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EDITORIAL

Antipsychotics for Children: Can we do better?

In this issue of our esteemed Journal, section editor of the psychopharmacology column, Dr. Dean Elbe, teamed up with an endocrinologist, a research assistant and child psychiatrists to present the current evidence focusing on the efficacy but mostly the metabolic safety profiles of atypical antipsychotic use in children and adolescents. The column was vetted as well through Dr. Elbe's co-editors of the column.

With the controversy about the vertiginous rise in prescription rates of atypical antipsychotics over the last few years, the questions about the risk/benefit profile of this category of drugs, prescribed mostly in off-label indications in pediatric psychopharmacology, will be coming in fast and furious now. Is clinical practise out of touch with the available evidence base? Why have guidelines regulating efficacy and safety not been instituted earlier? Are those psychiatrists who are formulating prescribing guidelines in a conflict of interest position (COI) if they have links to pharma? In the off-label environment what constitutes the appropriate standard of care? What constitutes a comprehensive informed consent? And of course, have psychiatrists, from those wined and dined at drug-company sponsored events, to those collecting speaking engagement fees to those sitting on consultation boards formulating guidelines, been unduly influenced by drug companies and their powerful advertising lobbies? We have all been influenced in one way or another, present company included.

Without demonizing Big Pharma, the bottom line is that they are in the business of making money while we are in the business of providing the best clinical care possible. Atypical antipsychotics are one of the largest markets for pharmaceutical manufacturers, representing over 14.6 billion dollars in sales per year (USA alone, 2008, imshealth.com). Therefore companies have strong incentives to "expand their market" but while growth is limited in the on-label indication environment (i.e. schizophrenia and to some extent bipolar disorder), off-label indications especially for the elderly and children and youth are "potential growth areas". Drug companies cannot directly advertise for off-label use but can do so indirectly through "incentives" to willing psychiatrists. In the USA, several states have attempted to make this issue more transparent by requiring pharmaceutical companies to disclose their payments to physicians. In a New York Times article (Psychiatrists, Children and Drug Industry's Role, 10/05/2007) authors Gardiner Harris, Benedict Carey and Janet Rogers report that in the state of Minnesota, where records have been tracked since 1992, from 2000 to 2005, drug company payments to Minnesota psychiatrists rose more than six-fold to 1.6 million and prescriptions for antipsychotics for children in the Medicaid program rose more than nine-fold. For the same period of time, psychiatrists receiving less than $5000 a year from drug companies wrote on average 67 prescriptions for atypicals per year whereas those psychiatrists receiving over $5000 per year, on average, wrote 223 prescriptions for atypicals per year. These observations are correlational rather than proof of cause and effect but other studies have indicated a consistent pattern of increased use as well beyond diagnostic indications (see Panagiotopoulos et al., this issue).

Are psychiatrists more vulnerable to pharma's influence than colleagues in other branches of medicine? Again the same data from Minnesota's Medicaid indicates that psychiatrists are more likely to receive financial incentives than other specialists. We can speculate on the reasons for this state of affairs (poor salaries? primitive state of diagnostics? complexity of mind-brain interactions? psychiatric identity problems?) but I have not yet seen a really cogent analysis of the various medical, social, cultural and economic factors influencing physician drug prescription decision-making.

It is hypocritical to bite the hand that feeds since the Journal accepts advertising dollars and the Academy accepts sponsorship monies for our annual conference. So can we do better? There are certain actions that can be taken to ensure arms length relationships in the interest of protecting the children and families who consult us. We can start by educating ourselves better about how the marketing strategies of Big Pharma work as they cannot sell their products without us. While there can be boardroom secrets there is enough information out there to deduce motivations, and data from research firms is available for marketing trend analysis (e.g. www.researchandmarkets.com). Practitioners should have knowledge of relatively unbiased groups (i.e. non pharma funded) conducting quality evidence based reviews such as AHRQ (Agency for Health Care Research and Quality, a branch of the US Human Health Services) and Cochrane Reviews. Other non profit organizations such as Prescription Policy Choices, (www.policychoices.org) based in Maine, are studying the escalating use of antipsychotics in children from a public policy perspective, and tracking what states are doing to safeguard children against the clinically inappropriate use of these drugs. Clinicians should familiarize themselves with the FDA approval process relating to the use of these drugs in children. For example the recent decision by an FDA panel of experts to approve quetiapine, olanzapine and ziprasidone for schizophrenia and bipolar disorder in the 10 to 17 age group was not a unanimous decision but represented committee member

consensus with many against and many abstentions (Kuehn, 2009).

Finally, while the culture in our subspecialty has been to commonly prescribe medications in an off-label fashion due to a lack of available evidence, this needs to change as more evidence of efficacy becomes available, and the risk of the serious adverse events these medications can cause becomes more well-defined. There are often guidelines about what to prescribe but not guidelines about what not to prescribe as new evidence emerges. Utilization data capturing trends over years should be reviewed at annual meetings and conferences as standing items. Articles such as the one by Panagiotopoulos et al. and prescribing guidelines that gather together evidence regarding drug efficacy, adverse events and recommended monitoring are valuable and essential in our field.

Normand Carrey MD (Editor in Chief)

Acknowledgements

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References

http://www.nytimes.com/2007/05/10/health/10psyche.html?em&ex=1178856000&en=19a69675db1d9fa0&ei=5087%0A**

http://www.nytimes.com/2009/12/12/health/12medicaid.html?_r=2&scp=1&sq=antipsychotics&st=cse

Kuehn, B. M. (2009). FDA panel oks 3 antipsychotic drugs for pediatric use, cautions against overuse. *Journal of the American Medical Association, 302*(8), 833-34.

Announcement

The Editor is seeking experts in the following areas willing to take on guest editorship duties on an upcoming theme issue in 2011:

"Longitudinal Studies: Implications for Change in Child and Adolescent Practise"

Guest editors should be experts in the theme issue and knowledgeable of other expert collaborators in the area.

Please send your expression of interest or suggestions to:

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LETTERS TO THE EDITOR

Iraqi Psychiatrist in Exile Helping Distressed Iraqi Refugee Children in Egypt in Non-Clinical Settings

Dear Editor,

The crisis following the 2003 war in Iraq has had a major negative impact on Iraqi society. One of these adverse effects has been massive civilian displacement, both within and beyond the Iraqi borders. An estimated four million Iraqis, nearly 15% of the total population, have fled their homes; 50% of these refugees are children. Among these refugees are many highly qualified professionals and academics who have escaped death threats only to find that their qualifications are not accepted by authorities in the host countries (Giles, 2007).

High rates of mental health problems and a history of multiple traumatic experiences among Iraqis have been documented in the literature (Murthy, 2007). Iraqi refugees face additional challenges; for example, in Egypt, between 2003 and 2007, between 100,000 to 150,000 Iraqis resettled to Egypt (Colville, 2007), but they have no access to free governmental health services. Iraqi refugees in Egypt have to pay private fees for healthcare, with the exception of limited services provided by NGO's, such as CARITAS, Catholic Relief Services, AMERA and Refugee Egypt. With few or no legal rights, and extreme economic hardship, life for Iraqi refugees is difficult. Children are usually out of school and parents struggle to find jobs to support their families. Moreover, the families are plagued by memories of violence. Mental health problems are ubiquitous. Under these difficult circumstances, concern is raised that the collective Iraqi trauma will continue and even intensify (AlObaidi, 2009).

Children who are refugees of war are exposed to traumatic stressors in premigration, flight, and resettlement that affect their psychological well-being and development. These stressors include direct exposure to war time violence and combat experience, displacement and loss of home, malnutrition, separation from caregivers, detention and torture, and a multitude of other traumatic circumstances that detrimentally affect children's health, mental health and general well being (NCTSNET, 2005).

This article is a report of my experiences as an Iraqi child psychiatrist living in Egypt since 2007, seeing first hand mentally disturbed Iraqi refugee children and adults. Working in non-clinical settings, such as my private accommodation and public cafes and/or gardens, providing services at no cost on a volunteer basis, my family and I endeavoured to provide assistance and in the tradition of Iraqi hospitality the refreshment of courtesy, concern and often food and drinks.

The children we encountered, aged 3 to l8 years of age, were displaying diverse emotional and behavioural problems following exposure to war, violence and traumatic displacement experiences. We were involved in managing children with various complaints, including increased bedwetting, separation anxiety, obsessive compulsive anxiety (triggered or exacerbated by trauma), drug abuse and conduct problems. We observed that Iraqi refugees fleeing violence and instability in their home country often continued to face health and psychological challenges, including difficulties in accessing health services, little social support, and psychosocial problems.

Our management plan focused upon a behavioral and supportive approach, but with no medication. Psychoeducation and some behavioral techniques to control symptoms were implemented, in addition to family and parenting therapy. Group therapy was used with some youths to help them through their traumatic experiences and to increase their psychosocial awareness. In consultation with licensed Egyptian physicans, I occasionally recommended the use of psychotropic medications when appropriate for adults or children.

The topic of Iraqi refugee mental health has not been thoroughly researched in the seven years that have elapsed since 2003. The Iraqi mental health treatment has been disrupted and many Iraqi health and mental health professionals have been displaced mainly to countries nearby Iraq. The systems of care available to Iraqi refugees in host countries have been ill-prepared to provide even the basic level of coverage.

It is difficult for Iraqi health and mental health professionals to work with Iraqi refugees in foreign countries. However, it is still possible for them to use their training and abilities in non-formal ways to help their fellow expatriates. In circumstances of crisis and conflict, there is often a need to create short-term solutions to provide immediate assistance to affected people, for example by using informal settings and/or private houses to offer both clinical and educational services to the population in need (Jones & Shahini, 2004).

Humanitarian efforts are at times too narrowly focused and removed from the needs of the most needy and should be re-designed to provide some basic infrastructure to facilitate the mobilization of the expertise of the refugee Iraqi health and mental professionals to serve the dire needs of Iraqi refugees. Instead of costly and unsustainable direct professional help, humanitarian efforts should make efficient use of the refugee's own expertise.

Within the last year or so, it seems that western media attention has shifted away from Iraq to other more "newsworthy" global conflicts; the plight of the expatriated refugee population is not a high priority as well for the Iraqi government. In this sense they are the victims of this double neglect. Hopefully this brief letter will remind everyone not to forget.

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References:

AlObaidi, A. K. S. & Attallah, S. F. (2009). Iraqi refugees in Egypt; an exploration of their mental health and psychosocial status. *Intervention, 7*(2), 145-151.
Colville, R. (2007). Regional perspectives. *Refugees, 146*(2), 16-20.
Giles, J. (2007). Lives in limbo. *Nature, 446*, 366-368.
Jones, L. & Shahini, M. (2004). Setting up services in difficult circumstances in Remschmidt , H., Belfer , L. M. & Goodyer, I. (eds). Facilitating pathways, care, treatment and prevention in child and adolescent mental health. Spring, Berline – Germany.
Murthy, R. (2007). Mass violence and mental health; recent epidemiological findings. *International Review of Psychiatry, 19*, 183-192.
National Child Traumatic Stress Network Refugee Trauma Task Force/ NCTSNET (2005). Mental Health Interventions for Refugee Children in Resettlement While Paper II: 3. Available on: http://www.nctsnet.org/nctsn_assets/pdfs/promising_practices/MH_Interventions_for_Refugee_Children.pdf

The Marketing of Science along with the Science of Marketing: *Response to Pharmacogenomics of Methylphenidate Response*

Dear Editor,

McGough et al., (2009) published the results of a study (*A Candidate Gene Analysis of Methylphenidate Response in Attention-Deficit/Hyperactivity Disorder)* showing: 1-that children respond differently to treatment with methylphenidate according to the intronic variant in their serotonin transporter gene (SLC6A4) and 2-a gene-by-dosage effects of two different variants of the dopamine receptor gene (DRD4).

Dr. Mrazek wrote an accompanying *JAACAP* editorial to this paper, *Pharmacogenomics of Methylphenidate Response: Making Progress,* offering an assessment of the results and future possibilities, an editorial with the potential to influence clinicians and parents.

In it, he speculates that genetic profiling will soon be as important to clinical outcomes as is child abuse from personal history, and bipolar disorder from family history. Dr. Mrazek tells us that "in his mind, it is problematic to ignore SLC6A4 and DRD4 genotypic results that may be helpful in treating children with ADHD", because "children who are treated without the benefit of individualized molecular genotyping have only a 60% chance of successful long-term treatment". Already, he tells us, "concerned parents" have begun to order "profiles of 1 million single nucleotide polymorphisms for $399", so that, he hopes, "the needs of our patients will drive us to seriously consider the value of informative gene variations".

I would buy all of this, were it based on credible evidence, which it is not. How can you possibly conclude to the clinical usefulness of a Genome Wide Scan (GWS) on the basis of a 4 week trial (McGough's study) in which the clinically relevant data are well hidden behind a mountain of statistically multi-transformed ones? Many basic questions have not been addressed in Mrazek's editorial in regard to this paper. It is claimed that the 12 repeat allele of the SLC6A4 gene is clinically important for a positive clinical response to methylphenidate and that the patients having less repeats had no symptom reduction on the medication. As a clinician I would be interested in knowing if *all* the 8 children having less than the 12 repeats had a bad response, and how many children with the 12 repeat (N=73) had a bad response. I also take note that a varimax rotation was performed on the data: this is done when the orthogonal factors are unsatisfactory, meaning that the data remain fuzzy as far as the basic concepts of the analysis are concerned. And so on, bringing to mind what a character in a play by Georges Duhamel says: Do remove everything so I can see something.

It could very well be that one day we will come across a given gene whose particularities will be relevant to the pharmacological treatment of some of our patients in psychiatry. On that day, I and other clinicians want to hear about it and about the credible evidence it is based upon. Making believe we are close to that moment is presently unacceptable and potentially harmful because it suggests to clinicians that knowing the SLC6A4 status is as important as knowing bipolarity from family history. Furthermore it gives an unrealistic and false hope to parents and patients and it puts pressure on them to buy these tests. Above all it makes us look the wrong way and prevents us from looking at the many other approaches through which many of our patients could be helped. It remains an open question as to the reasons why such papers (and editorials) selling the clinical benefits of still unverified approaches are being published. In my opinion, these papers have the flavour of selling devices, an all too common phenomenon in a substantial part of our

unfortunate modern psychiatric literature. We wonder to which extend the potential future commercial aspects of these concepts here play a role in the enthusiasm to go beyond the available data.

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References:

McGough, J. J., McCracken, J. T., Loo, S. K., et al (2009). A candidate gene analysis of methylphenidate response in ADHD. *Journal of the American Academy of Child and Adolescent Psychiatry, 48*(12), 1155-64.

Mrazek, D. (2009). Pharmacogenomics of methylphenidate response: Making progress. *Journal of the American Academy of Child and Adolescent Psychiatry*, *48*(12), 1140-42.

CONFERENCE WATCH 2010

71ST ANNUAL CANADIAN PSYCHOLOGICAL ASSOCIATION CONVENTION
June 3 – 5, 2010, Winnipeg, Manitoba
Website: www.cpa.ca

PATHWAYS TO RESILIENCE II: THE SOCIAL ECOLOGY OF RESILIENCE CONFERENCE
June 7 – 10, 2010, Halifax, Nova Scotia
Website: www.resilienceresearch.org

87TH ANNUAL CANADIAN PAEDIATRIC SOCIETY CONFERENCE
June 22 – 26, 2010, Vancouver, British Columbia
Website: www.cps.ca

60TH ANNUAL CANADIAN PSYCHIATRIC ASSOCIATION CONFERENCE
September 23 - 26, 2010, Toronto, Ontario

30TH ANNUAL CANADIAN ACADEMY OF CHILD AND ADOLESCENT PSYCHIATRY CONFERENCE
September 26 – 28, 2010, Toronto, Ontario
Website: www.cacap-acpea.org

CANADIAN ATTENTION DEFICIT HYPERACTIVITY DISORDER RESOURCE ALLIANCE CONFERENCE
November 20 – 21, 2010, Vancouver, British Columbia
Website: www.caddra.ca

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ORIGINAL ARTICLES

Outcome of EEGs Ordered at a Regional Children's Mental Health Service

Greta Toni Swart PhD, MD, FRCPC[1]; Aryan Wahab MD[1]

Abstract

Introduction: Clinical practice guidelines in child psychiatry recommend doing an EEG when warranted based upon a complete history and physical examination. The College of Physicians and Surgeons of Ontario published guidelines as to when an EEG is likely to provide useful information. **Method:** All the electroencephalograms ordered at a tertiary care children's mental health centre over about a 2 year period were reviewed and compared to the guidelines published by the Ontario College of Physicians and Surgeons for ordering EEGs. The outcome of the EEGs and what the ordering physician did after receiving the results were also reviewed. **Results:** About 53% were ordered for reasons that the guidelines indicated would result in a significant probability of obtaining clinically useful information. EEG abnormalities were identified in 49% of the youth in this category. About 20% were ordered for reasons the guidelines indicated that an EEG was not likely to provide clinically useful information. EEG abnormalities were identified in 24% of the youth in this category. About 27% of EEGs were ordered for reasons not mentioned in the guidelines. EEG abnormalities were identified in 52% of those youth. Youth who had abnormal results were generally followed up with further investigations. Those youth with more severe abnormalities were often referred to a pediatric neurologist for assessment and treatment. **Conclusions:** Children with severe mental health problems have an increased probability of having neurological problems which might have an impact on the ability to assess and treat the mental health problem.

Key words: EEG, children's mental health

Résumé

Introduction: Les directives de pratique clinique en pédopsychiatrie recommandent de faire un electro-encéphalogramme (EEG) lorsque les antécédents médicaux et l'examen physique du patient le justifient. Les directives du *College of Physicians and Surgeons of Ontario* précisent les circonstances dans lesquelles l'EEG est susceptible de donner des informations utiles. **Méthodologie:** Tous les EEG commandés à un centre pédopsychiatrique de soins tertiaires pendant deux ans ont été analysés et comparés aux directives du *College of Physicians and Surgeons of Ontario* sur les conditions de demande d'EEG. L'étude a également porté sur les résultats des EEG et sur le suivi fait par le médecin. **Résultats:** Environ 53% des EEG avaient été demandés pour les raisons qui, d'après les directives, donneraient fort probablement des informations cliniques utiles; des anomalies au niveau de ces EEG ont été constatées chez 49% des sujets de cette catégorie. Environ 20% des EEG avaient été demandés pour des raisons qui ne donneraient probablement pas d'informations cliniques utiles ; des anomalies ont été constatées dans 24% des sujets de cette catégorie. Enfin, environ 27% des EEG avaient été demandés pour des raisons ne figurant pas dans les directives du *College of Physicians and Surgeons of Ontario*; des anomalies ont été constatées dans 52% des EEG de ces sujets. Les enfants et adolescents dont les résultats étaient anormaux étaient généralement référés à un neurologue pédiatrique pour évaluation et traitement. **Conclusions:** Les enfants souffrant de graves problèmes mentaux risquent davantage que les autres de présenter des problèmes neurologiques susceptibles d'influer sur l'évaluation et le traitement de la maladie mentale.

Mots clés: EEG, santé mentale des enfants

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Introduction

In 2001 the Ontario College of Physicians and Surgeons (CPSO) published guidelines for ordering electroencephalograms (EEG) (Brunet et. al. 2000). These guidelines were intended to assist physicians in deciding when the information obtained by doing an EEG would likely provide relevant and useful clinical information beyond the history and physical examination. One of the indicators was "routine screening of psychiatric patients" which was identified as an indication that was not likely to provide additional useful information.

Butros et. al. (1992) published indications for the use of an EEG in general psychiatry. The primary indication was to look for possible organic aetiologies for the person's psychiatric condition. An organic aetiology might be considered if there is a history of a neurological disorder such as head injury or when the course of the illness is unusual because of very early onset, greater severity, or rapid progression. The presence of focal neurological signs might also be an indication to request an EEG. A history of epilepsy and episodic behavioural changes suggestive of epilepsy are other possible indication for ordering an EEG. An EEG might also be useful in differentiating between dementia and delirium and to follow the progress of Alzheimer's dementia. Children and adolescents experiencing significant mental health disturbances frequently also have physical health co-morbidity (McDonald et.al 1998).

The Canadian Psychiatric Association (Waddell et. al. 1999) established practice guidelines for the assessment and treatment of youth with a conduct disorder. The American Academy of Child and Adolescent Psychiatry has

also published practice guidelines (King et. al. 1997). The Canadian and American guidelines both emphasize the need to include a complete medical history and current physical examination as part of the diagnostic assessment. They both recommend obtaining an EEG if warranted. When conducting an assessment of a youth suspected of having mental retardation, autism, and other pervasive developmental disorders, an EEG is specifically recommended (Szymanski et. al. 1999, Volkmar et. al.1999; McDonald et. al.2006). Clinical practice guidelines for the assessment and treatment of children and adolescents with an oppositional defiant disorder (Steiner et. al. 2007), depressive disorder (Birmaher et. al. 1998), schizophrenia (McClellan et. al. 2001), substance use disorders (Bukstein et. al. 2005), and bipolar disorders (McClellan et. al. 2007) do not recommend a routine EEG.

Method

Participants

This study was carried out in a tertiary care regional children's mental health center that provides services to youth between birth and 18 years of age with developmental disabilities or psychiatric disturbances. At the time the study was completed, there were about 2000 referrals for outpatient services and 300 referrals for residential services each year. There were approximately 1800 active outpatients and about 200 residential admissions each year. The facility does not have an emergency room. The average length of stay for residential patients was about three months. At the time that the study was conducted there were six developmental paediatricians (the equivalent of 3 full time paediatricians) and six child and adolescent psychiatrists on staff.

Procedure

One administrative assistant was assigned to book all of the EEGs for all of the physicians. A running list of EEGs that were ordered was maintained, completion of the EEG was confirmed, and receipt of the report was monitored to ensure that the results were received in a timely manner. All of the EEGs on this list from its inception in September 1999 to August 2002 were included in this study. There were 147 EEGs ordered. The majority (139) of the EEGs were done at the local children's hospital which is a teaching hospital for a major medical school. The remainder were done in general hospitals in 4 different communities.

The casebooks of the youth who had EEGs were obtained from Clinical Records and the EEG requisition, the EEG report, and Progress Notes were reviewed to determine why the EEG was ordered, what the outcome was, and what the ordering physician did after receiving the results.

The majority (139/147) of the EEGs were done at the local children's hospital which is a teaching hospital for a major medical school. EEGs done at that hospital were interpreted by the staff Neurologists using a modification of the Mayo Clinic classification of abnormal EEGs (Mayo Clinic, Lemieux et al). In this system "normal" means normal limits for age and state of alertness. "Essentially normal" means probably normal but contains one or more elements of questionable normality. "Dysrhythmias Grade I-IV" include five categories of varying intensity and frequency of theta-delta or rhythmic activity, including spikes or recorded seizures. Only the highest dysrhythmia grade is given. If significant abnormalities in lower grades exist, they are included within the higher grade. When EEG abnormalities are not epileptiform, they are termed "non-specific" and localized to a lobe or lobes, hemispheric, or generalized in the same manner as seizure activity is localized.

The CPSO guidelines listed a number of indications for completing an EEG which were likely to provide clinical useful information (Table 1). They also listed a number of indications for completing EEGs that would be unlikely to result in useful clinical information (Table 2). Each EEG was coded according to the one CPSO guideline indication

Table 1. CPSO Recommended Indications of an EEG

Indication	EEGs Ordered	Normal	Probably Normal	Grade I	Grade II	Grade III	Grade IV	Unsatisfactory tracing
After Initial Seizure	2	1		1				
Prior to Stopping Anticonvulsant	1							
Poorly Controlled Epilepsy	18	4		3	3		7	1
Encephalitis	2	1					1	
Infantile Spasms	1			1				
Episodic Dyscontrol or Episodic Rage Attacks	15	12			2		1	
Interval EEG	5	2					3	
Query Seizure	34	18	1	5	3		4	2
Total	78	38	1	11	8		16	3

Table 2. CPSO Recommended against doing an EEG

Indication	EEGs Ordered	Normal	Probably Normal	Grade I	Grade II	Grade III	Grade IV	Unsatisfactory tracing
After Minor Head Trauma	2	1	1					
General Screening of Psychiatric Patients	1	1						
Learning Disabilities	4	3		1				
Attention Deficit Hyperactivity Disorder	5	4			1			
Behaviour Problems	15	10	1	2	1		1	
Language Delay	2	1					1	
Total	29	20	2	3	2		2	

of best fit. A number of EEGs were ordered for reasons that did not fit into any of the indications from the CPSO guidelines. These EEGs were grouped into a new category of indications that the CPSO did not mention in their guidelines (Table 3). There were many more situations mentioned by the CPSO guidelines that were not germane to this study such as seizure surgery, stupor and coma, assessment for brain death etc and these were excluded from the database. If the specific reason for ordering the EEG did not use the same terminology as one of the indicators in the guidelines, a best fit was coded based upon reading the consultation report and other clinical documentation that supported ordering the EEG. A history of epilepsy was coded as "poorly controlled epilepsy". This was an appropriate indication according to CPSO guidelines. "Staring spells" or "blank stares" were added to the group ordered for "query seizure disorder". "Query seizure disorder" was added to the list of indications cited by the CPSO guidelines as likely to provide useful clinical information. Hallucinations, delusions, and dissociative state were coded as "general screening of psychiatric patients". General screening of psychiatric patients was included in the list of situations in which an EEG does not have a reasonable probability of providing useful clinical information. Youth with mental retardation (McDonald et. al. 2006, Szymanski et. al. 1999) and pervasive developmental disorders (Volkman et. al. 1999) have a much higher rate of neurological abnormalities than children with other psychiatric disorders. Referrals for EEGs where mental retardation, autism, or Asperger's Syndrome was the indication for the EEG were put into the category (Table 3) created that included indications not mentioned in the CPSO guidelines rather than "general screening of psychiatric patients". Clinical practice guidelines for these conditions in the psychiatric literature mention that an EEG might be a useful thing to do in the assessment of these conditions.

Approval for this quality assurance study was given by the Administrator at the children's mental health centre pursuant to Section 182(2) of the Child and Family Services Act RSO 1990 C. 11 (last revised 2008). The University of Western Ontario Office of Research Ethics on the Use of Human Subjects approved this study and waived the need for patient consent.

Results

A total of 147 EEGs were ordered. Of these 78 (53%) were ordered for reasons that the CPSO recognized as having a reasonable probability of obtaining clinically useful information, 29 (20%) were ordered for reasons that the CPSO did not feel would likely lead to clinically useful information, and 40 (27%) were ordered for reasons that the CPSO did not mention. Abnormal EEGs were noted in 40 (50%) of youth who had an EEG for a reason that the guidelines indicated likely would lead to useful information. Almost a quarter (N=7, 24%) of youth who had EEGs for reasons that the guidelines felt would not provide useful information had an abnormal EEG. Of those youth who had an EEG for reasons that the guidelines did not mention, 22 (55%) had an abnormal EEG. The number of EEGs ordered for reasons that the CPSO did not mention in their guidelines was statistically significant (Chi Square 26.98; df (2) p> 0.000).

If there was an abnormality in EEGs done for reasons that the CPSO felt would be useful, the abnormality tended to be more severe. For those EEGs done for reasons that the CPSO thought would not lead to useful information, if there was an abnormality, it tended to be less severe. EEGs done for indications that the CPSO did not mention showed a full spectrum of level of severity if abnormal.

Often it is very difficult to get a satisfactory EEG tracing with youth who have a difficult temperament or major behavioural problems or an intellectual compromise. Only 4 tracings were reported as unsatisfactory for interpretation by the electrencephalographer generally because of movement artefact. This speaks to the skill of the EEG technicians at the local children's hospital where many of the EEGs were done.

The most common reasons for ordering an EEG were: query seizure (N=34), poorly controlled epilepsy (N=18), and previous abnormal EEG (N=18). The first two are reasons that the CPSO guidelines indicated would be useful reasons to order an EEG and the latter was not mentioned. Abnormal EEGs were found in 72% of youth

Table 3. CPSO made no recommendation regarding doing an EEG

Indication	EEGs Ordered	Normal	Probably Normal	Grade I	Grade II	Grade III	Grade IV	Grade V	Unsatisfactory tracing
Previous Abnormal EEG	18	7	1	1	1		7	1	
Medication Related	4	2			1		1		
Mental Retardation	12	5		3			3		1
Autism	6	3		2	1				
Total	40	17	1	6	3		11	1	1

with poorly controlled epilepsy, 50% of those with a question of epilepsy, and 61% of those with previous abnormal EEG. In most cases the abnormalities were towards the more severe end of the dysrythmias. The fourth most common reason for ordering an EEG were behavioural problems and episodic dyscontrol each with 15 EEGs ordered (each representing 10.2% of all EEGs ordered). Behaviour problems is one of the clinical concerns that the CPSO guidelines indicate that an EEG is unlikely to provide additional clinically useful data. Episodic dyscontrol is one of the situations that the CPSO guidelines indicate that an EEG would be useful. In our study 27% of the youth with behavioural problems and 20% of those with episodic dyscontrol had an abnormality in their EEG. The remaining individual indications all had fewer than 15 patients so an individual analysis was not completed.

Table 1 shows all of the indications that the CPSO felt an EEG would likely provide clinically useful information that were seen in this population as well as the outcome of all of the EEGs ordered for these reasons (49% abnormal). There were a number of other indications in the guidelines but none of our patients fit into those categories. When these children had an abnormal EEG the abnormality tended to be more severe in magnitude.

Table 2 lists all of the CPSO indicators seen in this study in the category of an EEG is unlikely to be providing useful clinical information (24.0% abnormal). Youth in this group who did have an abnormality on their EEG tended to have abnormalities toward the lower end of the severity spectrum. General screening of psychiatric patients is also in this category as are learning disabilities, attention deficit hyperactivity disorder, and language delay.

Table 3 shows all of the EEG's that were ordered for reasons that the CPSO guidelines did not mention. Over half of the youth (56%) who had EEGs ordered for reasons in this group had abnormalities which were about equally distributed between the levels of severity. When the EEG requisition indicated "mental retardation" or "autism" as the reason for ordering the EEG it was assumed that the patient did not have a known seizure disorder.

Table 4 shows the actions undertaken by the ordering physician after receiving the results of the EEG. For 47 of the children, two interventions were undertaken, 25 had three interventions, and 7 had four interventions. If an abnormal EEG was reported, the youth likely had further investigations through neuro imaging (CT or MRI) or was referred to a paediatric neurologist or developmental paediatrician. At the time that this study was conducted, there was a paediatric neurologist at the children's mental health centre one full day per week every week and the psychiatrists and developmental paediatricians could obtain a consultation within a few weeks.

Discussion

EEGs should be ordered when the medical history and physical examination provide reasons for using an EEG for further investigations. In 2000 the Ontario College of Physicians and Surgeons published guidelines for clinical practice and facility standards regarding EEGs. We compared the EEGs ordered by all of the physicians at a regional children's mental health centre against these guidelines.

The CPSO guidelines were developed for community-based practices. The patient population at the children's mental health center was heavily skewed toward children with developmental disabilities. Approximately 50% of the patients at the facility have some degree of developmental delay. People with a developmental delay have a significantly higher probability of having EEG abnormalities and seizure disorders. In addition, the children who were referred to this children's mental health centre had complicated mental health problems that were not amenable to remediation in a less restrictive situation such as the community-based practice or an outpatient department of a general hospital. Youth referred to this facility have generally exhausted the less restrictive interventions from community facilities before being referred. There is a significantly higher proportion of youth with biological predisposing, precipitating, and perpetuating factors in this population than within a community sample. For example, 16% of all children admitted to residential treatment at this children's mental health centre have a diagnosis of a seizure disorder (unpublished data from an internal quality assurance study) whereas 1-2% of the general population in Ontario have a history of convulsions (Epilepsy Ontario website). The prevalence is higher in children and the elderly than in the general population (Epilepsy Ontario website). Therefore it is not surprising to find EEG abnormalities in youth who had an EEG done for reasons that are less likely to produce useful information in the general population study. The high frequency of EEG abnormalities in this population points out the need for

Table 4. Actions Taken by Physicians after Receiving EEG Results

Action	Normal EEG	Probably Normal	Grade I	Grade II	Grade III	Grade IV	Grade V	Unsatisfactory tracing	Total
EEG Repeated	1	1	4	2	0	7	0	0	15
Sleep Deprived EEG Ordered	0	0	2	0	0	0	0	0	2
Anticonvulsant Changed to Different Drug	0	0	1	0	0	3	0	1	5
Measure Blood Level of Anticonvulsant	2	2	2	0	0	2	0	1	9
Change Dose of Anticonvulsant	0	0	1	1	0	4	0	1	7
No Change in Anticonvulsants	6	1	3	1	0	4	0	0	15
CT Ordered	23	1	7	1	0	5	0	1	38
MRI Ordered	6	0	6	1	0	5	0	2	20
Neurology Consult Ordered	8	2	9	5	0	14	0	2	40
Pediatric Consult Ordered	9	1	5	4	0	5	0	2	26
Unable to Determine Management Change	36	1	3	5	0	6	1	1	53
Total	91	9	43	20	0	55	1	11	230

child psychiatrists to be acutely aware of possible biological predisposing, precipitating, or perpetuating biological factors in a child with complex mental health problems. It also reminds us of the need to have a close working relationship with developmental paediatricians and paediatric neurologists. In some cases, unless the organic disorders are first addressed, the behavioural interventions will not be as effective.

Did the EEG abnormalities have any bearing on the treatment that the children and youth received? In some cases, it led to prescribing an anticonvulsant, changing the dose of an anticonvulsant or changing the anticonvulsant medication. In youth with mood instability or behavioural explosiveness, sometimes an anticonvulsant was prescribed. An abnormal EEG could also affect the choice of psychotropic medication to one with a lower potential for seizures as an adverse side effect. Anecdotal evidence indicates that for some youth who have an abnormal EEG and who have not responded well to behavioural interventions or psychotropic medications, adding an anticonvulsant may be useful.

Limitations of this study are that the data were collected in a retrospective chart review done a number of years after the actual EEGs were done. We were dependent on chart information and not able to clarify any questions with the physician who ordered the EEG particularly as it related to the actions taken after receiving the results. It is a relatively small study, with only 147 patients. The CPSO guidelines were developed for a primary care community based practice. With the highly complex patients in a tertiary care practice where there is a significant likelihood of the youth having a neurological problem, it is not surprising that there were a significant number of youth who had an abnormal EEG that were done for reasons that the CPSO guidelines indicated a low likelihood of providing useful information. These data are probably not transferable to the general population of children and adolescents with mental health problems because the population in this study is skewed towards children with more severe psychiatric problems and with developmental disabilities. The guidelines remain useful for a primary care practice. The study does, however, underscore the need for all physicians working with children and adolescents with mental health problems to conduct a complete medical history, particularly a neurological history, and order an EEG or a neurology consultation where indicated.

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The authors have no financial relationships or conflicts to disclose.

References

Birmaher, R. & the Working Group on Quality Issues (1998). Summary of the Practice Parameters for the Assessment and Treatment of Children and Adolescents with Depressive Disorder. *Journal of the American Academy of Child and Adolescent Psychiatry, 37*(11), 1234-1238.

Boutros, N. N. (1992). A Review of Indications for Routine EEG in Clinical Psychiatry Hospital and Community. *Psychiatry, 43*(7), 716-719.

Brunet, D. G., & Young, G. B. co-chair Electroencephalography Task Force. Guidelines for Clinical Practice and Facility Standards Electroencephalography. The College of Physicians and Surgeons of Ontario, September 2000.

Bukstein, O. & the Working Group on Quality Issues (2005). Practice Parameters for the Assessment and Treatment of Children and Adolescents with Substance Use Disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 44*(6), 609-621.

King, R., & the Working Group on Quality Issues (1997). Practice Parameters for the Psychiatric Assessment of Children and Adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*(10), 4S-20S.

Lemieux, J. F., Vera, R. S., & Blume, W. T. (1984). Database system for EEG laboratories. *Electroencephalography and Clinical Neurophysiology, 58*, 50.

Mayo Clinic (1999). Clinical examination in neurology. Ch 15. Mayo Clinic and Mayo Foundation in Medical Education and Research. Rochester, MN.

McClellan, J., & the Working Group on Quality Issues Practice (2001). Parameters for the Assessment and Treatment of Children and Adolescents with Schizophrenia. *Journal of the American Academy of Child and Adolescent Psychiatry*, *40*(7 Supplement), 4S-23S.

McClellan, J., & the Working Group on Quality Issues Practice (2007). Parameters for the Assessment and Treatment of Children and Adolescents with Bipolar Disorder. *Journal of the American Academy of Child and Adolescent Psychiatry, 46*(1), 107-125.

McDonald, C. A., Paterson, R., Bauer, P., & McDermott, B. (1998). Paediatric assessment in a residential child and adolescent psychiatric unit. *Journal of Paediatrics and Child Health, 34*, 267-272.

McDonald, L. A., Rennie, J. Tolmie, Galloway, P., & McWilliam, R. (2006). Instigation of global developmental delay. *Archives of Diseases in Childhood, 91*, 701-705.

Steiner, H., & the Working Group on Quality Issues (2007). Practice Parameters for the Assessment and Treatment of Children and Adolescents with Oppositional Defiant Disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, *46*(1), 126-141.

Szymanski, L., & King, B. H. Principal authors & the Working Group on Quality Issues (1999). Practice Parameters for the Assessment and Treatment of Children, Adolescents, and Adults with Mental Retardation and Co-morbid Mental Conditions. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*(12), 5S-31S.

Volkman, F., Cook Jr., E. H., Pomeroy, J., Realmuto, G., & Tanguay, P. Principal authors & Working Party on Quality Issues (1999). Practice Parameters for the Assessment and Treatment of Children, Adolescents, and Adults with Autism and Other Pervasive Developmental Disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*(12), 32S-54S.

Waddell, C., Lipman, E, Offord, D. (1999). Conduct Disorder: Practice Parameters for Assessment, Treatment, and Prevention. *Canadian Journal of Psychiatry, 44*(Supplement 2), 35S-40S.

Cognitive Behavioural Therapy for Depressed Youth: Predictors of Attendance in a Pilot Study

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Abstract

Objective: Of the many forms of psychotherapy offered to treat depression in youth, Cognitive Behavioural Therapy (CBT) has been shown to be efficacious. Nonetheless, a high degree of apparent non-responsiveness, failure to remit post-treatment, and lack of long term benefit are all problematic. Given that regular participation is critical to treatment success, child and family predictors of attendance were researched. **Method:** Twenty-nine depressed Canadian youth (aged 10-17) participated in a youth only or youth plus parent CBT group. Child and parent predictors of attendance were examined. **Results:** Youth who were younger, less anxious (by maternal report), and had more formally educated parents attended CBT more consistently. Further, mothers who perceived their children's depressive symptoms as more severe, whose children reported more depressive and anxious symptoms, and who reported more life stressors attended more parent sessions. **Conclusions:** This study identifies key factors influencing youth and parent attendance in group CBT for depressed youth. Addressing these factors at the outset of treatment may decrease attrition in this form of psychotherapy.

Key words: cognitive behavioural therapy, depression, youth, attendance

Résumé

Objectif: L'efficacité de la thérapie cognitivo-comportementale (TCC) dans le traitement de la dépression des adolescents n'est plus à démontrer. Toutefois, le taux élevé de non-réponse apparente au traitement, le fait que les symptômes subsistent après le traitement, et l'absence d'avantages à long terme sont problématiques. Cet article étudie les prédicteurs de participation, car la participation régulière de l'enfant et de sa famille est essentielle à la réussite du traitement. **Méthodologie:** Vingt-neuf jeunes Canadiens (âgés de 10 à 17 ans) ont participé à un groupe de TCC, seuls ou avec leur parents. Les prédicteurs de participation de l'enfant et de ses parents ont été analysés. **Résultats:** Les enfants plus jeunes, moins anxieux (d'après la mère) et dont les parents étaient plus éduqués assistaient plus régulièrement aux séances de TCC que les autres. Les sujets dont les symptômes dépressifs étaient plus sérieux (d'après la mère), ceux qui présentaient davantage de symptômes de dépression et d'anxiété et ceux qui avaient signalé un plus grand nombre de stresseurs dans leur vie assistaient à davantage de séances avec les parents que les autres sujets. **Conclusions:** Cette étude définit les facteurs clés qui influencent la participation des enfants et des parents aux groupes de TCC. Aborder ces questions au début du traitement peut contribuer à réduire le nombre d'abandons en cours de thérapie.

Mots clés: thérapie cognitivo-comportementale, dépression, adolescents, présence

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Introduction

It has been well established that depression in youth impacts their current functioning and has potential long lasting consequences well into adulthood (Costello et al., 2002). Of the many forms of psychotherapy offered to treat depression in youth, Cognitive Behavioural Therapy (CBT) is the most widely researched. Several meta-analyses have been published demonstrating the efficacy of CBT with depressed youth (Lewinsohn & Clarke, 1999; Michael & Crowley, 2002; Weisz et al., 2006). Each meta-analysis pointed to varying effect sizes, ranging from .34 to 1.27. Effect sizes differed because of the number of studies, inclusion criteria, and statistical methods utilized in the meta-analyses. Nonetheless, the literature also demonstrates a high degree of non-responsiveness to CBT, a very slow response in the absence of concurrent medication, high attrition rates, and frequent failure to remit post-treatment (TADS, 2004; Weisz et al., 2006). Moreover, the significant effects initially found at post-treatment were rarely maintained at follow-up (Weisz et al., 2006). A paucity of literature exists into mediators and moderators of effective treatment of depressed youth with CBT (Weisz et al., 2006).

Predictors of outcome in CBT for depressed youth included factors related to youth (e.g., age and comorbidity; Berman et al., 2000; Michael & Crowley, 2002), family (e.g., parental involvement in therapy and parental psychopathology; Lewinsohn et al., 1990), and study characteristics (e.g., attrition rates; Weisz et al., 2006). The present study was designed to ascertain which of several youth, family, and study factors are most predictive of consistent CBT attendance, a prerequisite for successful treatment. Existing research with respect to these factors in relation to youths' recovery from depression is first reviewed. No studies have examined these factors in relation to CBT attendance.

Youth Characteristics

With respect to age, a meta-analysis revealed that the overall effect size for adolescents (i.e., 13 and over) is better than children (i.e., 12 and under; Costello et al., 2002). Possible reasons include that older youth have better-developed cognitive skills and can thus benefit more from CBT (Weisz et al., 1997) or that younger children are more dependent on environmental influences to recover from depression. In contrast, another study found that younger age predicted better recovery from depression following CBT than older age (Clarke et al., 1992). A potential explanatory hypothesis is that younger children have less entrenched depression and are thus more amenable to therapy than older children.

Given that 25 to 50% of youth with a depressive disorder also have a co-morbid anxiety disorder (Axelson & Birmaher, 2001), evaluating the role of anxiety in CBT outcome trials for depression is critical. The presence of co-morbid anxiety predicted lower depression recovery (Clarke et al., 1992) and the presence of co-morbid depression predicted poorer anxiety recovery (Berman et al., 2000). However, a meta-analysis found that CBT utilized to treat depressed youth also reduced anxiety symptoms (Weisz et al., 2006). Specifically, anxiety acted as a moderator such that CBT had a stronger effect on depressive symptoms in those with co-morbid anxiety (Rohde et al., 2006).

Family Characteristics

Overall level of family functioning influences service utilization with this population (Velhurst & van der Ende, 1997). For example, one of the best predictors of youth depression is parental depression, particularly in mothers (Beardslee et al., 1998). Moreover, parental psychopathology affected treatment outcomes in youth with anxiety disorders and depression (e.g., Berman et al., 2000). Specifically, parents' self reported psychopathology in general, and depression in particular, was higher for those children in the treatment "failure group" compared to those from the "success group" (Berman et al., 2000). Often associated with parental psychopathology is parent-child conflict, which itself has been related to the maintenance of depressive disorders in youth (e.g., Birmaher et al., 2000).

Parents' perceptions of the severity of their children's symptoms may influence their decision to seek services (Logan & King, 2002) and thus time to recovery among depressed adolescents treated with CBT (Rohde et al., 2006). Once parents seek treatment, it is widely believed that parental involvement is crucial in therapy (Clarke et al., 1999). However, research is equivocal as to the advantage of adding a parental component to CBT with depressed youth. On the one hand, Lewinsohn et al. (1990) found a trend for larger therapeutic effects with an adolescent plus parent group compared to an adolescent group alone or waitlist control. Similarly, self-rated adolescent depression scores were found to be lower in the adolescent plus parent group compared to the adolescent group alone (Clarke et al., 1992). Conversely, Clarke et al. (1999) found no significant difference between an adolescent alone and adolescent plus parent group.

Study Characteristics

Attrition rates vary greatly for CBT with this population, ranging from 0% to 71% with a mean of 12.8% and a median of 9.5% (Weisz et al., 2006). This is unfortunate, as participation in therapy is a prerequisite for response to CBT. No studies have evaluated whether attendance moderates treatment outcome.

Hypotheses

The present study was designed to evaluate factors affecting attendance and thus potentially the efficacy of CBT treatment. Depressed youth participated in a youth only or youth plus parent CBT group. Youth and parent characteristics affecting participation were examined. The following were hypothesized: (1) parental attendance would predict youth attendance; (2) youth's age and co-morbid anxiety symptoms would affect attendance; however, due to the equivocal literature, directionality was not predicted; (3) mothers who self-reported more parenting stress and depression would be less likely to attend; and, (4) mothers who reported more severe symptoms in their children would attend more groups.

Method

Participants and Procedure

A total of 29 Canadian youth (16 male and 13 female) ranging in age from 9.85 to 16.90 years (M age = 13.31 years) were recruited to participate in the study. All participants had been referred for treatment to an urban, outpatient, mood and anxiety program due to a primary diagnosis of Major Depressive Disorder (MDD) or Dysthymic Disorder (DD). Comorbid diagnoses were permitted, as long as MDD or DD was the most impairing condition. Diagnoses were confirmed by the Anxiety Disorders Interview Schedule for the DSM-IV (ADIS; Silverman & Albano, 1996) conducted with both the parents and youth by experienced clinicians trained for reliability. The ADIS is a well-validated semi-structured diagnostic interview that probes for internalizing disorders in detail and screens for externalizing disorders. The ADIS also assesses for clinical impairment. All youth were at least moderately impaired, based on initial clinician ADIS data. Excluded from the study were youth with developmental delays and those who lacked fluency in English or suffered from psychosis. To ensure representation of a broad spectrum of severity and consistent with the benefits demonstrated in the TADS study (2004) for combining CBT and medication, concurrent antidepressant medication was permitted as long as the dosage was stabilized at least one month prior to starting CBT. Participants were compensated for their travel.

All parents of participants under 16 years of age and all youth 16 years of age and older provided written, informed consent prior to their participation. Youth under 16 years of age provided assent to participate in the study. This study was approved by our Research Ethics Board.

Participating families were assigned to either a Cognitive Behavioural Therapy group with parent participation (CBT+P; n= 18) or without parent participation (CBT; n = 11). Groups were offered whenever four or more adolescents within a 3-year age range were available for participation. Randomization of the groups was attempted but not entirely successful due to slow rate of recruitment. Accordingly, group assignment depended upon the type of group offered at time of referral[1]. Due to the lack of randomization, participants in the two treatment conditions were compared on demographic characteristics and pre-treatment measures (see below). Group differences were addressed in subsequent analyses.

In both CBT groups, youth participated in a manualized program (of 15 sessions[2]) entitled "Getting Back on Track: A Group Cognitive Behavioural Therapy Program for Depressed Youth" (Monga & Shaw, 2005, unpublished manuscript available from the authors) developed from established, evidence-based CBT manuals. Components of the group included: psychoeducation around depression; learning how to identify one's feelings; practicing relaxation techniques; discerning personal triggers for depressed mood; establishing new strategies for coping with low moods; understanding the importance of an active lifestyle; recognizing the connection between thoughts, feelings, and behaviour; how to challenge negative thoughts; as well as, how to care for yourself and build positive support systems.

Parents assigned to the CBT+P group participated in a manualized program (of 15 sessions[2]) based upon the book, "Helping Your Teenager Beat Depression" (Manassis & Levac, 2004 available from the authors) outlining an empathic, problem-solving approach for parents to help facilitate their children's recovery. Components of the group included: helping parents understand the spectrum of their teenager's mood (from sadness to suicidality); teaching parents problem solving techniques to use with their teenager; outlining healthy habits to instil in youth; discussing the comobidity of depression and anxiety, and how these disorders affect the whole family; and, helping parents cope with difficulties at school and with peers.

Therapists leading both youth and parent groups were seasoned clinicians of medical, nursing, and psychological backgrounds, each with several years of prior CBT experience with youth and parents. Parent and youth groups were independent, yet provided concurrently to facilitate attendance. Each session was 1.5 hours in length. Pre- and post-group measures were administered separately to the youth and their parents. Groups were audiotaped and a proportion of the tapes (10%) were scored by an independent rater for treatment fidelity, using a checklist for session content and important process elements. The adherence checklist was based upon DeRubeis and Feeley (1990), but modified for use with youth.

