

Vol. 3, No. 1 2009

## The Economics of Children's Mental Health

### Overview



**The cost of  
mental health**

### Feature



**It works...  
but at what price?**

### Review



**Assessing the value of  
an ounce of prevention**

### Letters



**Is there a link between  
bullying and suicide?**

### Next Issue



Our Spring 2009 issue looks at the prevention of child maltreatment. All forms of child abuse — physical, emotional and psychological — as well as neglect and abandonment can leave serious scars. We study what the evidence shows can be done to help.

### About the Children's Health Policy Centre

As an interdisciplinary research group in the Faculty of Health Sciences at Simon Fraser University, we aim to connect research and policy to improve children's social and emotional well-being, or *children's mental health*. We advocate the following public health strategy for children's mental health: addressing the determinants of health; preventing disorders in children at risk; promoting effective treatments for children with disorders; and monitoring outcomes for all children. To learn more about our work, please see [www.childhealthpolicy.sfu.ca](http://www.childhealthpolicy.sfu.ca)



# Children's Health Policy Centre

VOL. 3, NO. 1 2009

## About the Quarterly

The *Quarterly* is a resource for policy-makers, practitioners, families and community members. Its goal is to communicate new research to inform policy and practice in children's mental health. The publication is funded by the British Columbia Ministry of Children and Family Development, and topics are chosen in consultation with policy-makers in the Ministry's Child and Youth Mental Health Branch.

## Quarterly Team

### Scientific Writer

Christine Schwartz, PhD, RPsych

### Scientific Editor

Charlotte Waddell, MSc, MD, CCFP, FRCPC

### Research Assistants

Jen Barican, BA & Larry Nightingale, LibTech

### Production Editor

Daphne Gray-Grant, BA (Hon)

### Copy Editor

Naomi Pauls, BA, MPub

## Contact Us

We hope you enjoy this issue. We welcome your letters and suggestions for future topics. Please email them to [chpc\\_quarterly@sfu.ca](mailto:chpc_quarterly@sfu.ca) or write to the Children's Health Policy Centre, Attn: Daphne Gray-Grant, Faculty of Health Sciences, Simon Fraser University, Room 7248, 515 West Hastings St., Vancouver, British Columbia V6B 5K3 Telephone (778) 782-7772



SIMON FRASER UNIVERSITY  
THINKING OF THE WORLD

# Quarterly

## This Issue

### Overview

3

#### The cost of mental health

What are the financial costs associated with children's mental disorders? How do we do the most to support children's healthy development with the resources we have? We answer the most commonly asked questions about disorders and dollars.

### Feature

6

#### It works ... but at what price?

Economic evaluations are a new tool in the field of children's mental health. We use this research to feature effective treatments for children with severe conduct problems that can be delivered while minimizing costs.

### Review

9

#### Assessing the value of an ounce of prevention

In our first issue of the *Quarterly*, we identified six effective programs for preventing three mental disorders. Here we highlight available data on the financial costs and benefits of these programs.

### Letters

13

#### Is there a link between bullying others and suicide?

We answer a reader's question about whether there is a link between bullying others and suicide.

### References

14

We provide all references cited in this edition of the *Quarterly*.

### Links to Past Issues

16

#### How to Cite the Quarterly

We encourage you to share the *Quarterly* with others and we welcome its use as a reference (for example, in preparing educational materials for parents or community groups). Please cite this issue as follows:

Schwartz, C., Waddell, C., Barican, J., Zuberbier, O., Nightingale, L., & Gray-Grant, D. (2009). The economics of children's mental health. *Children's Mental Health Research Quarterly*, 3(1), 1-16. Vancouver, BC: Children's Health Policy Centre, Faculty of Health Sciences, Simon Fraser University.

### The cost of mental health

As a policy-maker, Rachel anticipated facing a tough decision while listening to the budget announcement. She was not surprised to hear funding would remain unchanged for children's mental health services despite a 10% increase in service demand. Rachel struggled with how she was going to allocate resources to provide the best services. She was eager to implement a home visitation program for at-risk infants but wanted to ensure that the additional expenses would pay off.