Measures

Youth completed paper and pencil questionnaires about their general functioning, as well as their depressive and anxious symptoms. Parents completed paper and pencil questionnaires about their children's functioning, their own depressive and general psychological functioning, as well as their perceived parenting stress. Experienced, independent clinicians blind to treatment assignment or to pre- versus post-treatment status assessed the youths' global functioning via the Children's Global Assessment Scale (CGAS) from the DSM-IV (APA, 1994). The Wechsler Intelligence Scale for Children-III (WISC-III; Wechsler, 1991) was conducted to examine participants' cognitive abilities. All measures chosen have demonstrated reliability and validity. Measures were administered to ensure comparability of subjects in the two treatment conditions, and to examine hypothesized predictors of attendance.

Youth self-report measures. Youth's depressive symptoms were assessed with the Children's Depression Inventory (CDI; Kovacs, 1992), a 27-item self-report inventory such that responses are rated on a 3 point scale ranging from 0 to 2, with higher scores indicating greater symptom severity. The Anhedonia subscale consists of 8 items with a Cronbach α = .66. Youth's anxiety symptoms were evaluated with the Multidimensional Anxiety Scale for Children (MASC; March, 1997), a 39-item self-report measure (ranging from 0, i.e., *never true about me*, to 3, i.e., *always true about me*). The Anxiety Disorder Index (consisting of 10 items) was created to assess youth who would also probably be diagnosed with an anxiety disorder, and has internal reliability coefficients ranging from α=.60 to α=.64 depending upon the age and gender of the sample. The Social Anxiety subscale (consisting of 9 items) produced internal reliability coefficients ranging from α=.79 to α=.86 depending upon the age and gender of the sample. Youth completed the Youth Self Report (YSR; Achenbach & Rescorla, 2001), a 112 item self-report inventory of functioning (ranging from 0, i.e., *not true*, to 2, i.e., *very true* or *often true*). Factor analyses have revealed 2 broad-band (i.e., Internalizing and Externalizing Problems) and 8 narrow-band (e.g., Anxious/Depressed, Somatic Complaints, and Withdrawn/Depressed) dimensions of Behavioural disturbance.

[1]The first 2 groups were the CBT+P and the remaining groups alternated between the two types.

[2]Please note that due to SARS some groups had the content of some sessions condensed into 1 session. All material was equally presented. Moreover, participation scores were reflected as a percentage of attendance to account for number of sessions offered.

Parent Measures. Parents completed the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) about their children's general functioning. The 118-item inventory (ranging from 0, i.e., *not true*, to 2, i.e., *very true* or *often true*) is comparable to the YSR, with the same broad- and narrow-band scales. The Anxious/ Depressed, Withdrawn/Depressed, DSM-Oriented Anxiety Problems and DSM-Oriented Somatic Problems subscales consist of 13, 8, 6, and 7 items, respectively; and, have Cronbach alpha's equal to .84, .80, .72, and .75, respectively.

Parents completed The Brief Symptom Inventory (BSI; Derogatis, 1993) about themselves. The BSI is a 53 item self-report inventory to assess psychological symptom patterns (ranging from 0, i.e., *not at all*, to 4, i.e., *extremely*). Three global indices and 9 dimensions (e.g., Depression and Anxiety) can be obtained. Parents completed the Beck Depression Inventory-Second Edition (BDI-II; Beck et al., 1996) about their own depressive symptoms. The BDI contains 21 self-report items rated on a 4 point scale ranging from 0 to 3, with higher scores indicating greater symptom severity.

Parents completed the Parenting Stress Index (PSI; Abidin, 1995), a 101-item questionnaire developed to assess child and parent characteristics associated with stressors in the parent-child system. Parents rate 89 statements on a 5 point scale ranging from *strongly agree* to *strongly disagree*. The remaining 12 questions are based upon a 4 or 5 point scale, with higher scores indicating greater discord. From the Total score, Child and Parent Domains can be obtained. The Parent Domain consists of 54 items and has a reliability coefficient equivalent to .93.

Attendance indices. A youth attendance index was created after viewing the histogram of attendance such that they were classified as either low attendance (i.e., attended less than 2/3 of sessions; n = 14) or high attendance (i.e., attended 2/3 or more of sessions; n = 15).

With respect to parental attendance, some parents were not offered the parent group, some parents who were offered the group did not attend frequently, and some parents were consistent attendees of the group. Accordingly, an index of parental attendance was created and parents were classified according to 1 of 3 categories: (1) no parent sessions offered (n = 11), (2) low attendance (i.e., attended less than 2/3 of sessions; n = 10), and (3) high attendance (i.e., attended 2/3 or more of sessions; n = 8). When predicting parental attendance, only the latter 2 categories were used.

Results

Demographic Characteristics

Based upon parent report, 48.3% of the youth were Caucasian, 24.1% were of a visible minority, and 27.6% did not report their racial or ethnic background. Sixty-nine percent of the participants' parents were living together. Among mothers, 41.3% possessed a college/university degree, 13.7% completed some college/university, 10.3% completed some secondary school, 3.4% finished secondary school, and 31% did not report their education level. Among fathers, 27.6% possessed a college/university degree, 20.7% completed some college/university, 10.3% finished secondary school, and 41.4% did not report their education level. Among households, 27.6% reported an income over $60 000, 13.7% between $40 000 and $60 000, 6.8% between $20 000 and $40 000, 13.7% earned less than $20 000, and 37.9% did not report their family income. According to the Hollingshead classification system, the mean socioeconomic level of participants was Level III (e.g., skilled craftsmen, sales workers), and all classes were represented.

Pretreatment Comparisons

In order to ensure that no group differences existed pretreatment, *t* tests and $^{-2}$ tests were conducted on key variables. There was no significant difference in attendance of youth between the CBT and CBT+P group (t (27) = 0.061, p = .95). On self-report measures, no differences in pretreatment measures were found between groups (CBT versus CBT+P) for the total CDI (t (25) = 0.054, p = 0.96), total MASC (t (17) = .247, p = .81), and YSR (total: t (10) = 0.24, p = .81; and, internalizing: t (10) = 0.17, p = .87). Additionally, no group differences in overall IQ was found (t (17) = 0.61, p = .55). On maternal reports, no differences between groups were found in the CBCL (total: t (12) = .317, p = .77, and internalizing: t (12) = 0.02, p = .98) and BSI (depression: t (14) =0.42, p = .68; and Global severity index: t (14) = 0.49, p = .64). Moreover, no pretreatment group differences were found on clinician rated CGAS (t (25) = 0.17, p = .87).

There was a significant group difference between female and male participants ($^{-2}$ (1) = 5.58, p = .018), such that more males were assigned to the CBT+P. Youth's age differed between groups such that those assigned to the CBT+P group (Mean = 12.53, SD = 1.53) were younger than those assigned to the CBT group (Mean = 14.58, SD = 1.54; t (27) = 3.50, p = .002).

Predicting Attendance

Youth attendance. Separate independent sample t-tests were performed with youth's attendance (high, low) as the independent factor for age, CDI, MASC, CBCL, and parent education. Please see Table 1 for details. The following significant differences were found for: (1) youth's age, such that younger children attended more consistently; (2) mother's CBCL-DSM Anxiety and Somatic Domain score, such that mother's who reported less anxious symptoms in their children had higher attending children; and, (3) parents education, such that parents with more formal education had children who attended more frequently. Additionally, mothers who reported more anxious and depressed symptomatology (mother's CBCL Anxious/Depressed Subscale) had children who tended to attend the group less frequently.

Table 1. Mean and Standard Deviation as a function of Youth Attendance

	Low Attendance (n = 14)	High Attendance (n = 15)	t	p
Age	14.32 (1.77)	12.36 (1.30)	1.18	.002
Mothers' CBCL				
Anxiety Domain	73.17 (3.55)	63.88 (8.95)	2.39	.034
Somatic Domain	77.00 (10.84)	64.38 (9.49)	2.32	.039
Mothers' education	6.38 (2.20)	8.17 (1.5)	2.16	.045
Fathers' education	6.17 (1.47)	8.18 (1.4)	2.79	.014
Mothers' CBCL				
Anxious/Depressed Subscale	76.50 (8.67)	66.38 (11.02)	1.86	.088
Youths' CDI (total)	61.50 (18.25)	57.00 (14.79)	0.70	.490
Youths' MASC (total)	50.44 (12.67)	53.00 (9.08)	0.62	.509

Parental attendance. Separate independent sample t-tests were performed with parental attendance (high, low) as the independent factor for age, CDI, MASC, CBCL, PSI, and parent education. Please see Table 2 for details. The following significant differences were found for: (1) youth CDI-Anhedonia subscale, such that youth who saw themselves as more anhedonic had parents who attended more frequently; and, (2) youth MASC-Anxiety Disorders index and Social Anxiety subscale, such that youth who reported more anxious symptoms had parents who attended more often. Additionally, the following trends occurred: (1) Mothers' CBCL-Withdrawn/Depressed subscale, such that mothers who reported more symptoms of depression in their children were more likely to attend; and, (2) Mother's PSI-Life Stress Index and Parent Domain, such that mothers who reported more life stresses and poorer general functioning were less likely to attend.

Discussion

It has been well established that CBT is efficacious in treating depression in youth, though to variable degrees depending on the study. In some studies, a high degree of non-responsiveness is found, as well as very high attrition rates. The latter may account for some of the apparent non-responsiveness. Given that depression in youth impacts their current functioning and that attendance is needed for treatment to be effective, the present study sought to ascertain which characteristics are most predictive of youth and parental attendance. Although conclusions must be tempered by the small sample size and other limitations (see below), our main hypotheses were confirmed.

In predicting attendance, younger participants were found to attend more often. Potentially, the didactic approach used in CBT is more developmentally consistent with the school-focused attitudes of preteens, versus adolescents' greater focus on peers and their own emerging autonomy. Alternatively, parents may be better able to influence their younger children to attend regularly, compared with their older children. Although age has not been investigated with respect to attendance in the CBT literature,

Table 2. Mean and Standard Deviation as a function of Parental Attendance

	Low Attendance (n = 10)	High Attendance (n = 8)	t	p
Youths' CDI				
Anhedonia subscale	50.00 (11.28)	65.22 (14.45)	2.29	.038
Youths' MASC				
Anxiety Disorders Index	44.50 (9.15)	59.20 (9.47)	2.34	.051
Youths' MASC				
Social Anxiety subscale	49.75 (11.30)	68.40 (11.68)	2.42	.046
Mothers' CBCL				
Withdrawn/Depressed scale	65.60 (8.17)	77.50 (8.18)	2.17	.067
Mothers' PSI				
Life Stress Index	12.00 (8.04)	3.67 (3.67)	2.26	.054
Mothers' PSI				
Parent Domain	137.75 (7.27)	117.5 (19.69)	1.94	.089
Youths' Age	12.92 (1.80)	12.21 (1.28)	0.99	.337

better attendance may partially account for the finding that young age predicted better recovery from depression following CBT than older age (e.g., Clarke et al., 1992).

In the current study, youth whose mothers reported more anxious symptoms in their children attended less regularly. This finding is interesting in light of the existing literature which points to a lower recovery rate among depressed adolescents with co-morbid anxiety and anxious adolescents with co-morbid depression (Clarke et al., 1992). Perhaps participants with this co-morbid condition attended less frequently, were thus less likely to benefit from treatment, resulting in lower recovery rates. Alternatively, the group format may have been perceived as threatening by anxious youth, resulting in avoidance of sessions.

In contrast, children who saw themselves as more anxious had mothers who attended more often. Similarly, mothers who saw their children as more depressed pretreatment participated in the groups more frequently. This finding is consistent with the literature, which illustrates how parents' perceptions of their children's symptoms influence their help seeking behaviour (Logan & King, 2002). Perhaps mothers who saw their children as suffering more from depression and co-morbid anxiety felt more stressed in their parenting role and more helpless to aid their children. This may have led to greater recognition of the need for professional help and to attend the program more regularly.

In predicting youth attendance, we found that parents who reported more education had children who attended more often. Additionally, mothers who reported less life stress (independent of the parent-child relationship, e.g., death of a loved one and economic hardship) attended the group more frequently. More educated families may understand and thus value psychiatric or psychological intervention more than less educated families. Alternatively, these parents may have greater job flexibility. Further, lack of life stressors may have made it easier for families to focus on their child's treatment. By offering all treatment free of charge and compensating families for the cost of travel to the clinic, we had hoped to offset this effect somewhat.

Limitations

The generalizability of these findings is limited by the small sample size and underrepresentation of some racial groups. Studies with larger, more diverse samples are indicated to replicate these findings. The lack of a truly random design is also unfortunate, though it speaks to the challenges of engaging this highly impaired population in psychotherapy research. Studies in community (rather than academic) settings could further examine generalizability, and qualitative studies could better examine youths' own perceptions of what helped and hindered their treatment participation.

Clinical Implications

This study identifies potential factors influencing attendance in group CBT for depressed youth. Should they be replicated in a larger study, may be confimed as key. Addressing these factors at the outset of treatment may decrease the attrition rates commonly found in this form of psychotherapy. For example, addressing parental stressors (e.g., the stress of parenting depressed youth and mental health factors) may help to increase both parent and child participation. Particular attention may be needed to engage older depressed youth, who appear less amenable to parental influences on participation. Methods to optimize treatment engagement in this population merit further study.

Acknowledgements / Conflicts of Interest

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References

Abidin, R. (1995). *Parenting Stress Index: Professional Manual* (3rd Ed.). Odessa: Psychological Assessment Resources.

Achenbach, T., & Rescorla, L. (2001). *Manual for the ASEBA school-age forms and profiles: An integrated system of multi-informant assessment*. Burlington: ASEBA.

American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition* (DSM-IV). Washington: APA.

Axelson, D., & Birmaher, B. (2001). Relations between anxiety and depressive disorders in childhood and adolescence. *Depression and Anxiety, 14*, 67-78.

Beardslee, W., Versage, E., & Gladstone, T. (1998). Children of affectively ill parents: A review of the past 10 years. *Journal of the American Academy of Child and Adolescent Psychiatry, 37*, 1134-1141.

Beck, A., Steer, R., & Brown, G. (1996). *Beck Depression Inventory: Manual* (2nd Ed.). San Antonio: The Psychological Corporation.

Berman, S., Weems, C., Silverman, W., & Kurtines, W. (2000). Predictors of outcome in exposure-based cognitive and behavioural treatments for phobic and anxiety disorders in children. *Behavior Therapy, 31*, 713-731.

Birmaher, B., Brent, D., Kolko, D., Baugher, M., Bridge, J., Holder, D., Iyengar, S., & Ulloa, R. (2000). Clinical outcome after short-term psychotherapy for adolescents with major depressive disorder. *Archives of General Psychiatry, 57*, 29-36.

Clarke, G., Hops, H., Lewinsohn, P., Andrews, J., Seeley, J., & Williams, J. (1992). Cognitive-Behavioural group treatment of adolescent depression: Prediction of outcome. *Behavior Therapy, 23*, 341-354.

Clarke, G., Rohde, P., Lewinsohn, P., Hops, H., & Seeley, J. (1999). Cognitive-Behavioural treatment of adolescent depression: Efficacy of acute group treatment and booster sessions. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*, 272-278.

Costello, E. J., Pine, D. S., Hamme, C., March, J. S., Plotsky, P. M., Weismman, M. M. et al., (2002). Development and

natural history of mood disorders. *Biological Psychiatry, 52*, 529-542.

Derogatis, L. (1993). *Brief Symptom Inventory*. Minneapolis: National Computer Systems.

DeRubeis, R. J., & Feeley, M. (1990). Determinants of change in cognitive therapy for depression. *Cognitive Therapy and Research, 14*, 469-482.

Jayson, D., Wood, A., Kroll, L., Fraser, J., & Harrington, R. (1998). Which depressed patients respond to cognitive-Behavioural treatment? *Journal of the American Academy of Child and Adolescent Psychiatry, 37*, 35-39.

Kovacs, M. (1992). *Children's Depression Inventory (CDI) manual*. New York: Multi-Health Systems.

Lewinsohn, P., & Clarke, G. (1999). Psychosocial treatments for adolescent depression. *Clinical Psychology Review, 19*, 329-342.

Lewinsohn, P., Clarke, G., Hops, H., & Andrews, J. (1990). Cognitive-Behavioural treatment for depressed adolescents. *Behavior Therapy, 21*, 385-401.

Logan, D., & King, C. (2002). Parental identification of depression and mental health service use among depressed adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*, 296-304.

Manassis, K., & Levac, A. (2004). *Helping your teenager beat depression: A problem-solving approach for families*. Bethesda: Woodbine House.

March, J. (1997). *The Multidimensional Anxiety Scale for Children*. Toronto: Multi-Health Systems.

Michael, K., & Crowley, S. (2002). How effective are treatments for child and adolescent depression? A meta-analytic review. *Clinical Psychology Review, 22*, 247-269.

Monga, S., & Shaw, M. (2005). *Getting Back on Track: A Workbook and Therapist Manual for Overcoming Depression in Adolescents and Children*. Unpublished manuscript, available from the authors.

Rohde, P., Seeley, J., Kaufman, N., Clarke, G., & Stice, E. (2006). Predicting time to recovery among depressed adolescents treated in two psychosocial group interventions. *Journal of Consulting and Clinical Psychology, 74*, 80-88.

Silverman, W., & Albano, A. (1996). *The Anxiety Disorders Interview Schedule for DSM-IV, Child Version*. Graywind Publications.

Treatment for Adolescents with Depression Study Team (2004). Fluoxetine, cognitive-behavioural therapy, and their combination for adolescent depression: Treatment for Adolescents with Depression Study (TADS) randomized controlled trial. *Journal of the American Medical Association, 292*, 807-820.

Velhurst, F., & van der Ende, J. (1997). Factors associated with child mental health service use in the community. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 901-909.

Wechsler, D. (1991). *The Wechsler Intelligence Scale for Children—III*. Canada: Harcourt Brace.

Weisz, J., McCarty, C., & Valeri, S. (2006). Effects of Psychotherapy for Depression in Children and Adolescents: A Meta-Analysis. *Psychological Bulletin, 132*, 132-149.

Weisz, J., Thurber, C., Sweeney, L., Proffitt, V., & LeGagnoux, G. (1997). Brief treatment of mild to moderate child depression using primary and secondary control enhancement training. *Journal of Consulting and Clinical Psychology, 65*, 703-707.

Day Treatment for Disruptive Behaviour Disorders: Can a Short-Term Program be Effective?

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Abstract

Objective: The present study investigates the effectiveness of a short-term day treatment program for children with a primary diagnosis of a Disruptive Behaviour Disorder (DBD) using best-practice treatment strategies. This study, using a wait list control, compared children's admission and discharge test scores on standardized measures of behaviour and functioning, as rated by parents. **Method:** A repeated measures MANOVA was used to evaluate symptom change. **Results:** The treatment group was found to have improved significantly more than the waitlist group on parent reports of externalizing behaviour, aggression, social problems, hyperactivity and parent stress. **Conclusions:** Children with DBD who attended a short-term day treatment program using best-practice treatment strategies showed significant improvement in their behaviour at home. The current study lends support to the idea that severe DBD can be treated using multi-modal, intensive and evidence-based treatment techniques.

Key words:: disruptive behaviour disorders, day treatment, treatment outcomes, children

Résumé

Objectif: Étudier l'efficacité d'un traitement en hôpital de jour à court terme des enfants qui ont reçu un diagnostic primaire de troubles sévères du comportement (TSC). Le traitement se base sur les meilleures pratiques. L'étude utilise une liste d'attente comme contrôle et compare les notes des enfants en début et en fin de traitement au rapport des parents sur le comportement et le fonctionnement des enfants. **Méthodologie:** L'évolution des symptômes a été mesurée à plusieurs reprises par analyse MANOVA. **Résultats:** Les résultats du groupe traité étaient significativement meilleurs que ceux de la liste d'attente et du rapport des parents sur l'extériorisation, l'agression, les problèmes sociaux, l'hyperactivité et le stress parental. **Conclusions:** Le comportement à la maison des enfants qui suivent une TCC à court terme en hôpital de jour est en nette amélioration. Cette étude confirme que le traitement des troubles sévères du comportement peut être multimodal, intensif et factuel.

Mots clés: troubles sévères du comportement, traitement, hôpital de jour, résultats du traitement, enfants

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Disruptive Behaviour Disorders (DBD) are one of the most frequently diagnosed psychiatric disorders in childhood (Kazdin et al., 1994) with up to 10% of children having disruptive behaviour problems (Offord, Boyle & Racine, 1989). Onset of externalizing disorders in childhood has been shown to be highly predictive of future behaviour problems and to be costly to society (Fergusson et al., 2005; van Bokhoven et al., 2006). These societal costs typically stem from involvement with the criminal justice system, need for education specialists, and residential placements (Scott et al., 2001). As such, DBDs represent a very significant mental health concern.

Treatment options for children with DBD

In general, there is a continuum of treatment services for DBD ranging from low to high intensity. Typically, day treatment programs are conceptualized as any program that falls "in the middle of the continuum of care between inpatient and outpatient treatment" (Topp, 1991). Studies have compared day treatment programs to both inpatient and outpatient treatment options (e.g., van Bokhoven et al., 2005) and found that when compared to residential treatment, day treatment was shown to be equally effective in reducing problem behaviours. As such, day treatment programs are often seen as a positive alternative to residential placement due to the fact that they are less costly, less restrictive, and maintain a child's contact with their home environment (Erker et al, 1993; Whitemore et al., 2003).

When children had comparable levels of behavioural difficulty, Grizenko and associates (1993) found that, compared to outpatient treatment, day treatment led to more improvement in behaviour, social skills, and family functioning. In addition, research indicates that clinicians refer children to day treatment programs when they have higher levels of psychopathology and family difficulties which are not as easily served in an outpatient setting, indicating that referrals are appropriately falling along the treatment continuum, with less severe DBD being treated in outpatient services, and more severe cases being referred to day treatment (McDermott et al, 2002; Ware et al., 2001).

Although there are some positive comparisons to residential and outpatient treatment, Farmer and associates (2002) noted that there is a lack of research on the multi-modal treatment of DBD in children between the ages of 6-12, making it difficult to draw conclusions about efficacy in this age range. Looking at day treatment programs specifically, some programs have been shown to significantly reduce disruptive behaviors and promote successful reintegration to communities and schools (Grizenko et al., 1993). However, other studies (Bennett

et al., 2001; McCarthy et al., 2006) found no significant change in externalizing problems, although other difficulties (i.e., poor peer relations) were reduced. Zimet and associates (1980) actually found that children had higher levels of aggression at discharge than they had at admission to a two-year day treatment program, although some clinical improvement occurred post-discharge.

Evaluating outcome in day treatment

Many factors may help explain the inconsistencies in the research on day treatment programs (Kotsopoulos et al., 1996). First, treatment duration times vary for almost all programs (Kiser et al, 1995). These durations range from programs with 20-26 treatment days (McCarthy et al., 2006) to the many programs that last for more than a year (e.g., Gabel et al., 1990). The average length of stay in a child/adolescent day treatment program is 143 treatment days (Milin et al., 2000).

Treatment modalities also differ between programs. Evidence from review and meta-analytic studies indicates that cognitive behavioural strategies, parent management training, psychopharmacological treatment, and behavioural strategies are effective components of all treatment programs for DBD, including day treatment (Brestan and Eyberg, 1998; Pappadopulos et al., 2006). Furthermore, programs combining these interventions show the most success in treating severe DBD (Burke et al., 2002; Connor et al., 2006). Many of the day treatment programs that have been studied do not include all of these evidence-based treatment components. Evidence-based interventions in day treatment programs have been found to have larger effects than "usual or eclectic" approaches (Farmer et al., 2002). In fact, Frick (2001) cautioned that treatment for children with conduct disorder should be implemented with careful consideration due to the potential harmful effects of using therapy tools that are not evidence based.

Another difficulty with previous studies of day treatment programs is that they are not always limited to children with DBD as a primary diagnosis. In fact, in one evaluation of a partial hospitalization program (Robinson, 2000) only 59% of children had a primary diagnosis of a DBD. This is problematic as some research indicates that treatment gains in day treatment programs are less likely for children with externalizing difficulties, with depression found to be a very strong predictor of behavioural improvement (Grizenko and Sayegh, 1990).

One of the difficulties with almost all previous studies of Day Treatment programs (e.g., McCarthy et al., 2006, Whitemore et al., 2003) is that they do not include a control group (Erker, Searight et al., 1993). As noted by Milin and associates (2000), this is typically due to the difficulties in establishing a comparable control group and the ethical considerations that preclude "no-treatment" control groups. A waiting list control group would be the obvious choice, but waiting lists can be short for day treatment programs due to the severity level and high needs of their referrals. In one study of Day Treatment outcomes with a wait list control (Grizenko et al., 1993), day treatment produced much greater change in deviant behaviors, self-perception and school reintegration. However, when compared to the control group, there was no change in peer relations or family functioning. In the many studies with no control group, it could be argued that the treatment effects are a result of developmental maturation. In addition, it is not possible to say how much regression to the mean or a placebo effect could account for some of the improvement seen.

Current study

The present study investigates the effectiveness of a short-term day treatment program for children with a primary diagnosis of DBD using best-practice treatment strategies. Using a wait-list control, we compared children's admission and discharge test scores on standardized measures of behaviour and functioning, as rated by the parent.

Method

Participants

Outcome data were obtained for 40 children for whom there was pre- and post-treatment symptom measures from their parent. The children attended the Child and Family Day Treatment program between 2002-2005. This sample was comprised of 32 boys (80%) and 8 girls (20%). The mean age of the sample was 10.51 years (SD = 1.86 years), with a range of 5 to 13 years. Twenty-nine of the children had ADHD and comorbid ODD, 9 had ODD only and 2 had ADHD only. Secondary diagnoses were most commonly learning disabilities and borderline intellectual functioning. Fifty percent of the sample (n = 20) attended the treatment program two days a week for an average of 16-weeks (average of 32 days), while the remainder of the sample (50%; n = 20) attended the treatment program beginning four days a week with a transition down to one day a week (average of 40 treatment days). This difference was due to a management led programming change. There was no difference on the measures between the two and four-day a week groups at point of admission. Mothers completed the measures most frequently (88%; n = 35).

A waitlist control group was formed of children who were referred to the Day Treatment program but were currently waiting for space to become available for treatment. The Day Treatment waitlist is not prioritized due to severity, due to the high needs of all children on the list. They are admitted based on referral date. Therefore, children on the wait list would be expected to have the same severity of behaviour as children who are admitted to the program. Seventeen children were in the waitlist control group with measures completed by a parent at the point of referral and 4-months after the point of referral.

This sample was comprised of 16 boys (94%). The mean age of the sample was 10.12, (SD = 1.73 years), with a range of 7 to 12.7 years. There were no significant differences between the treatment and waitlist groups on demographic variables.

Program

The Child and Family Day Treatment (CFDT) Service at the IWK Health Centre in Halifax, Nova Scotia provides assessment and management for children with severe DBD, ages five to 12 years old, and their families. These children are not able to manage their daily life in their family, school or community and require more support than can be provided on an outpatient basis, but do not yet require a residential setting. More specifically, this day treatment program is for children who are in need of additional support to manage their behaviour, assess medications, return to full-time school attendance, review diagnoses, and improve self-esteem and social competence. The treatment team consists of Youth Care Workers, a Psychologist, a Psychiatrist, an Occupational Therapist, a Registered Nurse, a Social Worker, and a Teacher.

The treatment program is based on best practice parameters for working with children with DBD. As part of the program, parents are required to be involved in the treatment process: attending parenting groups, completing daily program sheets, and attending scheduled meetings. Behavioural parental strategies are implemented at home and home visits are conducted to determine areas of strength and difficulty. In addition, daily contact between the program and the school occurs, and behavioural strategies are recommended in the schools. The day treatment program employs a Cognitive-Behavioural approach, using a token economy, and skill building groups with a focus on social skills training, anger management, processing of school difficulties, hygiene and relaxation training, to name a few. The parent group also follows a Cognitive-Behavioural model with skills for reinforcing positive behaviours, giving good instructions, applying appropriate consequences for negative behaviours, coping with parenting stress, and having fun with children. Parents are taught about ADHD and techniques for dealing with hyperactive, impulsive and inattentive behaviour. In addition, the team Psychiatrist prescribes or modifies medications when needed. Final DSM diagnosis for all children is made by a joint decision of the team Psychiatrist and Psychologist based on clinical interviews with parent and child, questionnaires and staff observations.

Data collection

Parents completed identical standardized assessment packages on admission and discharge. All questionnaires were then scored by a research assistant who was blind to the clinical status of the participant and had no clinical contact with the family or the child. This research received ethics approval from the IWK Health Centre Ethics Board and written consent was obtained from parents for participation in the study.

Measures

Child Symptomatology:

The Child Behaviour Checklist (CBCL) is a highly recognized measure, with well-established psychometric properties, designed to obtain parents' reports of the child's current level of functioning (Achenbach, 1991). Social Problems, Aggressive Behaviour, and the Externalizing scales were used.

The Conners' Parent Rating Scale Revised: Short Form (CPRS-R:S) is a 27-item scale designed to measure levels of oppositional Behaviour, cognitive problems/inattention and hyperactivity (Conners', 1997). The ADHD scale was used.

Parenting Stress:

The Parenting Stress Index (PSI) is designed to identify parent and child characteristics that contribute to parenting stress (Abidin, 1995). The Child and Parent stress scales were used. The PSI is able to detect changes in the level of stress as a result of intervention making it a good tool of choice for program evaluation (Abidin, 1997).

The Eyberg Child Behaviour Index is designed to assess behaviours associated with conduct disorders in childhood by measuring the number of difficult behaviour problems and the frequency with which they occur (Eyberg and Pincus, 1999). The Intensity scale is a measure of the severity of conduct problems as rated by parents.

Data-Analysis

Data analyses were designed to assess whether differences in outcomes between the wait list and the treatment group were evident. To test for these treatment effects, a repeated-measures MANOVA was calculated. Further, independent sample t-tests were calculated to compare reports of behavioural functioning at discharge between waitlist and treatment groups. Paired sample t-tests were calculated to examine treatment effects for treatment and waitlist groups separately. Cohen's d was used to examine both between and within group effect sizes.

Results

All results were analyzed using SPSS for Windows.

Group Comparisons: Test Scores. Means and standard deviations for the groups' test scores are regrouped in Table 1. Cohen's d reflects large effect sizes across all measures for the treatment group except for the parent stress measure (d = .39).

Behavioural Functioning. Parents reported on child's behaviour functioning at admission and discharge. At intake both groups of children (waitlist and treatment groups) had scores in the clinically significant range. At discharge, the children's scores in the treatment group had moved out of the clinical range. To test for treatment

Table 1. Means and Standard Deviations of Test Scores for Treatment (n = 40) and Waitlist (n = 17) Groups

	Treatment Group						Waitlist Group					
	Admission		Discharge				Admission		Discharge			
Symptom Report	X	(SD)	X	(SD)	*t*	*d*	X	(SD)	X	(SD)	*t*	*d*
CBCL												
Social Problems	70.84	(9.02)	63.47	(8.21)	6.34***	0.85	67.18	(7.26)	63.47	(6.67)	2.02	0.53
Aggression	71.50	(10.23)	62.76	(9.09)	5.98***	0.90	71.53	(10.02)	69.29	(7.30)	1.07	0.26
Externalizing	69.32	(6.97)	61.29	(8.36)	6.34***	1.04	70.18	(7.29)	69.41	(7.66)	0.45	0.10
Conners'												
Hyperactivity	75.11	(13.45)	63.16	(12.87)	6.76***	0.91	70.53	(14.05)	65.59	(13.17)	1.76	0.36
Eyberg Intensity	65.89	(7.63)	54.17	(7.42)	11.19***	1.56	64.53	(9.30)	59.73	(6.70)	1.72	0.59
PSI												
Child	76.86	(11.57)	63.51	(13.33)	5.99***	1.07	72.93	(8.24)	68.60	(13.71)	1.36	0.38
Parent	54.58	(8.64)	51.11	(9.18)	2.27*	0.39	53.60	(9.14)	53.07	(7.46)	0.25	0.06

Note. CBCL = Child Behavior Checklist, Conners' = Conners' Rating Scale, PSI = Parenting Stress Index; * $p < .05$, ** $p < .01$, *** $p < 001$; Cohen's *d* effect sizes small $d = .2$, medium $d = .5$, large $d = .8$.

effects, a repeated-measures MANOVA was calculated with group as the independent variable (Treatment vs. Waitlist) and CBCL externalizing total score, aggressive subscale, social problem subscale, Conners' hyperactivity index, and the Eyberg intensity score as dependent variables. The treatment group was found to have improved significantly more than the waitlist group on the combination of these variables, using Hotelling's T^2 criterion, $F = 2.60$, $df = 5,40$, $p = .04$. Univariate *F* statistics showed significant treatment effects for each of the variables taken separately, *F* (externalizing) = 11.91, $df = 1,44$, $p = .001$; *F* (aggression) = 13.88, $df = 1,44$, $p = .001$; *F* (social problems) = 26.35, $df = 1,44$, $p < .001$; *F* (hyperactivity) = 21.90, $df = 1,44$, $p < .001$; *F* (intensity) = 49.57, $df = 1,44$, $p < .001$. Group (Treatment vs. Waitlist) by Time (admission vs. discharge) *F* was significant, Hotelling's T^2 criterion, $F = 3.33$, $p = .013$. Univariate *F* statistics showed significant change for three of the variables between the point of admission to discharge, *F* (externalizing) = 8.92, $df = 1,44$, $p = .005$; *F* (aggression) = 6.51, $df = 1,44$, $p = .014$; *F* (intensity) = 13.72, $df = 1,44$, $p < .001$ and nonsignificant on the remaining two domains of functioning, *F* (social problems) = 1.17, $df = 1,44$, $p = .286$; and *F* (hyperactivity) = 3.20, $df = 1,44$, $p = .08$. Table 2 displays the between group (treatment vs. waitlist) effect sizes. Cohen's d reflects large effect sizes between the treatment and waitlist groups at the point of discharge for the child's aggressive, externalizing, and intensity of behaviour measures ($d = .79$ to 10.01) and small effect on the parents report of stress related to parenting their children ($d = .23$ to .38). There was no difference in report of children's behaviour on the social problems scale.

Independent sample t-tests were calculated to compare reports of behavioural functioning at discharge, between the waitlist and treatment groups. The treatment group had significantly lower scores than the waitlist group on the aggressive behaviour measure, $t(53) = 2.61$, $p = .012$, the externalizing measure, $t(53) = 3.41$, $p = .001$, and the intensity of the behaviour, $t(53) = 2.54$, $p = .014$. There were no differences between the waitlist and treatment groups on the social problems, hyperactivity, and parent stress measures (child and parent).

Parent Stress. Parents rated their feeling of stress in relation to parenting their child referred for treatment (child) and stress in relation to their parenting role (parent) at admission and discharge. Paired sample t-tests were calculated to examine treatment effects for the two groups (Treatment and Waitlist) independently. For the treatment group, significant reductions in parent report of child-related stress, $t(33) = 5.76$, $p < .001$ and parent stress was reported, $t(33) = 2.27$, $p = .03$; however no significant change was found for the waitlist group on either measure. Independent sample t-tests were calculated to compare the two groups (Treatment and Waitlist) at discharge. There were no significant differences in parents' report of change between the treatment and waitlist groups at discharge (see Table 2).

Discussion

Results of the present study indicate that, compared with a wait list control group, children with DBD who attend a short-term day treatment program showed significant improvement in their behaviour at home. At the time of discharge, children's scores on measures of externalizing behaviour and social behaviour were in the non-clinical range. The parent's level of stress regarding their child was also reduced to non-clinical levels. This study is a significant improvement over the large majority of studies in the day-treatment literature that do not include a control group. When the wait list group and treatment group were directly compared at discharge, the treatment group showed less aggression, externalizing behaviour and behavioral intensity. This is an important finding due

Table 2. Between Group Effect Sizes for Treatment (n = 40) and Waitlist (n = 17) Groups at Discharge

	Treatment		Waitlist		Discharge	
Symptom Report	**X**	**(SD)**	**X**	**(SD)**	***t***	***d***
CBCL						
Social Problems	63.47	(8.21)	63.47	(6.67)	0.00	0.00
Aggression	62.76	(9.09)	69.29	(7.30)	2.61**	0.79
Externalizing	61.29	(8.36)	69.41	(7.66)	3.41***	1.01
Conners'						
Hyperactivity	63.16	(12.87)	65.59	(13.17)	0.84	0.19
Eyberg Intensity	54.17	(7.42)	59.73	(6.70)	2.54*	0.79
PSI						
Child	63.51	(13.33)	68.60	(13.71)	1.33	0.38
Parent	51.11	(9.18)	53.07	(7.46)	0.82	0.23

Note. CBCL = Child Behavior Checklist, Conners' = Conners' Rating Scale, PSI = Parenting Stress Index; * $p < .05$, ** $p < .01$, *** $p < 001$; Cohen's *d* effect sizes small $d = .2$, medium $d = .5$, large $d = .8$.

to the fact that it is much more difficult to achieve significant improvement in externalizing behaviour when research takes place in a clinical setting, as opposed to a university laboratory setting (Farmer et al., 2002). The large effect sizes in the present study suggest optimism about treating severe DBD in the "real world".

In the present study, all children had a diagnosis of a DBD, ensuring that the large treatment effects were not due to the inclusion of children with disorders that might be more responsive to treatment. The use of psychometrically sound pre- and posttest measures is also a strength of the current study.

Effective treatments for DBD are important for the child, his or her family, and for society as a whole. The current study lends support to the idea that severe DBD can be treated using multi-modal, intensive and evidence-based treatment techniques. A significant limitation of the current study is that it is not yet clear if the significant behavioural gains will be maintained over time, as the children were not assessed at a post-discharge time point. It will be very important to further investigate long-term effectiveness, due to the fact that children with DBD are at high risk for major adolescent and adult dysfunction (Scott et al., 2001).

In future studies, if long-term improvement is noted, it would suggest that day treatment programs are a less costly treatment option, as compared to residential care, with good clinical outcomes. In addition, the fact that the present program was relatively short-term may lead to the suggestion that longer programs could be shortened, making them more cost effective and allowing for the treatment of a larger number of children and families. This could have a direct impact on health care costs, and the number of children who have to wait for treatment.

Acknowledgements/Conflict of Interest

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References

Abidin, R. R. (1995). *Parenting Stress Index, Third Edition: Professional Manual*. Florida: Psychological Assessment Resources.

Abidin, R. R. (1997). Parenting Stress Index: A measure of the parent-child system. In C.P. Zalaquett & R. Wood, (Eds.). *Evaluating stress: A book of resources* (pp. 277-291). Maryland: Scarecrow Press, Inc.

Achenbach, T. M. (1991). *Manual for Child Behaviour Checklist/4-18 and 1991 Profile*. Vermont: University of Vermont, Department of Psychiatry.

Bennett, D. S., Macri, M. T., Creed, T. A., & Isom, J. A. (2001). Predictors of treatment response in a child day treatment program. *Residential Treatment for Children and Youth, 19*(2), 59-72.

Brestan, E. V. & Eyberg, S. M. (1998). Effective psychological treatments of conduct-disordered children and adolescents: 29 Years, 82 Studies, and 5,272 Kids. *Journal of Clinical Child Psychology, 27*(2), 180-189.

Burke, J. D., Loeber, R. & Birmaher, B. (2002). Oppositional defiant disorder and conduct disorder: A review of the past 10 years, part II. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(11), 1275-1293.

Conners, C. K. (1997). *Conners' Parent Rating Scale-Revised: User's Manual*. North Tonwanda: Multi-Health Systems.

Connor et al. (2006). Juvenile maladaptive aggression: A review of prevention, treatment, and service configuration and a proposed research agenda. *Journal of Clinical Psychiatry*, *67*(5), 808-820.

Erker, G. J., Searight, H. R., Amanat, E., & White, P. (1993). Residential versus day treatment for children: A long-term follow-up study. *Child Psychiatry and Human Development*, *24*(1), 31-39.

Eyberg, S., & Pincus, D. (1999). *Eyberg Child Behavior Inventory & Sutter-Eyberg Student Behavior Inventory – Revised*. Florida: Psychological Assessment Resources.

Farmer, E. M. Z., Compton, S. N., Burns, B. J., & Robertson, E. (2002). Review of the evidence base for treatment of childhood psychopathology: Externalizing disorders. *Journal of Consulting and Clinical Psychology, 70*(6), 1267-1302.

Fergusson, D. M., Horwood, L. J., & Ridder, E. M. (2005). Show

me the child at seven: The consequences of conduct problems in childhood for psychosocial functioning in adulthood. *Journal of Child Psychology and Psychiatry, 46*(8), 837-849.

Frick. P. J. (2001). Effective interventions for children and adolescents with conduct disorder. *Canadian Journal of Psychiatry, 46*, 597-608.

Gabel, S., Swanson, A. J., & Shindledecker, R. (1990). Aggressive children in a day treatment program: Changedoutcome and possible explanations. *Child Abuse and Neglect*, *14*, 515-523.

Grizenko, N., Papineau, D., & Sayegh, L. (1993). A comparison of day treatment and outpatient treatment for children with disruptive behaviour problems. *Canadian Journal of Psychiatry, 38*(6), 432-435.

Grizenko, N. & Sayegh, L. (1990). Evaluation of the effectiveness of a psychodynamically oriented day treatment program for children with behaviour problems: A pilot study. *Canadian Journal of Psychiatry*, *35*, 519-525.

Kazdin, A. Mazurick, J., & Siegel, T. (1994). Treatment outcome among children with externalizing disorder who terminate prematurely versus those who complete psychotherapy. *Journal of the American Academy of Child and Adolescent Psychiatry*, *33*(4), 549-557.

Kiser, L. J., Culhane, D. P., & Hadley, T. R. (1995). The current practice of child and adolescent partial hospitalization: Results of a national survey. *Journal of the American Academy of Child and Adolescent Psychiatry, 34*(10), 1336-1342.

Kotsopoulos, S., Walker, S., Beggs, K., & Jones, B. (1996). A clinical and academic outcome study of children attending a day treatment program. *Canadian Journal of Psychiatry, 41,* 371-378.

McCarthy, G., Baker, S., Betts, K., Bernard, D., Dove, J., Elliot, M., Schneider, N., & Woodhouse, W. (2006). The development of a new day treatment program for older children (8-11 Years) with behavioural problems: The GoZone. *Clinical Child Psychology and Psychiatry, 11*(1), 156-166.

McDermott, B. M., McKelvey, R., Roberts, L., & Davies, L. (2002). Severity of children's psychopathology and impairment and its relationship to treatment setting. *Psychiatric Services, 53*, 57-62.

Milin, R., Coupland, K., Walker, S., & Fisher-Bloom, E. (2000). Outcome and follow-up study of an adolescent psychiatric day treatment school program. *Journal of the American Academy of Child and Adolescent Psychiatry*, *39*(3), 320-328.

Offord, D. R., Boyle, M. H. & Racine, Y. (1989). Ontario child health study: Summary of selected results. *Canadian Journal of Psychiatry, 34*, 483-491.

Pappadopulos, E., Wooston, S., Chait, A., Perkins, M., Connor, D., & Jensen, P. S. (2006). Pharmacotherapy of aggression in children and adolescents: Efficacy and effect size. *Journal of the Canadian Academy of Child and Adolescent Psychiatry, 15*(1), 27-39.

Robinson, K. E., (2000). Outcome of a partial-day treatment program for referred children. *Child & Youth Care Forum*, *29*(2), 127-137.

Scott, S., Knapp, M., Henderson, J., & Maughan, B. (2001). Financial cost of social exclusion: follow up study of antisocial children into adulthood. *British Medical Journal*, *323*, 191-194.

SPSS for Windows, Rel. 11.0.1. 2001. Chicago: SPSS Inc.

Topp, D. B. (1991). Beyond the continuum of care: Conceptualizing day treatment for children and youth. *Community Mental Health Journal, 27*(2), 105-113.

van Bokhoven, I., Matthys, W., van Goozen, S. H. M., & van Engeland, H. (2005). Prediction of adolescent outcome in children with disruptive behaviour disorders: A study of neurological, psychological, and family factors. *European Child and Adolescent Psychiatry, 14*(3), 153-163.

Van Bokhoven, I., Matthys, W., van Goozen, S., & van Engeland, H. (2006). Adolescent outcome of disruptive behaviour disorder in children who had been treated in in-patient and day-treatment settings. *European child & adolescent psychiatry*, *15*, 79-87.

Ware, L. M., Novotny, E. S., & Coyne, L. (2001). A therapeutic nursery evaluation study. *Bulletin of the Menninger Clinic*, *65*, 522-548.

Whitemore, E., Ford, E., & Sack, W. (2003). Effectiveness of day treatment with proctor care for young children: A four-year follow-up. *Journal of Community Psychology*, *31*(5), 459-468.

Zimet, S., Farley, G., Silver J., Hebert, E.B., Robb, C., &Ekanger, D. (1980). Behaviour and personality changes in emotionally disturbed children enrolled in a psychoeducational day treatment center. *Journal of the American Academy of Child and Adolescent Psychiatry, 19*, 240-256.

Teacher Perceived Mental and Learning Problems of Children Referred to a School Mental Health Service

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Abstract

Objective: Delivering mental health services to children and their families through schools has many potential advantages. However, little is known about the characteristics of children referred to such services. This study aimed to determine the pattern of mental health and learning difficulties of children referred to one school mental health service. **Methods:** An identity stripped administrative database of all new referrals (n=353) to a school mental health program in southern Alberta between September 2006 and June 2009 was used. Teacher Strengths and Difficulties Questionnaire responses and questions about learning and other developmental problems were included. **Results**: Hyperactivity-inattention was the most prevalent mental health concern, and spelling was the most common learning concern. Higher rates of hyperactivity-inattention concerns and pro-social deficits were observed for boys and more emotional problems were observed for girls. Hyperactivity-inattention was higher at lower grades. Hyperactivity-inattention and conduct problems were often comorbid as were several learning problems. **Conclusion:** Understanding the typical patterns of concerns among referrals to school mental health services may guide the prioritization of assessment and intervention approaches within these programs. Findings suggest assessments and interventions for ADHD and other disruptive behaviours should be prioritized, as well as the provision of cognitive and academic testing.

Key words: child mental disorders, health services, school-based services, learning disabilities

Résumé

Objectif: La prestation de services de santé mentale aux enfants et à leur famille dans un contexte scolaire présente de nombreux avantages. Toutefois, on dispose de peu d'informations sur les caractéristiques des enfants référés à un service scolaire de santé mentale. Cette étude présente le schéma mental et les difficultés d'apprentissage des enfants référés à un service scolaire de santé mentale. **Méthodologie:** Utilisation de la base de données (anonyme) de 353 sujets référés au programme de santé mentale d'une école du sud de l'Alberta, de septembre 2006 à juin 2009. Les réponses au *Teacher Strengths and Difficulties Questionnaire* et aux questions sur les problèmes d'apprentissage et de comportement ont été incluses. **Résultats:** L'hyperactivité/inattention était le principal problème de santé mentale, et l'orthographe la principale difficulté d'apprentissage. Les garçons présentaient davantage de symptômes d'hyperactivité/inattention et de difficultés de socialisation que les filles qui, elles, avaient davantage de problèmes émotionnels. L'hyperactivité/inattention était plus marquée dans les petites classes. Les comorbidités les plus fréquentes étaient les troubles de conduite et les troubles d'apprentissage divers. **Conclusion:** Comprendre le type de difficultés rencontrées chez les enfants référés à des services scolaires de santé mentale aide à prioriser les techniques d'évaluation et d'intervention proposées. Il convient de prioriser l'évaluation et le traitement du TDAH et des autres troubles du comportement, de faire passer des tests cognitifs et de vérifier les connaissances scolaires des enfants.

Mots clés: troubles pédopsychiatriques, services scolaires, difficultés d'apprentissage

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Introduction

School mental health clinics are an important approach to service delivery in child mental health. Expansion of school mental health services was flagged within the recent Canadian Senate report on mental health services in Canada (Kirby & Keon, 2006). School mental health clinics have been recognized as a potential solution to removing common barriers that impede children from receiving mental health services, such as financial concerns, transportation problems, poor accessibility, inflexible office hours, stigma, and long waitlists (American Academy of Pediatrics, 2004; Walrath et al., 2004; Weist, 2000). Additionally, school personnel may be positioned to (i) offer detailed information about a student's behaviour and functioning across various circumstances and over a significant period of the day, (ii) aid in the identification of deviant behaviour due to familiarity with typical child behaviour and access to a large normative sample, and (iii) have ready contact with the student's family (McLennan et al., 2008; Walrath et al., 2004). However, a lack of information as to what are typical concerns identified by teachers for students referred to school mental health services impairs attempts to optimally design these services.

Despite the growing body of literature on school mental health services, there are only a limited number of reports describing the mental health characteristics of referred students. One United States (US) study compared a sample of school mental health assessed and treated children and youth aged 5 to 18 years to a sample of children and youth receiving similar services in a community clinic (Armbruster & Lichtman, 1999). In the school sample, 43.5% were referred for externalizing problems versus 35.3% in the clinical sample. Internalizing problems were comparable for the two samples, with 27.9% of children in the school sample and 24.9% in the clinical sample. Children referred to the

clinic were also significantly more likely than children referred to the school service to be referred for both externalizing and internalizing reasons, 34.3% versus 21.9% respectively. The authors also noted demographic differences of students in the school sample whereby 92.2% were of ethnic minority status compared to only 48.2% in the clinical sample. Moreover, a higher number of students in the clinical sample had private insurance, which may indicate higher socio-economic status.

A second US study also compared users of school mental health services with users of community mental health centers (Weist et al., 1999). Two samples of children and youth, aged 10 to 19, were compared on numerous measures including general background, violence exposure, life stress, family supportive behaviour, self concept, and behavioural and emotional problems. Differences between the two samples on these psychosocial measures were not found to be significant. One difference, however, was that children with internalizing problems in the school program were significantly less likely to have had past involvement with the mental health system when compared to the community sample. In terms of demographic differences, 66% of students were African American in the school sample which was significantly higher than the 28% in the community sample.

Another US study examined the characteristics of children identified by their school as having behavioural or emotional problems which resulted in their placement into a special education program (Kutash & Duchnowkski, 2004). The study took place across 10 different urban schools, ranging from elementary to high school. Results from the Child Behaviour Checklist found that 73% of the 158 children in this sample scored within the borderline or clinical range on the Total Problems scale. Of children in the clinical range, 63% had externalizing problems while 39% had internalizing problems.

A recent meta-analysis conducted by Reddy et al. (2009) examined the effectiveness of school based prevention and intervention programs for children and youth under 18 years of age with emotional disturbances. In the analysis, the authors briefly reported on the characteristics of the disorders of the children and youth, which was available for 14 of the 28 articles reviewed (552 subjects). A majority of the children in this analysis had disruptive behaviour problems (64%), while a much smaller percentage had internalizing problems (6.5%). Learning disabilities and adjustment disorders were flagged in only 3 to 4% of these children.

Whether findings from these US studies can be generalized to the Canadian context is unknown given differences in health service structures and funding. In addition, referral patterns may differ as a function of the nature of the school mental health service, as well as the age, gender, and other demographic variables of children in the sample. Furthermore, patterns found in non-school clinic samples may not generalize to school mental health services. In particular, school referrals may be more teacher than parent-driven, the latter case seen for more traditional clinical samples.

The objective of this study was to determine the patterns of mental health and learning difficulties reported by teachers for children referred to a school mental health program by using administrative data. Specific research questions included: (i) what is the frequency of reported mental health and learning problems (including comorbid patterns), and (ii) do the frequency patterns vary by grade and/or child gender? This information may inform efforts to improve school mental health initiatives.

Method

Setting

Participants were referrals to the Community Outreach in Pediatrics/Psychiatry and Education (COPE program). COPE is a school mental health program serving all elementary schools in the Calgary and the Rockyview school districts (located around Calgary), Alberta, Canada. COPE is a partnership program between the schools and the health and social service sectors. Participating schools identify children with suspected emotional, behavioural and/or developmental problems and refer prioritized children to COPE. This process entails completing referral forms, as well as a screening meeting with COPE and school personnel. Following a screening meeting, most referred children are provided a physician-based assessment coordinated with the school and family. Additional details about the processes within this program are described elsewhere (McLennan et al., 2008). The COPE program was developed, in part, as an attempt to provide earlier access to developmental and mental health assessments for children and families who may not have ready access to timely care.

Sample

Data were extracted from a database containing all new referrals of children, ranging from kindergarten to grade 10, to COPE from September 2006 to June 2009. Complete data were available for mental health problems for 353 out of a possible 361 children in the database (97.8%). Complete data for learning concerns was available for 236 out of 353 children (66.9%). Learning problem data were only available for September 2006 to June 2008. There were no gender, grade, or Strengths and Difficulties Questionnaire -Total Difficulty Score differences between those with and without learning problem data.

Measures

The referral package from the teacher contains the extended version of the Strengths and Difficulties Questionnaire (SDQ) for each referred child. The SDQ is a commonly used screening measure for mental and social difficulties seen in children. The core 25 items, with response options of “not-true”, “somewhat true,” and “certainly true,” contain five subscales with five items

each: (i) hyperactivity-inattention, (ii) conduct problems, (iii) emotional symptoms, (iv) peer problems, and (v) prosocial problems. The SDQ has satisfactory reliability suggested by acceptable internal consistency, inter-rater agreement and test-retest stability (Goodman, 2001). Cut points proposed by the instrument developers allow for score categorization into normal, borderline, and abnormal categories for all subscales. The abnormal cutpoints were developed to correspond to approximately the extreme 10% of community samples (Goodman, 1997, 2001). The extent to which these cutpoints predict psychiatric disorders have been reported elsewhere (Goodman, 2001).

Within the same referral form, teachers rate concerns about learning (math, printing/writing, reading, and spelling), speech and language, and fine and gross motor skills. A single item for each is included in the referral form using the same response options as the SDQ, i.e., "not true", "somewhat true", and "certainly true." Additional information included on the teacher referral form included child gender and current grade. No other socio-demographic information was available in this administrative dataset.

Analysis

Prevalence of problems was first examined by computing the percentage of students who fell into the abnormal range for these categories. For this analysis, only those meeting the cut point for "abnormal" were identified as possible "cases" of a mental health disorder. Similarly, only those rated as "certainly true" were scored as positive for a learning, speech, and fine or gross motor difficulty. Variation by gender and age were then determined using Pearson's chi-square test. Finally, comorbidity patterns were studied by examining the co-occurrence of elevated scores on the SDQ subscales and the relationship between these and the learning difficulties.

Ethics

The study was approved by the ethics board of the University of Calgary/Calgary Health Region and entailed the release of the administrative database containing the above elements without child, parent or teacher identifiers.

Results

The majority of children in the sample were male (79.2%). Break down by grade was 27.6%, 34.8%, 25.6% and 12.0% for K-1, 2-3, 4-5, and 6+ respectively. Frequency distribution of problems by gender is presented in Table 1. Hyperactivity-inattention was the most frequently endorsed symptom cluster at the abnormal level for both genders though was significantly higher for boys. Deficits in prosocial behaviours were also more frequent in boys. In contrast, emotional problems were more frequently endorsed for girls. The distribution of the number of different mental health problems were similar for boys and girls with mean values of 2.8 (S.D. 1.3) and 2.6 (S.D. 1.3) respectively.

Spelling was the most common learning problem endorsed by teachers (Table 1). There were no significant differences in learning problems by gender. Mean number of learning concerns were 1.8 (S.D. 1.5) for both boys and girls. Fine motor concerns and speech and language concerns were reported in about one-third of the sample with no gender differences.

In examination of problems by grade, the only significant pattern was an overall trend for lower prevalence of hyperactivity-inattention with increasing grades (Table 2). There was an increase in the prevalence of emotional problems with higher grades though this was not statistically significant. No other patterns were apparent by grade grouping including total number of mental health or learning problems.

Co-occurring hyperactivity-inattention and conduct disorder symptoms were the most common mental comorbidities (Table 3). The next largest overlaps were hyperactivity-inattention and almost all the learning problems, as well as with fine motor concerns, each occurring in over 25% of children. There were no significant gender difference patterns.

Discussion

Hyperactivity-inattention symptoms were the most common problems endorsed for children referred to this school mental health service, with hyperactivity-inattention and conduct problem clusters the most common combination. This is consistent with other school studies identifying a predominance of referrals for externalizing students (Armbruster & Litchman, 1999; Kutach & Duchnowski, 2004; Reddy et al., 2009). The gender analysis finding higher prevalence of some disruptive behaviour in the boys and more emotional symptom clusters in girls is also consistent with previous findings (Ford et. al, 2003). However, overall there were few gender differences. Concerns of learning problems were common and frequently comorbid with the mental health problems.

Prevalence of hyperactivity-inattention in the overall sample peaked in grades 2 to 3 and subsequently declined with grade. This finding is similar to findings in the Great Smokey Mountain study, a community-based epidemiological study, wherein some childhood disorders, such as attention-deficit/hyperactivity disorder (ADHD), seem to decline around age 12 (Costello, et al., 2003). The British Child and Adolescent Mental Health Survey found ADHD hyperactive type tending to peak at age 11 to 12, and declining thereafter (Ford et al., 2003). However, caution is needed in contrasting our referred clinical sample and these representative community samples.

High levels of conduct disorder within those children identified as having hyperactivity concerns is similar to past research (Barkley, 2006, Biederman et al., 2002). However, gender differences, in particular the tendency for boys with hyperactivity concerns to be significantly more likely to have a comorbid externalizing problem compared to girls, was not replicated in this study (Barkley,

Table 1. Prevalence of mental health, learning and other problems by gender

Difficulty	Total % (n)	Boys % (n)	Girls % (n)
Mental Health Problems	**(n=353)**	**(n=278)**	**(n=75)**
Hyperactivity	77.1 (272)	79.5 (221)	68.0 (51)*
Conduct problems	63.2 (223)	62.6 (174)	65.3 (49)
Pro-social deficits	58.6 (207)	61.9 (172)	46.7 (35)*
Peer problems	53.0 (187)	55.0 (153)	45.3 (34)
Emotional problems	27.2 (96)	24.1 (67)	38.7 (29)*
0 of the above problems	5.1 (18)	4.3(12)	8.0 (6)
1 of the above problems	14.2 (50)	13.7 (38)	16.0 (12)
2 of the above problems	17.0 (60)	18.3 (51)	12.0 (9)
3 of the above problems	29.7 (105)	27.7 (77)	37.3 (28)
4 of the above problems	28.3 (100)	30.2 (84)	21.3 (16)
5 of the above problems	5.7 (20)	5.8 (16)	5.3 (4)
Learning Problems	**(n=236)**	**(n=187)**	**(n=49)**
Spelling concerns	52.4 (120)[g]	53.9 (97)[g]	46.9 (23)
Reading concerns	46.0 (108)[a]	46.2 (86)[a]	44.9 (22)
Printing/writing concerns	46.2 (108)[b]	49.2 (91)[b]	34.7 (17)
Math concerns	38.1 (90)	35.3 (66)	49.0 (24)
Total Learning Problems	**(n=228)[h]**	**(n=179)[h]**	**(n=49)**
0 of the above problems	28.1 (64)	27.4 (49)	30.6 (15)
1 of the above problems	19.7 (45)	20.1 (36)	18.4 (9)
2 of the above problems	14.9 (34)	15.6 (28)	12.2 (6)
3 of the above problems	16.2 (37)	14.5 (26)	22.4 (11)
4 of the above problems	21.1 (48)	22.3 (40)	16.3 (8)
Other Problems	**(n=236)**	**(n=187)**	**(n=49)**
Fine motor concern	33.3 (78)[b]	35.7 (66)[b]	24.5 (12)
Speech and Language concern	29.4 (69)[a]	28.0 (52)[a]	34.7 (17)
Gross motor concern	19.4 (45)[d]	19.7 (36)[d]	18.4 (9)

-Data missing for a- 1 child; b- 2 children; d- 4 children; g-7 children; h=8 children;
* $p<0.05$ (for gender differences)

Table 2. Prevalence of mental health, learning problems and other problems by grade grouping†

Difficulty	K-1 % (n)	2-3 % (n)	4-5 % (n)	6-10 % (n)
Mental Health Problems	**(n=97)**	**(n=122)**	**(n=90)**	**(n=42)**
Hyperactivity**	78.4 (76)	87.7 (107)	70.0 (63)	59.5 (25)
Conduct problems	64.9 (63)	63.1 (77)	63.3 (57)	57.1 (24)
Pro-social	61.9 (60)	54.9 (67)	61.1 (55)	59.5 (25)
Peer problems	53.6 (52)	45.1 (55)	60.0 (54)	57.1 (24)
Emotional problems	20.6 (20)	26.2 (32)	33.3 (30)	33.3 (14)
Learning Problems	**N=61**	**N=76**	**N=68**	**N=29**
Spelling concerns	54.4 (31)[d]	50.7 (38)[a]	52.2 (35)[a]	51.7 (15)
Reading concerns	58.3 (35)[a]	43.4 (33)	39.7 (27)	41.4 (12)
Printing/writing concerns	52.5 (32)	53.3 (40)[a]	37.3 (25)[a]	34.5 (10)
Math concerns	37.7 (23)	36.8 (28)	41.2 (28)	34.5 (10)
Other Problems	**N=61**	**N=76**	**N=68**	**N=29**
Speech and Language concern	41.0 (25)	26.3 (20)	23.5 (16)	27.6 (8)
Gross motor concern	23.0 (14)	17.3 (13)[a]	20.9 (14)[a]	14.3 (4)[a]
Fine motor concern	39.3 (24)	35.5 (27)	26.9 (18)[a]	31.0 (9)

†-Grade missing for 2 boys, resulting in reduction of total sample size of 351 for mental health problems and 234 for learning problems;
Data missing for a- 1 child; b- 2 children; c- 3 children; d- 4 children; e- 5 children; f- 6 children;
** $p<0.01$

Table 3. Co-morbid mental health and learning problems

	Scoring within abnormal range				
Difficulty	**Hyperactivity % (n)**	**Conduct % (n)**	**Emotional % (n)**	**All 3 MHP % (n)**	**None of 3 MHP % (n)**
Mental Health Problems (MHP) (n=353)					
Hyperactivity	77.1 (272)	52.1 (184)	20.1 (71)	14.4 (51)	X
Conduct symptoms	52.1 (184)	63.2 (223)	18.7 (66)	14.4 (51)	X
Emotional symptoms	20.1 (71)	18.7 (66)	27.2 (96)	14.4 (51)	X
No other MHP †	19.3 (68)	6.8 (24)	2.8 (10)	X	X
Learning Problems (n=236)					
Spelling concerns	40.2 (92)[g]	29.7 (68)[g]	16.2 (37)[g]	9.2 (21)[g]	6.1 (14)[g]
Reading concerns	36.6 (86)[a]	26.0 (61)[a]	14.0 (33)[a]	7.7 (18)[a]	4.7 (11)[a]
Printing/writing concerns	39.3 (92)[b]	29.9 (70)[b]	15.8 (37)[b]	10.3 (24)[b]	3.4 (8)[b]
Math concerns	29.7 (70)	24.2 (57)	11.9 (28)	6.8 (16)	4.2 (10)
Total Learning Problems (n=228)					
0 of the above	17.1 (39)	19.7 (45)	6.6 (15)	1.8 (4)	2.6 (6)
1 of the above	16.7 (38)	14.5 (33)	6.6 (15)	3.9 (9)	0.4 (1)
2 of the above	11.0 (25)	6.6 (15)	3.5 (8)	1.8 (4)	2.6 (6)
3 of the above	11.4 (26)	9.6 (22)	6.6 (15)	3.9 (9)	2.6 (6)
4 of the above	18.0 (41)	13.2 (30)	6.1 (14)	3.5(8)	1.3 (3)
Other Problems (n=236)					
Fine motor	26.5 (62)[b]	20.9 (49)[b]	12.8(30)[b]	7.7 (18)[b]	3.0 (7)[b]
Speech and language difficulties	21.7(51)[a]	14.5 (34)[a]	8.9(21)[a]	4.3 (10)[a]	5.1 (12)[a]
Gross motor	15.1 (35)[d]	10.3 (24)[d]	6.9 (16)[d]	3.9 (9)[d]	2.6 (6)[d]

Data missing for a- 1 child; b- 2 children; c- 3 children; d- 4 children; e- 5 children; f- 6 children; g-7 children

2006; Biederman et al., 2002).

It is important to consider limitations of this study. First, these results were based on only one mental health service system in one district and it is unknown whether they can generalize to other jurisdictions. However, this service covers all elementary schools across a large urban district and a peri-urban/rural region and includes all school types, i.e., public, Catholic, private. Second, the study is based on a screening instrument, not a diagnostic instrument. Though the screening instrument has strong psychometric properties, a more detailed assessment would be required to generate specific diagnostic patterns. Similarly specific cognitive and academic testing would be required to determine the actual presence of learning disorders versus teacher concerns.

The particularly high rates of hyperactive-inattention symptom clusters may partly be an awareness by the referring agents that the service has physician-based assessments and hence the potential for review of the role of medication. The high rate of conduct symptoms and combination of hyperactive-inattention and conduct symptoms is likely driven by the obvious impact these difficulties have in the classroom and school setting and hence serve a very immediate press to seek help. These same factors may explain the relatively low rate of identified emotional symptoms in the referred group. Children with prominent emotional symptoms are potentially missed or are prioritized lower given less direct impact in the school setting and/or they are referred to other services that may not be predominately physician-based (e.g., community mental health services, psychotherapists).

The high rates of concerns of learning problems in the hyperactive-inattentive group may be linked to a common referral question within this service as to whether a child's poor academic achievement is a function of ADHD or a learning disability. Given the lag in children receiving timely cognitive and academic testing in the schools to more definitely identify learning disorders, the latter concern has often not been examined prior to the physician-based assessment. The lack of cognitive and academic testing resources in COPE impairs the ability to adequately address this type of questions at the time of the physician-based assessment.

Given the high prevalence of hyperactive-inattention concerns, this program and others like it should be well-prepared to provide systematic assessments for ADHD and other disruptive behaviours and facilitate access to evidence-based services for these difficulties. ADHD may be a particularly good challenge to prioritize within school-mental health partnerships for several reasons including teachers' excellent vantage point for helping to identify ADHD symptoms, as well as the potential for feedback on treatment response monitoring, the evidence for improvement through school-based behavioural modification (Pelham & Fabiano, 2008), and the level of comorbid learning concerns that require a strong school-based response.

Currently the program uses parent and teacher MTA-SNAP-IVs as a second stage screening for possible ADHD cases to increase the identification of possible ADHD patterns (Swanson et al., 2001). Efforts to increase access to evidence-based treatment include linkage to a medication assessment service modeled on the Texas Children's Medication Algorithm Project (Pliszka et al., 2000a, 2000b, 2006). A pilot project is also underway, in collaboration with schools, to increase the use of the Daily Behavioural Report Card (Center for Children and Families, 2009). Approaches to systematically addressing other problems are less developed.

This study offers a partial description of the prevalence and patterns of mental health and learning problems of a sample of children referred to a school mental health service. This knowledge may inform the prioritization for service refinement for this particular program and others that share a similar referral pattern. In addition to the need for replication and expansion of this type of inquiry, there are other priority research areas. In particular there is a need to determine the pattern of school-based child mental health services in Canada and the extent to which evidence-based practices are employed within such services and to what effect.

Acknowledgements/Conflict of Interest

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References

American Academy of Pediatrics (2004). School-based mental health services. *Pediatrics, 113*(6), 1839-1845.

Armbruster, P. & Lichtman, J. (1999). Are school based mental health services effective? Evidence from 36 inner city schools. *Community Mental Health Journal, 35*(6), 493-504.

Barkley, R.A. (2006). *Attention-deficit hyperactivity disorder (3rd ed.).* New York, NY: The Guilford Press.

Biederman, J., Mick, E., Faraone, S. V., Braaten, E., Doyle, A., Spencer, T., et al. (2002). Influence of gender on attention deficit hyperactive disorder in children referred to a psychiatric clinic. *American Journal of Psychiatry, 159*(1), 36-42.

Center for Children and Families (2009). How to Establish a Daily Report Card (School-Home-Note). Accessed on Sept 13, 2009 at http://ccf.buffalo.edu/resources_downloads.php

Costello, E. J., Foley, D. L., & Angold, A. (2006). 10-year research update review: The epidemiology of child and adolescent psychiatric disorders: II. Developmental epidemiology. *Journal of the American Academy of Child and Adolescent Psychiatry. 45*(1), 8-25.

Ford, T., Goodman, R., & Meltzer, H. (2003). The British child and adolescent mental health survey 1999: The prevalence of DSM-IV disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 42* (10), 1203-1211.

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A Research Note. *Journal of Child Psychology and Psychiatry*, *38*(5), 581-586.

Goodman, R. (2001). Psychometric properties of the Strengths and Difficulties questionnaire. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*(11), 1337-1345.

Kirby M. & Keon W. (2006). Out of the Shadows at Last: Transforming Mental Health, Mental Illness and Addiction Services in Canada. Final report of the Standing Senate Committee on Social Affairs, Science and Technology.

Kutash, K. & Duchnowski, A. J. (2004). The mental health needs of youth with emotional and behavioural disabilities placed in special education programs in urban schools. *Journal of Child and Family Studies, 13*(2), 235-248.

McLennan, J. D., Reckord, M., & Clarke, M. (2008). A mental health outreach program for elementary schools. *Journal of the Canadian Academy of Child and Adolescent Psychiatry, 17*(3), 122-130.

Pelham, W. E. & Fabiano G. A. (2008). Evidence-based psychosocial treatments for attention-deficit/hyperactivity disorder. *Journal of Clinical Child & Adolescent Psychology, 37*(1), 184-214.

Pliszka S. R., Greenhill, L. L., Crismon, M. L., Sedillo, A., Carlson, C. K., Conners, C. K., et al. (2000a). The Texas Children's Medication Algorithm Project: Report of the Texas Consensus Conference Panel on Medication Treatment of Childhood Attention-Deficit/Hyperactivity Disorder. Part 1. *Journal of the American Academy of Child and Adolescent Psychiatry, 39*, 908-919.

Pliszka S. R., Greenhill, L. L., Crismon, M. L., Sedillo, A., Carlson, C. K. & Conners, C. K., et al. (2000b). The Texas Children's Medication Algorithm Project: Report of the Texas Consensus Conference Panel on Medication Treatment of Childhood Attention-Deficit/Hyperactivity Disorder. Part 2. *Journal of the American Academy of Child and Adolescent Psychiatry, 39*, 920-927.

Pliszka, S. R., Crimson, M. L., Hughes, C. W., Conners, C. K., Emslie, G. J., & Jensen, P. S., et al. (2006). The Texas Children's Medication Algorithm Project: Revision of the Algorithm for Pharmacotherapy of Attention-Deficit/Hyperactivity Disorder. *Journal of the American Academy of Child and Adolescent Psychiatry, 45*(6), 642-657.

Reddy, L. A., Newman, E., De Thomas, C. A., & Chun, V. (2009). Effectiveness of school-based prevention and intervention programs for children and adolescents with emotional disturbance: A meta-analysis. *Journal of School Psychology. 47,* 77-99.

Swanson, J. M., Kraemer, H. C., Hinshaw, S. P., Arnold, L. E., Conners, C. K., Abikoff, H. B., et al. (2001). Clinical relevance of the primary findings of the MTA: success rates based on severity of ADHD and ODD symptoms at the end of treatment. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*(2), 168-179.

Walrath, C. M., Burns, E. J., Anderson, K. L., Glass-Siegal, M., & Weist, M. D. (2004). Understanding expanded school mental health services in Baltimore City. *Behavior Modification, 28*(4), 472-490.

Weist, M. D., Myers, C. P., Hastings, E., Ghuman, H., & Ling Han, Y. (1999). Psychosocial functioning of youth receiving mental health services in the schools versus community mental health centers. *Community Mental Health Journal, 35*(1), 69-81.

Risk Factors of Acute Behavioral Regression in Psychiatrically Hospitalized Adolescents with Autism

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Abstract

Aim: During adolescence, some individuals with autism engage in severe disruptive behaviors, such as violence, agitation, tantrums, or self-injurious behaviors. We aimed to assess risk factors associated with very acute states and regression in adolescents with autism in an inpatient population. **Method:** Between 2001 and 2005, we reviewed the charts of all adolescents with autism (N=29, mean age=14.8 years, 79% male) hospitalized for severe disruptive behaviors in a psychiatric intensive care unit. We systematically collected data describing socio-demographic characteristics, clinical variables (severity, presence of language, cognitive level), associated organic conditions, etiologic diagnosis of the episode, and treatments. **Results:** All patients exhibited severe autistic symptoms and intellectual disability, and two-thirds had no functional verbal language. Fifteen subjects exhibited epilepsy, including three cases in which epilepsy was unknown before the acute episode. For six (21%) of the subjects, uncontrolled seizures were considered the main cause of the disruptive behaviors. Other suspected risk factors associated with disruptive behavior disorders included adjustment disorder (N=7), lack of adequate therapeutic or educational management (N=6), depression (N=2), catatonia (N=2), and painful comorbid organic conditions (N=3). **Conclusion:** Disruptive behaviors among adolescents with autism may stem from diverse risk factors, including environmental problems, comorbid acute psychiatric conditions, or somatic diseases such as epilepsy. The management of these behavioral changes requires a multidisciplinary functional approach.

Key words: autism, adolescence, acute behavioral state, regression, intellectual disability

Résumé

Objectif: À l'adolescence, certains autistes affichent des troubles graves du comportement tels que violence, agitation, colère ou auto-mutilation. Cette étude évalue les facteurs de risque associés aux états aigus et à la régression chez les adolescents autistes hospitalisés. **Méthodologie:** Nous avons étudié, de 2001 à 2005, le dossier d'adolescents souffrant d'autisme (n=29, âge moyen=14,8 ans, 79% de sujets de sexe masculin) hospitalisés pour troubles sévères du comportement dans un service psychiatrique de soins intensifs. Nous avons systématiquement recueilli les informations suivantes: données socio-démographiques des adolescents, variables cliniques (gravité, présence de langage, niveau cognitif), maladies organiques connexes, étiologie de l'épisode aigu et traitements reçus. **Résultats:** Tous les patients présentaient des symptômes autistiques et une déficience intellectuelle; deux tiers d'entre eux n'avaient pas de niveau du langage fonctionnel. Quinze sujets présentaient des symptômes épileptiques, et l'épilepsie n'avait pas été diagnostiquée chez trois de ces sujets avant l'épisode aigu. Les crises incontrôlées étaient considérées comme la cause principale des troubles sévères du comportement chez six sujets. Les autres facteurs de risque étaient notamment le trouble d'ajustement (n=7), le manque de traitement thérapeutique ou éducatif (n=6), la dépression (n=2), la catatonie (n=2) et les maladies physiques comorbides (n=3). **Conclusion:** Les troubles sévères du comportement des adolescents autistes peuvent être dus à divers facteurs de risque: facteurs environnementaux, comorbidités psychiatriques aigues ou maladies somatiques comme l'épilepsie. Ces comportements exigent une approche multidisciplinaire.

Mots clés: autisme, adolescence, trouble sévère du comportement, régression, déficience intellectuelle.

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Introduction

Adolescence is a particularly important period in the course of development. Regarding neuropsychiatric disorders, adolescence is the period of onset for schizophrenia, bipolar disorder, and catatonia (Cohen et al., 2005). Adolescence is also one of the peak periods of seizure occurrence (Tuchman and Rapin, 2002). In the field of autism, some authors have observed that the onset of puberty is temporally associated with clinical deterioration (Gillberg and Schaumann, 1981; Billstedt et al., 2005). However, most children with autism grow up and become adolescents and then adults, without manifesting major adult psychiatric disorders. Indeed, the core symptoms of autism – deficiencies in social interaction, language delay and communication disabilities, and restricted and stereotyped behavior – tend to show improvement over time (Rutter and Lockyer, 1967; Rutter et al., 1967; Kobayashi and Murata, 1998; Seltzer et al., 2003), and only a few individuals with autism experience severe disruptive disorders during adolescence.

The literature on autism during adolescence and adulthood is sparser than that concerning autism during childhood despite some challenging behaviors that persist throughout adulthood. In a review of studies published before 1996, Nordin and Gillberg (1998) observed that cognitive or behavioral regression occurred in 12 to 22% of adolescents with autism. The largest study of this phenomenon, a survey conducted on 201 young adults with autism born in Japan, indicated that 32% of them showed marked deterioration during adolescence (Kobayashi et al., 1992). More recently, a prospective study conducted on 120 Swedish autistic subjects showed that behavioral and cognitive regression, catatonia, and "adult psychosis" occurred during adolescence in 16%, 12%, and 8% of those studied, respectively (Billstedt et al., 2005). Finally, Mouridsen et al. (2008) showed using a case-control method that adults with autism had a higher frequency of additional treatable psychiatric disorders than controls, in particular psychotic disorders and affective disorders.

Normal intellectual abilities seem to be protective: among individuals with autism, those without intellectual disability experience less deterioration than those with mental disabilities (Venter et al., 1992; Ballaban-Gil et al., 1996). Similarly, among individuals with intellectual disability, those with autism experience more deterioration than those without autism. From an epidemiological sample of subjects with intellectual disabilities in Ontario [Canada], Bradley and Bolton (2006) compared the prevalence of episodic psychiatric disorders in adolescents with intellectual disability with (N=36) and without (N=36) autism. They found that autism was significantly associated with the total number of episodes and with psychotropic prescriptions. At least one episode of psychiatric illness occurred in the 17 individuals with autism. These episodic illnesses were depressive disorders (N=8), bipolar disorders (N=2), adjustment disorders (N=3), and persistent and unclassifiable disorders (N=4) (Bradley and Bolton, 2006).

In summary, severe behavioral changes and mental health problems in adolescents with autism are poorly investigated and inadequately understood. In particular, no empirical guidelines are available regarding etiology and treatment, as there are very few studies concerning inpatient treatment of subjects with autism (Shattuck et al., 2007) and, to our knowledge, none focusing on adolescence. The present study aimed to screen all patients with autism hospitalized in a psychiatric intensive care unit for severe behavioral disturbances occurring during adolescence. Some guidelines for diagnosis and treatment are suggested based on this clinical experience.

Methods

Participants

By reviewing patient charts and staff reports, we systematically looked for all adolescents with autism who were hospitalized for an acute episode of disruptive behavior between January 2000 and December 2005 at the Pitié-Salpêtrière Hospital, a University teaching hospital that treats 30-40% of all child and adolescent psychiatry inpatients in the Paris area [10 million people]. It is the only hospital that has an adolescent Psychiatric Intensive Care Unit treating life-threatening treatment refusal (Jaunay et al., 2006), catatonic syndrome (Cohen et al., 2005; Cornic et al., 2009), severe mood disorders (Taieb et al., 2002), and severe behavioral regression. During the study period, 41 out of nearly 420 adolescent inpatients were hospitalized with a discharge diagnosis of autism, Asperger's syndrome, or pervasive developmental disorder (PDD) not otherwise specified. Two experienced child and adolescent psychiatrists from the department (DP and CA) reviewed the charts and selected the cases (N=29) meeting the following criteria: (a) ICD-10 diagnosis of childhood autism confirmed by the Childhood Autism Rating Scale (CARS) (Shopler et al., 1980), which is used routinely in the department; (b) aged between 12 and 17 years old at the time of admission; (c) the main reason for admission was disruptive behavior or cognitive regression. No *a priori* exclusion criteria were used. The ICD-10 nosography is a criteria-based classification. For autism, the criteria are very similar to those used in the DSM-IV. It defines autism with three symptomatic domains (qualitative impairment in social interaction, qualitative abnormalities in communication, and restricted, repetitive, and stereotyped patterns of behavior, interests, and activities) and one developmental criterion (abnormal or impaired development is evident before the age of 3 years). We strictly checked for the presence of the required criteria, especially the age criterion. For example, one case was excluded because of his developmental history, which led to a diagnosis of childhood disintegrative disorder rather than autism.

Procedure and variables

We retrospectively reviewed charts, including clinician and nurse notes, from the hospitalization period. All information pertaining to the identity of the subjects was removed. Two co-authors (DP and CA) independently extracted the relevant data from the original selected reports and reviews. Contradictory data between the two co-authors were checked for improper extraction or consensus decision.

Selected data included *socio-demographic data*: age, gender, socio-economic status of the family based on income and parental work activity [classified into three groups: low, middle, and high], and composition of the family at the time of admission [number of siblings and marital status of the parents]. Special focus was placed on the type of care provided to the patients at the time of admission. The individuals were classified into three groups: those who received no institutional care or education [i.e., stayed at home all day], those who received

care and education in non-specific institutions [mainly institutions dedicated to all types of intellectual disability], and those who received care and education in institutions dedicated to PDD.

Recorded data also included a detailed *medical history* that was based on past personal and family psychiatric history recorded at intake with a semi-structured interview (Taieb et al., 2002). A particular emphasis was placed on associated pathologies, such as epilepsy, genetic disorders, and other chronic illnesses associated with autism.

Due to the difficulties involved in testing individuals who exhibit such problematic behaviors, subjects were identified as having intellectual disability according to the definition of the American Association on Mental Retardation. The estimates of *cognitive ability* were based on performance before the onset of the acute state that required hospitalization. Information was obtained from case records and interviews with parents and caregivers. Individuals were classified into five groups: profound, severe, moderate, and mild intellectual disability, and borderline-normal cognitive ability. For the same reasons, a similar method was used to estimate the level of expressive *language* before the onset of the acute state. The individuals were classified into three groups: those with no expressive language at all, those with only a few words or with very impaired expressive language [a maximum of 15 words was chosen arbitrarily], and those with greater abilities in this domain.

Other *clinical variables* at admission included CARS scores and the symptoms listed for referral. For descriptive purposes, pathological behaviors were classified into eight groups: aggression or violence toward others, self-injurious behaviors, severe stereotypies, hyperactivity, tantrums, panic attacks, catatonia, and instinctual disorders [severe disturbance concerning sleep, alimentation, sexuality, or urinary/fecal control].

Other variables were collected regarding the hospitalization process. The *team consensus best-estimate diagnostic method*, which is usually used to ascertain clinical diagnoses or data, was used to define the etiology of the acute state retained at discharge (Klein et al., 1994). The team included the two co-authors that extracted the data, two senior psychiatrists with a large amount of experience in inpatient care (DC, AC), and a neurologist with expertise in epilepsy (IAG). The etiology was the primary explanation retained for the behavioral regression. Postulated etiologies were based on all available information, including direct interviews, family history data, and treatment records (Klein et al., 1994). Each case received only one major postulated etiology, whereas several contributing factors were present in some cases. Postulated organic etiologies were confirmed if the specific treatment for that etiology positively affected the disruptive behaviors.

Finally, several types of data regarding *treatment* were also collected, including the duration of the hospitalization, the type and number of prescribed medications, adverse effects of medications, and paraclinical investigations (i.e., EEG and neuroimaging). The effectiveness of the hospitalization was measured with the Children's Global Assessment Scale (C-GAS), which is systematically used in the department at admission and discharge.

Statistical analysis

All analyses were performed using R software, version 2.7 (The R Foundation for Statistical Computing). Univariate analyses were used to examine the importance of various variables in the explanation of short-term outcomes upon discharge, including the change in GAF score [¢GAF = GAF at discharge – GAF at admission] and duration of hospitalization. We tested the following explicative variables: age, sex, socio-economic status, family ethnic origin, episode causes [no treatment/maladaptive/organic/psychiatric], level of intellectual disability (ID), history of an organic developmental disorder, and CARS and GAF scores at intake. For quantitative explicative variables, Pearson correlation coefficients were computed to estimate the strength of the linear association with the ¢GAS and the duration of hospitalization. ANOVAs were performed with qualitative explicative variables. The assumption of homogeneity of variances was checked by Levene's test, and the assumption of normality was assessed by the Shapiro-Wilk test. In the case of the rejection of the hypothesis of equality of means, Tukey's post-hoc tests were applied.

Results

Socio-demographic, personal history, and clinical characteristics at admission

Twenty-nine subjects were included (23 males, 6 females). The male-female ratio was 3.8/1. The mean age was 14.8 (±1.3) years. In total, 15 of the subjects' parents lived as couples (52%), whereas 14 of the subjects' parents were single without the presence of a stepfather or stepmother in the home (48%). The majority of patients (N=18, 62%) were from immigrant families. Socio-economic status was low for 12 individuals (41%) and middle or high for 17 individuals (59%). The mean number of siblings was three.

All subjects had severe autistic syndrome (CARS score: mean (±SD) = 41.9 (±3.2)) associated with intellectual disability: mild ID in 6 cases (21%), moderate ID in 8 cases (28%), severe ID in 14 cases (48%), and profound ID in 1 case (3%). The majority had poor language abilities: there was no language in 9 cases (31%), a few words in 11 cases (38%), and functional language in 9 cases (31%). All of the patients with a comorbid organic condition (N=15) also had seizures. Twelve patients had essential epilepsy, including three who were diagnosed during hospitalization. One patient had fragile X syndrome, one had tuberous sclerosis, and one had FG syndrome (a multiple congenital anomaly/intellectual disabil-

ity syndrome). Three patients had syndromic epilepsy [West syndrome, continuous spikes and waves during slow sleep (CSWSS), Lennox-Gastaut syndrome]. Prior to admission to the hospital, only five patients (17.2%) received care in a specialized institution for PDD individuals. Eleven patients (38%) received institutional care in nonspecific psychiatric settings or in special programs for youths with intellectual disability. Thirteen patients (44.8%) received no specialized or institutional care and stayed at home. Furthermore, 16 patients (55.2%) had received no care during more than one year of their life.

Reasons for referral are listed in Table 1. The mean number of disruptive symptoms was 2.6. Only three subjects had one symptom. The mean GAS score at the time of admission was 19.2 (±7.9). The mean number of psychotropic drugs prior to admission was 1.4 [range: no medication to 5 compounds].

Table 1. Disruptive symptoms and reasons for referral

Disruptive symptom	N
Hetero-aggressivity	19
Hyperactivity	17
Instinctual disorder (severe disturbance in sleep, alimentation, urinary/fecal control, or sexuality)	15
Stereotypies	7
Self-Injurious Behaviors	6
Tantrums	5
Panic attacks	5
Catatonia	2

Paraclinical examination, retained diagnosis, and inpatient care

The mean duration of hospitalization was 44 (±28) days. The distribution of the duration was not unimodal; three peaks could be distinguished (Figure 1).

Paraclinical examinations, such as EEG and neuroimaging, were prescribed in 25 cases (87%) and 17 cases (59%), respectively. In many cases, however, behavioral disturbances prevented technicians from performing these examinations or made the results unusable. Nineteen patients underwent an EEG (76%) and 11 patients underwent neuroimaging (65%).

The retained etiologies are listed in Table 2. For each patient, only the principal etiology was retained. In summary, the acute state was caused by environmental causes in 13 patients (45%), an organic cause in 9 patients (31%), and a psychiatric cause in 4 patients (14%). In three cases, despite being sent to the inpatient unit from specific institutions dedicated to PDD, no apparent cause was found for the acute episode. For these three patients, we can hypothesize that they presented with a psychiatric diagnosis that was misdiagnosed due to their absence of language.

Regarding psychiatric disorders, the diagnoses were made according to the ICD-10 criteria. In the current series, we listed four psychiatric comorbid conditions with acute states in autism (catatonia, major depression, bipolar disorder, and adjustment disorder). Although adjustment disorder is a psychiatric diagnosis according to the ICD-10 and DSM-IV, we considered it as an environmental cause that should be differentiated from the other specific psychiatric disorders found. As explained in the methods section, we did not consider adjustment problems associated with a change of routine in patients with autism. An adjustment disorder was diagnosed when a major modification or a breakdown of the patient's environment was the explanation for the disruptive symptoms. It included severe maltreatment for one patient, the recent death of one patient's father, the psychiatric hospitalization of two patients' mothers, the hospitalization for cancer of one patient's mother, and an unanticipated change of institution for one patient.

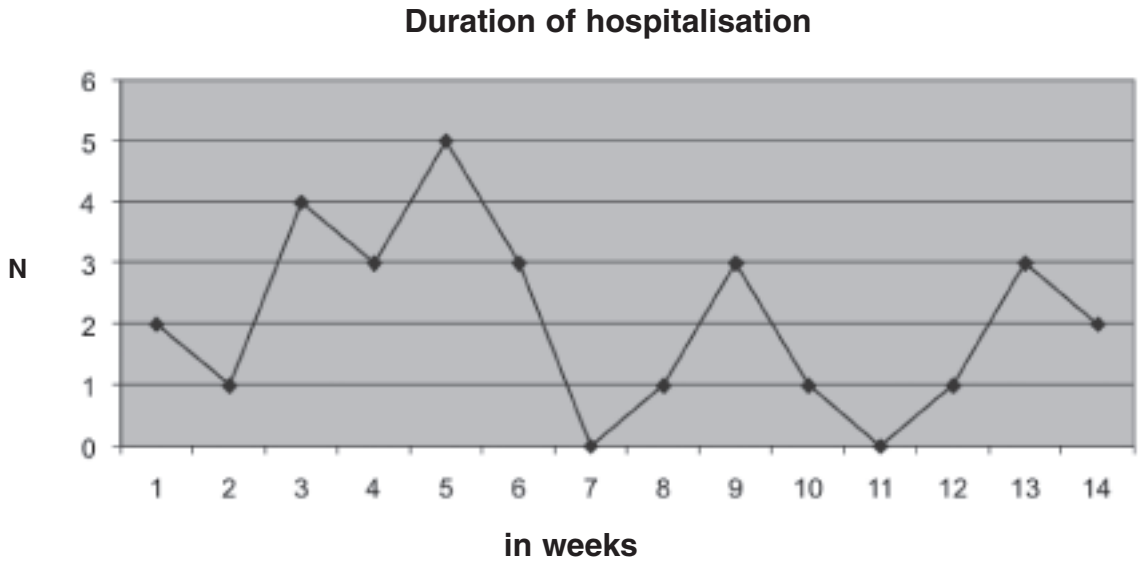
A lack of specific treatment was considered as the cause when both (a) a lack of appropriate care (including no care at all) was considered responsible for the acute state and (b) the inpatient setting was sufficient to reduce behavioral symptoms. Finally, we also observed organic conditions. The acute state was caused by uncontrolled seizures in six patients, and antiepileptic medications led to significant improvement. For three of them, this marked their first diagnosis of seizures. Other non-neurological organic causes were observed in three cases, including *Helicobacter pylori* gastritis, tooth decay, and urinary tract infection. In these three cases, the specific treatment of the condition led to a significant decrease in the disruptive behaviors.

The mean number of psychiatric medications at discharge was 1.7, and 27 patients (93%) were prescribed an antipsychotic. Most of them took one antipsychotic (N=22), and the remaining five took two. Fifteen patients received an anti-epileptic drug, and most of these patients had only one antiepileptic medication (N=8). Two patients took more than two drugs but had syndromic

Table 2. Best retained etiology for the acute state

Diagnosis	N (%)
Environmental causes	
Lack of treatment	7 (24)
Adjustment disorder	6 (21)
Organic causes	
Seizures	6 (21)
Other organic condition	3 (10)
Psychiatric causes	
Catatonia	2 (7)
Major depressive episode	1 (3)
Bipolar disorder	1 (3)
Unknown	3 (10)

Figure 1. Duration of hospitalization (in weeks) for acute behavioral states in adolescents with autism.



The mean duration of hospitalization was six weeks and was similar to the median. This duration did not show a normal distribution, and three peaks could be distinguished. Adolescents with severe intellectual disability had significantly longer inpatient stays.

epilepsy [Lennox-Gastaut syndrome or CSWSS]. Short-term adverse effects of prescription medications were observed in 2/3 of the patients. They included extra-pyramidal effects (N=14), adverse endocrine effects (N=2), weight gain (N=2), paradoxical effects of benzodiazepine (N=2), constipation (N=1), and seizures (N=1).

Treatments included milieu therapy, regular family visits and consultations, social support when necessary, and medication, as described above. At the end of the hospitalization, the mean GAS score was 26.9 (±8), which translates to an average of 40% improvement.

Explicative variables of improvement at discharge and length of hospitalization

We assessed whether independent variables (e.g., age, sex, socio-economic status, family ethnic origin, episode causes (no treatment/maladaptive/organic/psychiatric), level of ID, history of an organic developmental disorder, and CARS and GAS scores at intake) affected the length of hospitalization and improvement at the time of discharge from the hospital [¢GAS]. The variance analysis revealed that the psychiatric cause significantly affected the ¢GAS [F=3.42, p=0.024] and that the level of ID had a significant effect on the duration of hospitalization [F=3.93, p=0.032]. Tukey's and Bonferroni's tests were used to compare the different levels of the psychiatric causes and the ID. Patients with a psychiatric cause experienced better clinical improvement than did patients with another cause of the acute state. Furthermore, patients with profound or severe intellectual disability had longer inpatient stays than patients with moderate or mild intellectual disability.

Discussion

The current study provides a detailed clinical picture of a population of adolescents with autism who were hospitalized in a psychiatric setting for acute behavioral impairment or cognitive regression and documents the factors influencing the outcome.

The main limitations of this study are (a) the retrospective design, (b) the lack of standardized instruments to assess patients' level of intellectual disability or language, and (c) the use of a limited number of clinical instruments [GAS, CARS]. The strengths of this study are (a) the multidisciplinary approach, including the use of experts in epilepsy and genetic/metabolic disease, (b) the free access to inpatient care regardless of patients' socio-economic background, and (c) the use of long inpatient stays in an intensive care unit to monitor outcomes of multiple therapeutic techniques for behavioral improvement.

It is noteworthy that the population studied is unique in terms of the severity of the problematic behaviors observed. Indeed, psychiatric hospitalization is quite unusual among people with autism and generally occurs after the failure of first-line interventions, such as behavioral management or an outpatient trial of a psychotropic drug.

Low IQ, absence of communication skills, and comorbid epilepsy are well-known factors leading to a poor prognosis, including an impaired course of development during adolescence (Gillberg and Steffenburg, 1987; Venter et al., 1992; Ballaban-Gil et al., 1996; Rapin, 1997; Howlin et al., 2004). In the current sample, all 29 individuals were severely impaired and had multiple challenging behaviors. This point is not surprising, as it has been shown in adults that these behaviors often co-occur (Matson et al., 2008).

All had intellectual disability; all but one had severe autism as measured by the CARS; only a third had functional language; half of them had "syndromal or complex autism" (Cohen et al., 2005; Miles et al., 2005). However, this study also demonstrates that other factors, including specific care, family support, and socio-economic factors, appear to be crucial in the occurrence of these acute states. The male-female ratio was 3.8: 1 in the sample. Given the fact that all of the patients exhibited significant cognitive delay and severe autistic syndrome, the expected sex ratio should be closer to 2: 1 (Fombonne 2003, Amiet et al, 2008). This discrepancy can be explained by the fact that aggressivity and conduct disorders are more frequent among boys. Moreover, challenging behaviors are less tolerable among boys, leading to more frequent hospitalization requirement.

Absence of care was the retained diagnosis for the acute state in about 25% of the cases. This finding highlights two facts. First, adolescence is often a period when a new institution is needed, resulting in a higher risk of a break in the continuity of care (Fombonne et al., 1997). Individuals become too old for children's institutions, but no adolescent institution exists. Second, as demonstrated in a large naturalistic study that described the follow-up of a cohort of 495 children with PDD, the major risk factor for the absence of appropriate care in France is a high degree of behavioral impairment (Thevenot et al., 2008). Therefore, despite free access to care in France, both adolescence and behavioral impairment may serve as exclusion factors in individuals with PDD. As a result, a vicious circle occurs as the absence of care may increase behavioral impairment.

In addition, the importance of family support is demonstrated by cases in which consequences occurred after major family events. In six cases, a diagnosis of adjustment disorder was retained for the acute state. Poor adaptive skills are a classical feature of both intellectual disability and autism. However, it is noteworthy that the life events implicated in our cases were very severe in nature (death, hospitalization of a parent for psychiatric illness or cancer, and maltreatment) and would also have affected ordinary adolescents.

In four cases, a psychiatric illness was diagnosed. Two adolescents exhibited a severe form of catatonia with akinesia, catalepsy, and mutism. Classically associated with schizophrenia when it occurs in youths (Cohen et al., 2005; Cornic et al., 2009), catatonia can be associated with bipolar disorders (Brunelle et al., 2009), somatic illness (Lahutte et al., 2008), and also autism (Wing and Shah, 2000; Ohta et al., 2006; Cohen et al., 2009). In a clinical follow-up study, Wing and Shah (2000) reported a 6% rate of catatonic episodes in a group of 506 adolescents and adults, especially when subjects had intellectual disability. Only one case of major depressive disorder was reported in our study, but this statistic could be underestimated. There is emerging evidence that depression is probably the most common psychiatric disorder that occurs in autistic people, but this disorder can be difficult to recognize in subjects with autism with intellectual disability and poor communication skills (Kobayashi et al., 1992; Ghaziuddin et al., 2002). It could be hypothesized that some subjects with a diagnosis of adjustment disorder were, in fact, depressed. Finally, one patient had bipolar disorder, a comorbidity that has been reported in association with complex differential diagnosis issues (Atals and Gerbino-Rosen, 1995; Brunelle et al., 2009).