### Valuing children's well-being

Mental health is central to children's social and emotional development. Yet at any given time, an estimated 14% of children (or over 100,000 in BC and over 800,000 in Canada) experience clinically significant mental disorders.<sup>1</sup> These disorders range from those that are highly prevalent and cause varying degrees of impairment (such as anxiety, behaviour disorders and depression) to those that are less prevalent and highly disabling (such as autism and schizophrenia).<sup>2</sup>

Between 50% and 74% of mental disorders start in childhood<sup>3</sup> and then persist, affecting productivity and functioning over the lifespan. Given their prevalence and long-term impact, mental disorders are arguably the leading health problems Canadian children face from infancy onwards.

Children's mental disorders are also costly from an economic perspective.<sup>4</sup> Treatment costs extend to multiple sectors, including not only community-based (outpatient) treatment services but also child protection, special education and youth criminal justice sectors.<sup>5,6</sup> Even so, an estimated 75% of children with mental disorders do not receive specialized treatment services currently,<sup>1</sup> and few prevention programs are offered.<sup>7</sup>

Programs aimed at addressing social determinants of health (such as socio-economic inequalities) have the potential to produce cost-effective improvements in children's mental health.<sup>8</sup> However, despite recent Canadian investments in early child development programs aimed at reducing learning disparities, few researchers have studied the impact of these programs on children's mental health outcomes.<sup>8</sup>

Collectively we pay a long-term price when mental disorders are not effectively prevented or treated in childhood, including the lost potential associated with early school termination and unemployment.<sup>9</sup> For example, the lifetime cost of one case of conduct disorder is estimated to be \$1.5 million US, if no effective prevention or treatment services are offered.<sup>10</sup>



■ When governments invest in effective health promotion, disorder prevention and treatment services, the personal and financial costs of childhood mental disorders can be substantially reduced.

“Collectively we pay a long-term price when mental disorders are not effectively prevented or treated in childhood.”

The direct costs (including visits to health care providers) and indirect costs (such as lost work time) of mental disorders are now estimated to exceed \$14 billion annually in Canada.<sup>11</sup>

### Making the most of our limited resources

Almost every resource used for children’s mental health is scarce relative to both need and demand.<sup>12</sup> Billions of dollars would likely be required to fully address all the unmet program and service needs.<sup>12</sup> Substantive new investments are unlikely given the numerous competing demands for scarce public resources.<sup>6</sup> Policy-makers and practitioners, therefore, constantly face difficult decisions in allocating scarce resources. Economic evaluations of children’s mental health interventions are one tool that can help guide decision-making in this challenging environment.<sup>12</sup>

Once an intervention has been shown to be clinically effective, an economic evaluation assesses its fiscal value by systemically and simultaneously measuring its costs and benefits.<sup>13</sup> Both costs and benefits can be appraised from a number of viewpoints, including those of the child, the family, the service provider and society at large.<sup>14</sup> When calculating expenditures, researchers should assess both direct costs (such as salaries, supplies and transportation) and indirect costs (such as parents’ time).

There are many different types of economic evaluations. The three main types applicable to children’s mental health are described in the table below.

“The direct costs and indirect costs of mental disorders are now estimated to exceed \$14 billion annually in Canada.”

**Table 1: Types of economic evaluations**

Type	Measurement Unit <sup>13</sup>	Calculation <sup>15</sup>	Sample Conclusions
<i>Cost-benefit analysis</i>	Dollars	Measures whether the financial benefits of the intervention exceed the costs	Program A produces a net saving of \$1,000 per child
<i>Cost-effectiveness analysis</i>	Natural units (e.g., number of symptom-free days)	Computes and compares the ratio of the difference in costs between two interventions to the difference in outcome	Program A costs \$50 additional dollars per added anxiety-free day compared to program B
<i>Cost-utility analysis</i>	Quality-adjusted life years (QALY)	Measures and values the impact of an intervention in improvements in preference-weighted, health-related quality of life	Program A costs \$10,000 per additional QALY compared to program B

QALY The number of years of life in which the individual would be expected to be completely free of symptoms or disability as a result of the intervention.<sup>16</sup>

## The Canadian context

In Canada there is a movement toward approving treatments based on clinical effectiveness *and* cost considerations.<sup>17</sup> But the ability to make such decisions in children's mental health services has been hampered by the following limitations:

- Few economic evaluations of child mental health interventions exist.<sup>15</sup>
- Most cost-effectiveness analyses (particularly of medications) find new interventions to be more effective than older ones but also more expensive.<sup>15</sup> As a result, new interventions may be cost-effective but too expensive to approve.<sup>13</sup>
- To determine the full costs and cost savings of interventions, a long evaluation period is needed.<sup>5</sup> Because many potential future benefits take considerable time to accrue (such as savings from not using justice system services when conduct disorder is effectively prevented), this type of research is rarely done.
- Variations in clinical practice and health care costs both within and across regions make it difficult to apply findings from economic evaluations done elsewhere.<sup>18</sup>

Despite these challenges, high-quality economic evaluations are starting to accumulate. More work is needed, particularly to assess the economic outcomes of mental health interventions in childhood. Ideally, new economic evaluations will include sufficient details about costs so policy-makers and practitioners can apply research findings to their own particular populations and program needs.

## Investing in children yields excellent returns

All children have the right to thrive and to meet their potential. When governments invest in effective health promotion, disorder prevention and treatment services, the personal and financial costs of childhood mental disorders can be substantially reduced. Economic evaluations are a vital tool in reducing these costs because they help determine which specific interventions constitute the wisest use of limited public funds. 🖐️



■ Almost every resource used for children's mental health is scarce relative to both need and demand.

“Economic evaluations can assist policy-makers and practitioners in choosing mental health interventions with the greatest potential benefit.”

### It works ... but at what price?

Effective treatments exist for conduct disorder, anxiety and depression — three of the most common childhood mental disorders. As the evidence on effective interventions for these disorders accumulates, policy-makers and researchers are increasingly focusing on whether the benefits of clinically successful interventions justify the costs.

### The search for affordable answers

To provide information on the clinical and financial outcomes of child mental health interventions, Romeo, Byford and Knapp<sup>15</sup> conducted a systematic review of published cost-effectiveness analyses. Their review failed to uncover any economic evaluations of treatments for depression or anxiety. However, seven evaluations of interventions for conduct problems met the authors' inclusion criteria. We highlight findings from the three evaluations that used the most rigorous research designs — randomized-controlled trials — for assessing effectiveness.

All three studies compared the clinical effectiveness and costs of different forms of parent training (e.g., individual versus group delivery). All interventions taught parents of 3- to 12-year-olds behavioural techniques, such as contingency management, using methods including modelling and role play. One intervention also incorporated an optional social skills program for children.<sup>19</sup> Although all children were experiencing significant behavioural problems, only one study required a diagnosis of oppositional defiant disorder as a prerequisite for participation.<sup>20</sup> Clinical and cost outcomes of the three interventions are described in the following table.



■ Economic evaluations are a new tool in the field of children's mental health.

“ Policy-makers and researchers are increasingly focusing on whether the benefits of clinically successful interventions justify the costs. ”

**Table 2: Clinical and cost outcomes of parenting interventions for conduct problems**

Country (year)	Clinical Outcomes	Cost Outcomes
<b>Format (participant number)</b>		
Canada (1995) <sup>19</sup>	At 6-month follow-up, group community-based format produced significantly greater reductions in behaviour problems and increases in problem-solving skills	Direct intervention costs for group community-based format were significantly lower (\$124.52 versus \$802.75 per family) Group community-based format was more than six times as cost-effective
Group community-based (48) Individual clinic-based (46) Waitlist control (56)		
United Kingdom (2000) <sup>20</sup>	At 12-month follow-up, formats did not differ on any clinical outcomes, including parent- and teacher-rated behavioural problems	Direct intervention costs were not significantly different (community-based £374 versus £488 per child) Total assessed costs* were not significantly different (community-based £4,919 versus £3,403)
Group community-based (72) Group hospital-based (69)		
United States (1980) <sup>21</sup>	At post-test, individual and group formats demonstrated greater behavioural improvements	Direct intervention costs were not assessed Self-instruction format had lowest use of professional time (1 hour versus 12 hours for individual and 5 hours for group)
Individual (12) Group (12) Self-instruction (12)		

\* Including intervention and the use of additional health, education, social and private sector services.

## Encouraging parent participation

In addition to supplying data on clinical effectiveness and costs, one study also provided insight into ways of encouraging parents' participation.