The importance of somatic illness is probably the most significant result in this study. For one-third of the subjects (9 out 29), the acute behavioral state was a consequence of a treatable medical illness. A systematic approach is warranted, given the variety of possible conditions (see below). Among organic conditions, uncontrolled epilepsy should be the first-line hypothesis. Epilepsy was found to be responsible for the acute behavioral deterioration in six of our cases. Three of these received a diagnosis of epilepsy for the first time during the hospitalization. The high prevalence rate in this group is not surprising, given that epilepsy in autism is associated with intellectual disability (Amiet et al., 2008) and that early childhood and adolescence have been reported to be the peak periods for seizure onset (Tuchman and Rapin, 2002). However, the relationship between autism and epilepsy is complex, and their association may have different origins. Various seizure types and epileptic syndromes have been described in association with autism. Moreover, epileptic anomalies are frequently observed on the EEGs of autistic patients despite an absence of seizures, suggesting at least a low epileptic threshold (Tuchman and Rapin, 2002). It may also be true that autism and epilepsy share a genetic and/or neurodevelopmental cause, at least in the case of secondary autism (e.g., tuberous sclerosis). Epilepsy by itself may induce the development of autistic symptoms (Jambaqué et al., 1998). Two examples illustrate this point: (a) autistic regression may occur when the epileptic focus is located in a critical brain area, mainly in temporo-frontal locations, with substantial improvement after medication or even surgical treatment (Nass et al., 1999; Neville et al., 1997); (b) several epileptic encephalopathies are associated with intellectual disability and/or autistic traits, probably through a specific developmental impact. This association is especially true in West syndrome (Saemundsen et al., 2007). Finally, a coincidental association between autism and epilepsy cannot be ruled out in some cases, considering the high frequency of epilepsy in the general population. In terms of the diagnostic and therapeutic approach, we, like others, consider collaboration with an experienced neurologist to be crucial (Tuchman and Rapin, 2002).

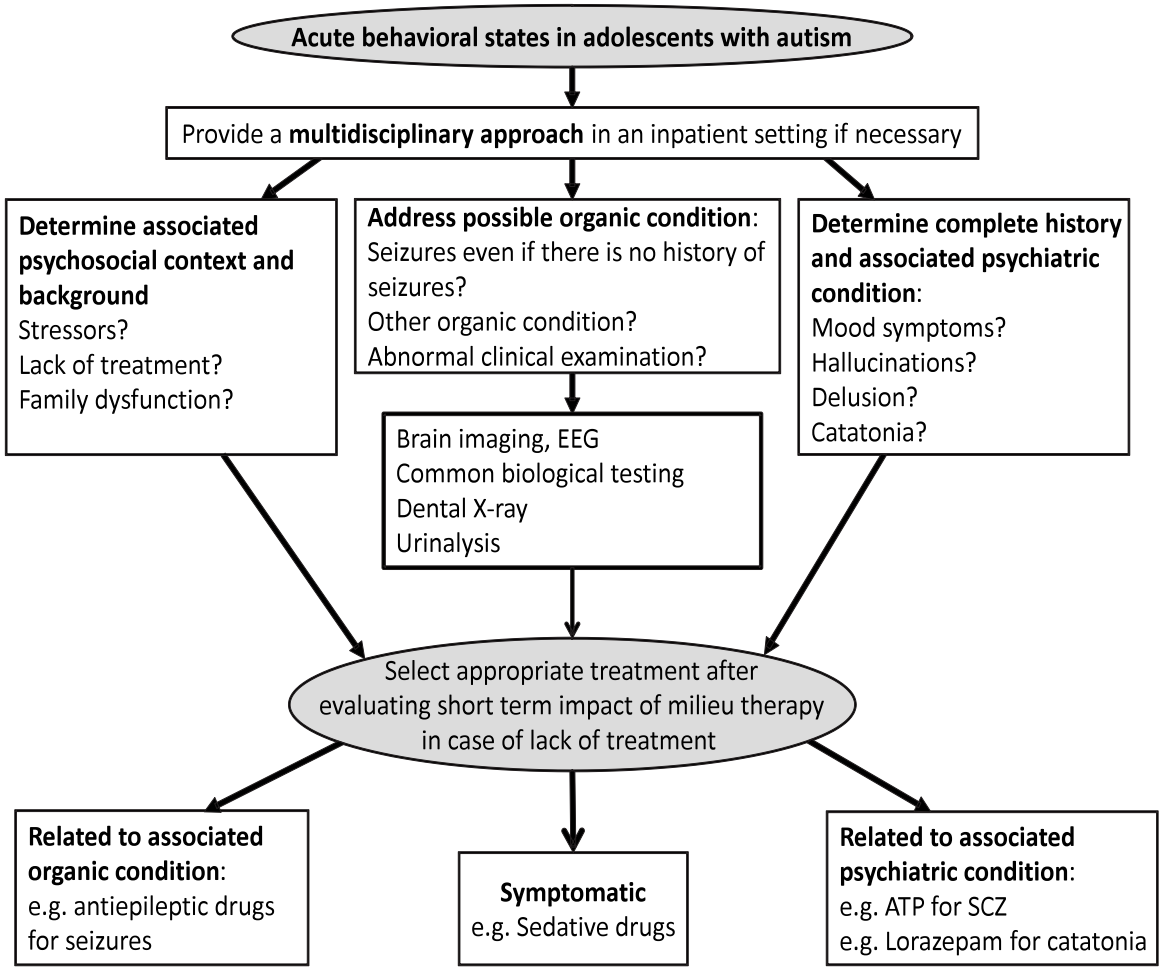
To formulate rational guidelines for the diagnosis and treatment of acute behavioral states or regression in adolescents with autism, one cannot remain at the level of

a symptomatic approach. Given the diversity of psychopathologies found in this study, we recommend a systematic integrative multidisciplinary approach that should include (a) a careful social and family evaluation, (b) a systematic search for frequent painful organic conditions, based on a clinical evaluation and a minimal screening [common blood tests, dental X-ray, urinalysis], (c) a neurological examination, with a specific focus on possible seizures, and an EEG, despite the technical issues in this population, and (d) a psychiatric evaluation, taking into account the particular profile of these adolescents [poor language skills, ID] and using adapted rating tools when available. This process should lead to a functional evaluation of each individual case and to the formulation of a principal hypothesis regarding the cause of the acute behavioral state. This step is crucial given the tendency to use too many medications in this field despite the minimal evidence available regarding their effectiveness for challenging behavior associated with autism (Matson and Neal, 2009). Considering alternative psychosocial-based interventions and careful functional assessments appear to be advisable. Figure 2 summarizes our view. Although this view is not a scientific fact and is essentially experience-based, this integrative approach can assist during the process of making treatment decisions.

Conclusion

Adolescents with autism who present with acute behavioral regression that compromises safety need to be examined with a multidisciplinary approach that includes organic, social, and psychiatric investigations. Given the complexity of these situations, hospitalization in psychiatric settings that collaborate with other disciplines is warranted. The adolescent psychiatrist plays a key role in coordinating investigations, giving a proper diagnosis, and treating the acute state.

Figure 2. Acute behavioral states in adolescents with autism: a multimodal framework for evaluation and treatment.



EEG = electroencephalography; ATP = antipsychotic drug; SCZ = schizophrenia

Acknowledgements/Conflict of Interest

The authors have no financial relationships or conflicts to disclose.

References

Amiet, C., Gourfinkel-An, I., Bouzamondo, A., Tordjman, S., Baulac, M., Lechat, P., Mottron, L., & Cohen, D. (2008). Epilepsy in autism is associated with mental retardation and gender: evidence from a meta-analysis. *Biological Psychiatry* 64, 577-82

Atals, J.A., & Gerbino-Rosen, G. (1995). Differential diagnostics and treatment of an inpatient adolescent showing pervasive developmental disorder and mania. *Psychological Report* 77, 207-210.

Ballaban-Gil, K., Rapin, I., Tuchman, R., & Shinnar, S. (1996). Longitudinal examination of the behavioral, language, and social changes in a population of adolescents and young adults with autistic disorder. *Pediatric Neurology* 15, 217-223.

Billstedt, E., Gillberg, I.C., & Gillberg, C. (2005). Autism after adolescence: population-based 13- to 22-year follow-up study of 120 individuals with autism diagnosed in childhood. *Journal of Autism and Developmental Disorder* 35, 351-60.

Bradley, E., & Bolton, P. (2006). Episodic psychiatric disorders in teenagers with learning disabilities with and without autism. *British Journal of Psychiatry* 189, 361-6.

Brunelle, J., Consoli, A., Tanguy, M.L., Huynh, C., Périsse, D., Deniau, E., Guilé, J.M., Gérardin, P., & Cohen, D. (2009). Phenomenology, socio-demographic factors and short-term prognosis of acute bipolar disorder in adolescents: a chart review. *European Child and Adolescent Psychiatry* 18, 185-193.

Cohen, D., Nicolas, J.D., Flament, M., Perisse, D., Dubos, P.F, Bonnot, O., Speranza, M., Graindorge, C., Tordjman, S., & Mazet, Ph. (2005) Clinical relevance of chronic catatonic schizophrenia in children and adolescents: evidence from a prospective naturalistic study. *Schizophrenia Research* 76, 301-308.

Cohen, D., Nicoulaud, L., Maturana, A., Danziger, N., Périsse, D., Duverger, L., Jutard, C., Kloeckner, A., & Consoli, A. (2009). The use of packing in adolescents with catatonia: a retrospective study with an inside view. *Clinical Neuropsychiatry* 6, 1-6.

Cohen, D., Pichard, N., Tordjman, S., Baumann, C., Burglen, L., Excoffier, S., Lazar, G., Mazet, Ph, Pinquier, C., Verloes, A., & Heron, D. (2005). Specific genetic disorders and autism : clinical contribution towards identification. *Journal of Autism and Developmental Disorder* 35, 103-116.

Cornic, F., Consoli, A., Tanguy, M.L., Bonnot, O., Périsse, D., Tordjman, S., Laurent, C., & Cohen D. (in press). Adolescent catatonia is associated with an increase in mortality and morbidity: evidence from a four-year prospective follow-up study. *Schizophrenia Research*

Fombonne, E., Du Mazaubrun, C., Cans, C., & Grandjean, H. (1997). Autism and associated medical disorders in a French epidemiological survey. *Journal of the American Academy of Child and Adolescent Psychiatry* 36, 1561-1569.

Fombonne E. Epidemiological surveys of autism and other pervasive developmental disorders: an update. J Autism Dev Disord 2003;33(4):365-82.

Ghaziuddin, M., Ghaziuddin, N., & Greden, J. (2002). Depression in persons with autism: implications for research and clinical care. *Journal of Autism and Developmental Disorder* 32, 299-306.

Gillberg, C., & Schaumann, H. (1981). Infantile autism and puberty. *Journal of Autism and Developmental Disorder* 11, 365-71.

Gillberg, C., & Steffenburg, S. (1987). Outcome and prognostic factors in infantile autism and similar conditions: a population-based study of 46 cases followed through puberty. *Journal of Autism and Developmental Disorder* 17, 273-87.

Howlin, P., Goode, S., Hutton, J., & Rutter, M. (2004). Adult outcome for children with autism. *Journal of Child Psychology and Psychiatry* 45, 212-29.

Jambaqué, I., Mottron, L., Ponsot, G., & Chiron, C. (1998). Autism and visual agnosia in a child with right occipital lobectomy. J*ournal of Neurology Neurosurgery and Psychiatry* 65, 555-560.

Jaunay, E., Consoli, A., Guile, J.M., Mazet, P., & Cohen, D. (2006). Treatment Refusal in Adolescents with Severe Chronic Illness and Borderline Personality Disorder. *Journal of the Canadian Academy of Child and Adolescent Psychiatry* 15, 135-142.

Klein, D.N., Ouimette, P.C., Kelly, H.S., Ferro, T., & Riso, L.P. (1994). Test-retest reliability of team consensus best-estimate diagnoses of axis I and II disorders in a family study. *American Journal of Psychiatry* 151, 1043-7.

Kobayashi, R., & Murata, T. (1998). Behavioral characteristics of 187 young adults with autism. *Psychiatry Clinical Neuroscience* 52, 383-90.

Kobayashi, R., Murata, T., & Yoshinaga, K. (1992). A follow-up study of 201 children with autism in Kyushu and Yamaguchi areas, Japan. *Journal of Autism and Developmental Disorder* 22, 395-411.

Lahutte, B., Cornic, F., Bonnot, O., Soussan, N., Amoura, Z., Sedel, F., & Cohen D. (2008). Multidisciplinary approach of organic catatonia in children and adolescents may improve treatment decision making. *Progress in Neuro-Psychopharmacology and Biological Psychiatry* 32, 1393-1398.

Matson, J.L., Cooper, C., Malone, C.J., & Moskow, S.L. (2008). The relationship of self-injurious behavior and other maladaptive behaviors among individuals with severe and profound intellectual disability. *Research in Developmental Disability* 29, 141-148.

Matson, J.L., & Neal, D. (2009). Psychotropic medication use for challenging behaviors in persons with intellectual disabilities: an overview. *Research in Developmental Disability* 30, 572-586.

Miles, J.H., Takahashi, T.N., Bagby, S., Sahota, P.K., Vaslow, D.F., Wang, C.H., et al. (2005). Essential versus complex autism: definition of fundamental prognostic subtypes. *American Journal of Medical Genetic A* 135, 171-180.

Mouridsen, S.E., Rich, B., Isager, T., & Nedergaard, N.J. (2008). Psychiatric diagnosis in individuals diagnosed with infantile autism as children: a case-control study. *Journal of Psychiatric Practice* 14: 5-12.

Nass, R., Gross, A., Wisdoff, J., & Devinski, O. (1999). Outcome of multiple subpial transections for autistic epileptiform regression. *Pediatric Neurology* 21, 464-470.

Neville, B.G., Harkness, W.F., Cross, J.H., Cass, H.C., Burch, V.C., Lees J.A., & Taylor DC. (1997). Surgical treatment of

severe autistic regression in childhood epilepsy. *Pediatric Neurology* 16, 137-140.

Nordin, V., & Gillberg, C. (1998). The long-term course of autistic disorders: update on follow-up studies. *Acta Psychiatrica Scandinavica* 97, 99-108.

Ohta, M., Kano, Y., & Nagai, Y. (2006). Catatonia in individuals with autism spectrum disorders in adolescence and early adulthood: A long-term prospective study. *International Review in Neurobiology* 72, 41-54.

Rapin, I. (1997). Autism. *New England Journal of Medicine* 337, 97-104.

Rutter, M., & Lockyer, L. (1967). A five to fifteen year follow-up study of infantile psychosis. I. Description of sample. *British Journal of Psychiatry* 113, 1169-82.

Rutter, M., Greenfeld, D., & Lockyer, L. (1967). A five to fifteen year follow-up study of infantile psychosis. II. Social and behavioural outcome. *British Journal of Psychiatry* 113, 1183-99.

Saemundsen, E., Ludvigsson, P., Hilmarsdottir, I., Rafnsson, V. (2007). Autism spectrum disorders in children with seizures in the first year of life – a population-based study. *Epilepsia* 48, 1724-1730.

Seltzer, M.M., Krauss, M.W., Shattuck, P.T., Orsmond, G., Swe, A., & Lord, C. (2003). The symptoms of autism spectrum disorders in adolescence and adulthood. *Journal of Autism and Developmental Disorder* 33, 565-81.

Shattuck, P.T., Seltzer, M.M., Greenberg, J.S., Orsmond, G.I., Bold, D., Kring, S., Lounds, J., & Lord C. (2007). Changes in autism and maladaptive behaviors in adolescents and adults with autism spectrum disorders. *Journal of Autism and Developmental Disorder* 37, 1735-1747.

Shopler, E., Reichler, R.J., De Velis, R.F., & Daly, K. (1980) Toward objective classification of childhood autism: Childhood Autism Rating Scale (CARS). *Journal of Autism and Developmental Disorder* 10, 91-103.

Taieb, O., Flament, M., Chevret, S., Jeammet, Ph, Allilaire, J.F., Mazet, Ph, & Cohen, D. (2002). Clinical relevance of ECT in adolescents with severe mood disorder : evidence from a follow-up study. *European Psychiatry* 17: 1-7.

Thevenot, J.P., Philippe, A., & Casadebaig F. (2008). Suivi d'une cohorte d'enfants porteurs de troubles autistiques et apparentés en Ile-de-France de 2002 à 2007: situation des enfants lors de l'inclusion. available online at <http://psydoc-fr.broca.inserm.fr/Recherche/Rapports/InclusionAutistes.pdf>

Tuchman, R., & Rapin, I. (2002). Epilepsy in autism. *Lancet Neurology* 1, 352-358.

Venter, A., Lord, C., & Shopler, E. (1992). A follow-up study of high-functioning autistic children. *Journal of Child Psychology and Psychiatry* 33, 489-507.

Wing, L., & Shah, A. (2000). Catatonia in autistic spectrum disorders. *British Journal of Psychiatry* 176, 357-62.

The Effectiveness of CBT in 3-7 Year Old Anxious Children: Preliminary Data

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Abstract

Introduction: While CBT has been found to be an effective treatment for anxious older children, it has not been empirically validated in children younger than 8 years. In this study we report on an open pilot trial to establish whether a modified form of CBT can benefit young children. **Methods:** Participants were 37 anxious children aged 37-89 months attending a university anxiety specialty clinic. Symptom severity and functioning were assessed before and after treatment by independent evaluators. Feasibility and acceptability of the intervention were high. Parents attended part of each treatment session and were considered part of the treatment team. **Results:** Patients exhibited significant improvement from pre – to post-treatment assessments after an average of 8.3 treatment sessions, using the Strengths and Difficulties Questionnaire (SDQ) and the Global Assessment of Functioning Scale (GAF) ratings. **Conclusions:** A modified form of CBT with active parent involvement may be a useful tool in treating anxiety disorders in preschool and early school aged children.

Key words: anxiety, preschool, CBT

Résumé

Introduction: Bien que la TCC ait fait ses preuves dans le traitement de l'anxiété chez les enfants plus âgés, elle n'a pas été validée empiriquement chez les enfants de moins de huit ans. L'objet de cet essai clinique est de constater si une forme modifiée de la TCC peut être utile aux jeunes enfants. **Méthodologie:** Trente-sept enfants anxieux, âgés de 37 à 89 mois, ont été suivis dans la clinique de l'anxiété d'un hôpital universitaire. Des évaluateurs indépendants ont noté la gravité des symptômes et le fonctionnement des enfants avant et après traitement. La faisabilité et l'acceptabilité de l'intervention étaient élevées. Les parents assistaient à une partie de chaque séance du traitement, et étaient considérés comme faisant partie de l'équipe traitante. **Résultats:** La comparaison, avant et après traitement, des notes obtenues au *Questionnaire sur les forces et faiblesses (Strengths and Difficulties Questionnaire - SDQ)* et à l'*Échelle d'évaluation globale du fonctionnement* (*Global Assessment of Functioning Scale - GAF)* après 8,3 séances de traitement attestait d'une amélioration significative chez les sujets. **Conclusions:** Une forme modifiée de la TCC, assortie de la participation active des parents, est utile pour traiter les troubles anxieux des enfants de trois à sept ans.

Mots clés: anxiété, âge préscolaire, TCC

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Introduction

Anxiety disorders are the most common form of psychopathology in children and adolescents although there are great variations reported in the actual rates of the conditions. Klein and Pine (2002) reported that 5 – 15% of children exhibit symptoms of an anxiety disorder at some time during their development while Verhulst et al. (1997) found 23% of a large adolescent cohort to show such a disorder. These differences may reflect variations in defining "a disorder" by different authors, but may also be related to age specific peak onset times for specific anxiety disorders. For example, separation anxiety disorder has its onset most often during early childhood while social phobia is more common in adolescence (Wittchen et al., 1999).

Nevertheless, it appears that the overall prevalence of anxiety disorders is virtually identical in preschoolers (ages 2 to 5) and children and adolescents aged 5 to 17 (Egger & Angold, 2004). Egger and colleagues used their recently developed Preschool Age Psychiatric Assessment (PAPA) to assess 307 children aged 2 – 5 for 8 diagnoses and found a rate of 9.5% for anxiety disorders. The PAPA has shown good test-retest reliability over 2 months (Egger et al., 2006) but has not yet been validated against other established preschool symptom check lists such as the CBCL (Achenbach, 1985).

One additional challenge in diagnosing anxious young children is their inability to reliably report on their feelings and behaviours, necessitating questionnaire based information from parents to obtain a diagnosis. This limits the use of traditional assessment tools such as the MASC (March et al., 1997) in young children and may also affect the validity of the PAPA (Egger & Angold, 2004) as it is also based on ratings by caretakers. However, Eggers and her colleagues claim that their reliability data provide good evidence for the observational accuracy of involved parents.

The treatment of young anxious children has received little scientific study. Thus, while there is good evidence for the efficacy of CBT in children aged 8 and older (Kendall et al., 2004), there is presently *only one* empirically vali-

dated psychosocial treatment outcome study for anxious preschool and early school aged children (Monga et al., 2009). In this pilot study, Monga and her group enrolled a total of 32 children aged 5-7 years in a 12-week, carefully developed manualized, CBT group program and compared them to 11 children on a 2.5 -5 months wait period. Groups comprised 5-8 children and parents were mostly seen separately during the time of the group meetings. Results showed that, among others, 43.8% of children no longer met criteria for any Axis I anxiety disorder after the group treatment, based on well validated assessment measures. There is also one promising report of an individualized approach by Scheeringa and colleagues (2007). They discussed two children aged 4 and 6 who had experienced the flooding of New Orleans and showed signs of PTSD, as did their mothers. The results of both these studies indicate that a CBT program including mothers and their young children is not only practically feasible but can lead to a significant decrease of anxiety in both. While commonly used manualized CBT programs for older children, such as the Coping Cat program (Kendall et al., 1992), involve the parents of the treated children only in a few specified sessions, the data by Monga and Scheeringa et al. indicate that parents have to play a more important role in the treatment of preschoolers. Moreover, since the relative cognitive immaturity of young children limits the use of some traditional strategies, such as exploring the evidence for faulty beliefs, the treatment approach must be based on more concrete cognitive abilities as well as external support. Finally, a recent meta-analytic review showed a substantial association between child anxiety and parental control, further highlighting the need to actively involve the parents (van der Bruggen et al., 2008).

The present study is an attempt to evaluate a modified cognitively based individual treatment approach with a larger sample of young anxious children, using age appropriate valid tools and actively involving the parents in the treatment process. More specifically, we hypothesized that preschool aged children will show a significant decrease in anxiety symptoms and improvement of their global psychological functioning following a two to three month period of weekly CBT.

Methods

Sample and Measures:

The present study involves 20 boys and 17 girls, mean age 71.1 months (37 – 89 months), a sub-sample of 250 children who were consecutively referred to a university hospital based child psychiatric anxiety clinic for young children by their respective physicians. This clinic accepted only children younger than 11 years and the present sample made up 73% of the children who were younger than 8 years at the time of referral. Fourteen children in this youngest age group were excluded because their primary diagnosis was Selective Mutism, a condition requiring different forms of treatment (Manassis et al., 2007). All 37 children were English speaking and attended some type of day care or preschool program at least on a part time basis. Eleven had previously been evaluated by community based psychologists and their parents had received advice about appropriate management techniques. When this proved of little or no help, the psychologists either suggested or supported the referral of the children to our clinic. Thirty-two of the children lived with both their biological parents and a majority came from middle class families, using Hollingshead 5 social economic class categories (SES: 1 + 2 = 16; 3 = 19; 4 + 5 = 2). Thirty-five were of Caucasian ethnicity. As the instruments and questionnaires used in this study were routinely given to all children assessed in the OPD of the Department of Psychiatry of the Montreal Children's Hospital, the study was declared to fall into the category of "quality control'' and did not require a specific IRB.

All families were initially screened by the department based intake team, consisting of a social worker and an experienced intake worker who took a brief history of the presenting complaints and family background over the telephone. Parents were asked to fill in questionnaires concerning family background and the child's development, and to provide a written referral from their physician. Parents and the teacher most familiar with the child at the day care center or school were requested to fill in the Strengths & Difficulties Questionnaire (SDQ) (Goodman, 1997). This is a relatively short (25 items), well validated instrument (Bourdon et al., 2005) that assesses 5 behavioural components (emotional, conduct, ADHD symptoms, peer relationships and prosocial behaviours) in children aged 3 to 17 years. It has an additional scale which records the impact of the child's behaviour on either parents or teachers. Only when the history (present for at least 3 months) and reported clinical symptoms strongly suggested the presence of an anxiety disorder was a referral to the anxiety clinic accepted.

As the waiting period for an appointment in the clinic was between 3 and 4 months, the primary author phoned each family shortly after receiving the referral to arrange the assessment date and time. This contact allowed for a discussion of the parents' main concerns and was used to initiate a supportive working alliance between the clinician and the family. Parents were encouraged to contact the primary author during their waiting time if necessary. They were also informed that they would meet with a team of about 6 people at the actual assessment (2 medical students, a social worker, a psychiatric resident, and a master student in drama and art therapy) and that both parents and all siblings attend the first meeting. Families were also told that we would collect follow-up data at the end of the treatment. All families agreed to these conditions.

Assessment and Treatment

The assessment of the family took about 2 hours and

consisted of a detailed history of the present illness of the identified patient, past psychiatric, social and medical histories of all family members, a developmental history, a mental status examination of the referred child and a formulation of the case. After the assessment, the team decided on one or more appropriate diagnoses, using DSM-IV criteria, as well as a GAF score for the patient.

The treatment program offered to the children was a modified CBT model, consisting of exposure or exposure and response prevention, learning how to 'talk back to the brain' as well as psycho-education for the parents. The modifications were expressly developed for our young patients, i.e., special emphasis was placed on concrete ways to overcome fears and emotional vulnerabilities. In weekly sessions children spent approximately 40 minutes with the primary author, followed by a 20-minute period when one or both parents joined their child. This allowed parents to report on the progress made during the preceding week, be informed about the main issues discussed with the youngster during the initial part of the hour and the home work the therapist and child had agreed on for the following week. They received psychoeducation as appropriate.

The actual time with the child was quite structured. During session 1 we reviewed the intake interview and confirmed that the child wanted to get rid of his worries, scary thoughts or obsessive behaviours. We identified the individual worries again, wrote them on the blackboard and established a hierarchy, using a severity rating between 0 and 10. Then the "String Test" was done. Here the child was shown the picture of a boy standing with his eyes closed and holding a string with a small weight (Vollmar, 2004). The therapist would demonstrate with a similar string how it could be moved simply by imagining that this would happen. The child would then do the same test, always with the same result, allowing the therapist to introduce the concept of "mind power" that can be used to "talk back to our brain when it tells us unnecessary scary thoughts".

Subsequent sessions were structured by having the children initially report on 'good' and 'not so good' experiences of the past week and recalibrating their anxieties. This was followed by working on one or two individual anxieties or fears, choosing those lower down on the hierarchy, to practice 'talking back to the brain' by not listening to it or finding specific distractions. This could involve drawing the demise of a scary thought, use of puppet play or concomitant breathing techniques. The children generally worked very hard on their specific tasks and usually agreed to pursue a specific goal during the subsequent week. During the last 20 minutes parents were given feedback about that session and new goals and their implementation were discussed. In addition, parents received relevant information ranging from the neurochemical aspects of anxiety disorders to advice about how to manage their children's comorbid conditions. At the same time we talked about the neuro-chemical and information processing abnormalities these children showed, e.g., narrow attentional focus on threat cues or distorted memories for scary rather than happy day-to-day events (Pine, 2007). Families also received literature they could use to help their children (e.g., Huebner, 2006). In 2 cases where children appeared to be overwhelmed by their symptoms, medication was offered immediately in addition to the psychological treatment. Otherwise medication was added if no improvement had been observed after 4 to 5 weeks. The standard prescribed medication was Fluoxetine in doses between 4 or 12 mg/day because of its overall safety level and availability in liquid form which allows better titration to provide appropriately small doses. If needed, children were titrated up from 4mg/day to the next higher level after 2-3 weeks.

When the children showed significant clinical improvement, i.e., were reported to have gained either full control over more than 65% of their worries or showed only occasional symptoms overall, appointments were spaced out to biweekly or even monthly treatment sessions. A follow-up visit was arranged 4 to 6 weeks after the last regular appointment. At that time a post-treatment GAF was obtained by the main author and parents were asked to complete another SDQ and to have the child's teacher do so as well.

Results

As stated above, our sample came primarily from middle class families and most of the parents were married. Interestingly, only 57% of the mothers in our sample were employed, a significantly lower number than the 82.6% of women aged 25 to 44 who work at least on a part time basis in Canada (Canada Year Book, 2008).

Concerning the parents' life time psychiatric history, table 1 indicates that in 86% of the families at least one parent (N=32) had a history of a psychiatric condition. The severity of the parental disorders was rated on a 4 - point scale (none; diagnosis by a healthcare professional but no treatment, outpatient treatment, and inpatient treatment). In total, 15 parents (41%) had received outpatient treatment and 5 (14%) had been hospitalized for a psychiatric condition at some time in the past. The most common diagnoses among the parents were any Anxiety Disorder and/or Depression (20 cases). There were 2 cases of Substance abuse.

Table 1 also presents the primary diagnosis of the children. As can be seen, they showed a wide range of anxiety disorders.

Figure 1 shows the different patterns of comorbidities for the child sample. As shown, 43% of children had more than one anxiety disorder, and another 38% showed comorbidities (mainly ODD) and language disorders.

Differences between initial and follow up ratings on the SDQ by parents and teachers are presented in table 2. Post-treatment parental ratings show a statistically

Table 1. Primary Psychiatric Diagnoses

Children		Parents	
Phobia	4	Anxiety and/or depression	20
GAD	7	Alcohol + drugs	2
SAD	11	More than one diagnosis	8
OCD	8	Other diagnoses	2
Other	7	No diagnosis	5

GAD: general anxiety disorder
OCD: obsessive compulsive disorder
SAD: separation anxiety disorder

significant improvement in total as well as emotional functioning and of the impact on the family after treatment. Teacher ratings concur, their somewhat lower overall ratings reflecting the published standardization data. The p-values reported are uncorrected for number of comparisons. The mean ratings on the other four SDQ scales (ADHD, conduct, peer relationships and prosocial behaviours) were within normal range before and after treatment, confirming the validity of the instrument. This must be seen within the context of the overall length of treatment which on average lasted 8.3 sessions for the children, spaced out over an average of 17.2 weeks.

GAF results support the SDQ data (see table3), with pre-treatment average GAF ratings of 54.6 (SE 1.3) and post-treatment mean ratings of 67.2 (SE 1.7), a significant improvement.

The presence of a life time psychiatric diagnosis in a parent was **not** associated with higher baseline SDQ or lower GAF scores of their respective children although it was associated with significantly greater improvement both on SDQ scores and GAF ratings ($p<.05$). In fact, there was a trend for children with higher initial SDQ and lower GAF ratings to show less improvement overall ($p< .1$). There was no statistical relationship between the age of the child and the post-treatment outcome, using a 2- group design (children aged 3-5 vs 6-7 years). Mother's marital and work status was also not related to any outcome data.

Another question was to what extent the use of

Table 2. Clinical Results – SDQ Ratings

	Parent Ratings	Teacher Ratings
Sum Total - B	14.2 (1.0)	11.2 (1.5)
Sum Total - A	9.1 (0.7)	7.3 (0.9)
Difference B-A	5.1 (0.6)***	3.8 (0.8)***
Emotional B	6.9 (0.4)	5.7 (0.6)
Emotional A	3.6 (0.3)	3.7 (0.4)
Difference B-A	3.3 (0.3)***	2.0 (0.3)***
Impact B	5.0 (0.3)	2.7 (0.4)
Impact A	2.6 (0.3)	2.3 (0.3)
Difference B-A	2.4 (0.4)***	0.4 (0.2)*

Note: Cells contain mean values for each SDQ measure. The difference and statistical significance is estimated using a two-tailed uncorrected t-test. Standard errors reported in parenthesis.
B = before treatment / **A** = after treatment.
*** P<.001 * P<.05

Table 3. GAF Scores of Children

Before treatment	54.6 (1.3)
After treatment	67.2 (1.7)
Difference B-A 12.7 (1.3)***	

Note: Cells contain mean values for each GAF measure. The difference and statistical significance is estimated using a two-tailed t-test. Standard errors reported in parenthesis. **B** = before treatment
A = after treatment.
*** P<.001

Figure 1. Child Comorbidities

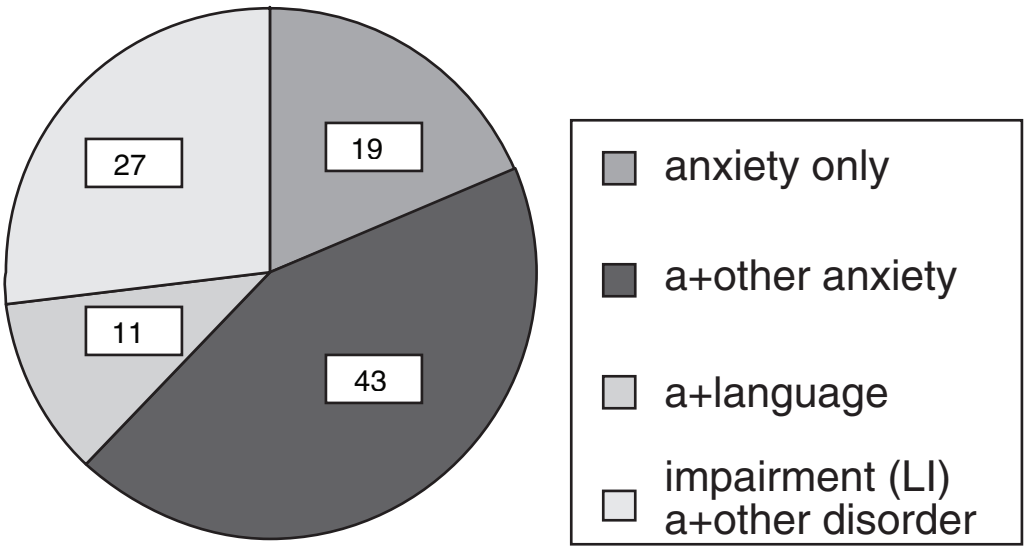

Table 4. Number of Children Receiving Medication

None	27
Fluoxetine	6
Concerta	3
Risperidone	1

medication would influence the outcome. Table 4 shows that 10 children (27%) received medication. The dosage of Fluoxetine given varied between 4 and 12 mg/day, while the Risperidone dosage of the one child was 0.25 mg/day. The use of medication was not related to any family variables, including the history of a parental psychiatric diagnosis. However, children who received medication had significantly lower GAF scores ($p<.01$) and higher baseline sum SDQ ratings by both their parents and teachers at baseline ($p<.05$ and $p<.01$ respectively) but not at follow-up. The medicated children also received more treatment sessions ($p<.05$).

We finally looked at nine potentially high risk background variables (age; SES, gender; work status of mother; marital status; severity of problem; length of treatment; medication and life time parental psychiatric diagnosis), in an attempt to predict overall CBT success. Only the presence of a past parental psychiatric diagnosis was found to have a statistically significant effect predicting positive treatment outcome ($r=.64$). This supports the notion that parents with such a history have a better understanding of anxiety, possibly motivating them more to collaborate with professionals in helping their children and/or benefiting personally from being part of the treatment team.

Discussion

Results from this open trial provide initial support for the feasibility and clinical efficacy of CBT for anxious children below the age of 7.5 years in a moderately to highly symptomatic sample, confirming the experiences of Monga et al. (2009). All 37 children and their families completed their individual treatment program, and significant improvement from pre- to post-treatment was evident in the children's level of anxiety and overall behaviour at home and at school. Parents also reported that their children after treatment placed a significantly lower burden on them and their families. While we obtained follow-up reports from all parents, three teachers did not feel they knew the children well enough because treatment had been terminated during the summer and the children worked with a new teacher or had recently graduated from day care to a preschool setting. In two cases parents did not want new teachers to know about their children's past problems. However, a separate analysis of the 32 children who had a full data set did not change the overall statistical significance of the results.

The study was done within a university based specialty clinic where assessments are routinely done by a team and different team members are involved in the treatment process. An exception was made in the cases of the present sub-sample of very young children, all of whom were treated by the primary author to limit confounding variables and assure the continuity of care. The cognitive behavioural treatment of this age group presents both advantages and challenges. Strategies like positive self-statements, modeling, positive reinforcement as well as exposure, i.e., thoughtfully initiated desensitization or shaping procedures work well with young children. While their ability to conceptualize and systematically explore evidence is less developed, they grasp abstract concepts when presented in concrete ways. Thus, the "string test" was uniformly seen by the children as evidence that thoughts can change behaviours and that they can be challenged, i.e., one "can talk back to one's brain". With the help of their parents, they also generally did their "homework" conscientiously and were often amazed to discover their own strengths.

Our sample was primarily middle class, and in more than 80% one parent presented a life time history of a psychiatric disorder. Many parents told us that they had struggled since childhood to get their own anxieties or depression under control, some having managed to do so only in the recent past. They hoped to cut this struggle short for their children and consequently were eager to work with us. Even though the mothers as a group were highly educated, comparatively few chose to work outside the home, which may be another sign, at least in some cases, of their own anxiety.

The assessment of family psychopathology was restricted to the parents of our child patients because of the clinical nature of the study. While we have no documented evidence for the accuracy of our findings here, the parent's reports on their own past treatment experience would support the validity of their information. Moreover, the relatively high incidence of anxiety disorders and depression in these parents is in keeping with the literature (Beidel & Turner, 1997). The same applies to the high rate of co-morbid conditions the children displayed (Merikangas, 2005). While neither of those studies dealt with preschool children, the early presentation of anxiety symptoms clearly supports the strong familial base seen in our sample.

As far as the treatment outcome is concerned, a number of points stand out. The children, on average, required only 8 treatment sessions to move from borderline or abnormal to normal SDQ ratings and from moderate or severe symptoms to some mild or transient symptoms according to their ratings on the GAF Scale. While we have no formal data concerning subsequent functioning, only three of the children have returned to the clinic in 3 years and for two of those a couple of booster sessions resolved the apparent setback.

Another question is whether the modified CBT was the sole active ingredient in our treatment or whether non-specific treatment aspects were at play, such as our

emotional commitment to the children's families and their subsequent support of our work. The rather rapid response of the children and their long past history of anxieties (i.e., at least 6 months, as a 3 months history of the condition was required to have an assessment at our clinic and there was an additional 3-4 months wait for the actual appointment) would make the second option more likely. However, the sample contained 10 children who required additional help in the form of medication as this is known to be helpful to more children than CBT alone in older children (Walkup et al., 2008). In contrast to these authors, who compared groups who were assigned to either CBT or combination treatments, we in most cases added medication only after CBT treatment seemed not effective as this was more in line with the wishes of our families.

The fact that CBT was provided by the same therapist made it impossible to explore the transferability of our treatment model. Yet the enhanced treatment response in children whose parents had a history of anxiety/depression suggests being part of the treatment team clearly represented an emotionally meaningful learning experience for them.

Finally, the use of medication needs some discussion. Studies examining the effectiveness of treatment in older anxious or depressed children have repeatedly reported that a combination of pharmacological and psychological therapy is the best strategy for dealing with serious disorders (Brent et al., 1997, Kendall et al., 2004, Walkup et al., 2008). Similar data do not exist for children aged 3 – 7 years. In fact, many of the parents were quite reluctant to accept medication for their children even when they showed serious symptoms such as severe obsessional rituals, or symptoms which made it difficult for them to leave the house. Therefore psychopharmacological treatment of any sort was only provided in the most serious cases.

Clinical implications and limitations

In the present paper we suggest that a modified CBT program can be helpful in assisting even very young children in managing moderate to severe anxieties and that parents are ready to actively participate in this work. While this appears to be the first report where CBT on an individual basis was used as a clinical tool in a larger sample of young children with a variety of anxiety disorders, and supports the results obtained by using CBT in treating preschool within a group setting (Monga et al., (2009), this is a pilot study that requires replication. The study also did not use a standardized diagnostic interview, provided some children with drugs in addition to CBT and the follow-up rating of the GAF was done only by the primary author who had also treated the children. All of these features are obvious limitations of our clinic based work. Future studies should use a random assignment of CBT versus supportive therapy and use multiple experienced therapists to validate treatment effects. This should involve larger samples to allow examining the effectiveness of this form of treatment for individual anxiety disorders. It may also be useful to assess actual change in specific anxiety symptoms after each CBT session as was done in the two cases reported by Scheeringa and colleagues (2007). Finally, future studies should provide for longer term follow-up evaluations.

Based on our experience of the developmental needs of this population, we predict that close involvement of the family will remain a key aspect of any successful treatment of young anxious children. Given the growing understanding that anxiety disorders frequently begin during the preschool years, it is important to develop evidence based and developmentally appropriate interventions.

Acknowledgements/Conflict of Interest

The authors have no financial relationships or conflicts to disclose.

References

Achenbach, T. M. (1985). The assessment of anxiety in children. In A. H. Tuma & J. D. Maser (Eds.) *Anxiety and the anxiety disorders.* (pp. 707-734). Hillsdale, NJ: Erlbaum.

Beidel, D. C. & Turner, S. M. (1997). At risk for anxiety; I. Psychopathology in the offspring of anxious parents. *Journal of the American Academy of Child and Adolescent Psychiatry, 36,* 918-924.

Brent, D. A., Holder, D., Kolko, D., Birmaher, B., Baugher, M., Roth, C., et al. (1997). A clinical psychotherapy trial for adolescent depression comparing cognitive, family and supportive therapy. *Archives of General Psychiatry, 54,* 877-885.

Bourdon, K. H., Goodman, R., Donald, R. S., Simpson, G., Rae, D. S., & Koretz, D. S. (2005). The Strengths and Difficulties Questionnaire: US normative data and psychometric properties. *Journal of American Academy of Child and Adolescent Psychiatry, 44*, 557-564.

Canada Year Book. *Statistics Canada.* (2008). (p. 277) Louiseville, Quebec: Transcontinental Gagné.

Egger, H. L., & Angold, A. (2004). The Preschool Age Psychiatric Assessment (PAPA): *A* structured parent interview for diagnosing psychiatric disorders in preschool children. In R. DelCarmen-Wiggins & A. Carter (Eds.), *Handbook of infant, toddler, and preschool mental assessment*. (pp. 223-243). New York: Oxford University Press.

Egger, H. L., Erkanli, A., Keeler, G., Potts, E., Walter, B. K., & Angold, A. (2006). Test-retest reliability of the Preschool Age Psychiatric Assessment (PAPA). *Journal of the American Academy of Child and Adolescent Psychiatry, 45,* 538-549.

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry, 38,* 581-586.

Huebner, W. (2006). What to do when you worry too much: a kid's guide to overcoming anxiety. Washington, D.C.: Magination Press.

Kendall, P. C. (1992). *Anxiety disorders in youth: Cognitive-Behavioral Interventions*. Needham Heights, MA: Allyn & Bacon.

Kendall, P. C., Safford, S., Flannery-Schroeder, E., & Webb, A. (2004). Child anxiety treatment: Outcomes in adolescence and impact of substance use and depression at 7.4-year follow-up. *Journal of Consulting and Clinical Psychology, 62*, 276-287.

Klein, R. G. & Pine, D. S. (2002). Anxiety disorders in child and adolescent psychiatry: modern approaches. In: Rutter, M., Taylor, E., Hersov, L., (Eds.) *Children and Adolescents Psychiatry*. (pp. 486-509). London: Blackwell Scientific.

Manassis, K., Tannock, R., Garland, E. J., Minde, K., McInnes, A., & Clark, G. (2007). The sounds of silence: Language, cognition and anxiety in selective mutism. *Journal of the American Academy of Child and Adolescent Psychiatry, 46,* 1187-1195.

March, J, Parker, R, Sullivan, J, Stallings, P, & Conner, C. K. (1997). The Multidimensional Anxiety Scale for Children (MASC): Factor structure, reliability and validity. *Journal of the American Academy of Child and Adolescent Psychiatry, 36,* 554-565.

Merikangas, K. R. (2005). Vulnerability factors for anxiety disorders in children and adolescents. *Child and Adolescent Psychiatric Clinics of North America, 14*, 649-679.

Monga, S., Young, A, & Owens, M. (2009). Evaluating a cognitive behavioural group program for five to seven year old children: a pilot study. *Depression and Anxiety, 27,* 243-250.

Pine, D. (2007). Research Review: A neuroscience framework for pediatric anxiety disorders. *Journal of Child Psychology and Psychiatry, 48*, 631-648.

Scheeringa, M. S., Salloum, A., Arnberger, R. A., Weems, C. F., Amaya-Jackson, L., Cohen, J. A. (2007). Feasibility and effectiveness of cognitive-behavioral therapy for post traumatic stress disorder in preschool children: Two case reports. *Journal of Traumatic Stress, 20*, 631-636.

Van der Bruggen, C. O., Stams, G. J. J. M., & Boegels, S. M. (2008). Research Review: The relation between child and parent anxiety and parental control: a meta-analytic review. *Journal of Child Psychology and Psychiatry, 49,* 1257-1269.

Verhulst, F. C., van der Ende, J., Ferdinand, R. F., & Kasius, M. C. (1997). The prevalence of DSM-III-R diagnoses in a national sample of Dutch adolescents. *Archives of General Psychiatry, 54*, 329-336.

Vollmar, K. (1994). *Autogenes Training mit Kindern*. Munich: Graefe & Unzer Verlag. page 28.

Walkup, J. T., Albano, A. M., Piacentini, J., Birmaher, B., Compton, S. N., Sherill, J. T. et al. (2008). Cognitive behavioural therapy, Sertraline, or a combination in childhood anxiety. *New England Journal of Medicine 359*(26), 2753-2766.

Wittchen, H. U., Stein, M. B., & Kessler, R. C. (1999). Social fears and social phobia in a community sample of adolescents and young adults: Prevalence, risk factors and comorbidity. *Psychological Medicine, 29*, 309-323.

Upcoming in the August 2010 Theme Issue of the *Journal*:

Journeys to Engagement: Families as Partners for Child and Youth Mental Health, Keli Anderson & Jana Davidson (Guest Editors)

COMMENTARY

Infant Mental Health in Canada: Initiatives from British Columbia, Québec and Ontario

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In Canada and abroad, the prevention and perinatal intervention in early childhood have made significant headway in the last twenty years. Those advances have occurred in three main clinical fields: early childhood prevention, perinatal psychiatry and psychiatric intervention with children aged 0 to 5. This article is meant for colleagues, as an overview of these three clinical sectors; it will describe some networking and knowledge transfer initiatives organized by the different Canadian groups that work with early childhood.

Early childhood prevention

It is well established that prevention efforts for the most common pathologies in child and adult psychiatry – including personality disorders – require an early screening and intervention for children from families that are most at risk of abuse and neglect. Developmental psychopathology, which will be a key conceptual aspect in the DSM-V, has shown the strong influence of early determinants on vulnerable children's trajectories. Moreover, the most recent neurobiological data on brain development – including epigenetic factors – clearly demonstrate the importance of early intervention in children at risk (Cozolino, 2006).

This essential prevention work is mainly done by first-line professionals, Youth Centers and community organizations. Studies have shown that the trajectory of children at risk can be influenced by focused intervention programs, especially if they are intensive and multimodal (Olds, Sadler & Kitzman, 2007). Reducing symptoms of externalization in children has often been used as a benchmark for measuring the programs' efficiency, but other "intermediate" variables, e.g. attachment, have also been used. Early intervention on the parent-child attachment bond can protect the children at risk, and help them better cope with adversity in life. In general, it can be said that though these intervention programs have not had the dramatic effect expected, they are an essential component of the identification effort and the longitudinal studies that society has to offer, in a clinical and ethical manner, to children who are most at risk of developing mental health problems (Petitclerc & Tremblay, 2009).

A significant challenge to our prevention efforts is that 'early childhood' is defined differently by policy makers, early educationists, early childhood mental health professionals, infant psychiatrists, neonatologists and developmental paediatricians. This often implies that the availability and duration of services tend to vary greatly, which places many preschoolers and kindergartners at risk. Even if they are inseparable, infant physical health and mental health are not always considered on the same footing. A vision shared by many Canadian clinicians is for every infant to have access to mental health services without barriers of regional politics, transportation and fragmented services. Our dream is to ensure high grade preventive intervention to infants and also to fetuses.

Two significant initiatives based in Ontario address separate aspects of preventive work with vulnerable populations. Both are based in empirical findings and are using careful evaluation to assess their impact. Supporting Security is a group intervention developed by the Infant Psychiatry Program at the Hospital for Sick Children in Toronto, for groups of mothers and/or fathers and young babies (Wittenberg, in press). It focuses on fostering more adaptive attachment relationships. It integrates multiple theoretical approaches to help parents recognize the significance of infant observation, the development of the infant's mind and the influence of the parent's state of mind and behaviours on the baby's sense of security. At the present time it is being evaluated in five First Nation communities in northern Ontario where risks for attachment difficulties are seen as high.

The second initiative addresses the needs of one of our most vulnerable populations, infants and toddlers who come to the attention of the child protection system and the courts. These children may have particular challenges based on the potential for hereditary disorders, intrauterine experiences characterized by poor prenatal care and highly stressed mothers, and finally by adverse experiences and inadequate supports, abuse and neglect, after they are born. Infant Mental Health Promotion (IMP) at Sickkids in Toronto is developing plans to establish a specialty family court in the Peel Region near Toronto. This court will work by integrating the efforts of child protection and the legal system with infant mental health and social service systems. The goal is to improve support for infant mental health and development by using the power of the courts to make the more rapid and effective decisions based on what we know about developmental trajectories at this age.