Many programs struggle to attract parents even when common barriers are addressed through flexible service hours and the provision of child care and transportation. The Canadian study shed some light on ways of encouraging parents' enrolment. In this study, immigrant parents and those dealing with more serious child behavioural problems were much more likely to participate in a parenting program that used a community group format rather than an individual clinic-based format.<sup>19</sup>

## Tallying *all* the costs

Economic evaluations are a new tool in the field of children's mental health. Early attempts to examine the costs and benefits of interventions faced methodological challenges that were apparent in two of the three studies reviewed here. In evaluating costs, the American study considered only professional time. The Canadian study included a much wider range of costs, including travel time, room rentals, intervention materials, and costs incurred by participants for time and mileage. Neither study, however, assessed possible cost savings from participating in the intervention, such as reduced service use in other sectors. Only the British study employed this more rigorous and comprehensive type of evaluation.

*“Immigrant parents and those dealing with more serious child behavioural problems were much more likely to participate in a parenting program that used a community group format rather than an individual clinic-based format.”*

## Maximizing positive outcomes

The research suggests that clinically effective treatments for children with severe conduct problems can be delivered in ways that maximize positive outcomes while minimizing costs. For example:

- *Parent training* can reduce child behaviour problems with relatively low costs.
- *Group parent training* can produce improved outcomes at significantly lower costs than individually delivered parent training.
- *Group parent training* can be delivered in different venues (including community clinics and hospitals) with equal clinical improvements and similar costs.
- *Group parent training* may encourage the participation of parents who are less likely to enroll in or complete traditional individually delivered clinic-based programs.
- *Self-instructional parent training* can be delivered with lower personnel costs but may produce fewer behavioural improvements.

The fundamental goal of delivering effective treatments can best be met when researchers, policy-makers and practitioners collaborate on study designs and evaluations. Including economists in these evaluations ensures vital learning about costs and cost savings. 🖐️

“Clinically effective treatments for children with severe conduct problems can be delivered in ways that maximize positive outcomes while minimizing costs.”



# Assessing the value of an ounce of prevention

Conduct disorder, anxiety and depression are three of the most potentially preventable mental disorders in children. In our [first issue](#) of the *Quarterly*, we identified six particularly effective programs for preventing these three conditions. Here we build on these findings by highlighting available data on the financial costs and benefits of these programs.

## Our systematic method for selecting research

Our search strategy included updating our original search for [randomized-controlled trials \(RCTs\)](#) of prevention programs up to May 2008. We then added economic evaluation search terms and search strategies adapted from the National Health Service Economic Evaluation Database.<sup>22</sup> We used these combined prevention and economic evaluation search strategies in the Medline, PsycINFO, Embase and Cochrane Central Register of Controlled Trials databases. We also scanned several online libraries and the reference and citation lists of all applicable retrieved studies for additional relevant publications.

A two-phase assessment was followed. Studies were first assessed using our standard RCT [acceptance criteria](#). Studies meeting these criteria were then assessed for their economic evaluation methodology using criteria adapted from the [Campbell Collaboration Economics Methods Group](#). Because no widely validated criteria have been established for assessing economic evaluations,<sup>23</sup> all studies with an economic evaluation that met our usual RCT acceptance criteria were included.

## Finding the needles in the haystack

Of 12 articles retrieved for assessment, four met our RCT acceptance criteria. *Coping with Stress*<sup>24</sup> was designed to prevent depression, and the remaining programs — *Perry Preschool*,<sup>25</sup> *Nurse Home Visitation*<sup>26</sup> and *Fast Track*<sup>27</sup> — were designed to prevent conduct disorder.

All interventions were targeted at high-risk groups in the United States. The years in which the programs were delivered varied dramatically, ranging from the 1960s<sup>25</sup> to the 1990s and 2000s.<sup>27</sup> The content of the interventions is described in Table 3.



■ All of the programs assessed produced clinically significant benefits.

“After first providing high-quality evidence on the effectiveness of certain prevention interventions, researchers have now begun to evaluate the economic costs and benefits of these interventions.”