Perinatal psychiatry

The perinatal period is a developmental crisis and a very delicate transitional period during which the bases for parental functioning are established. A great number of clinical and epidemiological studies have stressed the high prevalence of psychiatric disorders during pregnancy and post-partum (Pearlstein, 2008). It is established that various parental psychopathologies very frequently appear or are exacerbated at that time, giving rise to significant morbidities in parents and harming the parent-child relationship in a sometimes significant manner. Moreover, some 15 studies have shown the correlation between maternal stress during pregnancy and the risk of perturbations in the child development, even if this link is not linear and if symptoms are present at a sub-clinical level (Talge et al., 2007). Hence infant psychiatrists need to be leaders in disseminating information regarding infant mental health to all perinatal clinicians.

A particular aspect of perinatal psychiatry regards the use of psychotropic drugs during pregnancy, which has significantly increased over the past years. We do have to treat mothers presenting mood and anxiety disorders but we have to be aware of the risk of overly focusing on medical modes of interventions at the expense of other types of treatments (St-André and Martin, in press). Moreover, we need to make sure that we encourage perinatal clinicians to include families and infants in treatment.

Child psychiatry for children aged 0 to 5

General practitioners, pediatricians and first-line professionals detect the classical child psychiatry disorders listed in the DSM-IV (anxieties, ADHD and externalization symptoms) very early on. Early childhood psychiatry is still developing thanks to the creation of various specialized clinics and the systematic use of early childhood diagnosis with the DC:0-3R classification, a classification that notably includes early parent-child relationship difficulties on axis 2 (DC: 0-3R, 2005). The clinical work is growing with the observation of the young child (Lebel, 2009), the developmental research on attachment (Zeanah, 2009) and the work on the comorbid neurosensory disorders commonly found in young children (Reebye and Stalker, 2008; St-André et al., 2009). In Quebec, the collaboration with youth protection teams (specialized in maltreatment or adoption) and the means these teams have currently at their disposal for detecting early trauma or attachment disorders facilitate more productive interfaces that respect every one's mandate.

In their efforts to intervene with high-risk parents, particularly perinatally, the British Columbia group has been able to develop a parenting capacity tool that is applicable to mentally ill mothers and their infant, thus attempting to prevent developmental trajectories to preschool aggression.

Moreover, psychopharmacology takes increasingly more space in the early childhood clinical practice, which opens new therapeutic ways but raises questions about the risk of overprescribing medication for young children (Tellier & Boivin, 2009; Gauthier, 2009).

Training

In early childhood psychiatry, psychotherapeutic and systemic tools are diversified, but the resources available to first line professionals for applying these advanced methods often prove insufficient. Moreover, practices depend on the staff's expertise and on where the care is provided: university hospital, general hospital, mother-child unit in a university hospital, psychiatric institute. Practice conditions and care philosophy tend to vary from one location to another; emphasis on individual, parent-child or systemic aspects of treatment also will tend to vary. As a result these factors can isolate various approaches and slow down the dissemination of knowledge in universities and continuous medical education programs.

Several other issues stand out with regard to training, such as finding enough child psychiatrists who are committed to specializing in work with infants and toddlers. Another issue has to do with creating integrated multidisciplinary teams that can provide comprehensive assessment and treatment. Finally, more needs to be done to develop trained researchers who work within the field.

In Quebec, the different players are currently making efforts to collaborate and coordinate the continuing education programs in perinatality and early childhood. This complex initiative involves the departments of the four universities, the university institutes, the professional organisms and field organizations that organize workshops, courses, educational programs and congresses on perinatality and early childhood. In November 2010, the Birthing the World Conference (www.birthingtheworld.com) proposes an interdisciplinary formula of unprecedented scope, bringing together various disciplines and organizations – public health, obstetrics,

family practice, pediatrics, midwifery, nursing, infant mental health disciplines, community organizations – around a broad range of topics directly impacting perinatal and early childhood health.

The Infant Psychiatry Clinic at British Columbia's children's hospital is involved with training of infant mental health fellows on a regular basis for the past five years. In BC, we have emphasized the interdisciplinary aspect of infant mental health that is reflected in selection of our fellows that were chosen from varied disciplines of child psychiatry, infant development, anthropology and psychology/criminology. The training period is usually eighteen months and the candidate is expected to carry out clinical research of their interest. We have also trained many elective postgraduate trainees from overseas and nationally. These trainees typically spend a minimum of three months. In 2007, we developed a web based course and an experiential course designed for newly hired early mental health professionals in BC. This activity occurred in conjunction with the Ministry of Children and Families.

Training for infant mental health in Ontario, as in most other locales, occurs in an uncoordinated, organic fashion rooted in many different disciplines, sometimes occurring as a result of integrated efforts but often in more isolated ways. As interest and awareness have grown, some training has occurred within disciplines as disparate as early interventionists, social workers, psychologists, psychiatrists, child protection workers, etc. In some sites, disciplines are brought together to provide and to seek training (e.g. IMP, The Hospital for Sick Children, the Hincks-Dellcrest Institute). For example at the Hospital for Sick Children, monthly Infant Mental Health Rounds bring community agencies and the Hospital together to share knowledge about research and interventions. IMP has been a long term resource for a wide range of educational programs aimed primarily at front-line workers and has developed a program of study at York University. IMP also has a project underway to educate professionals who work in the areas of child protection and the courts. Work is being done to improve consultations specialists in infant mental health can provide to the courts (Wittenberg, in press). Strong efforts are being brought to developing educational access via the Internet and distance learning. Jean Wittenberg at the Hospital for Sick Children uses telepsychiatry to provide training for leaders of Supporting Security groups in remote aboriginal communities.

Research activities

The research climate in Canada has evolved positively in many areas of Canada for studying infants. A description of specific projects would be beyond the scope of this article. The Center for Excellence of Early Childhood Development, which is based at the Université de Montréal, works in partnership with Canadian and international health organizations, education and social services, non-governmental organizations, and other research organizations. It publishes regular bulletins summarizing key Canadian and international research activities dealing with infants and their families, including research done in Quebec in developmental psychopathology and perinatal mental health.

In BC, research networking has expanded thanks to the physical proximity of the Child and Family Research Institute, the Women's Research Institute and the Children's Hospital. The past and current research activities of this clinic have included studies collaborating with reproductive psychiatry, genetics, and criminology. Our clinic studied self-regulation capacities of young children and Regulation disorder with Sensory Processing disorder. Currently we are studying the home visitation impact on externalizing disorders, a longitudinal project studying the socio-emotional development of young children, and infant massage as a valid treatment option for depressed mother-infant dyads.

In Ontario, a great deal of research is carried out on infant development and even into specific areas of developmental disorders, the most predominant being autism and fetal alcohol syndrome. Some intervention evaluation has been carried out (e.g. Cohen et al, 1999; Cummings and Wittenberg, 2008) Much more needs to be done on clinical interventions but this type of research is notoriously difficult to carry out.

As knowledge grows and resources develop across Canada, some organizations dedicated to infant mental health have sprouted and are growing.

Revived by the international congress of the World Association for Infant Mental Health in Montreal in 2000 under Dr. Yvon Gauthier's presidency, l'*Association québécoise pour la santé mentale des nourrissons* (WAIMH-Quebec) has some 100 members and a circulation list of some 700 people and local organizations. It regroups health care staff, professionals and physicians involved with very young children; it is a forum that integrates the diverse clinical practices and circulates recent data on perinatal research. Thanks to the partnership it has established with *Autonomie Jeunes Familles,* the Association has an organizational basis that enables it to offer training program, scientific nights and annual days on topics as diverse as pregnancy, new parental practices, attachment, adoption, paternity or transcultural practices.

In Ontario, IMP, which grew out of a collaboration agreement between the Infant Psychiatry Program at the Hospital for Sick Children and many community agencies, has run workshops and conferences for many years. In collaboration with York University, IMP has run a university level program in infant mental health. It produces IMPrint, a quarterly bulletin for frontline infant mental health workers across disciplines. It has produced DVD's addressing attachment and emotional regulation. It is engaged in cross-Canada collaborations for education

and as mentioned above, in an initiative to support infants and toddlers at risk for abuse and neglect.

Infant programs in BC are affiliated with the World Association of Infant Mental Health (WAIMH), and represent the Western Canadian region. This division includes our infant mental health professional colleagues from Alberta and Saskatchewan. Whenever possible, we have tried to raise its profile by having conferences on an annual basis and an ongoing informal discussion group that meets every month.

Child psychiatrist and adult psychiatrists interested in this fascinating clinical field are invited to participate more actively in their provincial network activities. Those who wish to become members of the Western Canadian Association for Infant Mental Health can visit www.vcn.bc.ca/wcaimh or prebye@cw.bc.ca. The address of the Infant Mental Health Promotion in Ontario is imp.mail@sickkids.ca. Colleagues who wish to become members of the *Association québécoise pour la santé mentale des nourrissons* or have their names on the free circulation list can go to www.aqsmn.org.

References

Cohen, N. J. Muir, E., Lojkasek, M., Muir, R., Parker, C. J., Barwick, M., & Brown, M. (1999). Watch, wait, and wonder: Testing the effectiveness of a new approach to mother-infant psychotherapy. *Infant Mental Health Journal, 20*(4), 429–451.

Cummings, J. G. & Wittenberg, J. (2008). Supportive Expressive Therapy – Parent Child Version: An Exploratory Study. *Psychotherapy Theory, Research, Practice, Training, 45*(2), 148–164.

Cozolino, L. The neuroscience of human relationships: Attachment and the developing social brain. New York, Norton, 2006.

Diagnostic classification of Mental Health and Developmental Disorders in Infancy and Early Childhood: DC: 0-3R: Revised Edition. Washington, DC: Zero to Three Press, 2005.

Gauthier, Y. L'avenir de la psychiatrie de l'enfant. Érès, 2009.

Lebel, A. (2009). Ce corps où la pensée s'est logée. *Filigrane, 18*(1), 7-27.

Ogren, M. P., & Lombroso, P. J. (2008). Epigenetics: behavioral influences on gene function, Part I. Maternal Behavior Permanently Affects Adult Behavior in Offspring. *Journal of the American Academy of Child & Adolescent Psychiatry, 47*(3), 240-244.

Pearlstein, T. (2008). Perinatal depression: treatment options and dilemmas. *Journal of Psychiatry and Neuroscience, 33*(4), 302-318.

Petitclerc, A. & Tremblay, R. E. (2009). Childhood disruptive behaviour disorders: review of their origin, development and prevention. *Canadian Journal of Psychiatry, 54*(4), 222-31.

Reebye, P. & Stalker. Understanding regulation disorders of sensory processing: Management strategies for parents and professionals. London: Jessica Kingsley, 2008.

St-André, M. & Martin, B. Z. (in press). Psychopharmacological treatments during pregnancy: risks and benefits for the mother and her infant. In S Tyano, M Keren, H Herrman, J Cox (Eds), Parenting and mental health: a bridge between adult and infant psychiatry. London: Wiley-Blackwell.

St-André, M., Boisjoly, L., Émond-Nakamura, M., & Palardy, S. (2009). L'enfant déjoué par ses propres sens: le trouble de la régulation sensorielle. *Le Médecin du Québec, 44*(6), 35-39.

Talge, N. M., Neal, C., & Glover, V. (2007). The Early Stress, Translational Research and Prevention Science Network: Fetal and Neonatal Experience on Child and Adolescent Mental Health. Antenatal maternal stress and long-term effects on child neurodevelopment: how and why? *Journal of Child Psychology & Psychiatry, 48*(3/4), 245-261.

Tellier, G. & Boivin, J. (2009). Au-delà du diagnostic psychiatrique. *Le Médecin du Québec, 44*(6), 27-31.

Wittenberg, J. (in press a). Supporting Security: A Parent Group Intervention to Foster Secure Attachment between Parents and Infants.

Wittenberg, J. P. (in press b). Legal Assessment of Parenting Competency. In S. Tyano, M. Keren, H. Herman, & J. Cox (Eds.), Parenthood and Mental Health: A Bridge between Infant and Adult Psychiatry.

Zeanah, C. Z. Handbook of infant mental health, 3rd Ed., Guilford Press, 2009.

Commentaire

La santé mentale des très jeunes enfants au Canada: initiatives de la Colombie-Britannique, du Québec et de l'Ontario

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Le travail de prévention et d'intervention en périnatalité et en première enfance a connu au Canada, comme ailleurs dans le monde, des avancées importantes durant les vingt dernières années. Ces avancées sont survenues dans trois grands domaines cliniques: la prévention en première enfance, la psychiatrie périnatale et l'intervention pédopsychiatrique auprès des enfants de 0 à 5 ans. Ce texte vise à offrir aux collègues de la profession un bref survol de ces trois secteurs d'activité clinique ainsi qu'à décrire quelques efforts de réseautage et de transfert des connaissances organisés par différents groupes canadiens oeuvrant dans le secteur de la première enfance.

La prévention en première enfance

On sait aujourd'hui que les efforts de prévention des pathologies les plus fréquentes en pédopsychiatrie et en psychiatrie adulte – comme les troubles de la personnalité - exigent un travail de dépistage et d'intervention précoce auprès des enfants issus des familles les plus à risque d'abus et de négligence. La psychopathologie développementale, qui constituera un fondement conceptuel du DSM-V, a fait ressortir combien les déterminants précoces influencent les trajectoires d'enfants vulnérables. De plus, les données neurobiologiques les plus récentes sur le développement du cerveau - notamment sur les facteurs épigénétiques - viennent clairement appuyer l'importance d'intervenir le plus tôt possible dans la vie des enfants vulnérables (Cozolino, 2006).

Ce travail essentiel de prévention est effectué principalement par les intervenants des ressources de première ligne, des centres jeunesse et du réseau communautaire. Des études ont en effet démontré la possibilité d'influencer les trajectoires d'enfants à risque par des programmes d'intervention précoce ciblés, surtout si ces programmes sont offerts de manière intensive et multimodale (Olds, Sadler et Kitzman, 2007). La réduction de troubles extériorisés chez les enfants a souvent servi de balise pour mesurer l'efficacité de ces programmes, mais d'autres variables dites 'intermédiaires' comme l'attachement ont aussi été utilisées. Ainsi, la modification précoce du lien d'attachement parent-enfant peut constituer, pour les enfants vulnérables, un facteur de protection qui les aide à mieux faire face à l'adversité au cours de leur vie. Dans l'ensemble, on peut dire que si ces programmes d'intervention n'ont pas toujours eu les effets dramatiques escomptés, ils constituent une base essentielle du travail de repérage et de suivi longitudinal que la société doit offrir, cliniquement et éthiquement, aux enfants les plus à risque de développer différents problèmes de santé mentale (Petitclerc et Tremblay, 2009).

Les définitions différentes données par les politiciens, les éducateurs, les professionnels, les pédopsychiatres, les néonatologistes et les pédiatres développementaux au concept de petite enfance pose un problème. Cela implique souvent que la disponibilité et la durée des services varient grandement, ce qui met à risque les enfants fréquentant les garderies préscolaires ou les écoles maternelles. Bien que la santé physique et la santé mentale des jeunes enfants soient indissociables l'une de l'autre, elle ne sont pas toujours mises sur le même pied. De nombreux cliniciens canadiens sont de l'avis que tous les jeunes enfants doivent avoir accès à des services de santé mentale sans barrières régionales, distance ni fragmentation. Nous rêvons d'offrir des services préventifs d'intervention de qualité aux nourrissons et aux fœtus.

En Ontario, deux initiatives importantes traitent des différents aspects de la prévention auprès des populations vulnérables. Basées sur des constatations empiriques, elles estiment leur impact au moyen d'évaluations rigoureuses. *Supporting Security* est un groupe d'intervention créé par le programme de psychiatrie du nourrisson à l'*Hospital for Sick Children* de Toronto. Créé à l'intention des groupes de mères et/ou pères et des jeunes bébés (Wittenberg, sous presse), il veut favoriser de meilleures

relations d'attachement. Ses approches théoriques multiples aident les parents à reconnaître l'importance de l'observation du nourrisson, de l'éveil de l'esprit du bébé et de l'influence de l'état d'esprit et du comportement du parent sur le sentiment de sécurité du bébé. Ce programme est testé actuellement dans cinq communautés des Premières Nations dans le nord de l'Ontario où les enfants sont à risque de souffrir de problèmes d'attachement.

La deuxième initiative traite des besoins de l'une de nos populations les plus vulnérables, les nourrissons et les très jeunes enfants qui font l'objet d'un signalement aux organismes de protection de l'enfance et aux tribunaux. Ces enfants peuvent avoir des difficultés particulières en raison de maladies héréditaires ou d'expériences vécues *in utero* à la suite de négligence prénatale et de grand stress de la mère; après la naissance, à cause de mauvaises expériences, d'un manque de soutien, d'abus et de négligence. Le programme *Infant Mental Health Promotion (IMP)* de l'*Hospital for Sick Children* de Toronto envisage de présenter un projet de création d'un tribunal spécial pour la famille dans la région de Peel près de Toronto. Ce tribunal intégrera les efforts de protection de la jeunesse et de la justice aux services de santé mentale de l'enfant et aux services sociaux. Son objectif sera d'appuyer la santé mentale et le développement du nourrisson en utilisant le pouvoir des tribunaux pour accélérer et appliquer les décisions, en s'appuyant sur ce que nous savons actuellement de la trajectoire du développement des enfants à cet âge.

La psychiatre périnatale

La période périnatale constitue une crise développementale et une période charnière extrêmement sensible où s'établissent les bases du fonctionnement parental. De très nombreux travaux cliniques et épidémiologiques ont fait ressortir la prévalence élevée des troubles psychiatriques durant la grossesse et le post-partum (Pearlstein, 2008). On sait aussi que différentes psychopathologies parentales se déclenchent ou s'exacerbent trop souvent durant cette période, entraînant des morbidités importantes chez les parents ainsi que des perturbations potentiellement très significatives de la relation parent-enfant. De plus, une quinzaine d'études ont fait ressortir la corrélation entre le niveau de stress maternel durant la grossesse et le risque de perturbations du développement de l'enfant, même si ce lien n'est pas linéaire et que les manifestations se situent souvent à des niveaux sous-cliniques (Talge et al., 2007). Ainsi, les psychiatres du jeune enfant doivent diffuser l'information sur la santé mentale du nourrisson à l'ensemble des cliniciens qui oeuvrent en périnatalité.

Un enjeu particulier en psychiatrie périnatale concerne l'utilisation des psychotropes durant la grossesse, utilisation qui a connu une augmentation importante au cours des dernières années. La prescription des antidépresseurs durant la grossesse constitue donc une préoccupation majeure actuellement dans la pratique en psychiatrie périnatale. Nous devons traiter énergiquement les mères présentant des troubles de l'humeur ou des troubles anxieux durant la grossesse, mais nous devons aussi nous préoccuper cliniquement du risque de médicaliser les situations nécessitant principalement un travail psychothérapeutique (St-André et Martin, sous presse). De plus, nous devons nous assurer d'encourager les cliniciens en périnatalité à inclure les jeunes enfants et les familles à l'intérieur des plans de traitement proposés.

La pédopsychiatrie des enfants de 0-5 ans

Les médecins généralistes, les pédiatres et les équipes de première ligne repèrent de plus en plus précocement les problèmes pédopsychiatriques «classiques» du DSM-IV (troubles anxieux, TDAH et troubles extériorisés). Avec l'organisation de plusieurs cliniques spécialisées en première enfance et la systématisation du diagnostic précoce à l'aide du DC:0-3R (2005) - qui inclut désormais, à l'axe 2, le trouble de la relation parent-enfant - la pratique en pédopsychiatrie de la première enfance poursuit son développement. La clinique continue à s'enrichir par l'apport de l'observation du jeune enfant (Lebel, 2009), par la recherche développementale sur l'attachement (Zeanah, 2009) ainsi que par les travaux sur les aspects neurosensoriels souvent retrouvés en comorbidité chez le jeune enfant (Reebye and Stalker, 2008; St-André et al., 2009). Au Québec, la collaboration avec les centres jeunesse (équipes spécialisées en maltraitance, équipes d'adoption) et les moyens dont ces organismes disposent maintenant pour repérer les troubles précoces liés à l'attachement ou au traumatisme facilitent aussi des interfaces plus productives, qui respectent les mandats de chacun.

Désireux d'intervenir auprès des parents qui présentent un risque élevé, notamment au niveau périnatal, le groupe de Colombie-Britannique a mis au point un outil d'éducation parentale qui peut être utilisé par les mères souffrant de maladie mentale et par leur nourrisson, ce qui évitera les comportements agressifs au niveau préscolaire.

De plus, la psychopharmacologie occupe une place de plus en plus importante dans la pratique clinique en première enfance, ce qui offre certes des pistes thérapeutiques nouvelles mais soulève aussi des interrogations sur les risques de surprescription de médicaments chez les jeunes enfants (Tellier et Boivin, 2009; Gauthier, 2009).

Formation

En psychiatrie du jeune enfant, les moyens psychothérapeutiques et systémiques se sont diversifiés, même si la formation dont disposent les ressources de première ligne pour appliquer ces méthodes de pointe s'avère souvent, dans les faits, insuffisante. De plus, les pratiques dépendent de l'expertise du personnel en place de même que du lieu de dispensation des soins: CHU, hôpital général, CHU mère-enfant, Institut psychiatrique. Les modes de pratique et les philosophies de soins tendent à varier d'un lieu à un autre avec un accent plus ou moins variable sur les aspects individuels, mère-

enfant ou systémiques, ce qui peut compartimenter différentes pratiques et freiner la diffusion des connaissances dans les programmes universitaires et les programmes de formation médicale continue.

Plusieurs problèmes ressortent en matière de formation, comme recruter suffisamment de pédopsychiatres désireux de se spécialiser dans le traitement des nourrissons et des jeunes enfants. Un autre problème est celui posé par la création d'équipes multidisciplinaires intégrées capables d'évaluer et de traiter au niveau global. Enfin, il faut faire davantage pour former des chercheurs dans cette discipline.

Des efforts de collaboration et de coordination de la formation continue en première enfance ont présentement lieu au Québec entre les différents partenaires impliqués. Cette démarche complexe implique les départements universitaires des quatre facultés de médecine, les instituts universitaires, les organismes professionnels ainsi que les organismes terrain dans la planification d'ateliers, de séries de cours, de journées de formation continue et de congrès en périnatalité et en première enfance. En novembre 2010, la conférence Enfanter le Monde (www.enfanterlemonde.com) proposera une formule interdisciplinaire d'envergure inédite, qui permettra de rassembler les différentes disciplines – santé publique, obstétrique, médecine familiale, pédiatrie, groupes sage-femmes, nursing, santé mentale du nourrisson, groupes communautaires – autour des grandes questions et enjeux en santé périnatale et en santé infantile précoce.

La clinique de psychiatrie du nourrisson du *British Columbia's Children's Hospital* forme régulièrement des boursiers depuis cinq ans. En Colombie-Britannique nous avons mis l'accent sur l'aspect interdisciplinaire de la santé mentale du nourrisson. C'est pourquoi les boursiers que nous choisissons proviennent de disciplines aussi variées que la pédopsychiatrie, le développement du nourrisson, l'anthropologie et la psychologie/criminologie. La période de formation dure généralement dix-huit mois, et le candidat doit faire de la recherche clinique sur le sujet de son choix. Nous avons aussi formé de nombreux stagiaires de deuxième et troisième cycles venant de l'étranger ou d'autres provinces ou territoires canadiens. Ce stage dure au moins trois mois. En 2007 nous avons conçu un cours par Internet et un cours expérimental destiné aux professionnels de la santé mentale de la petite enfance qui viennent juste d'être engagés en Colombie-Britannique. Cette activité est menée conjointement avec le ministère de l'Enfance et de la Famille.

En Ontario, comme presque partout ailleurs, la formation en santé mentale du nourrisson se fait sans plan directeur très précis, en s'inspirant de diverses disciplines, qui regroupent leurs efforts, mais plus souvent de manière isolée. L'intérêt et la conscientisation s'étant développés, des programmes de formation ont été organisés pour les intervenants en petite enfance, les travailleurs sociaux, les psychologues, les psychiatres, les services de protection de l'enfance, etc. Dans certains endroits, les disciplines sont réunies afin d'offrir ou de suivre des formations (ex.: IMP, *Hospital for Sick Children, Hincks-Dellcrest Institute*). À l'*Hospital for Sick Children,* par exemple, les conférences mensuelles sur la santé mentale du nourrisson rassemblent les organismes communautaires et du personnel de l'hôpital, qui partagent les connaissances sur les activités de recherche et les interventions. L'IMP est une ressource à long terme pour un grand nombre de programmes éducatifs destinés principalement au personnel de première ligne; il offre un programme d'étude à York University. Il a aussi un projet en cours destiné aux professionnels qui travaillent en protection de l'enfance et aux tribunaux (Wittenberg, sous presse). Il s'efforce de développer l'accès aux programmes de formation par Internet et à distance. À l'*Hospital for Sick Children,* Jean Wittenberg utilise la télépsychiatrie pour former les dirigeants des groupes d'intervention de *Supporting Security* dans les communautés reculées.

Recherche

Au Canada, la recherche sur le nourrisson a évolué de manière positive dans de nombreux secteurs. Décrire chaque projet n'entre pas dans le cadre de cet article. À l'Université de Montréal, le Centre d'excellence pour le développement des jeunes enfants collabore avec les organismes de santé canadiens et internationaux, les organismes non gouvernementaux, les services éducatifs, les services sociaux et d'autres organismes de recherche. Il publie régulièrement des bulletins qui présentent les activités de recherche clés, au Canada et à l'extérieur, sur les nourrissons et leur famille, ainsi que les travaux de recherche menés au Québec en psychopathologie développementale et en santé mentale périnatale.

En Colombie-Britannique le réseau des chercheurs s'est étendu grâce à la proximité du *Child and Family Research Institute,* du *Women's Research Institute* et du *Children's Hospital.* Les travaux de recherche passés et présents de notre clinique ont porté sur des études de collaboration avec la psychiatrie reproductive, la génétique et la criminologie. Notre clinique a étudié les capacités d'autorégulation des jeunes enfants et les troubles de la régulation accompagnés du trouble de traitement sensoriel. Nous étudions actuellement l'incidence des visites à domicile sur les troubles extériorisés, le projet d'étude longitudinale du développement socio-émotionnel des jeunes enfants et le massage des enfants comme traitement valable de la dépression dans la dyade mère-nourrisson.

En Ontario, de nombreux travaux de recherche portent sur le développement du nourrisson et même sur certains troubles développementaux, comme l'autisme et l'ensemble des troubles causés par l'alcoolisation foetale. Certaines interventions ont été évaluées (ex.: Cohen et al., 1999; Cummings et Wittenberg, 2008). Il reste encore beaucoup à faire en matière d'interventions cliniques, mais ce type de recherche est particulièrement difficile à mener à bien.

De nouveaux organismes voués à la santé mentale du nourrisson ont apparu et grandi à mesure que les connaissances et les ressources augmentaient.

Ravivée par le congrès international de la World Association for Infant Mental Health tenu à Montréal en 2000 sous la présidence du Dr Yvon Gauthier, l'Association québécoise pour la santé mentale des nourrissons (WAIMH-Quebec) compte près de 100 membres et dispose d'une liste de diffusion de près 700 personnes et organisations. Regroupant des intervenants, des professionnels et des médecins impliqués auprès des très jeunes enfants, l'association propose un lieu d'échange qui vise à intégrer la diversité des pratiques cliniques et à diffuser les données récentes issues de la recherche dans le champ périnatal. À travers un partenariat établi avec la Corporation Autonomie Jeunes Familles, l'Association a pu trouver une base organisationnelle qui lui permet maintenant d'offrir des formations, des soirées scientifiques et des journées annuelles sur des thèmes variés tels la grossesse, les nouvelles pratiques parentales, l'attachement, l'adoption, la paternité, ou les pratiques transculturelles.

En Ontario l'IMP qui résulte de la collaboration entre le programme de psychiatrie du nourrisson de l'*Hospital for Sick Children* et de nombreux organismes communautaires organise des ateliers et des conférences depuis de nombreuses années. Il a mis sur pied un programme de niveau universitaire sur la santé mentale du nourrisson en collaboration avec *York University*. Il publie *IMPrint,* bulletin trimestriel destiné aux intervenants de première ligne en santé mentale du nourrisson dans plusieurs disciplines. Il a produit des DVD sur l'attachement et la régulation émotionnelle. Il a établi des collaborations dans tout le Canada pour l'éducation et, comme indiqué plus haut, dans le cadre de son initiative de soutien des nourrissons et très jeunes enfants à risque d'abus ou de négligence.

En Colombie-Britannique les programmes sur les nourrissons sont affiliés à la *World Association of Infant Mental Health (WAIMH),* et représentent l'Ouest du Canada, ce qui inclut nos collègues d'Alberta et de Saskatchewan. Nous nous sommes efforcés, chaque fois que cela a été possible, d'élever notre profil en organisant des conférences annuelles et en organisant tous les mois des groupes de discussions informels.

Les pédopsychiatres et les psychiatres pour adultes intéressés par ce champ clinique passionnant sont invités à s'impliquer plus activement au sein de leur réseau provincial. Les personnes qui désirent devenir membre de la *Western Canadian Association for Infant Mental Health* peuvent contacter le www.vcn.bc.ca/wcaimh/ par prebye@cw.bc.ca. Les coordonnées de l'*Infant Mental Health Promotion* en Ontario sont le imp.mail@sickkids.ca. Enfin, les personnes intéressées à devenir membre ou s'inscrire gratuitement à la liste de diffusion de l'Association québécoise pour la santé mentale des nourrissons peuvent contacter le www.aqsmn.org.

Bibliographie

Cohen, N. J. Muir, E., Lojkasek, M., Muir, R., Parker, C. J., Barwick, M., & Brown, M. (1999). Watch, wait, and wonder: Testing the effectiveness of a new approach to mother-infant psychotherapy. *Infant Mental Health Journal, 20*(4), 429–451.

Cummings, J. G. & Wittenberg, J. (2008). Supportive Expressive Therapy – Parent Child Version: An Exploratory Study. *Psychotherapy Theory, Research, Practice, Training, 45*(2), 148–164.

Cozolino, L. The neuroscience of human relationships: Attachment and the developing social brain. New York, Norton, 2006.

Diagnostic classification of Mental Health and Developmental Disorders in Infancy and Early Childhood: DC: 0-3R: Revised Edition. Washington, DC: Zero to Three Press, 2005.

Gauthier, Y. L'avenir de la psychiatrie de l'enfant. Érès, 2009.

Lebel, A. (2009). Ce corps où la pensée s'est logée. *Filigrane, 18*(1), 7-27.

Ogren, M. P., & Lombroso, P. J. (2008). Epigenetics: behavioral influences on gene function, Part I. Maternal Behavior Permanently Affects Adult Behavior in Offspring. *Journal of the American Academy of Child & Adolescent Psychiatry, 47*(3), 240-244.

Pearlstein, T. (2008). Perinatal depression: treatment options and dilemmas. *Journal of Psychiatry and Neuroscience, 33*(4), 302-318.

Petitclerc, A. & Tremblay, R. E. (2009). Childhood disruptive behaviour disorders: review of their origin, development and prevention. *Canadian Journal of Psychiatry, 54*(4), 222-31.

Reebye, P. & Stalker. Understanding regulation disorders of sensory processing: Management strategies for parents and professionals. London: Jessica Kingsley, 2008.

St-André, M. & Martin, B. Z. (in press). Psychopharmacological treatments during pregnancy: risks and benefits for the mother and her infant. In S Tyano, M Keren, H Herrman, J Cox (Eds), Parenting and mental health: a bridge between adult and infant psychiatry. London: Wiley-Blackwell.

St-André, M., Boisjoly, L., Émond-Nakamura, M., & Palardy, S. (2009). L'enfant déjoué par ses propres sens: le trouble de la régulation sensorielle. *Le Médecin du Québec, 44*(6), 35-39.

Talge, N. M., Neal, C., & Glover, V. (2007). The Early Stress, Translational Research and Prevention Science Network: Fetal and Neonatal Experience on Child and Adolescent Mental Health. Antenatal maternal stress and long-term effects on child neurodevelopment: how and why? *Journal of Child Psychology & Psychiatry, 48*(3/4), 245-261.

Tellier, G. & Boivin, J. (2009). Au-delà du diagnostic psychiatrique. *Le Médecin du Québec, 44*(6), 27-31.

Wittenberg, J. (in press a). Supporting Security: A Parent Group Intervention to Foster Secure Attachment between Parents and Infants.

Wittenberg, J. P. (in press b). Legal Assessment of Parenting Competency. In S. Tyano, M. Keren, H. Herman, & J. Cox (Eds.), Parenthood and Mental Health: A Bridge between Infant and Adult Psychiatry.

Zeanah, C. Z. Handbook of infant mental health, 3rd Ed., Guilford Press, 2009.

Psychopharmacology

First do no Harm: Promoting an Evidence-Based Approach to Atypical Antipsychotic use in Children and Adolescents

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Abstract

Objectives: To review the evidence for efficacy and metabolic effects of atypical antipsychotics (AAPs), and to propose a metabolic monitoring protocol for AAP use in children and adolescents. **Methods:** A PubMed search was performed to obtain all studies related to efficacy, metabolic side-effects, and monitoring in those less than 18 years of age. **Results:** There are no approved indications for AAP use in children and adolescents in Canada. Based on US Food and Drug Administration approvals and a review of randomized controlled trials, we identified 7 indications for AAP use that target specific symptoms in youth including schizophrenia, bipolar I disorder, autism, pervasive developmental disorder, disruptive behaviour disorders (including conduct disorder and ADHD), developmental disabilities and Tourette Syndrome. A wide range of metabolic effects including weight gain, increased waist circumference, dysglycemia, dyslipidemia, hypertension, elevated hepatic transaminases and prolactin levels have been reported. We have developed a proposal for metabolic monitoring that includes anthropometric measurements and laboratory testing at baseline and appropriate intervals thereafter. **Conclusion:** There is an urgent need for national clinical practice guidelines that provide, not only appropriate treatment algorithms for AAP-use based on evidence, but also address metabolic monitoring and subsequent management of complications in this vulnerable population.

Key words: atypical antipsychotics, children, adolescents, efficacy, metabolic, monitoring

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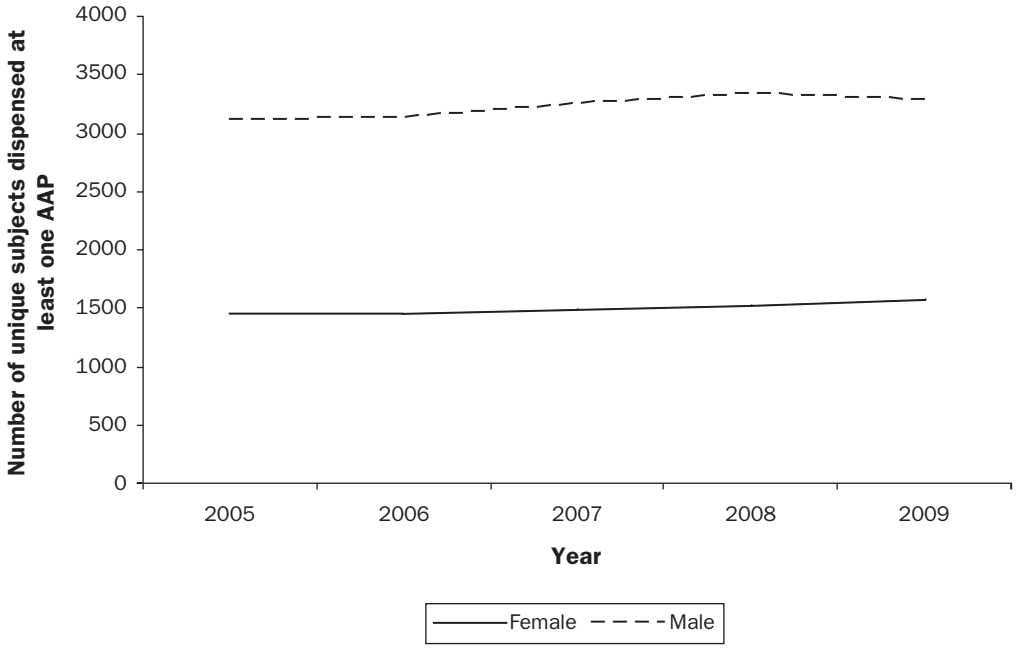
Introduction

Second-generation or atypical antipsychotics (AAPs) have steadily replaced first-generation or typical antipsychotics since their introduction in the late 1980's. In parallel with rising adult prescription rates (Hermann et al., 2002; Mond, Morice, Owen, & Korten, 2003), there is a growing body of literature demonstrating that prescriptions of AAPs to children and adolescents have increased substantially over the last decade. In the United States (US), the number of office-based visits by youth that included an AAP prescription increased 6-fold from 201,000 in 1993 to 1,224,000 in 2002 (Olfson, Blanco, Liu, Moreno, & Laje, 2006). A more recent study (Domino & Swartz, 2008) reported that the average age of AAP users declined from 49 years of age to 43 years of age in the US, as a result of a shift in prescriptions from the elderly towards youth, who accounted for 15% of all AAP prescriptions in 2005, doubled from 7% in 1996. While similar national data are not available for Canada, prescriptions of AAPs for children under 14 years old increased 10-fold between 1997 and 2007 in British Columbia (Therapeutics initiative, 2009). Consistent with US data (Cooper et al., 2006; Olfson et al., 2006), BC Pharmacare data (Pharmacare, 2009) indicate that prescriptions of AAPs are more common in boys than in girls (Figure 1a), with a substantial number of children under age 12 receiving these medications (Figure 1b). In a recent Canadian survey of child psychiatrists and developmental pediatricians (Doey, Handelman, Seabrook, & Steele, 2007), 12% of all AAP prescriptions were for children 8 years of age and under, which is of particular concern.

Reasons that may have contributed to the increased prescription rates of AAPs in youth include the following: increasing evidence that illnesses such as bipolar disorder (Geller, Tillman, & Bolhofner, 2007) and schizophrenia (Addington & Rapoport, 2009) may present in childhood; arguable overgeneralization of clinical trial data from efficacy trials in adults and sub-populations of children and youth; and, most importantly, a perception of an improved side-effect profile particularly with respect to extrapyramidal symptoms (EPS) including tardive dyskinesia (Correll, Leucht, & Kane, 2004; Kane, 2001) than the first-generation or typical antipsychotic medications. However, in adults, there has been a clear link between AAPs and metabolic adverse effects for some time. Many studies in adults confirm that AAPs can precipitate weight

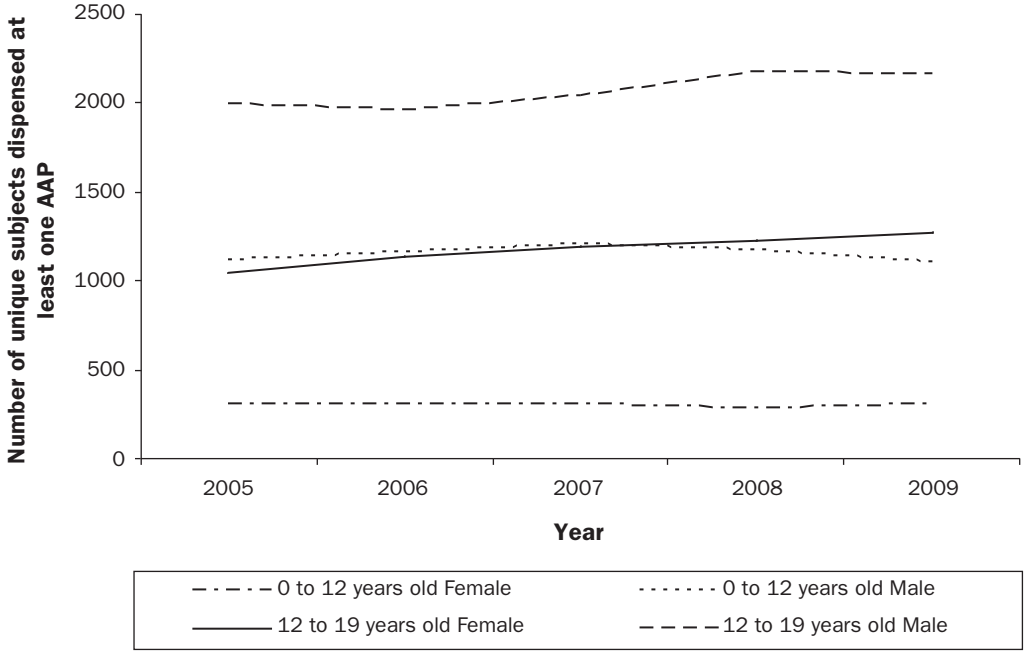
Figure 1a. Sex distribution of atypical antipsychotic prescriptions in youth ≤ 19 years



gain (Tandon & Halbreich, 2003), hyperlipidemia (Meyer & Koro, 2004) and insulin resistance (Nasrallah & Newcomer, 2004; Wu et al., 2006), and that their use is associated with development of metabolic syndrome (Meyer, Koro, & L'Italien, 2005; Shirzadi & Ghaemi, 2006) and type 2 diabetes (Cohen, 2004; Henderson, 2002; Melkersson & Dahl, 2004; Newcomer, 2005).

There have been recent reports (Correll, 2009; Panagiotopoulos, Ronsley, & Davidson, 2009) of similar metabolic effects in children and adolescents. Of concern, there are data (Doey et al., 2007) indicating that a substantial percentage of physicians prescribe these medications for symptoms and diagnoses that have not been previously studied [e.g., poor frustration tolerance

Figure 1b. Distribution of atypical antipsychotic prescriptions by age group and sex



(75%), impulsivity (65%), obsessive-compulsive disorder (52%), insomnia (36%), post traumatic stress disorder (34%), depression (30%), and eating disorders (26%)]. These observations, combined with the increase in AAP prescription rates, indicate that there is an urgent need to systematically review both the existing evidence for use of AAPs, and their metabolic effects.

Therefore, our objectives with regard to children and adolescents under 18 years of age (collectively referred to as youth) are to summarize the evidence for efficacy of AAPs, review the existing literature assessing the metabolic effects of AAPs, and propose a protocol for metabolic monitoring in youth prescribed AAPs.

Methods

Efficacy

A PubMed search was performed to obtain all efficacy studies using the following key words: children or adolescents or youth or pediatric; atypical or second generation antipsychotics; aripiprazole or clozapine or olanzapine or paliperidone or quetiapine or risperidone or ziprasidone; efficacy; safety; indications. Only randomized controlled trials (RCTs) with a primary outcome of efficacy of one or more AAP conducted in individuals under 18 years of age were included. Case reports, review articles and open label trials assessing indications for AAP efficacy were not included due to space limitations. Information about current US Food and Drug Administration (FDA) approvals for children was obtained from the FDA website (Food and Drug Administration, 2010). Information about current Health Canada approvals was obtained from the Health Canada website (Health Canada, 2009).

Metabolic effects

A PubMed search was performed to obtain all studies assessing metabolic side effects using the following key words: children or adolescents or youth or pediatric; atypical or second generation antipsychotics; aripiprazole or clozapine or olanzapine or paliperidone or quetiapine or risperidone or ziprasidone; weight gain, obesity, dyslipidemia, hypercholesterolemia, hypertriglyceridemia, hyperglycemia, diabetes, insulin resistance, hypertension or blood pressure, hepatic transaminases, metabolic side effects, monitoring. Given that rare side effects may not be identified from randomized clinical trials and that regulatory agencies have relied on case series of serious adverse events (Gitlin, Julie, Spurr, Lim, & Juarbe, 1998; Kohlroser, Mathai, Reichheld, Banner, & Bonkovsky, 2000; Malik, Prasad, Saboorian, Thiele, & Malet, 2000) as a basis for removing a drug from the market to protect patient safety, all studies with a primary or secondary outcome measure of the above metabolic side effects conducted in individuals under 18 years of age were included. Studies were also included for review if they contained guidelines for monitoring of metabolic side effects in AAP-treated youth or adults. Additional articles were obtained from references and poster publications. Studies pertaining to cardiovascular disease (with the exception of hypertension/blood pressure), thyroid, parathyroid, or gonadal effects are beyond the scope of this review.

Classification

Articles were classified into level of evidence categories based on the Centre for Evidence Based Medicine criteria (Cache Limited, 2010).

Results

Efficacy

A total of 42 RCTs assessing efficacy of AAPs in children and adolescents were identified. Of these, 41 RCTs demonstrated a positive outcome, and one double-blind, placebo controlled RCT of quetiapine (DelBello et al., 2009) for symptoms of depression in adolescents 12-18 years of age with bipolar I disorder demonstrated no improvement.

While there are currently no Health Canada approved indications, there are several FDA approved indications for AAP use in children and adolescents. Table 1 summarizes the target symptoms, and mental health conditions, including the specific age ranges, for which there is either FDA approval or RCT evidence for use in this population.

Metabolic Effects

A total of 24 studies were identified using our search criteria, and are presented in Table 2.

Absolute Weight Gain

Compared to adults, AAPs have been found to produce significantly greater weight gain in children and do so within a very short time frame (Correll & Carlson, 2006; Fleischhaker et al., 2007; Penzner et al., 2009; Ratzoni et al., 2002). The magnitude of absolute weight gain varies between AAPs, with olanzapine producing the greatest weight gain (Correll et al., 2009; Fleischhaker et al., 2007; Fraguas et al., 2008; Patel, Kistler, James, & Crismon, 2004). Correll reported significant weight gain within 4 weeks of AAP initiation (average weight gain: olanzapine 4.52 kg; quetiapine 2.87 kg; risperidone 2.72 kg; aripiprazole 1.61 kg), that remained significantly higher than that seen in untreated youth after 12 weeks of treatment (olanzapine 8.5 kg; quetiapine 6.1 kg; risperidone 5.34 kg; aripiprazole 4.4 kg). Due to insufficient enrollment, the ziprasidone group was not analyzed. Extreme weight gain (defined as an increase of ≥7% from initial baseline weight) was observed in 84% of olanzapine-treated, 56% of quetiapine-treated, 64% of risperidone-treated and 58% of aripiprazole-treated patients (Correll et al., 2009; Ratzoni et al., 2002). Of note, one study (Fleischhaker et al., 2007) demonstrated that olanzapine and risperidone, but not clozapine, caused a disproportionately higher weight gain in children and adolescents compared to adults. There are limited long-term studies of AAPs in which weight gain is a primary or secondary

Table 1. Evidence supporting atypical antipsychotic use for specific indications

Antipsychotic	Indication	Target symptoms	Age range (years)	Evidence
Aripiprazole	Autism§	Irritability	6-17	Owen et al., 2009, Marcus et al., 2009.
	Bipolar I Disorder§	Manic or mixed episodes	8-17 (10-17)§	Findling et al., 2009, Tramontina et al., 2009.
	Schizophrenia§	Positive and negative symptoms	13-17	Findling et al., 2008.
Clozapine	Schizophrenia	Psychosis	8-18	Sporn et al., 2007.
Olanzapine	Bipolar I Disorder§	Manic or mixed episodes (acute and maintenance treatment)	13-17	Tohen et al., 2007
	PDD	Aggression	6-14	Hollander et al., 2006.
	Schizophrenia§	Positive and negative symptoms	13-17	Kryzhanovskaya et al., 2009.
Quetiapine	Schizophrenia§	Positive and negative symptoms	13-17	www.clinicaltrials.gov
	Bipolar I Disorder§	Manic episodes	12-18 (10-17)§	DelBello et al., 2006, Del Bello et al., 2002.
	Conduct disorder	Aggression	12-17	Connor et al., 2008.
Risperidone	Autism§	Irritability, Aggression, Communication, Hyperactivity, affect regulation	2-18 (5-16)§	Aman et al., 2008, Aman et al., 2005, McCracken et al., 2005, McCracken et al., 2002, McDougle et al., 2005, Miral et al., 2008, Nagaraj et al., 2006, Pandina et al., 2007, Shea et al., 2004.
	Bipolar I Disorder§	Manic or mixed episodes	10-17	www.clinicaltrials.gov, www.clinicaltrials.gov (Johnson et al., 2008), DelBello M et al., 2005, Wilson et al., 2009.
	Developmental Disabilities, Subaverage IQ	Aggression, SIB	6-18	Buitelaar et al., 2001, Zarcone et al., 2001.
	Disruptive Behaviour Disorders (including ADHD)	Conduct problems, Irritability, Hyperactivity, Aggression	4-14	Aman et al., 2009, Aman et al., 2002, Armenteros et al., 2007, Biederman et al., 2006, Correia Filho et al., 2005, Findling et al., 2004, Reyes et al., 2006, Snyder et al., 2002.
	Schizophrenia§	Positive and negative symptoms	13-17	Haas et al., 2009.
	Tourette Syndrome	Tics	7-17	Bruggeman et al., 2001, Gaffney et al., 2002, Gilbert et al., 2004, Scahill et al., 2003.
Ziprasidone	Bipolar I Disorder	Mania	10-17	DelBello et al., 2008.
	Tourette Syndrome	Tics	7-17	Salle et al., 2000.

§ - FDA Approved Indication

outcome measure. However, an RCT (Arango et al., 2009) comparing olanzapine and quetiapine in adolescent patients with a first psychotic episode, reported the mean incremental weight gain to be 15.5 kg and 5.4 kg respectively during the 6 month study. Although it has been argued that youth may be more vulnerable to AAP-induced weight gain than adults, recent work (Correll et al., 2009) challenges this hypothesis by suggesting that the greater weight gain in youth is related to less frequent AAP exposure compared with most adult samples.

Body mass index (BMI)

Because childhood and adolescence involves continuing increases in height and weight as part of normal growth, body mass index (BMI: weight (kg)/height (m)^2) normalized for age and sex (BMI *z*-score) provides a more accurate method with which to assess the appropriateness of absolute weight gain in the context of linear growth. For children, overweight is defined as a BMI ≥85th percentile and obese as ≥95th percentile for age and sex (Center for Disease Control and Prevention, 2007) (corre-

Table 2. Summary of studies assessing metabolic effects of antipsychotics as a primary outcome

Type of Study (Level of evidence)	AP	Length of study (weeks)	Study sample (N, %male, mean age [years])	Metabolic Outcomes	Reference
Randomized controlled trial (1a)	R	8	N=101, 81% 8.8	prolactin	Anderson, et al., 2007.
Prospective open label (1b)	A, O, Q, R	12	N=272, 57%; 13.9	weight, weight%, BMI, zBMI, fat mass, waist circumference, lipids, triglycerides, glucose, insulin	Correll, et al., 2009.
Prospective open label (1b)	A, C, O, Q, R, Z	12	N=153; 77.8%; 11.3	body composition parameters, lipids, glucose, insulin, metabolic syndrome	Penzner, et al., 2009.
Prospective open label (1b)	R	4	N=120, 76% 8.56	alanine aminostransferase, aspartate aminotransferase, gamma glutamyltransferase, alkaline phosphatase	Erdogan, et al., 2008.
Open label or double blind (1b)	C, H, O	6-8	N=57, 60% C: 14.2, H: 13.8, O: 14.5	prolactin	Alfaro, et al., 2002.
Cross sectional open label (2b)	Q, R	N/A	N=194, 77% 11.6	zBMI, BMI, waist circumference, glucose, insulin, lipids, metabolic syndrome	Weiss, et al., 2009.
Naturalistic longitudinal (2b)	O, Q, R	24	N=66, 66.6% 15.2	zBMI, lipids, glucose, thyroid stimulating hormone	Fraguas, et al., 2008.
Prospective open label (2b)	C, O, R	6	N=45, 69% C: 17.4, O: 15.7, R: 15.2	weight, BMI, zBMI	Fleischhaker, et al., 2007.
Prospective open label (2b)	R	24	N=63, 78% 8.6	weight, leptin	Martin, et al., 2004.
Prospective open label (2b)	H, O, R	12	N=50, 62% H: 17.3, O: 17.0, R: 17.1	weight, BMI	Ratzoni, et al., 2002.
Prospective open label (2b)	R	10	N=25, 88% 4.10	prolactin	Masi, et al., 2001.
Prospective open label (2b)	C, H, O	6	N=35, 63% 14.1	prolactin	Wudarsky, et al., 1999.
Retrospective chart review (2b)	C, O, Q, R	N/A	N=432, 62% treated: 13.7, control: 13.9	zBMI, glucose, lipids, blood pressure, metabolic syndrome	Panagiotopoulos, et al., 2009.
Retrospective chart review (2b)	R	151	N=99, 88% normal BMI:11.9, high BMI:11.3	weight, BMI, zBMI, blood pressure, waist circumference, lipids, glucose, insulin	Calarge, et al., 2009.
Retrospective cohort design (2b)	A, O, Q, R, Z	N/A	N=4140, 68% 10.4	BMI, type 2 diabetes, dyslipidemia, hypertension, cardiovascular disease, cerebrovascular/orthostatic hypotension adverse events	McIntyre, et al., 2008.
Retrospective chart review (2b)	A, C, O, Q, R, Z	4	N=95, 57% 14	BMI, lipids	Patel, et al., 2007.
Cross sectional study (2b)	O, Q, R	1-127	N=126, 61.9% 15.62	glucose, lipids, BMI, prolactin, thyroid stimulating hormone, glycosylated hemoglobin A1c, blood pressure	Laita, et al., 2007.
Retrospective chart review (2b)	O, Q	4-5	N=103, 48% O: 14.2, Q: 14.4	weight, BMI	Patel, et al., 2004.
Retrospective chart review (2b)	R	34	N=22, 86% 12.8	weight, triglycerides, total cholesterol	Martin, et al., 2002.
Retrospective chart review (2b)	R	24	N=37, 76% 12.5	weight, BMI, tanner staging, zweight	Martin, et al., 2000.
Retrospective chart review (2b)	R	106	N=38, 84% 10.6	aspartate aminotransferase, alanine aminotransferase, total bilirubin, weight	Szigethy, et al., 1999.
Case series (3a)	R	N/A	N=3, 66% cases aged 15, 17, 18	prolactin	Madhusoodanan, et al., 2006.
Letter to editor (3b)	R	N/A	N=12, 58% 13.5	diabetes mellitus	Koller, et al., 2004.
Letter to editor (3b)	O, C	N/A	20, 55% cases age range: 13-18	hyperglycemia	Koller, et al., 2001.

Legend: A: Aripiprazole; **AP:** Antipsychotic; **C:** Clozapine; **H:** Haloperidol; **N/A:** not available; **O:** Olanzapine; **Q:** Quetiapine; **R:** Risperidone; **Z:** Ziprasidone
Lipids: total cholesterol, triglycerides, HDL-cholesterol, LDL-cholesterol
R: Risperidone; **Z:** Ziprasidone; **zBMI:** body mass index standardized for age and sex; **zweight:** weight standardized for age and sex

sponding to BMI *z*-scores of 1.04 and 1.64, respectively). An absolute increase in BMI *z*-score of ≥ 0.5 has been proposed as significant because this degree of growth-adjusted weight gain was found to increase the risk for metabolic syndrome by more than 50% (Correll & Carlson, 2006; Weiss et al., 2004). Within 12 weeks of treatment, Correll reported (Correll et al., 2009) an increase in BMI *z*-score of > 0.5 in 62% of olanzapine-treated, 36% of quetiapine-treated, 47% of risperidone-treated, and 22% of aripiprazole-treated youth. Overall, 17% of these patients had become overweight or obese. In the short-stay, child and adolescent psychiatric emergency (CAPE) unit at BC Children's Hospital (BCCH), cross-sectional prevalence rates of obesity/overweight were more than double in AAP-treated youth (57%) compared with AAP-naïve youth (23%) (Panagiotopoulos et al., 2009). This finding is consistent with Patel (Patel et al., 2007), who reported an overall prevalence of 68% obesity/overweight in their inpatient sample which was 2.2 times greater than a sample from the general population (31%).

Waist Circumference

Waist circumference has been used as a surrogate measure of central adiposity, and has been shown to be a strong predictor of other components of the metabolic syndrome (Bitsori, Linardakis, Tabakaki, & Kafatos, 2009; Zimmet et al., 2007). There is a growing body of evidence that AAPs can result in a rapid increase in waist circumference. In the CAPE unit at BCCH, 49% of AAP-treated youth had a waist circumference ≥ 90th percentile compared to only 18% of AAP-naïve youth (Panagiotopoulos, Davidson, Weiss, 2009). In a subset of children (n=27) treated with both risperidone and a psychostimulant for ADHD, and enrolled in a protocol for metabolic monitoring at BCCH, increased waist circumference was documented in 68% (Weiss et al., 2009). Correll (Correll et al., 2009) reported significant mean increases in waist circumference after 12 weeks of therapy with olanzapine (8.6 cm), aripiprazole (5.4 cm), quetiapine (5.3 cm), and risperidone (5.1 cm) compared to untreated controls. Similar to increases in body weight, increases in waist circumference were noted within 4 weeks of treatment.

Glucose and Insulin

In the US FDA MedWatch Drug Surveillance System, there are several case series (Koller, Malozowski, & Doraiswamy, 2001; Koller, Cross, & Schneider, 2004; Koller, Weber, Doraiswamy, & Schneider, 2004) reporting the occurrence of diabetes and diabetic ketoacidosis in children and adolescents following treatment with clozapine, olanzapine, risperidone and quetiapine. Although most of these cases occurred within 6 months of drug initiation, some occurred as late as 12-24 months of therapy. Of 46 cases of quetiapine-related diabetes (Koller, Weber et al., 2004), 11 deaths were reported (age range 12-47 years). Significant elevations in fasting glucose (without overt diabetes symptoms) have been shown to occur following 12 weeks of olanzapine treatment (Correll et al., 2009; Sikich et al., 2008). The cross-sectional prevalence of impaired fasting glucose and/or type 2 diabetes from the CAPE unit at BCCH was 21.5% in AAP-treated youth, almost three times that seen in AAP-naïve youth (7.5%) (Panagiotopoulos et al., 2009), likely due to a longer duration of AAP treatment. While the exact pathophysiology of AAP-induced diabetes/hyperglycemia remains unclear, there is evidence (Calarge, Acion, Kuperman, Tansey, & Schlechte, 2009; Correll et al., 2009; Weiss et al., 2009) that AAPs promote insulin resistance with compensatory fasting hyperinsulinemia. Although rapid weight gain and central adiposity likely contribute to insulin resistance, emerging evidence from animal models (Chintoh et al., 2008; Savoy et al., 2008) suggest that AAPs may also exert direct effects on beta-cell function.

Lipids

Significant increases in total cholesterol have been documented following olanzapine and quetiapine treatment (Fraguas et al., 2008; Sikich et al., 2008), in triglycerides following olanzapine, quetiapine and risperidone treatment, and in LDL-cholesterol following aripiprazole and olanzapine treatment (Correll et al., 2009). Using administrative datasets, McIntyre and Jerrell (McIntyre & Jerrell, 2008) previously reported that the odds of incident dyslipidemia are higher for those exposed to multiple antipsychotics (OR 5.26; 95% confidence interval (CI): 1.64-16.82). The risk of patients with preexisting obesity and hypertension developing type 2 diabetes or dyslipidemia was 4.5 times higher following antipsychotic exposure than those without these preexisting conditions. One study (Martin et al., 2004), found that almost 25% of the variance in triglyceride levels could be explained by weight gain alone, and another study (Patel et al., 2007) reported that BMI *z*-scores were positively associated with total cholesterol, triglycerides and LDL and negatively correlated with HDL.

Blood Pressure

The odds of developing incident hypertension have been reported to be significantly higher for antipsychotic-treated adolescents 13 years of age or older (OR 2.78; 95% CI: 1.69-4.55), but are not correlated to which antipsychotic they received (McIntyre & Jerrell, 2008). Consistent with these data, the cross-sectional prevalence of elevated blood pressure (defined as systolic or diastolic ≥90th percentile for age, sex, and height percentile) within the CAPE unit at BCCH was 54% in AAP-treated youth, three times that seen in AAP-naïve youth (18%) (Panagiotopoulos, Davidson, Weiss, 2009). However, two other studies in AAP-treated children and adolescents (Fraguas et al., 2008; Laita et al., 2007)

have not found significant changes in blood pressure even when assessing long-term treatment.

Metabolic syndrome

The 'metabolic syndrome' refers to a condition in which there is central obesity and at least 2 additional criteria (high blood pressure, high triglyceride level, low HDL-cholesterol level, high fasting glucose) (Zimmet et al., 2007). Metabolic syndrome is a predictor of cardiovascular disease risk, particularly of atherosclerosis and stroke in adults (Li et al., 2003; Raitakari et al., 2003). The definition of metabolic syndrome is derived from adult studies and is not universally accepted in pediatrics. There is ongoing debate about the relative importance of the diagnosis compared to the individual abnormalities. The current literature indicates that the atherosclerotic process begins in childhood and that indices of metabolic syndrome track from childhood to adulthood (Berenson et al., 1998).

Studies assessing the impact of AAPs on metabolic syndrome in children are limited. Following short-term treatment (mean follow-up 10.8 weeks) with AAPs, the mean prevalence of metabolic syndrome was 1.6% with the highest rate documented in the quetiapine sub-group (6.5%) (Correll et al., 2009). In contrast, in the CAPE unit at BCCH, where the mean duration of AAP treatment at the time of assessment was 12 months, the prevalence of metabolic syndrome was 9 times higher in AAP-treated (27%) compared to AAP-naïve (2.9%) children and adolescents ($p<0.001$) with an increased prevalence of the following components, respectively: elevated waist circumference (49.1 vs. 17.9%; $p<0.0001$); hypertriglyceridemia (42.6 vs. 22.4%; $p=0.015$); impaired fasting glucose (16.1 vs. 2.6%; $p=0.005$); and hypertension (54 vs. 18%; $p<0.0001$). In addition, low HDL-cholesterol was seen in 16% of AAP-treated youth compared to 11% of AAP-naïve youth; however, this result was not statistically significant (Panagiotopoulos, Davidson, Weiss, 2009).

Hepatic Transaminases

Studies in children and adolescents regarding effects on hepatic transaminases during AAP treatment are limited. Woods (Woods, Martin, Spector, & McGlashan, 2002) reviewed the FDA MedWatch Drug Surveillance System regarding olanzapine and noted significantly higher risk ratios for hepatic transaminase abnormalities in children [under 10 years of age] (RR 3.4, 95% CI: 1.9-6.1) and adolescents [10-19 years of age] (RR 1.9, 95% CI: 1.5-2.4) compared to adults. These findings are consistent with other clinical trials (Gonzalez-Heydrich, Raches, Wilens, Leichtner, & Mezzacappa, 2003; Sikich et al., 2008). However, in risperidone-treated youth, data are conflicting. One case series (Kumra, Herion, Jacobsen, Briguglia, & Grothe, 1997) identified steatohepatitis in 2 of 13 children treated with risperidone, while other prospective studies (Erdogan et al., 2008; Szigethy, Wiznitzer, Branicky, Maxwell, & Findling, 1999) have reported low rates of clinically significant hepatic transaminase elevation. More research is needed to evaluate these abnormalities and the potential for steatohepatitis in this population.

Prolactin

There is accumulating evidence (Anderson et al., 2007) that children treated with risperidone often exhibit modest to marked elevations in prolactin. In a post-hoc analysis of 5 clinical trials (Findling et al., 2003) in children between 5-15 years of age with disruptive behaviour disorders who were treated with risperidone, there was a rapid rise of serum prolactin peaking at 1-2 months following initiation of therapy and returning to normal levels after 3-5 months. However, in a different study (Anderson et al., 2007) of children with autism between 5-17 years of age, the risperidone-induced increase in prolactin reached a 4-fold increase within the first 2 months, and remained significantly increased at 6 months (3-fold) and at 22 months of treatment (2-fold). While data (Alfaro et al., 2002) do not suggest any correlation between prolactin levels and risperidone dosage, a reduction in dosage has been associated with significantly decreased levels (Masi, Cosenza, & Mucci, 2001). While increases in prolactin levels are especially noted with risperidone, they can also occur with other AAPs, including olanzapine and clozapine (Alfaro et al., 2002; Dittmann et al., 2008; Laita et al., 2007; Wudarsky et al., 1999). These elevations appear to be particularly concerning in adolescents (Woods et al., 2002). In contrast, aripiprazole appears to decrease prolactin levels (Findling et al., 2008). While the majority of patients remain asymptomatic with mild prolactin elevation, more marked elevation has been reported to lead to gynecomastia in males, and galactorrhea and amenorrhea in females (Madhusoodanan & Moise, 2006). Although there is evidence that AAP-induced increases in prolactin tend to diminish over time, the impact of chronic prolactin increases on gonadal hormones, growth and pubertal development and bone mineral density are unknown (Anderson et al., 2007).

Metabolic monitoring

Prompted by the growing body of evidence highlighting significant metabolic effects associated with AAP treatment in adults, the American Diabetes Association with the American Psychiatric Association published a consensus statement (American Diabetes Association, American Psychiatric Association, American Association of Clinical Endocrinologists, & North American Association for the Study of Obesity, 2004) in 2004 that specified a monitoring protocol including baseline assessments of personal/family history, body mass index, waist circumference, blood pressure, as well as fasting plasma glucose and lipid levels. In spite of these recommendations, and in conjunction with FDA warnings about metabolic adverse

effects of AAPs, adherence to these monitoring recommendations has been low in adults (Haupt et al., 2009; Morrato et al., 2009).

In our retrospective chart review of 432 youth admitted to the CAPE unit at BCCH during a 2.5-year period, we found that only 39% of patients had their height and weight measured, 34% had their fasting glucose measured, and 32% had a lipid profile measured (Panagiotopoulos et al., 2009). Similarly, Haupt reported (Haupt et al., 2009) that baseline and 12-week testing rates for lipids and glucose in children were the lowest of all age groups. A survey of Australian child psychiatrists (Walter et al., 2008) revealed the following monitoring rates following AAP-initiation: height (50%); waist circumference (28%); blood pressure (46%); fasting glucose (52%); lipids (48%); prolactin (32%); hepatic transaminases (53%).

Based on the current literature regarding the time course of onset of metabolic complications, and other national consensus guidelines (American Diabetes Association et al., 2004; Woo, Harris, Houlden, 2005), we have created a metabolic monitoring protocol. Table 3 summarizes the proposed history, anthropometric and laboratory measures with suggested time intervals in the first year of treatment. Although beyond the scope of this

Table 3. Proposed metabolic monitoring protocol

Assessment	Baseline	1 month	2 months	3 months	6 months	9 months	12 months†
Family History (diabetes,high cholesterol, cardiovascular disease, psychiatric history)	x						
Risk Factors (smoking, physical activity, screen time, sugar-sweetened beverages)	x						
Height	x	x	x	x	x	x	x
Weight	x	x	x	x	x	x	x
Waist Circumference	x	x	x	x	x	x	x
Blood Pressure	x	x	x	x	x	x	x
Fasting Plasma Glucose	x			x	x		x
Fasting Insulin	x			x	x		x
Fasting Total Cholesterol	x			x	x		x
Fasting LDL-Cholesterol	x			x	x		x
Fasting HDL-Cholesterol	x			x	x		x
Fasting Triglycerides	x			x	x		x
Aspartate Aminotransferase	x			x	x		x
Alanine Aminotransferase	x			x	x		x
Gamma Glutamyltransferase	x			x	x		x
Prolactin	x			x*	x*		x*
Amylase‡	x			x	x		x
Thyroid Stimulating Hormone‡	x			x			x

† and yearly thereafter or sooner if clinically indicated
* as clinically indicated [ie. abnormalities in menstruation, galactorrhea/nipple discharge, sexual dysfunction, delays in pubertal development; signs of osteoporosis (fractures)]
‡ quetiapine-treatment only

review, reports of thyroid stimulating hormone and amylase abnormalities following quetiapine treatment (Feret & Caley, 2000; Gropper & Jackson, 2004; Kelly & Conley, 2005) support inclusion of these parameters in our metabolic monitoring protocol. More frequent assessments of metabolic parameters may be required based on clinical circumstances. This monitoring protocol is currently being piloted at BC Children's Hospital and Vancouver Coastal Child & Youth Mental Health Teams.

Discussion

There are no approved indications for AAP use in children and adolescents in Canada. In this paper, we have summarized the limited number of indications and target symptoms within specific age groups by AAP for which there is evidence to support efficacy in this population. Our review confirms that there is no evidence to support the use of these medications for insomnia or major depression. While naturalistic studies assessing clinical effectiveness would be helpful to guide clinical practice, these studies are limited to non-existent for these published indications. In view of the fact that AAPs are being prescribed for a wide range of symptoms and mental health conditions in children and adolescents (Doey et al., 2007; Harrison-Woolrych, Garcia-Quiroga, Ashton, & Herbison, 2007; Olfson et al., 2006) that are not supported by our comprehensive review of the literature, we strongly encourage health care professionals to review their prescribing practices in this vulnerable population. Furthermore, based on recent FDA warnings (US Food and Drug Administration, 2010) and our literature review, it is clear that olanzapine should not be used as a first-line treatment in youth. Given that a growing number of physicians without specialty training are also prescribing these medications, practice guidelines that provide an evidence-based algorithm for treatment (including alternatives to AAP use) are vital for ensuring that all children and adolescents with mental health conditions receive the best care.

In view of the substantial body of literature suggesting that AAPs have a wide range of metabolic effects on individuals who are still growing and developing, consistent metabolic monitoring including anthropometric measurements and laboratory testing at baseline and at appropriate intervals thereafter is necessary. As part of the routine psychiatric history, baseline documentation of familial and lifestyle risk factors for obesity, type 2 diabetes, dyslipidemia and cardiovascular disease should be performed to assist the prescriber in assessing and providing anticipatory guidance regarding potential metabolic risks. We propose that national consensus guidelines for monitoring and management of metabolic complications of AAPs are urgently required and will serve as a starting point for improving awareness and monitoring uptake in Canada. As a first step, following synthesis of the current evidence, we have prepared a metabolic monitoring protocol which is currently being piloted at BC Children's Hospital and local community mental health teams.

Conclusion

Prescription of AAPs in children and adolescents should be guided by the available evidence in this age group, and not extrapolated from adult studies. It is incumbent on physicians to ensure that the benefits of AAP treatment outweigh the risks. There is an urgent need for clinical practice guidelines in Canada that provide, not only appropriate treatment algorithms for AAP-use based on indications, but also address metabolic monitoring and subsequent management of complications in this vulnerable population. In preparation for the development of such guidelines, the authors invite readers' comments and feedback.

Acknowledgements/Conflict of Interest

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References

Addington, A. M., & Rapoport, J. L. (2009). The genetics of childhood-onset schizophrenia: When madness strikes the prepubescent. *Current Psychiatry Reports, 11*(2), 156-161.

Alfaro, C. L., Wudarsky, M., Nicolson, R., Gochman, P., Sporn, A., Lenane, M., et al. (2002). Correlation of antipsychotic and prolactin concentrations in children and adolescents acutely treated with haloperidol, clozapine, or olanzapine. *Journal of Child and Adolescent Psychopharmacology, 12*(2), 83-91.

Aman, M. G., Hollway J. A., Leone, S., Masty, J., Lindsay, R., Nash, P., et al. (2009). Effects of Risperidone on cognitive-motor performance and motor movements in chronically medicated children. *Research in Developmental Disabilities, 30*, 386-396.

Aman, M. G., Hollway, J. A., McDougle, C. J., Scahill, L., Tierney, E., McCracken, J. T., et al. (2008). Cognitive effects of risperidone in children with autism and irritable behavior. *Journal of Child and Adolescent Psychopharmacology, 18*(3), 227-236.

Aman, M. G., Arnold, L. E., McDougle, C. J., Vitiello, B., Scahill, L., Davies, M., et al. (2005). Acute and long-term safety and tolerability of risperidone in children with autism. *Journal of Child and Adolescent Psychopharmacology, 15*(6), 869-884.

Aman, M. G., Binder, C., & Turgay, A. (2004). Risperidone effects in the presence/absence of psychostimulant medicine in children with ADHD, other disruptive behavior disorders, and subaverage IQ. *Journal of Child and Adolescent Psychopharmacology, 14*(2), 243-254.

Aman, M. G., De Smedt, G., Derivan, A., Lyons, B., Findling, R. L., & Risperidone Disruptive Behavior Study Group (2002). Double-blind, placebo-controlled study of risperidone for the treatment of disruptive behaviors in children with subaverage intelligence. *The American Journal of Psychiatry, 159*(8), 1337-1346.

American Diabetes Association, American Psychiatric Association, American Association of Clinical Endocrinologists, & North American Association for the Study of Obesity (2004). Consensus development confer-

ence on antipsychotic drugs and obesity and diabetes. *Diabetes Care, 27*(2), 596-601.

Anderson, G. M., Scahill, L., McCracken, J. T., McDougle, C. J., Aman, M. G., Tierney, E., et al. (2007). Effects of short- and long-term risperidone treatment on prolactin levels in children with autism. *Biological Psychiatry, 61*(4), 545-550.

Arango, C., Robles, O., Parellada, M., Fraguas, D., Ruiz-Sancho, A., Medina, O., et al. (2009). Olanzapine compared to quetiapine in adolescents with a first psychotic episode. *European Child & Adolescent Psychiatry, 18*(7), 418-428.

Armenteros, J. L., Lewis, J. E., & Davalos, M. (2007). Risperidone augmentation for treatment-resistant aggression in attention-deficit/hyperactivity disorder: A placebo-controlled pilot study. *Journal of the American Academy of Child and Adolescent Psychiatry, 46*(5), 558-565.

Berenson, G. S., Srinivasan, S. R., Bao, W., Newman, W. P.,3rd, Tracy, R. E., & Wattigney, W. A. (1998). Association between multiple cardiovascular risk factors and atherosclerosis in children and young adults. the bogalusa heart study. *The New England Journal of Medicine, 338*(23), 1650-1656.

Biederman, J., Mick, E., Faraone, S. V., Wozniak, J., Spencer, T., & Pandina, G. (2006). Risperidone for the treatment of affective symptoms in children with disruptive behavior disorder: A post hoc analysis of data from a 6-week, multicenter, randomized, double-blind, parallel-arm study. *Clinical Therapeutics, 28*(5), 794-800.

Bitsori, M., Linardakis, M., Tabakaki, M., & Kafatos, A. (2009). Waist circumference as a screening tool for the identification of adolescents with the metabolic syndrome phenotype. *International Journal of Pediatric Obesity: IJPO: An Official Journal of the International Association for the Study of Obesity, 4*(4), 325-331.

Bruggeman, R., van der Linden, C., Buitelaar, J. K., Gericke, G. S., Hawkridge, S. M., & Temlett, J. A. (2001). Risperidone versus pimozide in tourette's disorder: A comparative double-blind parallel-group study. *The Journal of Clinical Psychiatry, 62*(1), 50-56.

Buitelaar, J. K., van der Gaag, R. J., Cohen-Kettenis, P., & Melman, C. T. (2001). A randomized controlled trial of risperidone in the treatment of aggression in hospitalized adolescents with subaverage cognitive abilities. *Journal of Clinical Psychiatry, 62*(4), 239-248.

Cache Limited (2010). *Oxford centre for evidence-based medicine - levels of evidence.* Retrieved 11/23, 2009, from http://www.cebm.net/index.aspx?o=1025.

Calarge, C. A., Acion, L., Kuperman, S., Tansey, M., & Schlechte, J. A. (2009). Weight gain and metabolic abnormalities during extended risperidone treatment in children and adolescents. *Journal of Child and Adolescent Psychopharmacology, 19*(2), 101-109.

Center for Disease Control and Prevention (2007). *CDC growth charts United States 2000*.

Chintoh, A. F., Mann, S. W., Lam, L., Lam, C., Cohn, T. A., Fletcher, P. J., et al. (2008). Insulin resistance and decreased glucose-stimulated insulin secretion after acute olanzapine administration. *Journal of Clinical Psychopharmacology, 28*(5), 494-499.

Cohen, D. (2004). Atypical antipsychotics and new onset diabetes mellitus. An overview of the literature. *Pharmacopsychiatry, 37*(1), 1-11.

Connor, D. F., McLaughlin, T. J., & Jeffers-Terry, M. (2008). Randomized controlled pilot study of quetiapine in the treatment of adolescent conduct disorder. *Journal of Child and Adolescent Psychopharmacology, 18*(2), 140-156.

Cooper, W. O., Arbogast, P. G., Ding, H., Hickson, G. B., Fuchs, D. C., & Ray, W. A. (2006). Trends in prescribing of antipsychotic medications for US children. *Ambulatory Pediatrics : The Official Journal of the Ambulatory Pediatric Association, 6*(2), 79-83.

Correia Filho, A. G., Bodanese, R., Silva, T. L., Alvares, J. P., Aman, M., & Rohde, L. A. (2005). Comparison of risperidone and methylphenidate for reducing ADHD symptoms in children and adolescents with moderate mental retardation. *Journal of the American Academy of Child and Adolescent Psychiatry, 44*(8), 748-755.

Correll, C. U., Manu, P., Olshanskiy, V., Napolitano, B., Kane, J. M., & Malhotra, A. K. (2009). Cardiometabolic risk of second-generation antipsychotic medications during first-time use in children and adolescents. *The Journal of the American Medical Association, 302*(16), 1765-1773.

Correll, C. U. (2009). Multiple antipsychotic use associated with metabolic and cardiovascular adverse events in children and adolescents. *Evidence-Based Mental Health, 12*(3), 93.

Correll, C. U., & Carlson, H. E. (2006). Endocrine and metabolic adverse effects of psychotropic medications in children and adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry, 45*(7), 771-791.

Correll, C. U., Leucht, S., & Kane, J. M. (2004). Lower risk for tardive dyskinesia associated with second-generation antipsychotics: A systematic review of 1-year studies. *The American Journal of Psychiatry, 161*(3), 414-425.

DelBello, M. P., Chang, K., Welge, J. A., Adler, C. M., Rana, M., Howe, M., et al. (2009). A double-blind, placebo-controlled pilot study of quetiapine for depressed adolescents with bipolar disorder. *Bipolar Disorders, 11*(5), 483-493.

Delbello, M., Findling, R., Wang, P., Gundapeneni, B., & Versavel, M. (2008). *Poster: Efficacy and safety of ziprasidone in pediatric bipolar disorder.* Unpublished manuscript.

DelBello, M. P., Kowatch, R. A., Adler, C. M., Stanford, K. E., Welge, J. A., Barzman, D. H., et al. (2006). A double-blind randomized pilot study comparing quetiapine and divalproex for adolescent mania. *Journal of the American Academy of Child and Adolescent Psychiatry, 45*(3), 305-313.

Delbello, M. P., Schwiers, M. L., Rosenberg, H. L., & Strakowski, S. M. (2002). A double-blind, randomized, placebo-controlled study of quetiapine as adjunctive treatment for adolescent mania. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(10), 1216-1223.

Dittmann, R. W., Meyer, E., Freisleder, F. J., Remschmidt, H., Mehler-Wex, C., Junghanss, J., et al. (2008). Effectiveness and tolerability of olanzapine in the treatment of adolescents with schizophrenia and related psychotic disorders: Results from a large, prospective, open-label study. *Journal of Child and Adolescent Psychopharmacology, 18*(1), 54-69.

Doey, T., Handelman, K., Seabrook, J. A., & Steele, M. (2007). Survey of atypical antipsychotic prescribing by Canadian child psychiatrists and developmental pediatricians for patients under 18 years of age. *Canadian Journal of Psychiatry, 52*(6), 363-368.

Domino, M. E., & Swartz, M. S. (2008). Who are the new users

of antipsychotic medications? *Psychiatric Services, 59*(5), 507-514.

Erdogan, A., Atasoy, N., Akkurt, H., Ozturk, D., Karaahmet, E., Yalug, I., et al. (2008). Risperidone and liver function tests in children and adolescents: A short-term prospective study. *Progress in Neuro-Psychopharmacology & Biological Psychiatry, 32*(3), 849-857.

Feret, B. M., & Caley, C. F. (2000). Possible hypothyroidism associated with quetiapine. *The Annals of Pharmacotherapy, 34*(4), 483-486.

Findling, R. L., Nyilas, M., Forbes, R. A., McQuade, R. D., Jin, N., Iwamoto, T., et al. (2009). Acute treatment of pediatric bipolar I disorder, manic or mixed episode, with aripiprazole: A randomized, double-blind, placebo-controlled study. *The Journal of Clinical Psychiatry, 70*(10), 1441-1451.

Findling, R. L., Robb, A., Nyilas, M., Forbes, R. A., Jin, N., Ivanova, S., et al. (2008). A multiple-center, randomized, double-blind, placebo-controlled study of oral aripiprazole for treatment of adolescents with schizophrenia. *The American Journal of Psychiatry, 165*(11), 1432-1441.

Findling, R. L., Aman, M. G., Eerdekens, M., Derivan, A., Lyons, B., & Risperidone Disruptive Behavior Study Group (2004). Long-term, open-label study of risperidone in children with severe disruptive behaviors and below-average IQ. *The American Journal of Psychiatry, 161*(4), 677-684.

Findling, R. L., Kusumakar, V., Daneman, D., Moshang, T., De Smedt, G., & Binder, C. (2003). Prolactin levels during long-term risperidone treatment in children and adolescents. *The Journal of Clinical Psychiatry, 64*(11), 1362-1369.

Fleischhaker, C., Heiser, P., Hennighausen, K., Herpertz-Dahlmann, B., Holtkamp, K., Mehler-Wex, C., et al. (2007). Weight gain associated with clozapine, olanzapine and risperidone in children and adolescents. *Journal of Neural Transmission, 114*(2), 273-280.

Food and Drug Administration (2010). *Atypical antipsychotic drugs information*. Retrieved 11/23, 2009, from http://www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/ucm094303.htm

Fraguas, D., Merchan-Naranjo, J., Laita, P., Parellada, M., Moreno, D., Ruiz-Sancho, A., et al. (2008). Metabolic and hormonal side effects in children and adolescents treated with second-generation antipsychotics. *The Journal of Clinical Psychiatry, 69*(7), 1166-1175.

Gaffney, G. R., Perry, P. J., Lund, B. C., Bever-Stille, K. A., Arndt, S., & Kuperman, S. (2002). Risperidone versus clonidine in the treatment of children and adolescents with tourette's syndrome. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(3), 330-336.

Geller, B., Tillman, R., & Bolhofner, K. (2007). Proposed definitions of bipolar I disorder episodes and daily rapid cycling phenomena in preschoolers, school-aged children, adolescents, and adults. *Journal of Child and Adolescent Psychopharmacology, 17*(2), 217-222.

Gilbert, D. L., Batterson, J. R., Sethuraman, G., & Sallee, F. R. (2004). Tic reduction with risperidone versus pimozide in a randomized, double-blind, crossover trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 43*(2), 206-214.

Gitlin, N., Julie, N. L., Spurr, C. L., Lim, K. N., & Juarbe, H. M. (1998). Two cases of severe clinical and histologic hepatotoxicity associated with troglitazone. *Annals of Internal Medicine, 129*(1), 36-38.

Gonzalez-Heydrich, J., Raches, D., Wilens, T. E., Leichtner, A., & Mezzacappa, E. (2003). Retrospective study of hepatic enzyme elevations in children treated with olanzapine, divalproex, and their combination. *Journal of the American Academy of Child and Adolescent Psychiatry, 42*(10), 1227-1233.

Gropper, D., & Jackson, C. W. (2004). Pancreatitis associated with quetiapine use. *Journal of Clinical Psychopharmacology, 24*(3), 343-345.

Haas, M., Eerdekens, M., Kushner, S., Singer, J., Augustyns, I., Quiroz, J., et al. (2009). Efficacy, safety and tolerability of two dosing regimens in adolescent schizophrenia: Double-blind study. *The British Journal of Psychiatry: The Journal of Mental Science, 194*(2), 158-164.

Harrison-Woolrych, M., Garcia-Quiroga, J., Ashton, J., & Herbison, P. (2007). Safety and usage of atypical antipsychotic medicines in children: A nationwide prospective cohort study. *Drug Safety: An International Journal of Medical Toxicology and Drug Experience, 30*(7), 569-579.

Haupt, D. W., Rosenblatt, L. C., Kim, E., Baker, R. A., Whitehead, R., & Newcomer, J. W. (2009). Prevalence and predictors of lipid and glucose monitoring in commercially insured patients treated with second-generation antipsychotic agents. *The American Journal of Psychiatry, 166*(3), 345-353.

Health Canada (2009). *Drug product search*. Retrieved 02/02, 2010, from http://webprod.hc-sc.gc.ca/dpd-bdpp/index-eng.jsp

Henderson, D. C. (2002). Atypical antipsychotic-induced diabetes mellitus: How strong is the evidence? *CNS Drugs, 16*(2), 77-89.

Hermann, R. C., Yang, D., Ettner, S. L., Marcus, S. C., Yoon, C., & Abraham, M. (2002). Prescription of antipsychotic drugs by office-based physicians in the United States, 1989-1997. *Psychiatric Services, 53*(4), 425-430.

Hollander, E., Wasserman, S., Swanson, E. N., Chaplin, W., Schapiro, M. L., Zagursky, K., et al. (2006). A double-blind placebo-controlled pilot study of olanzapine in childhood/adolescent pervasive developmental disorder. *Journal of Child and Adolescent Psychopharmacology, 16*(5), 541-548.

Kane, J. M. (2001). Extrapyramidal side effects are unacceptable. *European Neuropsychopharmacology, 11* Suppl 4, S397-403.

Kelly, D. L., & Conley, R. R. (2005). Thyroid function in treatment-resistant schizophrenia patients treated with quetiapine, risperidone, or fluphenazine. *The Journal of Clinical Psychiatry, 66*(1), 80-84.

Kohlroser, J., Mathai, J., Reichheld, J., Banner, B. F., & Bonkovsky, H. L. (2000). Hepatotoxicity due to troglitazone: Report of two cases and review of adverse events reported to the United States food and drug administration. *The American Journal of Gastroenterology, 95*(1), 272-276.

Koller, E. A., Weber, J., Doraiswamy, P. M., & Schneider, B. S. (2004). A survey of reports of quetiapine-associated hyperglycemia and diabetes mellitus. *The Journal of Clinical Psychiatry, 65*(6), 857-863.

Koller, E. A., Cross, J. T., & Schneider, B. (2004). Risperidone-associated diabetes mellitus in children. *Pediatrics, 113*(2), 421-2; author reply 421-2.

Koller, E., Malozowski, S., & Doraiswamy, P. M. (2001). Atypical

antipsychotic drugs and hyperglycemia in adolescents. *The Journal of the American Medical Association, 286*(20), 2547-2548.

Kryzhanovskaya, L., Schulz, S. C., McDougle, C., Frazier, J., Dittmann, R., Robertson-Plouch, C., et al. (2009). Olanzapine versus placebo in adolescents with schizophrenia: A 6-week, randomized, double-blind, placebo-controlled trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 48*(1), 60-70.

Kumra, S., Herion, D., Jacobsen, L. K., Briguglia, C., & Grothe, D. (1997). Case study: Risperidone-induced hepatotoxicity in pediatric patients. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*(5), 701-705.

Laita, P., Cifuentes, A., Doll, A., Llorente, C., Cortes, I., Parellada, M., et al. (2007). Antipsychotic-related abnormal involuntary movements and metabolic and endocrine side effects in children and adolescents. *Journal of Child and Adolescent Psychopharmacology, 17*(4), 487-502.

Li, S., Chen, W., Srinivasan, S. R., Bond, M. G., Tang, R., Urbina, E. M., et al. (2003). Childhood cardiovascular risk factors and carotid vascular changes in adulthood: The bogalusa heart study. *The Journal of the American Medical Association, 290*(17), 2271-2276.

Madhusoodanan, S., & Moise, D. (2006). Risperidone-induced hyperprolactinemia in adolescents: A case series. *The Journal of Clinical Psychiatry, 67*(7), 1110-1113.

Malik, A. H., Prasad, P., Saboorian, M. H., Thiele, D. L., & Malet, P. F. (2000). Hepatic injury due to troglitazone. *Digestive Diseases and Sciences, 45*(1), 210-214.

Marcus, R. N., Owen, R., Kamen, L., Manos, G., McQuade, R. D., Carson, W. H., et al. (2009). A placebo-controlled, fixed-dose study of aripiprazole in children and adolescents with irritability associated with autistic disorder. *Journal of the American Academy of Child and Adolescent Psychiatry, 48*(11), 1110-1119.

Martin, A., Scahill, L., Anderson, G. M., Aman, M., Arnold, L. E., McCracken, J., et al. (2004). Weight and leptin changes among risperidone-treated youths with autism: 6-month prospective data. *The American Journal of Psychiatry, 161*(6), 1125-1127.

Martin, A., & L'Ecuyer, S. (2002). Triglyceride, cholesterol and weight changes among risperidone-treated youths. A retrospective study. *European Child & Adolescent Psychiatry, 11*(3), 129-133.

Martin, A., Landau, J., Leebens, P., Ulizio, K., Cicchetti, D., Scahill, L., et al. (2000). Risperidone-associated weight gain in children and adolescents: A retrospective chart review. *Journal of Child and Adolescent Psychopharmacology, 10*(4), 259-268.

Masi, G., Cosenza, A., & Mucci, M. (2001). Prolactin levels in young children with pervasive developmental disorders during risperidone treatment. *Journal of Child and Adolescent Psychopharmacology, 11*(4), 389-394.

McCracken, J. T., McGough, J., Shah, B., Cronin, P., Hong, D., Aman, M. G., et al. (2002). Risperidone in children with autism and serious behavioral problems. *The New England Journal of Medicine, 347*(5), 314-321.

McDougle, C. J., Scahill, L., Aman, M. G., McCracken, J. T., Tierney, E., Davies, M., et al. (2005). Risperidone for the core symptom domains of autism: Results from the study by the autism network of the research units on pediatric psychopharmacology. *The American Journal of Psychiatry, 162*(6), 1142-1148.

McIntyre, R. S., & Jerrell, J. M. (2008). Metabolic and cardiovascular adverse events associated with antipsychotic treatment in children and adolescents. *Archives of Pediatrics & Adolescent Medicine, 162*(10), 929-935.

Melkersson, K., & Dahl, M. L. (2004). Adverse metabolic effects associated with atypical antipsychotics: Literature review and clinical implications. *Drugs, 64*(7), 701-723.

Meyer, J., Koro, C. E., & L'Italien, G. J. (2005). The metabolic syndrome and schizophrenia: A review. *International Review of Psychiatry, 17*(3), 173-180.

Meyer, J. M., & Koro, C. E. (2004). The effects of antipsychotic therapy on serum lipids: A comprehensive review. *Schizophrenia Research, 70*(1), 1-17.

Miral, S., Gencer, O., Inal-Emiroglu, F. N., Baykara, B., Baykara, A., & Dirik, E. (2008). Risperidone versus haloperidol in children and adolescents with AD : A randomized, controlled, double-blind trial. *European Child & Adolescent Psychiatry, 17*(1), 1-8.

Mond, J., Morice, R., Owen, C., & Korten, A. (2003). Use of antipsychotic medications in Australia between July 1995 and December 2001. *The Australian and New Zealand Journal of Psychiatry, 37*(1), 55-61.

Morrato, E. H., Newcomer, J. W., Kamat, S., Baser, O., Harnett, J., & Cuffel, B. (2009). Metabolic screening after the American Diabetes Association's consensus statement on antipsychotic drugs and diabetes. *Diabetes Care, 32*(6), 1037-1042.

Nagaraj, R., Singhi, P., & Malhi, P. (2006). Risperidone in children with autism: Randomized, placebo-controlled, double-blind study. *Journal of Child Neurology, 21*(6), 450-455.

Nasrallah, H. A., & Newcomer, J. W. (2004). Atypical antipsychotics and metabolic dysregulation: Evaluating the risk/benefit equation and improving the standard of care. *Journal of Clinical Psychopharmacology, 24*(5 Suppl 1), S7-14.

Newcomer, J. W. (2005). Second-generation (atypical) antipsychotics and metabolic effects: A comprehensive literature review. *CNS Drugs, 19*, S1-S93.

Olfson, M., Blanco, C., Liu, L., Moreno, C., & Laje, G. (2006). National trends in the outpatient treatment of children and adolescents with antipsychotic drugs. *Archives of General Psychiatry, 63*(6), 679-685.

Owen, R., Sikich, L., Marcus, R. N., Corey-Lisle, P., Manos, G., McQuade, R. D., et al. (2009). Aripiprazole in the treatment of irritability in children and adolescents with autistic disorder. *Pediatrics, 124*(6), 1533-1540.

Panagiotopoulos, C., Davidson, J., & Weiss, M. (2009). Treatment with atypical antipsychotics increases the risk for metabolic syndrome in youth with mental illness. *Poster Presentation at the Annual Meeting of the American Academy of Child & Adolescent Psychiatry (AACAP), October 27-November 1 2009.*

Panagiotopoulos, C., Ronsley, R., & Davidson, J. (2009). Increased prevalence of obesity and glucose intolerance in youth treated with second-generation antipsychotic medications. *Canadian Journal of Psychiatry, 54*(11), 743-749.

Pandina, G. J., Bossie, C. A., Youssef, E., Zhu, Y., & Dunbar, F. (2007). Risperidone improves behavioral symptoms in children with autism in a randomized, double-blind, placebo-controlled trial. *Journal of Autism and Developmental*

Disorders, 37(2), 367-373.

Patel, N. C., Hariparsad, M., Matias-Akthar, M., Sorter, M. T., Barzman, D. H., Morrison, J. A., et al. (2007). Body mass indexes and lipid profiles in hospitalized children and adolescents exposed to atypical antipsychotics. *Journal of Child and Adolescent Psychopharmacology, 17*(3), 303-311.

Patel, N. C., Kistler, J. S., James, E. B., & Crismon, M. L. (2004). A retrospective analysis of the short-term effects of olanzapine and quetiapine on weight and body mass index in children and adolescents. *Pharmacotherapy, 24*(7), 824-830.

Penzner, J. B., Dudas, M., Saito, E., Olshanskiy, V., Parikh, U. H., Kapoor, S., et al. (2009). Lack of effect of stimulant combination with second-generation antipsychotics on weight gain, metabolic changes, prolactin levels, and sedation in youth with clinically relevant aggression or oppositionality. *Journal of Child and Adolescent Psychopharmacology, 19*(5), 563-573.

Pharmacare (2009). *Policy, outcomes evaluation and research, Pharmaceutical Services Division, Ministry of Health Services.* Unpublished manuscript.

Raitakari, O. T., Juonala, M., Kahonen, M., Taittonen, L., Laitinen, T., Maki-Torkko, N., et al. (2003). Cardiovascular risk factors in childhood and carotid artery intima-media thickness in adulthood: The cardiovascular risk in young Finns study. *The Journal of the American Medical Association, 290*(17), 2277-2283.

Ratzoni, G., Gothelf, D., Brand-Gothelf, A., Reidman, J., Kikinzon, L., Gal, G., et al. (2002). Weight gain associated with olanzapine and risperidone in adolescent patients: A comparative prospective study. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(3), 337-343.

Reyes, M., Buitelaar, J., Toren, P., Augustyns, I., & Eerdekens, M. (2006). A randomized, double-blind, placebo-controlled study of risperidone maintenance treatment in children and adolescents with disruptive behavior disorders. *American Journal of Psychiatry, 163*(3), 402-410.

Salle, F., Kurlan, R., Goetz, C., Singer, H., Scahill, L., Law, G., et al. (2000). Ziprasidone treatment of children and adolescents with tourette's syndrome: A pilot study. *Journal of the American Academy of Child and Adolescent Psychiatry, 39*(3), pages.

Savoy, Y. E., Ashton, M. A., Miller, M. W., Nedza, F. M., Spracklin, D. K., Hawthorn, M. H., et al. (2008). Differential effects of various typical and atypical antipsychotics on plasma glucose and insulin levels in the mouse: Evidence for the involvement of sympathetic regulation. *Schizophrenia Bulletin, 36(2), 410-418*.

Scahill, L., Leckman, J. F., Schultz, R. T., Katsovich, L., & Peterson, B. S. (2003). A placebo-controlled trial of risperidone in tourette syndrome. *Neurology, 60*(7), 1130-1135.

Shea, S., Turgay, A., Carroll, A., Schulz, M., Orlik, H., Smith, I., et al. (2004). Risperidone in the treatment of disruptive behavioral symptoms in children with autistic and other pervasive developmental disorders. *Pediatrics, 114*(5), e634-41.

Shirzadi, A. A., & Ghaemi, S. N. (2006). Side effects of atypical antipsychotics: Extrapyramidal symptoms and the metabolic syndrome. *Harvard Review of Psychiatry, 14*(3), 152-164.

Sikich, L., Frazier, J. A., McClellan, J., Findling, R. L., Vitiello, B., Ritz, L., et al. (2008). Double-blind comparison of first- and second-generation antipsychotics in early-onset schizophrenia and schizo-affective disorder: Findings from the treatment of early-onset schizophrenia spectrum disorders (TEOSS) study. *The American Journal of Psychiatry, 165*(11), 1420-1431.

Snyder, R., Turgay, A., Aman, M., Binder, C., Fisman, S., Carroll, A., et al. (2002). Effects of risperidone on conduct and disruptive behavior disorders in children with subaverage IQs. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(9), 1026-1036.

Sporn, A. L., Vermani, A., Greenstein, D. K., Bobb, A. J., Spencer, E. P., Clasen, L. S., et al. (2007). Clozapine treatment of childhood-onset schizophrenia: Evaluation of effectiveness, adverse effects, and long-term outcome. *Journal of the American Academy of Child and Adolescent Psychiatry, 46*(10), 1349-1356.

Szigethy, E., Wiznitzer, M., Branicky, L. A., Maxwell, K., & Findling, R. L. (1999). Risperidone-induced hepatotoxicity in children and adolescents? A chart review study. *Journal of Child and Adolescent Psychopharmacology, 9*(2), 93-98.

Tandon, R., & Halbreich, U. (2003). The second-generation 'atypical' antipsychotics: Similar improved efficacy but different neuroendocrine side effects. *Psychoneuroendocrinology, 28*(suppl 1), 1-7.

Therapeutics initiative (2009). Increasing use of newer antipsychotics in children: A cause for concern? *Therapeutics Initiative: Evidence Based Drug Therapy, April-June 2009.*

Tohen, M., Kryzhanovskaya, L., Carlson, G., Delbello, M., Wozniak, J., Kowatch, R., et al. (2007). Olanzapine versus placebo in the treatment of adolescents with bipolar mania. *The American Journal of Psychiatry, 164*(10), 1547-1556.

Tramontina, S., Zeni, C. P., Ketzer, C. R., Pheula, G. F., Narvaez, J., & Rohde, L. A. (2009). Aripiprazole in children and adolescents with bipolar disorder comorbid with attention-deficit/hyperactivity disorder: A pilot randomized clinical trial. *The Journal of Clinical Psychiatry, 70*(5), 756-764.

Turgay, A., Binder, C., Snyder, R., & Fisman, S. (2002). Long-term safety and efficacy of risperidone for the treatment of disruptive behavior disorders in children with subaverage IQs. *Pediatrics, 110*(3), e34.

US Food and Drug Administration (2010). *Zyprexa (olanzapine): Use in adolescents.* Retrieved 02/02, 2010, from http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/ucm198402.htm

Walter, G., DeLaroche, A., Soh, N., Hunt, G., Cleary, M., Malhi, G., et al. (2008). Side effects of second-generation antipsychotics: The experiences, views and monitoring practices of Australian child psychiatrists. *Australasian Psychiatry, 16*(4), 253-262.

Weiss, M., Panagiotopoulos, C., Giles, L., Gibbins, C., Kuzeljevic, B., Davidson, J., et al. (2009). A naturalistic study of predictors and risks of atypical antipsychotic use in an attention-deficit/hyperactivity disorder clinic. *Journal of Child and Adolescent Psychopharmacology, 19*(5), 575-582.

Weiss, R., Dziura, J., Burgert, T. S., Tamborlane, W. V., Taksali, S. E., Yeckel, C. W., et al. (2004). Obesity and the metabolic syndrome in children and adolescents. *The New England Journal of Medicine, 350*(23), 2362-2374.

Woo, V., Harris, S., & Houlden, R. (2005). Canadian diabetes association position paper: Antipsychotic medications and associated risks of weight gain and diabetes. *Canadian Journal of Diabetes, 29*(2), 111.

Woods, S. W., Martin, A., Spector, S. G., & McGlashan, T. H.

(2002). Effects of development on olanzapine-associated adverse events. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(12), 1439-1446.

Wu, R. R., Zhao, J. P., Liu, Z. N., Zhai, J. G., Guo, X. F., Guo, W. B., et al. (2006). Effects of typical and atypical antipsychotics on glucose-insulin homeostasis and lipid metabolism in first-episode schizophrenia. *Psychopharmacology, 186*(4), 572-578.

Wudarsky, M., Nicolson, R., Hamburger, S. D., Spechler, L., Gochman, P., Bedwell, J., et al. (1999). Elevated prolactin in pediatric patients on typical and atypical antipsychotics. *Journal of Child and Adolescent Psychopharmacology, 9*(4), 239-245.

Zarcone, J. R., Hellings, J. A., Crandall, K., Reese, R. M., Marquis, J., Fleming, K., et al. (2001). Effects of risperidone on aberrant behavior of persons with developmental disabilities: I. A double-blind crossover study using multiple measures. *American Journal of Mental Retardation, 106*(6), 525-538.

Zimmet, P., Alberti, K. G., Kaufman, F., Tajima, N., Silink, M., Arslanian, S., et al. (2007). The metabolic syndrome in children and adolescents - an IDF consensus report. *Pediatric Diabetes, 8*(5), 299-306.

On a besoin d'un nouveau Redacteur Adjoint!!!

Nous voulons sincèrement remercier le Dr. André Gagnon pour son travail assidu, notre premier rédacteur-adjoint pour les soumissions francophones au Journal.

Malheureusement le Dr. Gagnon doit tirer sa révérence de notre équipe. On recherche une personne dynamique avec une bonne connaissance des deux langues officielles pour le remplacer aussitôt que possible. SVP envoyez un bref paragraphe exprimant votre intérêt et votre CV, le tout sera gardé confidentiellement, au Dr. Normand Carrey, normand.carrey@iwk.nshealth.ca

We need another Assistant Editor for Francophone submissions!!!

We want to sincerely thank Dr. André Gagnon for his valued contributions as the first assistant editor for francophone submissions. Unfortunately Dr. Gagnon must tend his resignation. We are interested in attracting a dynamic person who has fluency in both official languages.

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CLINICAL PERSPECTIVES

Clinical Case Rounds in Child and Adolescent Psychiatry

A Case of Adolescent Catatonia

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Catatonia is a motor dysregulation syndrome in which patients lose the ability to move normally despite having the full physical capacity to do so. It is a syndrome, a cluster of symptoms, and in itself is not a diagnosis. The syndrome was first described by the German psychiatrist, Karl Kahlbaum, in 1874 in his monograph, *Die Katatonie oder das Spannungsirresein* (Kahlbaum, 1874). Kahlbaum reported twenty-six cases of what he called *tension insanity*, of various etiologies. Its recognition in the following years rose dramatically in psychiatric populations, with prevalence estimates between 6% and 38% (Fink & Taylor, 2003). Its identification rose to such extents that Emil Kraepelin's notion of *dementia praecox* considered catatonia to be a hallmark of the disorder. Others, such as Kleist, Wernicke, and Leonhard, noted catatonic features in patients with affective disorders (Shorter, 1997).

As a syndrome, there are a number of cardinal features which have been described (Fink & Taylor, 2003). *Mutism* refers to verbal unresponsiveness; alternatively, *echolalia* (repetition of the sounds and words produced by others) may also occur. Patients may also imitate physical gestures (*echopraxia*). *Negativism* refers to the process of actively resisting any efforts to be moved or failure to obey requests or commands; this process is involuntary. Conversely, patients may demonstrate *automatic obedience*, the inability to resist following commands. Other patients demonstrate *waxy flexibility (cerea flexibilitas),* allowing their limbs to be molded at the examiner's will. Patients may exhibit *catalepsy*, maintaining abnormal and peculiar postures for an extended period of time; prior to the advent of adequate treatment, some patients would maintain these postures for days or months. Patients may also demonstrate *stereotypies* (purposeless, repetitive motor behavior) and *mannerisms* (odd, purposeful or exaggerated movements).

A wide variety of causes of catatonia have been reported (Takaoka & Takata, 2003). Psychiatric conditions, including schizophrenia, bipolar disorder, post-traumatic stress disorder, eating disorders, and depressive disorders have been associated with catatonia. Medical causes such as autoimmune disorders, paraneoplastic syndromes, and metabolic disturbances have also been identified. Catatonia also occurs in a variety of neurological conditions including encephalitis, stroke, and seizure disorders. Catatonia has been associated with ecstasy, phencyclidine, inhalant, steroid, and neuroleptic use, as well as the abrupt withdrawal of benzodiazepines.

A number of subtypes of catatonia have been described (Fink & Taylor, 2003). Kahlbaum's instrumental role in delineating the entity led to a specific form of *retarded catatonia* (with rigidity, inhibition of movement, abnormal posturing, mutism, and failure to respond to painful stimuli) to be called *Kahlbaum's syndrome*. In contrast, *excited catatonia (delirious mania, Bell's mania)* involves restless movements, talkativeness, agitation, frenzy, disorientation, and confusion. *Periodic catatonia*, most frequently associated with bipolar disorder, involves fluctuations between stupour and excitement. *Malignant catatonia* (*lethal, pernicious*) is characterized by rigidity and an altered level of consciousness with hyperthermia and autonomic instability; this condition is potentially life threatening. Neuroleptic malignant syndrome and serotonin syndrome are considered forms of malignant catatonia.

Literature regarding catatonia in children and adolescents is sparse. Features particular to child and adolescent presentations have been described which include: (1) increased slowness affecting motor and verbal responsiveness, (2) difficulty initiating and completing actions, (3) increased reliance on cueing by others, (4) increased passivity and lack of motivation, (5) reversal of circadian rhythms, (6) Parkinsonian features, (7) excitement and agitation, and (8) increased repetitive and ritualistic behavior (Wing & Shah, 2000).

A number of rating scales have been developed to assist with its identification, including the Bush-Francis Catatonia Screening Instrument (BFCSI), the Bush-Francis Catatonia Rating Scale (BFCRS), and the Modified Roger's Rating Scale (MRRS). The *lorazepam challenge* may also assist in evaluation. It involves the administration of 1-2mg of intravenous lorazepam. A positive test results in the rapid relief of catatonic symptoms, albeit usually transiently (Fink & Taylor, 2003). There is a high response rate, cited as typically between 75%-100% (Hawkins et al., 1995).

Admission to neurology or a medical intensive care unit is warranted for cases of catatonia associated with neuroleptic malignant syndrome, encephalitis, and non-convulsant status epilepticus. Atypical antipsychotics are preferred over typical agents due to the risk of precipitating or worsening a potential malignant state. If initially useful, regular doses of lorazepam (starting at 3mg per day) should be used to prevent relapse into catatonia. Parenteral nutrition and intravenous fluids should be considered for those with poor intake. Vitals should be monitored regularly for autonomic instability. If the above measures are unsuccessful, electroconvulsive therapy has been identified as the definitive treatment (Fink & Taylor, 2009).

Case

A 17 year old female with no previous mental health contact presented to the emergency department with her family. She had moved in with her grandmother several months prior, following an argument with her mother about her declining school attendance over the previous year. The family reported a rather abrupt onset over the previous week of unusual behavior. Prior to coming to hospital she spent over an hour in the shower standing naked, without running water. She slept in the bed with her grandmother at night, and required repeated reassurance that she and her family were safe. During the day she was uncharacteristically tearful, minimally communicative, and was mostly withdrawn to her room. She had reportedly taken a strong interest in religion, which was unusual for her. She expressed thoughts of being "damned." Her boyfriend reported that over the previous several months she had become increasingly anxious about school and expressed a great deal of sadness about her family situation. He denied that she used any substances. She was on no medications prior to hospitalization.

In terms of her mental status on admission, she lay in a hospital bed and by facial expression and affect appeared significantly frightened and anxious. She was frequently tearful. She did not maintain eye contact, and appeared to resist any attempts to do so. She was rigid, with her arms held in flexion against her body. She demonstrated negativism, resisting any attempts to manipulate her extremities. She did not obey commands. She was largely mute; however, she did utter fragmented phrases of a religious nature, such as being "damned" and in "limbo." She also frequently apologized for no apparent reason to her family members. It was difficult to assess whether she was experiencing perceptual disturbances.

She had a full medical evaluation, including a CT scan and lumbar puncture which were normal. As part of screening for structural anomalies, an MRI was ordered, which was subsequently normal. She was given lorazepam (2 mg parenterally) in preparation for this procedure. Approximately fifteen minutes after its administration, she demonstrated a profound change in her mental status. She began to respond appropriately to commands, the rigidity dissipated, and she began to verbalize appropriately, even demonstrating an appropriate sense of humour. She stated that she had been aware of the events and conversations that had occurred in her presence over the last several days.

Regular doses of lorazepam were initiated. It quickly became evident that she had significant nihilistic and religious delusions and was experiencing perceptual disturbances. She was treated with olanzapine and her psychosis resolved. She was discharged to outpatient follow up. On further investigation, there was a prominent low mood (which may have had its onset months prior); she was started on fluoxetine. Three months later, her depressive symptoms persisted, not having responded to the initial antidepressant. Throughout, she has demonstrated poor insight into her illness, particularly her mood state, yet has been agreeable to ongoing follow up and care.

Discussion

Although it has been suggested that advances in psychopharmacology are contributing to reduced rates of catatonic states (Mahendra, 1981), it remains an under-recognized phenomenon. One study demonstrated that while clinicians identified catatonia in 2% of 139 patients, researchers identified catatonia symptoms in 18% (van der Heijden et al., 2005). Part of its lack of recognition may be due to misinterpretation of symptoms. Cases of excited catatonia may be masked due to overlap with symptoms of mania. Negativism may be viewed as the patient simply not wishing to cooperate, dismissed as a behavioral problem rather than a true inability to cooperate. The shift towards outpatient care and the lack of emphasis on physical examinations may be contributory (Fink, 2009). Lack of education of medical and psychiatric residents may also play a role. Nevertheless, catatonia is not rare, and cases exist in child and adolescent populations. The astute clinician should evaluate for the presence of catatonic symptoms using the rating scales identified previously in this article, as well as a thorough medical examination. If catatonia is suspected, the lorazepam challenge should be considered an invaluable tool for confirming its presence.

We have presented a case of an adolescent female whose catatonic state was surreptitiously confirmed with the administration of benzodiazepines. Given the associated risks if left untreated, this case further outlines the need for clinicians to be vigilant for such presentations and cognizant of its various forms and etiologies, even in youth.

References

Fink, M. (2009). Catatonia: a syndrome appears, disappears, and is rediscovered. *Canadian Journal of Psychiatry, 54*(7), 437-445.

Fink, M., & Taylor, M. A. (2003). Catatonia: a clinician's guide to diagnosis and treatment. Cambridge, England: Cambridge University Press.

Fink, M., & Taylor, M. A. (2009). The catatonia syndrome: forgotten but not gone. *Archives of General Psychiatry, 66*(11), 1173-1177.

Hawkins, J. M., Archer, K. J., Strakowski, S. M., & Keck, P. E. (1995). Somatic treatment of catatonia. *International Journal of Psychiatry in Medicine, 25*(4), 345-369.

Kahlbaum, K. L. (1874). Die Katatonie oder das Spannungsirresein. Berlin: Verlag August Hirshwald.

Mahendra, B. (1981). Where have all the catatonics gone? *Psychological Medicine, 11*(4), 669-671.

Shorter, E. (1997). A history of psychiatry. New York, NY: John Wiley & Sons.

Takaoka, K., & Takata, T. (2003). Catatonia in childhood and adolescence. *Psychiatry and Clinical Neurosciences, 57*, 129-137.

van der Heijden, R. M., Tuinier, S., Arts, N. J., Hoogendoorn, M. L., Kahn, R. S., & Verhoeven, W. M. (2005). Catatonia: disappeared or under-diagnosed? *Psychopathology, 38*(1), 3-8.

Wing, L., & Shah A. (2000). Catatonia in autistic spectrum disorders. *British Journal of Psychiatry, 176*, 357-362.

Clinical Perspectives

Interview with Richard Ballon Goldbloom

(interviewed by Normand Carrey MD)

This issue's interviewee is Richard Ballon Goldbloom, (O.C., B.Sc., M.D., C.M., F.R.C.P.C., D.Litt (Hon), LLD (Hon), a paediatrician who has always advocated for closer ties with psychiatry. In 1967, he was appointed Professor and Head of the Department of Pediatrics at Dalhousie University, and Physician-in-Chief and Director of Research at the Izaak Walton Killam Hospital for Children in Halifax, Nova Scotia. He held these posts from 1967 to 1985. He was appointed Officer of the Order of Canada in 1987 in recognition of contributions to regional health care for children. He has authored over 120 original papers in the medical literature and numerous textbook chapters. He edited (with Dr. Robert S. Lawrence) a book entitled "Preventing Disease, Beyond the Rhetoric", published in 1990. His second book, "Pediatric Clinical Skills", first published by Churchill-Livingstone, NY, in June 1992, has been extremely popular with medical undergraduates and postgraduates. A fourth edition will be published in 2010. He achieved international recognition as a pioneer of family participation in the care of hospitalized children, having introduced one of the first Care-by-Parent Units in Canada. He has held visiting professorships and distinguished lectureships throughout the world, including Litchfield Lecturer at Oxford University and Visiting Professor of Pediatrics at Shanghai Medical University, Tel Aviv University and other universities throughout Canada and the United States. In 1986, he was named Sir Arthur Sims Commonwealth Travelling Professor, and visited universities and hospitals in India, Hong Kong, Singapore, Australia, New Zealand, South Africa, Zimbabwe and the United Kingdom. In 1997, he received the Ross Award, the highest recognition of the Canadian Pediatric Society. He served as Chancellor of Dalhousie University from 2001-2008 and is currently Chancellor Emeritus.

In terms of community interests he has served as President of the Atlantic Symphony Orchestra and Vice-President of Symphony Nova Scotia; he was the first Board Chairman of the Waterfront Development Corporation in Halifax and founding Chairman of the Discovery Centre, an interactive children's museum of science and technology in Halifax. In 2003, he received a Canada Post National Literacy Award, in recognition of his work to promote child literacy. In 2005, he was honoured by the IWK Health Centre with the naming of a new building as the Richard B. Goldbloom Pavilion for Research and Clinical Care.

Good day Dr. Goldbloom and then you for agreeing to do this interview from Florida!

Q: Can you describe a little about your family's background (mother and father)?

A: Both my parents were born in Montreal but my grandparents were immigrants from what is now Lithuania, but was then part of a narrow band of Tsarist Russia, known as the Pale of Settlement, within which Jews were confined. When I was born, my parents lived on Crescent Street in Montreal which at that time was largely a "doctor's street." Physicians typically had their offices on the ground floor, while the family lived on the two upper floors. My dad had started his professional life as an actor (initially a child actor in a stock company) at a time when his family was living in Worcester, Massachusetts. His parents (my grandparents) wanted him to be a doctor. Before he was born my grandmother had lost two children in early infancy, probably from pneumonia. And when my father was very young, he too developed pneumonia, and was treated by Dr. William Molson, of the Molson brewing family. Dr. Molson took care of many impoverished Jewish immigrant families, frequently charging them nothing. My father recovered from this illness and my grandmother decided then and there that she wanted him to become a doctor when he grew up, "just like Dr. Molson."

Q: What happened to your dad's acting career?

A: He continued acting professionally until he entered medical school (at McGill). As a matter of fact, he did one final tour on the RKO vaudeville circuit after finishing first year medicine. My father's acting experience undoubtedly enhanced his extraordinary talent as a teacher, since he was an extremely effective speaker and story-teller and had a great sense of timing. Incidentally, his sister Eva was also a professional actress for many years.

Q: Could you describe for me any eventful experiences in your childhood that may have influenced you or your career choices.

A: The thing that jumps to mind immediately was the physical environment in which my brother and I grew up – we had to walk through dad's office to leave the house to go to school. I remember distinctly the smell of acetone as if it was yesterday. Also, my parents insisted we ate together as a family as often as possible, a tradition my wife and I tried to maintain when raising our own children. Many fascinating guests were invited to our house for meals, many of the

guests were physicians, but the roster also included actors, musicians and a host of fascinating people and these dinners generated plenty of interesting discussion. One event that stands out for me indelibly took place when my father and my uncle (a surgeon) were looking after a little girl, I think she was 7 or 8 years old. She had been desperately ill for months, with recurrent fever and empyema (pneumococcal, I think), and nasty abcesses which had to be drained. They were sure she would die. They had heard about a promising new antibacterial drug developed in Germany called Prontosil, (an early ancestor of the sulfonamides). They somehow managed to acquire a small supply of Prontosil. When it arrived they administered it to this girl. Her fever disappeared precipitously in 48 hours and she became symptom free and recovered completely. They published the account of her miraculous recovery in a medical journal as that was an unusual case for those days. I was exposed to innumerable patient stories throughout my childhood and adolescence like that.

My father was atypical for English-speaking Quebecers in that he understood the importance of bilingualism many decades before it became fashionable. He insisted that my brother and I learned to speak French beginning as pre-schoolers. This was a time when few anglophones believed this was important. At that time it was possible to live an entire lifetime in one of Montreal's English enclaves and never hear a single word of French spoken.

The other memory that stands out is that my parents also took us to Europe every summer, at a time when most Anglophone middle-class families were shipping their youngsters off to summer camps with great sighs of relief. Of course the mode of travel in those days was by ship. We saw most of Europe…its great museums, historic sites, theatrical performances etc. Despite my father's busy schedule, he insisted on taking this time off, as he thought it was important for himself and for the family.

Q: Any adventures as a young man before entering medicine?

A: When I was a teenager my father began to take my brother and I (as silent observers) on his Sunday morning ward rounds at the Montreal Children's Hospital. I suppose doctors are not allowed to do that these days. But this was a different era. My father was the first fully trained pediatrician to practice in Montreal. During my pre-med years at McGill I worked as an assistant (unpaid) lab technician at the Montreal Children's Hospital (then known as the Children's Memorial Hospital) on Cedar Avenue, on the slopes of Mount Royal. I learned how to do blood counts, urinalyses, and other routine lab tests and assisted at autopsies. When I obtained my driver's license, my father would often have me drive him around Montreal as he made house calls. He would talk to me about youngsters he had seen, and this too began to shape my perspective on children and their families. Most modern trainees never get to make a single house call and I'm sad that they are denied this invaluable experience.

Q: What was your training like? In your 2003 presentation at the CACAP in Halifax you describe your internship experience at the Verdun Protestant Hospital (now the Douglas) and influences by psychiatrists Drs. Lehman, Stern and Kral.

A: It was an amazing experience to have such mentors. Most were Jewish refugee physicians from Germany and since they could not get jobs in the university teaching hospitals and many Canadian-born doctors did not want to work in "mental hospitals", many of them ended up working in huge psychiatric institutions, such as the Verdun Protestant Hospital. Also, you did not have to be a psychiatrist to get a job at a chronic mental hospital. This was around 1949-1950. I often drove Vladimir Kral to work since he did not have a car. We had amazing conversations. Another psychiatrist whose thinking affected me greatly was Karl Stern, Professor of Psychiatry at McGill during my undergraduate years. He too had a brilliant, cultured mind, and an unforgettable way of describing psychiatric and behavioral phenomena especially the role of ritual in reducing anxiety. He would remind us of the silly ritualistic games we would play as children (e.g. never stepping on cracks in the sidewalk…) and would proceed to show that, while we might abandon such "silly" practices, in fact, we simply substituted other rituals, e.g. our individual sequence of sleeping positions when we go to bed at night, morning rituals, etc., and that these rituals were an important part of our defenses against anxiety.

Another psychiatrist from whom I learned a good deal from was Dr. Jerome Schulman a child psychiatrist from Chicago. To help improve their interviewing skills, he would ask trainees to audiotape a couple of their own interviews with families, then listen to the tapes by themselves. Initially it often took some persuasion to get them to tape their first such interviews, but the simple process of having them listen to their own conversations with patients automatically improved their interviewing skills. Like Heinz Lehman, Jerry Shulman was also a talented amateur cinematographer. In one film he had documented a young child's hospitalization experience from the child's perspective. He did all the camera shots from the places where the child's eyes would be. The images were memorable, and it was not hard to appreciate why children, especially young ones, became both anxious and frightened by a visit to the hospital.

Of course the most impressive of the post-war refugee physician/psychiatrists I encountered was Heinz Lehman. He reminded me when we first met (when I did a rotation at the Verdun Protestant Hospital in 1949) that my father was the one who had made it possible for him to get into the medical system in Canada by offering him an internship at the Montreal Children's Hospital. As you know, Lehman would become the first doctor in the world to try chlorpromazine (largactil) in psychotic (schizophrenic) patients. This was truly the beginning of the psychopharmacological revolution. In those days psychotic patents were segregated on religious grounds. The Verdun facility housed 1500 patients, many of whom spent much or all of their lives there. ECT was new and dangerous, and insulin shock was almost equally so. Lehman went on to become the Chief of Psychiatry and the Director of the hospital.

Q: What is the film East House, made by Lehman?

A: East House was an old, uninviting building on the hospital grounds which housed the most severely regressed psychotic female patients. Many had been there most of their adult lives. Most refused to tolerate clothing, smeared feces everywhere and basic hygiene was impossible to maintain. Many were violent. Frankly, I found the place repelling and downright scary. But, as always, Lehman could see light where the rest of us saw only darkness. He took on the unfortunate patients of "East House" as a personal challenge. Even before antipsychotic medication was available he showed that even the most severely regressed patients could be conditioned through behavioral interventions to accept greater order, conformity and even some degree of tranquility in their tragic lives. He repeatedly clothed women who had previously rejected all such attempts. Gradually, after repeated attempts they accepted the clothing. He would have their hair brushed repeatedly, and after a while they would stop messing it up. He installed mirrors. He taught them to apply make-up. He recorded his accomplishments cinematically in a silent, amateur film entitled, simply, "East House". This amateur, black-and-white film is a memorable record of how it is possible to condition even the most regressed patients to more acceptable behavior, and even to regain a few basic social skills.

Q: You indicated as well that he was very interested in creativity and its therapeutic role in mental patients?

A: Lehman was deeply interested in encouraging the creative work of psychiatric patients, particularly painting. He documented the often striking evolution in subject matter that accompanied changes, for better or worse, in patients' mental status. This inspired me to encourage the arts in hospitalized children as a therapeutic tool for them.

Q: To be blunt, and I say this more tongue in cheek, why did you not go into child psychiatry?

A: In fact, I truly believe that I *did* go into child psychiatry, at least to a considerable degree. One of my medical heroes, the late Dr. Harry Gordon, a pediatrician who later became Dean at Albert Einstein Medical School, once said that "the doctor's mission is to relieve anxiety….and everything we do by way of diagnosis, treatment (and even research) is only a means to that end." By that definition we are all, or should be, to a considerable degree, psychiatrists.

Simply put, when I was training, child psychiatry only existed in an embryonic stage. However I was always aware of psychosocial issues interacting with physical conditions even when I was in med school- My father had appointed the first child psychiatrist to join the staff of a Canadian children's hospital…the Montreal Children's Hospital. This was Dr. Taylor Statten, who had trained at Johns Hopkins. My father organized weekly pediatric rounds with the child psychiatrist. These rounds were designed to focus specifically on the psychosocial aspects of a particular patient's illness. These were pediatric ("medical") patients, e.g. with rheumatic fever, osteomyelitis, or tuberculosis but the psychosocial and family aspects were the only issues discussed. In my opinion this type of clinical rounds should be revived.

Q: Tell me about the family therapist Nate Epstein? How did that affect your views of families? How does that fit in with pediatrics and I quote you from the 2003 lecture, "And to this day I find myself applying the principles of family therapy, irrespective of whether the presenting clinical problem is primarily biomedical or psychosocial - a distinction that is becoming progressively fuzzier in any case."

A: I met Nate in the 1940's, when I became his children's pediatrician. In fact, his daughter Nancy, a fine ophthalmologist, is now my daughter-in-law, having married my youngest (psychiatrist) son, David. Nate Epstein came from the same Nova Scotia coal-mining town as my wife, Ruth i.e. New Waterford in Cape Breton, and his ideas about families greatly influenced me. He was interested in the dynamics of how families operate. This may sound simple now but no one had looked into this during that era. From him I learned to understand some of the fundamentals of family homeostasis. I learned that each family develops its own unique equilibrium (or dysequilibrium, as the case may be). I also learned from him the specific elements of family function that determine emotional health in children. His landmark studies, carried out in collaboration with Dr. Bill Westley, a sociologist at McGill involved a long term detailed study of 100 ostensibly" normal" families, published in a small book entitled, "The Silent Majority." They showed that

3 critical elements of family function played key roles in conferring emotional health on children, namely: warm, open communication; shared labor, and leadership. An example of how I apply this is if I have a child with a chronic condition I ask both parents to come in. In some families one caregiver is shouldering the whole burden, producing a dysequilibrium in the family. Another element of family therapy I learned from him was his insistence on time-limited results (as opposed to open-ended psychotherapy). Families under treatment were "required" to produce results (i.e. improved family function) in short order if they were to continue in treatment. I suspect this kind of "toughness" may have been partly related to growing up in a rough and tumble coal-mining town.

Q: How did you balance career and family life, always a difficult issue for physicians?

A: There is a growing literature that family dining is vanishing. In my family we had special times for meals and these times were sacrosanct. On Friday night I brought my whole family over for dinner at my parents. Now, even if there is insistence for the kids to eat with their families, with the new toys such as television, video games, cell phones, MP3 players etc…, it seems everything is being done to discourage conversation. At the family dinner table it is important to lay down some behavioral and conversational rules- it must not be a forum for criticizing each other, but a time for focusing on everyone's positive qualities- personal qualities and achievements.

Q: Any themes emerging in your early career- any unexpected twists or surprises that changed any preconceived ideas you had?

A: Not really, I enjoyed my practice a lot but most of all I enjoyed house calls and learned a huge amount from seeing and talking to children and their families in their natural habitat, a totally different perspective than when you see people and kids in the office.

Q: You have three grown-up children. How do you think your influence affected them?

A: The pediatrician-well that's a family tradition…though after becoming Associate Physician-in-Chief at Sick Kids in Toronto, Alan gradually morphed into a senior hospital administrator, and is now President and CEO of Childrens' Hospitals and Clinics of Minneapolis-St. Paul in Minnesota. Our youngest son, David is a psychiatrist, and is Senior Policy Advisor at the Centre for Addiction and Mental Health in Toronto. Our daughter Barbara also works with kids: she is a teacher, former school principal, and now an educational consultant (who works with pediatricians) evaluating and remediating youngsters who are experiencing school difficulties.

Q: I guess later on in life you started to travel more. How do you see medicine, pediatrics from an international perspective i.e. borderless medicine?

A: Travelling and experiencing first-hand how medicine is practiced in many other parts of the world has been very important to me. I had two 6-month sabbaticals, during which I travelled widely. I was impressed how doctors in Africa and many parts of India could practice high quality medicine with minimal lab backup. It convinced me of the importance of clinical skills. Also, one gains a new respect for people of different cultures and backgrounds. Becoming sensitive to cross-cultural issues becomes more important with each passing day, as the populations we serve become progressively more heterogeneous.

Q: You are a great supporter of the symphony in Halifax and an adept pianist. What is role of music in your life- how do you see it affecting your approach to medicine, patients?

A: Several people in my family were musical- my mother's sister was a well-known professional concert pianist, one brother was a violinist (he became a surgeon) another sister was a cellist but I was too lazy to think about a career in music for very long…aside from not having enough talent! Still, music for me remains very therapeutic and I still like to play as much as I can. The most fun I have is when I can highjack one of our symphony musicians to come to the house and play duos with me.

Q: Any patient or family that really influenced you in your professional or personal life? You published an article entitled "Unforgettable Patients".

A: Quite a few patients have affected me deeply –usually the ones I have *not* been able to cure. These "kids", now in their 30s, 40s and fifties are people with whom (in many cases) I still keep in touch, and/or they still keep in touch with me. These kids, grown up now, in some cases are like part of my family. They come to visit when they are in town, they send me birthday cards

Q: You appear to be in favour of strong ties between pediatrics and child psychiatry. What could pediatrics and child psychiatry improve on?

A: For over half a century- several well-spoken authorities have held forth on the contemporary functional (I believe it is more often dysfunctional) relationship between psychiatry and pediatrics and have suggested practical ways in which it could be improved. Unless I'm badly misinformed, I believe there is still a long way to go in closing that gap for the benefit of our patients. Dr Anders of Stanford's Dept of Psychiatry surveyed 56 pediatric training programs and concluded that, "the major function of child

psychiatry continues to be the provision of sporadic consultations to pediatric inpatients on request". One of his striking findings was the absence in pediatrics of courses on interviewing and family counseling. Barbara Korsch at Children's Hospital in Los Angeles audio-taped 800 interviews of 800 different patients, questioning the mothers afterwards. In about 25% of cases parents had not revealed their main concern to the doctor-a shocking indictment of our recurrent failure to root out the hidden agendas that so many families find too menacing to verbalize spontaneously. Many years have passed since these papers were published and I believe that not much has changed.

Q: So what do we do? Any suggestions?

A: One suggestion is that the department of pediatrics should have one or two child shrinks on staff and vice versa - a pediatrician could keep child psychiatrists on their toes about developmental issues. This is a matter of principle- and I believe it was Sir William Osler who said that when doctors speak about matters of principle, they usually mean money. But with joint appointments everyone would benefit and the cost should be shared by both departments. The second issue is location, location, location. The physical separation of many mental health services from other pediatric services is wrong. Functional integration begins with architectural intimacy and money. Thirdly, child psychiatrists should be obliged to attend and participate in weekly joint clinical pediatric teaching sessions when decisions about patient care are made-the kind my late father instituted over 70 years ago. Pediatricians should reciprocate at child psychiatry conferences. If child psychiatrists and allied pediatric mental health personnel really want to make their lives less frantic and less frustrating, the surest and quickest way will be to teach medical undergraduates and pediatric post-graduates to be better psychosocial diagnosticians and therapists.

Thank you Dr. Goldbloom and enjoy the rest of your vacation in Florida!

Thanks also to Dr. Aidan Stokes for suggesting Dr. Goldbloom's name.

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Book Reviews

Clinical Handbook of Psychological Disorders: A Step-By-Step Treatment Manual, Fourth Edition
David H. Barlow, Editor. The Guilford Press: New York, NY, 2008. 722 pages. CDN $75.00.

Many clinicians and students will be familiar with the earlier editions of this work, first published in 1985, and for them this collection of expert authors, strict emphasis on evidence-based treatments, and chapter-by-chapter treatment of psychological disorders will be quickly recognizable. This edition has been refreshed and updated with references to the newest evidence-based publications, and those familiar with Barlow's compilations will be eager for this updated version.

For those unfamiliar with previous editions, its title may be misleading. A "handbook" conjures thoughts of a paperback manual, but this is a beautiful, hard-covered textbook and a handsome addition to any clinical library. It is not meant to be a quick reference in the labcoat pocket. It is fully 733 pages, double–columned, with each chapter supported by an extensive, current and particularly pertinent bibliography.

There are sixteen chapters, and, for the most part, each of these is dedicated to the most current evidence-based psychological treatments for 13 specific disorders: Panic Disorder and Agoraphobia, Post-Traumatic Stress Disorder, Social Anxiety, Obsessive Compulsive Disorder, Major Depressive Disorder, Borderline Personality Disorder, Bipolar Disorder, Schizophrenia and other Psychotic Disorders, Alcohol Use Disorders, Drug Abuse and Dependence, Eating Disorders, Sexual Dysfunction and Couple Distress. This chapter by chapter approach to the aforementioned disorders is the scaffolding upon which the bulk of this book is based. In this sense each of these chapters is typical of the other, and each is well written, well referenced, and by and large definitive.

Each of these chapters begins with the diagnosis as described by the criteria of the Diagnostic and Statistical Manual of Psychiatric Disorders (DSM-IV-TR). Routinely, there follow discussions of epidemiology, current research, and evidence-based treatment protocols, and in many, a theoretical model of treatment is offered. In each chapter there is at least one case study with detailed description including client-therapist dialogue over a series of sessions. Case studies are followed by discussion and conclusions. In this sense, this book is best consumed in tutorial fashion, one whole chapter at a time, and not necessarily from cover to cover. Step-by-step instruction may at times seem tedious, but it is the stepwise instruction that is the hallmark of this text and the gem upon which the teaching pivots. For the diligent, when applied to a current clinical case, this approach can become not just practical, but exciting.

Not all the chapters are based on the format described above. Indeed, the topic of depression is dealt with in three chapters, one dedicated to treatment with Cognitive Behavioural Therapy, another with Interpersonal Therapy and a third with a rather new concept — treatment by Behavioural Activation. This latter chapter, a chapter on Eating Disorders, and another chapter titled "Emotional Disorders: A Unified Approach" seem to have ignited the editor's enthusiasm. Not only do these chapters deviate from the usual format and serve as new additions in the current text — it seems that within the boundaries of these chapters, there is a new thinking and a new comprehensive approach to psychological treatments. After all, handbooks and manuals, important tools to guide and to teach, must have a theoretical foundation, and it seems that in these chapters, the authors are moving towards a comprehensive understanding of the person that allows an explanation of their symptoms, be they panic, depression, obsessive or delusional thought, or abnormal eating.

Offered here is a foretaste of some exceptional themes: this book includes a meta-psychological theory that transcends the DSM-IV-TR with a non-categorical approach to emotional disorders (page 216), an alternative to traditional CBT — Behavioural Activation for Depression (page 328), and a marvelously sympathetic way of understanding anxiety and depression as rooted in the threatening contingencies of past and future experience (page 333). As well, there is a theoretical understanding of the thoughts, actions, and feelings of a person with an eating disorder so that the various types are connected — Bulimia nervosa is understood as the "the nothing or all " inverse of Anorexia nervosa (page 580). Also exquisite is the authors' exploration of the natural human phenomena of self-consciousness and the universal need for a feeling of self-worth (page 566).

Clinical Handbook of Psychological Disorders then is two books. On the one hand, it is what readers have come to expect — a well-written, painstaking, step-by-step guide to the psychological treatment of psychiatric disorders and with exceptional value in being current, expert, evidence-based, and most of all superbly thorough. But the authors offer that their work is not definitive, and they have also allowed for the possibility of a "second text" scattered throughout and embedded in the first. It is this second text that is a subtle injunction to practitioners. The client is a whole person and not just a sum of his disorders, and there is an imperative to understand more completely the person and the person's relationship with the world. It is this personal understanding upon which future clinical practice will hinge.

This is a text that should be in every clinical library so as to be referenced based on the clinician's needs. For the student of psychological treatments, and the bibliophile, a personal copy would provide exceeding value in its study and stimulate ardour based on its thoroughness and beauty.

John Charles Rogers MD, Sydney, Nova Scotia

Researching Children's Experiences
Melissa Freeman & Sandra Mathison. Guilford Press: New York, NY, 2008. 190 pages. CDN $30.00.

This book's co-authors Freeman and Mathison are faculty affiliated with education departments in their respective universities (University of Georgia and University of British Columbia), who have broad experience in the use of qualitative inquiry with young people. This text represents a "how to" for researchers in any discipline who work with children. A social constructivist methodology is used, allowing for an understanding of the formation of knowledge both contextually and dialogically, wherein knowledge is a negotiated discursive construct that is created between individuals. The legitimacy of each individual's knowledge claim is highlighted — no single point of view is more valid than another because all viewpoints are imbedded in a social context that gives them meaning. This framework is critical as it acknowledges the importance of both the lived experience and the social contexts within which children live their lives.

Most research about children has traditionally been carried out *on* them rather than *with* them. They have frequently been the objects of observation or experimentation. There is a long history of using children (and adults) as interview and questionnaire respondents but normally with the topic and design selected solely by the researchers (Christensen & James, 2000). However, there has been a recent burgeoning of research projects that attempt to engage children and give them choices in relation to the research topic, design, fieldwork, and data interpretation. This book covers the key issues to consider in contemplating research with children and provides a much needed pragmatic text for those wishing to engage in this work.

This book is divided into three sections. Section I (chapters 1 through 5) focuses on outlining the use of social constructivism — its theoretical and relational framework, negotiating access, recruiting participants, defining the role of the researcher, and possible ethical challenges. Section II (chapters 6 through 9) details the process of data collection and strategies for analysis, positioning children as active contributors to research. This section includes practical examples, such as the provision of a sample recruitment flyer in the chapter on negotiating access to study participants. The authors are to be commended for including not only the typical strategies for individual interviewing and focus group work, but devoting an entire chapter to visual forms of expression and representation, and to other forms of written data such as journaling. Section III (Chapter 10) discusses children as research collaborators and researchers and addresses important notions of power. Importantly, the authors do not make the assumption that involving children as collaborators in the research process necessarily is beneficial to them or enhances the validity of findings. The book concludes with a brief discussion of the elements of authentic collaboration and a shared research agenda – "repositioning the voices of young people and of sharing inquiry and understanding of each other's worlds" (page 175).

Overall, this volume is well-written and very comprehensive. Each chapter is nicely laid out with appropriate subtitles, text boxes, and summary tables that summarize main messages or strategies. A key goal of the text is to raise questions and stimulate thinking about the everyday, taken-for-granted assumptions we make about children and their lives. This process is enhanced by the series of discussion questions that are posed at the end of each chapter to stimulate discussion around the issues identified.

This volume makes a critical contribution to the growing methodological literature on research with children (see, for example, Christensen & James, 2000; Christensen, 2004; John, 2003). It is an excellent resource for researchers wanting to tap into the critical issues – theoretical, methodological and practical – to address when conducting research with children.

Christensen P. & James A. (2000). Research with Children. Falmer Press: London.
Christensen, P. (2004). Children's participation in ethnographic research: Issues of power and representation. Children & Society, 18, 165-176.
John, M. (2003). Children's rights and power: Charging up for a new century. UK: Jessica Kingley Publishers.

Katherine M. Boydell PhD, Toronto, Ontario

Pediatric and Adolescent Psychopharmacology: A Practical Manual for Pediatricians
Donald Greydanus, Joseph L Calles, Jr. & Dilip Patel. Cambridge University Press: New York, NY, 2008. 301 pages. CDN $70.00.

The premise of this information-packed book is indisputable – namely that there is an inadequate supply of child and adolescent psychiatrists and that the burden of care for behaviourally challenged children falls on the shoulders of other clinicians. Paediatricians, the authors argue, are not as a rule adequately exposed to child psychiatry during their training and may be faced with patients already taking unfamiliar psychopharmacological agents or may have to implement new drug treatment themselves. Notably, of the seven authors of this text, only one is a psychiatrist.

To what extent does access to this book assist a paediatrician in fulfilling the proposed role as mental health clinician? Does it provide information that cannot be easily or better obtained from standard works on child and adolescent psychiatry? The very nature and target audience of this book also raises interesting boundary

issues. To what extent should the absence of psychiatrists encourage others to assume their role?

The early chapters of the book summarize various types of psychological management, as well as pharmacological and prescribing principles. The remainder is given to specific problems including Attention Deficit-Hyperactivity Disorder (ADHD), anxiety, depression, autism, disruptive behaviour, cognitive-adaptive disabilities, sleep disorders, tic disorders, schizophrenia and drug dependency.

Each chapter provides a short introduction to its subject, a differential diagnosis (sometimes unnecessarily long), and a comprehensive list of medications which can or have been used, including compounds which are no longer available or are out of favour (*e.g.* pemoline). Flow charts of management are appended to some chapters. In a flow chart for Bipolar Disorder *"referral to psychiatry if not done before,"* appears as an afterthought, the very last comment on the algorithm. Given the controversy surrounding the issue and the complexity of making a diagnosis, I found this surprising.

While this book provides much information on psychopharmacology, it could do better in distinguishing between those problems in which the support of a child and adolescent psychiatrist is essential and those that can be adequately managed by a paediatrician. There is a clear difference in this regard, for instance, between ADHD, where the bulk of management is already performed by paediatricians, and psychotic disorders, which are appropriately the primary aegis of the psychiatrist.

As a paediatrician who practices primarily in the field of mental health, I have found existing textbooks and journals essential in increasing my knowledge. However, they can only take one a small distance in making the transition from the practice of "organic" to psychological medicine. The training and guidance I have received from my psychiatrist colleagues and other mental health professionals have been indispensable. No book could have fulfilled this role.

If one were a paediatrician making therapeutic choices based on the contents of this source alone, without guidance from others, one could imagine that a sense of confusion might arise from a tyranny of choice with no clear direction as to what might work best in difficult circumstances. The information provided lacks context. The descriptions of the disorders in question are too brief and the writing style too concrete for the reader to readily grasp how any particular disorder will be experienced by the patient, the family, or the therapist. Some illustrative case studies might have been helpful but would have taken the text even further from its primary mandate.

In the end, while informed paediatricians are an asset to the mental health community, they cannot be expected to function as a thing apart. Only by working hand in glove with trained specialists in mental health will they find an appropriate niche in the mental health field. Without expert and diverse input there is a significant risk of the profession developing in ways that are inappropriate and unchecked. If all this means we need more child and adolescent psychiatrists – so be it. This book therefore cannot be recommended as an introductory text on child psychiatry for paediatricians. By extending its mandate to diagnostic issues it has weakened its main value as a resource on psychopharmacology.

Michael L. White FRCPC, Truro, Nova Scotia

Handbook of Developmental Disabilities

Samuel L. Odom, Robert H. Horner, Martha E. Snell & Jan Blacher, Editors. The Guildford Press: New York, NY, 2007. 654 pages. US $80.00.

"It takes a village to raise a child." The famous African proverb has a greater meaning to the lives of developmentally disabled individuals. This is not surprising as developmental disability affects various aspects of human intellectual and physical development, and disabled individuals require a range of expertise at different ages depending on the developmental and adaptive challenges faced by them. The sheer breadth of the subject matter relevant to developmental disabilities and pace of knowledge explosion in each sub-speciality has made it impossible to single-handedly keep abreast of advances in all related fields. This handbook is a useful addition to a growing list of texts covering the breadth of the field.

The editors have organised the book into eight sections. It starts off with 'Foundations' and the editors define the construct of developmental disabilities in the first chapter in a pragmatic manner. The impact of race, colour and ethnicity in United States (US) educational practice is well covered in a separate chapter and will resonate with Canadian readers working with similar populations. The book progresses to sections titled Issues in Health, Genetics & Neuroscience, Early Intervention, School-Age Education & Intervention, Post-school & Adult Issues, Behavior Supports, Family Issues, and finally signs off with a section on International Perspectives and Future Directions. This is a worthwhile read, although the unevenness in writing styles and approach to the topics in its thirty chapters make it difficult in parts, which is an inescapable aspect of a multi-authored text. Although the focus appears to be primarily on policies and practices in the US, the principles can be translated to other systems and settings.

As a psychiatrist I was keen to read the chapters related to psychiatric disorders and psychopharmacology. The chapter on psychiatric issues is impressive in its overview of the subject, including current evidence and issues related to diagnostic and treatment issues, and service delivery. The next chapter, 'Psychotherapeutic Medications and Positive Behavior Support (PBS)', articulates the concept of psychotropic medications impacting on the behavioural mechanisms that mediate challenging behaviours, providing a meaningful framework to conceptu-

alize the role of medications within the framework of functional analysis and positive behaviour support (PBS). The field of PBS, which changed the behavioural treatment approaches for individuals with developmental disabilities and challenging behaviours, lost a pioneer academician and clinician recently, the late Edward G. Carr. The clarity of his writing, his masterful summary of the evolving field, and humility in acknowledging the limitations of PBS make the chapter he co-authors on the topic in this text a wonderful read.

I particularly enjoyed the chapters on early intervention. With increasing research and programmatic focus in this area, this section is a must read for policy makers to avoid problems that plague the delivery of early intervention services in the real world, as passionately articulated by Carl Dunst (pages 161-180).

The fourteen chapters included in the sections 'School-age Education and Intervention', 'Post school and Adult Issues' and 'Family Issues' are succinctly written, provide clear summaries of the current evidence base, and outline implications for practitioners, policy makers, and researchers. Practitioners will find useful ideas and practices to advocate for their patients and to inform program development and delivery. The issues highlighted and discussed in these chapters bring into sharp focus the importance of life-span services and programs for individuals with developmental disabilities.

Supportive public policies have a profound impact on lived experience. For example, a focus on providing accessible public spaces and facilities can have a transformative effect on the experience of physical disability in daily life. Policies are invariably affected by the prevailing politico-economic climate and persuasions. The chapter on the impact and evolution of public policies in the US, discussed using a framework of 'core concepts', is one of the best chapters in the book.

The authors of the chapter on international perspectives should be congratulated for their erudite discussion on the priorities and issues affecting the lives of people with developmental disability living in developing parts of the globe where the majority of the human population lives. The chapter titled 'General Health' is rambling and could have benefited from a tighter editorial direction and scrutiny, and I thought the chapter 'Neuroscience' was a missed opportunity due to lack of focus. The chapter titled 'Genetics' will appeal to clinicians. The chapters on research and the suggestions for further research contained in various chapters might whet the appetite of researchers in this field.

The book is recommended for departmental and hospital libraries.

Senthil Damodharan MD, Regina, Saskatchewan

Canadian Academy of Child and Adolescent Psychiatry
Académie canadienne de psychiatrie de l'enfant et de l'adolescent

30th Annual Conference, September 26-28, 2010
Westin Harbour Castle Hotel, Toronto, Ontario

"Child and Adolescent Psychiatry Grows Up:
Progress, the Profession, and the People we Treat"

PROGRAM HIGHLIGHTS

KEYNOTE SESSIONS

Developmental Transitions from Multiple Perspectives
Dr. David Mrazek

Pediatric Update: Seizures in Children: Notes from the Epilepsy Clinic
Dr. Elizabeth Donner

The Search for Brain Based Biomarkers and Endophenotypes
Dr. Brad Peterson

The Quest for Resilience
Dr. Richard Gunderman

Adult Update: Short-term Psychodynamic Psychotherapy Interventions for Children and Adolescents: Current State and Evidence
Dr. Allan Abbass

Perspectives from the American Academy of Child and Adolescent Psychiatry
Dr. Larry Greenhill, President, AACAP

SPONSORED LUNCH

Adverse Childhood Experiences and their Relationship to Adult Health and Well-being
Dr. Vincent Filetti, The Norlien Foundation

TOWN HALL

Everything You Always Wanted to Know about Becoming a Subspecialist
Dr. John Leverette

CANADIAN EXPERT PANEL

Should We Define Who We Treat By Age Alone?
Dr. Klaus Minde, Dr. Derryk Smith, Dr. Stan Kutcher

INVITED SYMPOSIA

Metabolic Screening and Monitoring: Moving Toward a National Consensus
Dr. Jana Davidson, Chair

A Model for Resident Education in Child Psychopharmacology: Implications for Subspecialty Training
Dr. Daniel Gorman, Chair

The Future of Child Psychiatry
Dr. Normand Carrey, Chair

Global Child and Adolescent Mental Health: Canadian Perspectives
Dr. Stan Kutcher, Chair

The Transition of Youth with Autism Spectrum Disorder into Adulthood
Dr. Peter Szatmari, Chair

Resident Clinical and Research Training *'Cinq à Sept'*
Social event for residents to meet Child Psychiatry Division Heads, Program Directors and Research Mentors. An opportunity to network and exchange information and ideas!

More to come! Please check our website for schedule updates.

www.cacap-acpea.org

INSTRUCTIONS TO AUTHORS

Manuscripts are welcome on any topic relevant to child and adolescent mental health, including psychiatry, psychology, pediatrics, pharmacology, social work and social policy (advocacy). The *Journal* is an open access, interdisciplinary, international publication that seeks to advance knowledge in child mental health and foster critical debate and discussion around controversial topics. The *Journal* publishes two theme issues and two regular issues per year. A theme issue is built around cutting edge issues and consists of a set of companion articles built around a theme selected by a guest editor(s) who is solicited by the Editor.

Length

Manuscripts exceeding word limits will not be accepted without permission from the Editor. Manuscripts of excessive length may be returned. Word limits for each submission category are as follows and include abstract, references, tables and figures. Authors may submit to any of the following categories except psychopharmacology column.
Original Research/Review Articles – 4,000 words; Brief Communication – 2,500 words
Clinical Perspectives – 1,200 words (case studies, grand rounds); 2,500 words (clinical interviews, debate forum)
Psychopharmacology column – 4,000 words
Book Reviews – 700 words
Letters to Editor – 700 words

Original Research / Review Articles / Brief Communications

Original research consists of original work with data not published elsewhere. Review articles are accepted either as submissions by authors or as solicited by the editor. Authors in their reviews should seek to 1) not duplicate existing reviews available elsewhere, and 2) critically appraise the literature for gaps in knowledge and controversial areas. The editor may accept on occasion scholarly theoretical papers (essays) with potential implications for theory building, especially in interdisciplinary areas. Original research can be qualitative or quantitative.

Clinical Perspectives (case studies, grand rounds, debate forums, clinical interviews)

This section of the *Journal* presents clinically based discussions of relevant mental health areas. Criteria for acceptability will be whether the submissions suggest novel clinical hypotheses or contradict current clinical practice not supported by the evidence or literature. Authors must rigorously appraise and review existing literature as part of their submission. The clinical interviews recognize the expertise of senior researchers or clinicians who have clinical or research wisdom and can offer trend analysis or historical overviews of the field. For all of these submissions, the Editor may identify an independent discussant to provide expert commentary. Author(s) will have full access to the discussant's commentary and may choose to add a brief response.

Book Reviews

Send directly to Dr. Pratihba Reebye, Book Review Editor, at preebye@cw.bc.ca. Book Review submissions should include:

Title, Author(s), and Editor(s)
City, province/state and country
Publisher and year of publication
Number of pages
Price and type of currency (CDN, US, etc.)
'Paperback' if applicable, all others are assumed to be hard cover
Reviewer's full name, academic credentials, city, province/state and country

Letters to the Editor

The *Journal* encourages opinion, controversy, and preliminary ideas. We invite reader comments on the articles we publish, as well as issues of concern to child and adolescent mental health. The Editor reserves the right to solicit and publish responses or commentaries from the authors of articles and others. The author of the original letter waives the right to review or respond to those responses or commentaries. All letters are subject to editing and shortening. Not all letters will be published.

Ethics

Research involving human beings must be conducted ethically with due regard for informed consent. Submissions must include a statement of approval and description of consent procedures. Patient anonymity must be protected and any identifying information must be omitted from all submissions such as the location of the clinical facility, age, diagnosis, etc. The parent/guardian and the patient (if able) must give permission for publication.

Conflict of Interest

Authors are responsible for recognizing and disclosing financial and other ties that might appear to be a conflict of interest. Authors must provide a listing of all current financial ties with for-profit enterprises which may include industry research funding, stockholdings/ownership interest, consulting relationships and speaker's bureaus. Financial benefit from instruments, technology or treatments must also be disclosed. If all of the authors have nothing to disclose, include the statement: "The authors have no financial relationships to disclose."

Authorship

Manuscripts are considered with the understanding that they represent original material and have not been submitted or accepted elsewhere, either in whole or in part. Give authorship credit only if substantial contributions have been made to *all* of the following: conception and design of study or analysis and interpretation of data; critically drafting or revising the manuscript for intellectual content; and, approval of the final version for publication.

Copyright

Authors must submit written permission from the copyright owner to use direct quotations, tables or illustrations that have appeared in copyrighted form elsewhere, along with complete details about the source. Permission fees are the responsibility of the submitting author. At the time of submission, the corresponding or lead author is required to indicate agreement to the following statement:

> The author(s) hereby transfer(s), assign(s), or otherwise convey(s) all copyright ownership to the Canadian Academy of Child and Adolescent Psychiatry in the event that such work is published in the *Journal*. I (we) warrant that the material contained in the manuscript represents original work and has not been published or under consideration for publication elsewhere.

Clinical Trials

A clinical trial is any study that prospectively assigns human subjects to intervention or comparison groups to evaluate the cause-and-effect relationship between an intervention and an outcome. Trial registry name, registration identification number, and the URL for the registry should be included at the end of the abstract. Trials should be registered in one of the recognized trial registries and require the minimum registration data set as described by the ICMJE (www.icmje.org/faq.pdf).

Manuscript Processing and Peer Review

Manuscripts should be submitted by email to the Editorial Assistant. Authors can usually expect a decision within 6 to 10 weeks. All manuscripts are submitted to an anonymous peer review process. A consulting reviewer may be added at any stage of the review process to address technical questions. Reviewers' comments will be sent with the editor's decision. However papers that clearly do not fit the *Journal's* format, mission, or publication priorities will be returned without review. Accepted papers are subject to editorial revisions and copyediting. Corrected proofs must be returned within 48 hours. Authors will receive a complimentary copy of the issue in which their submission appears.

> **Important Note:** Changes that have been made to conform to *Journal* style will stand if they do not alter the authors' meaning. Only the most critical changes to the accuracy of the content will be made. Changes that are stylistic or are a reworking of previously accepted material will be disallowed. The Editor reserves the right to deny any changes that do not affect the accuracy of the content.

Preparation of Manuscripts

All submissions must be formatted for 8½ by-11-inch paper with 1-inch margins, in 10-point or larger font, double spaced. Each manuscript must contain the following elements, ordered as below.

General

- Title (max 15 words)
- Name, address, telephone, fax and e-mail address of the corresponding author
- Full name, academic degrees, affiliation, city, state/province and country for each author
- Acknowledgment paragraph (max 120 words), with any necessary credit lines and description of any funding or support
- Structured abstract (max 200 words):

Objective: the primary purpose of the study
Method: design of the study, main outcome measures and age range of subjects
Results: key findings
Conclusions: including clinical significance
Key words: 3 to 5 key words to be used for indexing

- Trial Registry name, URL and registration identification number (if applicable)
- Spell out all abbreviations (other than units of measure) the first time they are used
- Do not use footnotes in the text
- Always use the generic term for a drug. When it is necessary to refer to the proprietary name, list it in parentheses after the generic term, followed by the register mark ®

References

- Consult a recent print or electronic issue for sample references prepared following American Psychological Association 5th Edition.
- If there are more than two authors in a citation use "et al."' after the first author's name within the text

Reference list:

- Arrange in alphabetical order by author name and chronologically by author (do not number).
- List all authors' names for each publication using initials and surnames
- Unpublished or submitted manuscripts or personal communications should only be noted in the text, not the reference list
- Include "in press" manuscripts in the reference list

Tables and Figures

- Tables and figures should comprise no more than a total of 5 double-spaced manuscript pages. The *Journal* does not publish tables or figures that have appeared in other publications. Cite previously published materials only for reference.
- Do not submit tables as picture files (JPG, BMP, etc)
- Number tables consecutively in order of appearance in the text
- Cite each table in the text and note approximately where it should be placed
  If abbreviations are necessary, define them in a key within the caption

INSTRUCTIONS DESTINÉES AUX AUTEURS

Le *Journal de l'Académie canadienne de psychiatrie de l'enfant et de l'adolescent* accepte tout manuscrit traitant de la santé mentale de l'enfant et de l'adolescent, et tout particulièrement de psychiatrie, psychologie, pédiatrie, pharmacologie, travail social et politique sociale (défense des droits des enfants et des adolescents). Le *Journal* est une publication internationale, interdisciplinaire et accessible à tous, qui a pour objet l'avancement des connaissances en santé mentale de l'enfant et de l'adolescent. Il encourage le débat critique et la discussion sur des sujets controversés. L'Académie publie deux numéros spéciaux sur un thème donné et deux numéros ordinaires par an. Les numéros spéciaux traitent de questions d'actualité. Ils regroupent divers articles qui s'articulent autour d'un thème choisi par un ou plusieurs rédacteurs invités, à la demande du rédacteur en chef du *Journal*.

Longueur

Les manuscrits qui dépassent le nombre de mots permis ne seront acceptés qu'avec la permission du rédacteur en chef. Les manuscrits trop longs seront retournés à leurs auteurs. Le nombre de mots maximal dans chaque catégorie est indiqué ci-après. Sont inclus dans ce total le résumé, les références, les tableaux et les figures. Les auteurs peuvent soumettre un article dans l'une des catégories ci-dessous, exception faite de la chronique sur la psychopharmacologie.
Recherche originale/Exposés de synthèse – 4 000 mots; Brève communication – 2,500 mots
Perspectives cliniques – 1 200 mots (études de cas, conférences scientifiques); 2,500 mots (entrevues cliniques, groupes de discussion)
Chronique sur la psychopharmacologie – 4 000 mots
Critiques de livres – 700 mots
Lettres au rédacteur en chef – 700 mots

Recherche originale / Exposés de synthèse / Communications brèves

La recherche originale porte sur des travaux qui n'ont jamais été publiés ailleurs. Les exposés de synthèse sont acceptés. Ils peuvent être présentés par les auteurs ou demandés par le rédacteur en chef du *Journal*. Les auteurs doivent 1) ne pas reproduire des exposés disponibles ailleurs, et 2) évaluer, dans une optique critique, les manques dans les connaissances et les sujets controversés. Le rédacteur en chef peut accepter occasionnellement les articles théoriques (essais) si les implications de ces derniers sont susceptibles de mener à l'élaboration d'une théorie, notamment dans les secteurs interdisciplinaires. La recherche originale peut etre de nature qualitative ou quantitative.

Perspectives cliniques (études de cas, conférences scientifiques, groupes de discussion, entrevues cliniques)

Cette section du *Journal* présente des discussions cliniques sur des secteurs de la santé mentale. Pour être acceptés, les articles doivent proposer de nouvelles hypothèses cliniques ou contredire la pratique actuelle si elle n'est pas appuyée par les faits ou la littérature. Dans leur article, les auteurs doivent évaluer et analyser rigoureusement la littérature existante. Les entrevues cliniques reconnaissent l'expertise des chercheurs ou cliniciens chevronnés qui ont une grande expérience - clinique ou théorique -, qui peuvent analyser les tendances ou présenter une analyse historique du thème considéré. Dans tous les cas, le rédacteur en chef du *Journal* peut demander à un participant indépendant à la discussion de servir d'expert. Les auteurs ont accès à la totalité des commentaires du participant et peuvent décider d'y répondre brièvement.

Critiques de livres

Les envoyer directement au Dr. Pratihba Reebye, rédacteur en chef, Critiques de livres, à preebye@cw.bc.ca. Les critiques de livres devront donner les informations suivantes:

Titre, auteurs et rédacteurs
Ville, province/État et pays
Éditeur et année de publication
Nombre de pages
Prix et devise (dollar canadien, dollar américain ou autre)
Livre broché (le cas échéant). Ne rien indiquer si le livre est relié
Nom complet du réviseur, titres universitaires, ville, province/état et pays

Lettres au rédacteur en chef

Le *Journal* encourage l'opinion, la controverse et les idées novatrices. Nous invitons les lecteurs à nous faire part de leurs commentaires sur les articles que nous publions, ainsi que sur les questions se rapportant à la santé mentale de l'enfant et de l'adolescent. Le rédacteur en chef se réserve le droit de demander des réponses ou des commentaires aux auteurs ou à d'autres personnes, et de les publier. Les auteurs d'une lettre originale renoncent à étudier ces réponses ou commentaires ou à y répondre. Toutes les lettres peuvent être modifiées et abrégées, mais toutes ne seront pas publiées.

Éthique

La recherche qui porte sur des êtres humains doit respecter les principes d'éthique. Les sujets doivent avoir été informés et avoir donné leur consentement à l'étude. Les soumissions doivent inclure le formulaire de consentement et une description du déroulement de la procédure. L'anonymat du sujet doit être respecté. Les soumissions ne doivent contenir aucune information (emplacement de la clinique, âge du sujet, diagnostic, etc.) permettant d'identifier le patient. Les résultats ne peuvent être publiés sans l'autorisation du parent, tuteur ou patient (s'il est en mesure de donner son autorisation).

Conflit d'intérêt

Les auteurs doivent indiquer les liens financiers ou autres susceptibles de donner lieu à un conflit d'intérêt. Ils doivent fournir la liste de tous les liens financiers qu'ils ont avec des organismes à but lucratif (entreprises qui financent des recherches, actions ou parts de société, activités de conseil et bureaux des conférenciers). Ils doivent également indiquer les avantages financiers qu'ils tirent d'instruments, de techniques ou de traitements. Les auteurs qui n'ont rien à divulguer feront la déclaration suivante: Les auteurs n'ont aucun intérêt financier à divulguer.

Crédits d'auteur

Les manuscrits considérés pour publication doivent présenter des travaux originaux qui n'ont été ni soumis ni acceptés ailleurs, en totalité ou en partie. Indiquer les crédits d'auteur seulement s'il y a eu une contribution substantielle à *tous* les aspects suivants: conception de l'étude; analyse et interprétation des données; analyse critique ou révision du contenu intellectuel du manuscrit; approbation de la version finale pour publication.

Droits d'auteur

Pour pouvoir utiliser des citations, tableaux ou illustrations publiés ailleurs, les auteurs doivent produire l'autorisation écrite du détenteur des droits d'auteur et citer intégralement leurs sources. Les auteurs qui soumettent un article sont tenus d'acquitter les droits d'autorisation. Au moment où il propose son article, le correspondant ou l'auteur principal doit donner son accord sur la déclaration suivante:

> **Les auteurs transfèrent tous les droits d'auteur à l'Académie canadienne de psychiatrie de l'enfant et de l'adolescent si leur article est publié dans le *Journal*. Ils attestent que le manuscrit présente des travaux originaux qui n'ont été ni publiés ni soumis pour publication ailleurs.**

Essais cliniques

On entend par essai clinique toute étude qui répartit les sujets dans un groupe d'intervention ou dans un groupe témoin afin d'évaluer la relation de cause à effet entre une intervention et un résultat. Les auteurs indiqueront à la fin du résumé le nom, le numéro d'identification et l'adresse URL du registre dans lequel l'essai clinique a été inscrit. Les essais doivent être inscrits dans l'un des registres ci-dessous, et donner les informations requises par l'*International Committee of Medical Journal Editors* (www.icmje.org/faq.pdf)

Traitement et révision des manuscrits

Les manuscrits doivent être envoyés par courriel à l'assistante du rédacteur en chef du *Journal* qui répondra aux auteurs dans les six à dix semaines qui suivent. Tous les manuscrits sont assujettis à une révision anonyme par un comité formé de pairs. Les réviseurs ou le rédacteur peuvent demander à un consultant des conseils sur les questions techniques. Les commentaires des réviseurs seront joints à la lettre informant les auteurs de la décision du rédacteur. Les articles acceptés pourront être révisés et mis en forme par la rédaction. Les épreuves corrigées devront être retournées dans les 48 heures. *Les auteurs recevront un exemplaire gratuit du numéro du *Journal* dans lequel leur article sera publié. Les articles qui ne correspondent pas au format, à la mission ou aux exigences de publication du *Journal* seront renvoyés à leurs auteurs sans être révisés.

> ***Remarque importante:** Ne seront apportés que les changements destinés à respecter le style du *Journal*, s'ils ne modifient pas le sens voulu par les auteurs. Seuls seront faits les changements essentiels à l'exactitude du contenu. Les changements d'ordre stylistique ou le remaniement d'un article déjà accepté sont interdits. Le rédacteur en chef se réserve le droit de refuser tout changement qui ne modifie pas l'exactitude du contenu de l'article.**

Préparation des manuscrits

Présenter les articles sur papier de format 8½ po par 11 po avec marges d'un pouce; utiliser une police de 10 points ou plus, à double interligne. Inclure les éléments suivants, dans l'ordre indiqué ci-après:

Généralités

- **Titre (max. 15 mots)**
- **Nom, adresse, numéro de téléphone, numéro de télécopieur et courriel de l'auteur correspondant**
- **Nom complet, titres universitaires, affiliation, ville, État, province et pays de chaque auteur**
- **Remerciements (max. 120 mots), avec indication des crédits et de l'appui reçu - financier ou autre**
- **Résumé structuré (max. 200 mots):**

Objectif: principal objectif de l'étude
Méthodologie: organisation de l'étude, principaux résultats et âge des sujets
Résultats: principales constatations
Conclusions: indiquer la pertinence clinique
Mots clés: trois à cinq mots pour indexer l'article

- **Nom, adresse URL et numéro d'identification (s'il y a lieu) du registre des essais cliniques**
- **Écriture, en toutes lettres, des abréviations (autres que les unités de mesure) lors de leur première utilisation dans le texte**
- **Ne pas inclure de note de bas de page dans le texte**
- **Toujours utiliser le nom générique des médicaments. S'il est nécessaire de donner la dénomination spéciale d'un médicament, l'indiquer entre parenthèses après le nom générique, suivi de la mention ® ou MC.**

Références

- **Consulter un numéro récent (version papier ou électronique) pour présenter les références selon la 5e édition du *Publication Manual de l'American Psychological Association.***
- **Si une citation compte plus de deux auteurs, faire suivre le nom du premier auteur de la mention *et al*.**

Liste des références:

- **Placer les références par ordre alphabétique de nom d'auteur et chronologiquement (ne pas les numéroter)**
- **Indiquer, pour chaque publication, les initiales du prénom et le nom de famille de tous les auteurs**
- **Indiquer dans le texte, et non dans la liste des références, les communications personnelles ou manuscrits non publiés ou soumis pour publication.**
- **Indiquer les manuscrits sous presse dans la liste des références**

Tableaux et figures

- **Les tableaux et figures ne doivent pas représenter plus de cinq pages à double espace de la totalité du manuscrit. Le *Journal* ne publiera ni tableaux ni figures publiés ailleurs. Indiquer, pour référence seulement, les documents qui ont déjà été publiés.**
- **Ne pas envoyer de tableaux sous forme d'images (JPG, BMP, etc.);**
- **Numéroter les tableaux selon leur ordre d'apparition dans le texte;**
- **Citer chaque tableau dans le texte et indiquer approximativement où le tableau doit être inséré;**
- **Les abréviations devront être écrites en toutes lettres, dans une légende à l'intérieur du titre.**

Vyvanse®
(lisdexamfetamine dimesylate capsules)

PRESCRIBING SUMMARY

Patient Selection Criteria

THERAPEUTIC CLASSIFICATION:

Central Nervous System Stimulant for Attention Deficit Hyperactivity Disorder

INDICATIONS AND CLINICAL USE

Pediatrics

VYVANSE®*(lisdexamfetamine dimesylate capsules) is indicated for the treatment of Attention Deficit Hyperactivity Disorder (ADHD) in children aged 6-12 years.

Adolescents, Adults and Geriatrics

VYVANSE is not currently indicated for use in adolescents (13-17 years of age) or in adults (>18 years of age). VYVANSE has not been systematically studied in, and is therefore not indicated for use in, the geriatric population (>65 years of age).

A diagnosis of ADHD (DSM-IV-TR®) implies the presence of hyperactive-impulsive or inattentive symptoms that cause impairment and were present before the age of 7 years. The symptoms must be persistent, must be more severe than is typically observed in individuals at a comparable level of development, must cause clinically significant impairment, and be present in two or more settings. The symptoms must not be better accounted for by another mental disorder. For the Inattentive Type, at least six of the following symptoms must have persisted for at least 6 months: lack of attention to details/careless mistakes, lack of sustained attention, poor listener, failure to follow through on tasks, poor organization, avoids tasks requiring sustained mental effort, loses things, easily distracted, forgetful. For the Hyperactive-Impulsive Type, at least six of the following symptoms must have persisted for at least 6 months: fidgeting/squirming, leaving seat, inappropriate running/climbing, difficulty with quiet activities, "on the go", excessive talking, blurting answers, can't wait turn, intrusive. For a Combined Type diagnosis, both inattentive and hyperactive-impulsive criteria must be met.

Special Diagnostic Considerations

The specific etiology of ADHD is unknown, and there is no single diagnostic test. Adequate diagnosis requires the use not only of medical but also of special psychological, educational, and social resources. Learning may or may not be impaired. The diagnosis must be based upon a complete history and evaluation of the patient and not solely on the presence of the required number of DSM-IV characteristics.

Need for Comprehensive Treatment Program

VYVANSE is indicated as an integral part of a total treatment program for ADHD that may include other measures (psychological, educational/vocational, social) for patients with this syndrome. Drug treatment may not be indicated for all patients with this syndrome. Drug treatment is not intended for use in a patient who exhibits symptoms secondary to environmental factors and/or other primary psychiatric disorders, including psychosis. Appropriate educational/vocational placement is essential for patients with this diagnosis and psychosocial intervention is often helpful. When remedial measures alone are insufficient, the decision to prescribe drug treatment will depend upon the physician's assessment of the chronicity and severity of the child's symptoms and on the level of functional impairment.

Long-Term Use

The effectiveness of VYVANSE for long-term use, i.e. >4 weeks, has not been systematically evaluated in controlled trials. Therefore, the physician who elects to use VYVANSE for extended periods should periodically re-evaluate the long-term usefulness of the drug for the individual patient (*also see* **DOSAGE AND ADMINISTRATION**).

Pediatrics (<6 years of age): Amphetamines are not recommended for use in children <6 years of age.

CONTRAINDICATIONS

- Advanced arteriosclerosis, symptomatic cardiovascular disease, moderate to severe hypertension, hyperthyroidism, known hypersensitivity or idiosyncrasy to the sympathomimetic amines, glaucoma, allergy to amphetamines or to components of VYVANSE (lisdexamfetamine dimesylate capsules) or its container.
- Agitated states.
- Patients with a history of drug abuse.
- Administration of VYVANSE during or within 14 days following the administration of monoamine oxidase inhibitors may result in hypertensive crises (also see Supplemental Product Information – Drug Interactions).

Safety Information

WARNINGS AND PRECAUTIONS

General

The least amount of amphetamine feasible should be prescribed or dispensed at one time in order to minimize the possibility of overdosage. VYVANSE should be used with caution in patients who use other sympathomimetic drugs.

Cardiovascular (*also see* CONTRAINDICATIONS, DOSAGE AND ADMINISTRATION – Dosing Considerations and Supplemental Product Information)

Misuse and Serious Cardiovascular Adverse Events

The misuse of amphetamines may cause serious cardiovascular adverse events (AEs) and sudden death.

Pre-existing Structural Cardiac Abnormalities or Other Serious Heart Problems and Sudden Death

Sudden death has been reported with sympathomimetic drugs used for ADHD treatment at therapeutic doses in children/adolescents with structural cardiac abnormalities or other serious heart problems. Although some serious heart problems alone carry an increased risk of sudden death, sympathomimetic drugs generally should not be used in children/adolescents with known serious structural cardiac abnormalities or other serious cardiac problems that may place them at increased vulnerability to the sympathomimetic effects of ADHD drugs.

Hypertension and other Cardiovascular Conditions

Sympathomimetic medications can cause a modest increase in average blood pressure (BP) and average heart rate (HR) and individuals may have larger increases. While the mean changes alone would not be expected to have short-term consequences, all patients should be monitored for larger changes in HR and BP. Caution is indicated in treating patients whose underlying medical conditions might be compromised by increases in BP or HR. BP and pulse should be monitored at appropriate intervals in patients taking VYVANSE, especially patients with hypertension.

Assessing Cardiovascular Status in Patients Being Treated with Sympathomimetic Medications

Theoretically there exists a pharmacological potential for all ADHD drugs to increase the risk of sudden/cardiac death. Although confirmation of an incremental risk for adverse cardiac events arising from treatment with ADHD medications is lacking, prescribers should consider this potential risk.

All drugs with sympathomimetic effects prescribed in the management of ADHD should be used with caution in patients who: a) are involved in strenuous exercise or activities, b) use other sympathomimetic drugs, or c) have a family history of sudden/cardiac death. Patients who are being considered for treatment with sympathomimetic medications should have a careful history (including assessment for a family history of sudden death or ventricular arrhythmia) and physical exam to assess for the presence of cardiac disease, and should receive further cardiac evaluation if findings suggest such disease. Patients who develop symptoms such as exertional chest pain, unexplained syncope, or other symptoms suggestive of cardiac disease during stimulant treatment should undergo a prompt cardiac evaluation.

Effects on Weight and Long-Term Suppression of Growth (*also see* Supplemental Product Information)

Children in VYVANSE Clinical Trials

Growth should be monitored during treatment with stimulants, and patients who are not growing or gaining weight as expected may need to have their treatment interrupted.

Stimulant Use in Adolescents and Children
Published data for other stimulants report that in children aged 7-10 years there is a temporary slowing in growth rate without evidence of growth rebound during this period of development. Published data are inadequate to determine whether the chronic use of amphetamines in children may be causally associated with suppression of growth.

Dependence Liability (*also see* Supplemental Product Information)
VYVANSE is a Schedule III drug under the Controlled Drugs and Substances Act (CDSA).

Amphetamines have been extensively abused. Tolerance, extreme psychological dependence, and severe social disability have occurred. There are reports of patients who have increased the dosage to levels many times higher than recommended. Abrupt cessation following prolonged high dosage administration results in extreme fatigue and mental depression; changes are also noted on the sleep EEG. Careful supervision is therefore recommended during drug withdrawal. Manifestations of chronic intoxication with amphetamines may include severe dermatoses, marked insomnia, irritability, hyperactivity, and personality changes. The most severe manifestation of chronic intoxication is psychosis, often clinically indistinguishable from schizophrenia.

Psychiatric (*also see* Supplemental Product Information)

Pre-existing Psychosis
Clinical experience suggests that in psychotic patients, administration of stimulants may exacerbate symptoms of behaviour disturbance and thought disorder.

Bipolar Illness
Particular care should be taken in using stimulants to treat ADHD in patients with comorbid bipolar disorder because of concern for possible induction of a mixed/manic episode in such patients. Prior to initiating treatment with a stimulant, patients with comorbid depressive symptoms should be adequately screened to determine if they are at risk for bipolar disorder; such screening should include a detailed psychiatric history, including a family history of suicide, bipolar disorder, and depression.

Emergence of New Psychotic or Manic Symptoms (also see CONTRAINDICATIONS)
Treatment-emergent psychotic or manic symptoms can be caused by stimulants at therapeutic doses. If such symptoms occur, consideration should be given to a possible causal role of the stimulant, and discontinuation of treatment may be appropriate.

Aggression
Aggressive behaviour or hostility is often observed in children/adolescents with ADHD, and has been reported in clinical trials and the post-marketing experience of some medications indicated for the treatment of ADHD. Although there is no systematic evidence that stimulants cause aggressive behaviour or hostility, patients beginning treatment of ADHD should be monitored for the appearance of, or worsening of, aggressive behaviour or hostility.

Neurologic

Seizures
There is some clinical evidence that stimulants may lower the convulsive threshold in patients with prior history of seizures, in patients with prior EEG abnormalities in absence of seizures, and, very rarely, in patients without a history of seizures and no prior EEG evidence of seizures. In the presence of seizures, the drug should be discontinued.

Tics
Amphetamines have been reported to exacerbate motor and phonic tics in Tourette's syndrome. Therefore, careful clinical evaluation for tics in Tourette's syndrome in patients and their families should precede use of stimulant medications.

Ophthalmologic (*also see* CONTRAINDICATIONS)
Difficulties with accommodation and blurring of vision have been reported with stimulant treatment.

SPECIAL POPULATIONS (*also see* Supplemental Product Information)

Pregnant Women
The effects of VYVANSE on labour and delivery in humans is unknown. There are no adequate and well-controlled studies in pregnant women.

Non-teratogenic Effects: Infants born to mothers dependent on amphetamines have an increased risk of premature delivery and low birth weight. Also, these infants may experience symptoms of withdrawal as demonstrated by dysphoria, including agitation, and significant lassitude.

Amphetamines should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nursing Women
Amphetamines are excreted in human milk. Mothers taking amphetamines should be advised to refrain from nursing.

Pediatrics (<6 years of age)
Amphetamines are not recommended for use in children <6 years of age. Long-term effects of amphetamines in children have not been well established.

ADVERSE REACTIONS (*also see* Supplemental Product Information)

Adverse Events Associated with Discontinuation of Treatment
The pre-marketing pediatric development program for VYVANSE included exposures in a total of 401 participants in clinical trials (345 pediatric and 56 healthy adult subjects). Of these, 345 pediatric patients (ages 6-12) were evaluated in two controlled clinical studies (one parallel-group and one crossover), one open-label extension study, and one single-dose clinical pharmacology study.

Adverse drug reactions observed with VYVANSE treatment mainly reflect side effects commonly associated with amphetamine use. In clinical trials, approximately a third of pediatric subjects treated with VYVANSE reported decreased appetite and insomnia. Other very common adverse drug reactions include dry mouth, headache and upper abdominal pain. Stimulant side effects generally occur early in treatment and tend to decrease over time.

In a 4-week, parallel-group controlled clinical trial in pediatric patients with ADHD, 9% (20/218) of VYVANSE-treated patients discontinued due to AEs compared to 1% (1/72) who received placebo. The most frequent AEs leading to discontinuation and considered to be drug-related (i.e. leading to discontinuation in at least 1% of VYVANSE-treated patients and at a rate at least twice that of placebo) were ECG voltage criteria for ventricular hypertrophy, tic, vomiting, psychomotor hyperactivity, insomnia, and rash (2/218 each; 1%).

Clinical Trial Adverse Drug Reactions
AEs reported in a 4-week clinical trial in pediatric patients treated with VYVANSE (incidence of ≥1%) and greater than that observed in placebo-treated patients are presented in Table 1.

Table 1. Adverse Drug Reactions Reported by ≥1% of Pediatric Patients Taking VYVANSE in a 4-Week Clinical Trial

Body System	Preferred Term	VYVANSE (n=218)	placebo (n=72)
Metabolism and Nutrition Disorders	Decreased Appetite	39.0%	4.2%
	Anorexia	1.8%	0%
Psychiatric Disorders	Affect lability	3.2%	0%
	Agitation	1.4%	0%
	Aggression	1.4%	0%
	Initial Insomnia	4.1%	0%
	Insomnia	18.8%	2.8%
	Irritability	9.6%	0%
	Tic	2.3%	0%
Nervous System Disorders	Dizziness	5.0%	0%
	Headache	11.9%	9.7%
Gastrointestinal Disorders	Abdominal Pain Upper	11.9%	5.6%
	Vomiting	8.7%	4.2%
	Nausea	6.0%	2.8%
	Dry Mouth	4.6%	0%
Skin and Subcutaneous Tissue Disorders	Rash	2.8%	0%

General Disorder and Administration Site Conditions	Pyrexia	2.3%	1.4%
Investigations	Weight Decreased	9.2%	1.4%

Note: This table includes those events for which the incidence in patients taking VYVANSE was greater than the incidence in patients taking placebo.

The pediatric clinical trial was a phase 3, randomized, multicentre, double-blind, parallel-group, placebo-controlled study in 290 children aged 6-12 years with ADHD. Adverse drug reactions with the highest subject incidence rates in VYVANSE treatment group combined were decreased appetite, insomnia, upper abdominal pain, headache, irritability, vomiting, weight decreased, and nausea. All of these adverse drug reactions are typical side effects of amphetamine products. Fifty percent of these adverse drug reactions occurred within the first week of treatment with VYVANSE, when all of the active-treated subjects received VYVANSE 30 mg. Small increases in heart rate were observed with VYVANSE use. These changes were small in magnitude and are known effects of amphetamine use.

Effect on body weight: In the pediatric study, VYVANSE demonstrated a dose-response effect on subjects' body weight over 4 weeks. No significant differences were observed among the treatment groups in systolic BP and diastolic BP (*also see* **WARNINGS AND PRECAUTIONS, Effects on Weight and Long-Term Suppression of Growth**).

To report an adverse event, contact your Regional Adverse Reaction Monitoring Office at 1-866-234-2345 or call Shire Canada Inc. at 1-800-268-2772.

Administration

DOSAGE AND ADMINISTRATION

Dosing Considerations

Dosage should be individualized according to the therapeutic needs and response of the patient. VYVANSE should be administered orally starting at the lowest possible effective dosage.

VYVANSE should not be used in patients with symptomatic cardiovascular disease including coronary artery disease and should generally not be used in patients with known serious structural cardiac abnormalities or other serious heart problems that may place them at increased vulnerability to the sympathomimetic effects of ADHD drugs (*also see* **CONTRAINDICATIONS** *and* **WARNINGS AND PRECAUTIONS**).

Cardiovascular: Assessing cardiovascular status in patients being treated with sympathomimetic medications).

Patients who are considered to need extended treatment with VYVANSE should undergo periodic evaluation of their cardiovascular status.

Recommended Dose and Dosage Adjustment

In children with ADHD who are 6-12 years of age and are either starting treatment for the first time or switching from another medication, 30 mg once daily in the morning is the recommended dose. In clinical studies, doses of 30-70 mg/day were shown to be effective, although no additional benefit was demonstrated at doses >30 mg/day, and AEs and discontinuations were more frequent at higher doses. Doses >70 mg/day of VYVANSE have not been studied. If the physician, based on clinical judgment, decides a dose increase >30 mg/day is warranted for an individual patient, the maximum recommended dose is 50 mg/day; dosage adjustment should occur after approximately one week. VYVANSE has not been studied, and is not recommended for use, in patients <6 years or >12 years of age.

VYVANSE should be taken in the morning. Afternoon doses should be avoided because of the potential for insomnia.

VYVANSE may be taken with or without food.

VYVANSE capsules may be taken whole, or the capsule may be opened and the entire contents dissolved in a glass of water. If the patient is using the solution administration method, the solution should be consumed immediately; it should not be stored. The dose of a single capsule should not be divided. The contents of the entire capsule should be taken, and patients should not take anything less than one capsule/day.

Where possible, drug administration should be interrupted occasionally to determine if there is a recurrence of behavioural symptoms sufficient to require continued therapy.

SUPPLEMENTAL PRODUCT INFORMATION

WARNINGS AND PRECAUTIONS

Cardiovascular

Adults: Sudden deaths, stroke, and myocardial infarction have been reported in adults taking stimulant drugs at usual doses for ADHD. Although the role of stimulants in these adult cases is also unknown, adults have a greater likelihood than children of having serious structural cardiac abnormalities, cardiomyopathy, serious heart rhythm abnormalities, coronary artery disease, or other serious cardiac problems. Adults with such abnormalities should also generally not be treated with stimulant drugs.

Effects on Weight and Long-Term Suppression of Growth

Children in VYVANSE Clinical Trials: In a controlled trial of lisdexamfetamine in children ages 6 to 12 years, mean weight loss from baseline after 4 weeks of therapy was -0.9, -1.9, and -2.5 lbs, respectively, for patients receiving 30 mg, 50 mg, and 70 mg of lisdexamfetamine, compared to a 1 lbs weight gain for patients receiving placebo. Higher doses were associated with greater weight loss with 4 weeks of treatment. Careful follow-up for weight in children ages 6 to 12 years who received lisdexamfetamine over 12 months suggests that consistently medicated children (i.e. treatment for 7 days per week throughout the year) have a slowing in growth rate measured by body weight as demonstrated by an age- and sex-normalized mean change from baseline in percentile of -13.4 over 1 year (average percentile at baseline and 12 months was 60.6 and 47.2, respectively).

Stimulant Use in Adolescents and Children: In a controlled trial of amphetamine (d to l enantiomer ratio of 3:1) in adolescents, mean weight change from baseline within the initial 4 weeks of therapy was -1.1 lbs and -2.8 lbs, respectively, for patients receiving 10 mg and 20 mg of amphetamine (d to l enantiomer ratio of 3:1). Higher doses were associated with greater weight loss within the initial 4 weeks of treatment.

Dependence Liability

Human Studies: In a human abuse liability study, when equivalent oral doses of 100 mg VYVANSE and 40 mg immediate-release d-amphetamine sulfate were administered to individuals with a history of drug abuse, VYVANSE 100 mg produced subjective responses on a scale of "Drug Liking Effects", "Amphetamine Effects", and "Stimulant Effects" that were significantly less than d-amphetamine immediate-release 40 mg. However, oral administration of 150 mg VYVANSE produced increases in positive subjective responses on these scales that were statistically indistinguishable from the positive subjective responses produced by 40 mg of oral immediate-release d-amphetamine and 200 mg of diethylpropion.

Intravenous administration of 50 mg lisdexamfetamine to individuals with a history of drug abuse produced positive subjective responses on scales measuring "Drug Liking", "Euphoria", "Amphetamine Effects", and "Benzedrine Effects" that were greater than placebo but less than those produced by an equivalent dose (20 mg) of intravenous d-amphetamine.

Animal Studies: In animal studies, lisdexamfetamine produced behavioural effects qualitatively similar to those of the CNS stimulant d-amphetamine. In monkeys trained to self-administer cocaine, intravenous lisdexamfetamine maintained self-administration at a rate that was statistically less than that for cocaine, but greater than that of placebo.

Psychiatric

Emergence of New Psychotic or Manic Symptoms: In a pooled analysis of multiple short-term, placebo-controlled studies, such symptoms occurred in about 0.1% (4 patients with events out of 3482 exposed to methylphenidate or amphetamine for several weeks at usual doses) of stimulant-treated patients compared to 0 in placebo-treated patients.

Special Populations

Pregnant Women: VYVANSE had no apparent effects on embryo-fetal development or survival when administered orally to pregnant rats and rabbits throughout the period of organogenesis at doses up to 40 and 120 mg/kg/day respectively. These doses are approximately 2.7 and 16 times respectively the maximum recommended dose of 70 mg/day on a mg/m^2 body surface area basis.

There has been one report of severe congenital bony deformity, tracheoesophageal fistula, and anal atresia (VATER association) in a baby born to a woman who took d-amphetamine sulfate with lovastatin during the first trimester of pregnancy.

Pediatrics (<6 years of age): A study was conducted in which juvenile rats received oral doses of 4, 10, or 40 mg/kg/day of lisdexamfetamine from 7 to 63 days of age. These doses are approximately 0.3, 0.7, and 3 times the maximum recommended human daily dose of 70 mg on a mg/m^2 basis. Dose-related decreases in food consumption, bodyweight gain, and crown-rump length were seen; after a four-week drug-free recovery period, bodyweights and crown-rump lengths had significantly recovered in females but were still substantially reduced in males. Time to vaginal opening was delayed in females at the highest dose, but there were no drug effects on fertility when the animals were mated beginning on 85 days of age. In a study in which juvenile dogs received lisdexamfetamine for 6 months beginning at 10 weeks of age, decreased bodyweight gain was seen at all doses tested (2, 5, and 12 mg/kg/day, which are approximately 0.5, 1, and 3 times the maximum recommended human daily dose on a mg/m^2 basis). This effect partially or fully reversed during a four-week drug-free recovery period.

ADVERSE REACTIONS

Uncommon Adverse Drug Reactions (reported by ≥0.1% to <1% of pediatric patients taking VYVANSE) in a 4-week clinical trial include:

Immune System Disorders: Hypersensitivity; ***Psychiatric Disorders:*** Dysphoria, Logorrhea; ***Eye Disorders:*** Vision Blurred; ***Cardiac Disorders:*** Palpitation and Tachycardia; ***Gastrointestinal Disorders:*** Diarrhea; ***General Disorders and Administration Site Conditions:*** Feeling jittery; ***Investigations:*** Blood pressure increased

Post-Market Adverse Drug Reactions

Body System	Preferred Term
Psychiatric Disorders	Anxiety Euphoria Depression Hallucination Mania Psychotic episodes Suicidal behaviour
Nervous System Disorders	Dyskinesia Restlessness Seizure Tremor
Eye Disorders	Mydriasis
Skin and Subcutaneous Tissue Disorders	Angioedema Hyperhidrosis Urticaria

DRUG INTERACTIONS

Drug-Drug Interactions

Agents that Lower Blood Levels of Amphetamines: Urinary Acidifying Agents: These agents (ammonium chloride, sodium acid phosphate, etc.) increase the concentration of the ionized species of the amphetamine molecule, thereby increasing urinary excretion. Methenamine Therapy: Urinary excretion of amphetamines is increased, and efficacy is reduced, by acidifying agents used in methenamine therapy.

Agents that Increase Blood Levels of Amphetamines: Urinary Alkalinizing Agents: These agents (acetazolamide, some thiazides) increase the concentration of the non-ionized species of the amphetamine molecule, thereby decreasing urinary excretion. Monoamine Oxidase Inhibitors: MAOI antidepressants, as well as a metabolite of furazolidone, slow amphetamine metabolism. This slowing potentiates amphetamines, increasing their effect on the release of norepinephrine and other monoamines from adrenergic nerve endings; this can cause headaches and other signs of hypertensive crisis. A variety of toxic neurological effects and malignant hyperpyrexia can occur, sometimes with fatal results.

Agents Whose Effects May be Reduced by Amphetamines: Adrenergic Blockers: Adrenergic blockers are inhibited by amphetamines. Antihistamines: Amphetamines may counteract the sedative effect of antihistamines. Antihypertensives: Amphetamines may antagonize the hypotensive effects of antihypertensives. Veratrum Alkaloids: Amphetamines inhibit the hypotensive effect of veratrum alkaloids. Ethosuximide: Amphetamines may delay intestinal absorption of ethosuximide.

Agents Whose Effects May be Potentiated by Amphetamines: Antidepressants, Tricyclic: Amphetamines may enhance the activity of tricyclic antidepressants or sympathomimetic agents; d-amphetamine with desipramine or protriptyline and possibly other tricyclics cause striking and sustained increases in the concentration of d-amphetamine in the brain; cardiovascular effects can be potentiated. Meperidine: Amphetamines potentiate the analgesic effect of meperidine. Phenobarbital: Amphetamines may delay intestinal absorption of phenobarbital; co-administration of phenobarbital may produce a synergistic anticonvulsant action. Phenytoin: Amphetamines may delay intestinal absorption of phenytoin; co-administration of phenytoin may produce a synergistic anticonvulsant action.

Agents that May Reduce the Effects of Amphetamines: Chlorpromazine: Chlorpromazine blocks dopamine and norepinephrine receptors, thus inhibiting the central stimulant effects of amphetamines, and can be used to treat amphetamine poisoning. Haloperidol: Haloperidol blocks dopamine receptors, thus inhibiting the central stimulant effects of amphetamines. Lithium Carbonate: The anorectic and stimulatory effects of amphetamines may be inhibited by lithium carbonate.

Agents that May Potentiate the Effects of Amphetamines: Norepinephrine: Amphetamines enhance the adrenergic effect of norepinephrine. Propoxyphene Overdosage: In cases of propoxyphene overdosage, amphetamine CNS stimulation is potentiated and fatal convulsions can occur.

Drug-Food Interactions

Food does not affect the observed AUC and C_{max} of d-amphetamine in healthy adults after single-dose oral administration of 70 mg of VYVANSE (lisdexamfetamine dimesylate) capsules but prolongs T_{max} by approximately 1 hour (from 3.8 hrs at fasted state to 4.7 hrs after a high-fat meal). After an 8-hour fast, the AUC for d-amphetamine following oral administration of lisdexamfetamine dimesylate in solution and as intact capsules were equivalent.

Drug-Laboratory Interactions

Amphetamines can cause a significant elevation in plasma corticosteroid levels. This increase is greatest in the evening. Amphetamines may interfere with urinary steroid determinations.

OVERDOSAGE

Individual patient response to amphetamines varies widely. Toxic symptoms may occur idiosyncratically at low doses.

Symptoms: Manifestations of acute overdosage with amphetamines include restlessness, tremor, hyperreflexia, rapid respiration, confusion, assaultiveness, hallucinations, panic states, hyperpyrexia and rhabdomyolysis. Fatigue and depression usually follow the central nervous system stimulation. Cardiovascular effects include arrhythmias, hypertension or hypotension and circulatory collapse. Gastrointestinal symptoms include nausea, vomiting, diarrhea, and abdominal cramps. Fatal poisoning is usually preceded by convulsions and coma.

Treatment: Treatment of overdosage consists of appropriate supportive measures. Consult with a Certified Poison Control Center for up-to-date guidance and advice. Management of acute amphetamine intoxication is largely symptomatic and includes gastric lavage, administration of activated charcoal, administration of a cathartic and sedation. Experience with hemodialysis or peritoneal dialysis is inadequate to permit its recommendation in this regard. Acidification of the urine increases amphetamine excretion, but is believed to increase risk of acute renal failure if myoglobinuria is present. If acute severe hypertension complicates amphetamine overdosage, administration of intravenous phentolamine has been suggested. However, a gradual drop in blood pressure will usually result when sufficient sedation has been achieved. Chlorpromazine antagonizes the central stimulant effects of amphetamines and can be used to treat amphetamine intoxication.

The prolonged release of VYVANSE (lisdexamfetamine dimesylate capsules) should be considered when treating patients with overdose.

Animal Toxicology

Acute administration of high doses of amphetamine (d- or d,l-) has been shown to produce long-lasting neurotoxic effects, including irreversible nerve fibre damage, in rodents. The significance of these findings to humans is unknown.

STORAGE AND STABILITY

Dispense in a tight, light-resistant container as defined in the USP. Store at 25°C (77°F). Excursions permitted to 15-30°C (59-86°F).

DOSAGE FORMS

VYVANSE (lisdexamfetamine dimesylate capsules) is designed as a capsule for once-a-day oral administration. VYVANSE capsules contain 30 mg and 50 mg of lisdexamfetamine dimesylate.

Study references

§ This analogue classroom study was a double-blind, randomized, crossover trial comparing the efficacy and safety of VYVANSE (30, 50 and 70 mg/day) with placebo and with mixed amphetamine salts extended-release (MAS XR: 10, 20 and 30 mg/day) included as a reference arm. Following a 3-day washout period, patients with ADHD aged 6 to 12 years underwent a 3-week, open-label dose-titration period on MAS XR to determine optimal dose (10 mg/day, n=10; 20 mg/day, n=17; 30 mg/day, n=25) based on therapeutic response and tolerability. Following the dose-titration period, subjects entered the double-blind crossover portion of the study where each subject received in random order 1 week of placebo, 1 week of MAS XR (at the individually optimized dose), and 1 week of VYVANSE (in an approximately equivalent dose of amphetamine). VYVANSE provided significant improvement in patient behaviour through the last time point evaluated (12 hours post-dose; 0.8 vs.1.7 for placebo on SKAMP-DS scale; $p<0.0001$).

¶ This study was a double-blind, forced-dose, parallel-group, randomized trial assessing the efficacy and safety of VYVANSE in children aged 6 to 12 years with ADHD. Following a 1-week washout period, patients were randomized to receive VYVANSE 30 mg/day for 4 weeks (n=71), 50 mg/day (30 mg/day for week 1, with forced-dose escalation to 50 mg/day for weeks 2 to 4, n=74), 70 mg/day (30 mg/day for week 1, with forced-dose escalation to 50 mg/day for week 2 and 70 mg/day for weeks 3 and 4, n=73), or placebo capsules for 4 weeks (n=72). VYVANSE is dosed at 30 mg for starting or switching; the maximum recommended dose is 50 mg/day.

References: 1. Biederman J, *et al.* Lisdexamfetamine dimesylate and mixed amphetamine salts extended-release in children with ADHD: a double-blind, placebo-controlled, crossover analog classroom study. *Biol Psychiatry* 2007;62:970-76. **2.** Data on File. Shire Canada Inc., Clinical Study Report NRP104.201. July 13, 2005. **3.** VYVANSE Product Monograph. Shire Canada Inc., January 6, 2010. **4.** Biederman J, *et al.* Efficacy and tolerability of lisdexamfetamine dimesylate (NRP-104) in children with attention-deficit/hyperactivity disorder: a phase III, multicenter, randomized, double-blind, forced-dose, parallel-group study. *Clin Ther* 2007;29(3):450-63.

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Product Monograph available on request at 1-800-268-2772.

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