**Table 3: Intervention programs assessed**

Target Group	Intervention (participant number)	Control (participant number)
<b>Coping with Stress:</b> <sup>24</sup> 13- to 18-year-olds with past depressive episode or current symptoms and a depressed parent	15 one-hour group cognitive-behavioural therapy sessions including cognitive restructuring techniques to identify and challenge irrational thoughts; 3 parent information meetings — delivered in the mid-1990s (45)	Usual care* (49)
<b>Fast Track:</b> <sup>27</sup> 1st to 10th graders living in neighbourhoods with high rates of crime and poverty	10-year intervention with a range of services including parent training with home visits, child tutoring, mentoring and social skills training — delivered in the 1990s to 2000s (345)	No services provided** (334)
<b>Nurse Home Visitation:</b> <sup>26</sup> Unmarried teens during their first pregnancy	Home visits by nurse during pregnancy and first 2 years after birth focused on parent education; developmental screening and transportation <sup>†</sup> — delivered in the early 1980s (94)	Screening and transportation <sup>†</sup> (161)
<b>Perry Preschool:</b> <sup>25</sup> 3- to 4-year-old African-American children with low IQ scores and parents with low education and socio-economic status	2½-hour preschool classes over 30 weeks per year; 1½-hour weekly home visits; parent group meetings — delivered in the 1960s (56)	No services provided (63)

\* Participants were free to initiate or continue any mental health services.

\*\* Participants were free to access any usual community or school-based services.

† Including free transportation to prenatal and “well-child care” appointments and child sensory/developmental screening.

## The good, the bad and the costly

All economic evaluations had at least some minor shortfalls in their analyses (such as a failure to assess costs borne by participants). However, these weaknesses did not detract from the studies’ sound methodological quality — with one exception. The *Fast Track* study had major shortcomings, including questionable assumptions about potential cost savings and a lack of reporting of statistical tests for most data. These limitations were serious enough to raise questions about the validity of the study’s findings.

## Preventing disorders while containing costs

All of the programs assessed produced clinically significant benefits. The per-participant cost of the programs varied dramatically, ranging from \$1,632 (in 2000 \$US) for *Coping with Stress*<sup>24</sup> to \$58,283 (in 2004 \$US) for *Fast Track*.<sup>27</sup> Details of clinical benefits and intervention costs are described in the following table.

“Research is beginning to answer not only the question can this intervention work, but also, is it worth doing economically?”

**Table 4: Clinical and cost outcomes by program**

Child Clinical Outcomes	Intervention Costs
<b>Coping with Stress:</b> <sup>24</sup> At 1-year outcome, significantly more depression-free days (301 versus 248) and greater increases in quality of life years (0.93 versus 0.87)	<ul style="list-style-type: none"> <li>• Average cost of \$1,632 per participant (in 2000 \$US with no discounting)</li> <li>• The average incremental cost-effectiveness ratio was \$10 per depression-free day and \$9,275 per quality-adjusted life year*</li> </ul>
<b>Fast Track:</b> <sup>27,28</sup> At 9-year outcome, significantly lower incidence of conduct disorder among highest-risk children only (5% versus 21%)	<ul style="list-style-type: none"> <li>• Average cost of \$58,283 per participant (in 2004 \$US adjusted for inflation with 5% discounting)</li> <li>• Cost per averted case of conduct disorder was \$3,481,433 for whole sample and \$752,103 for high-risk children</li> </ul>
<b>Nurse Home Visitation:</b> <sup>26,29</sup> At 15-year outcome, significantly fewer arrests, convictions and probation violations	<ul style="list-style-type: none"> <li>• Average cost of \$3,246 per family** (in 1980 \$US with 3% discounting)</li> <li>• Net cost to provide program to whole sample was \$1,582 per family — For low-income families, program costs were recovered, with a net savings of \$180 per family at 4-year outcome</li> </ul>
<b>Perry Preschool:</b> <sup>25</sup> At 37-year outcome, significantly higher educational attainment and employment earnings and significantly less criminal activity	<ul style="list-style-type: none"> <li>• Average cost of \$15,827 per participant (in 2000 \$US with no discounting)</li> <li>• Net cost savings achieved across all assessed perspectives, including participants (\$49,190), general public (\$180,455) and society (\$229,645) (in 2000 \$US with 3% discounting)</li> </ul>

\* Commonly cited guidelines suggest adopting new interventions that are more effective than existing ones with costs of less than \$20,000 per quality-adjusted life year.<sup>24</sup>

\*\* Figure does not include transportation and screening service costs received by both treatment and comparison groups.

There was considerable variation in the financial outcomes of these programs. In preventing depression, *Coping with Stress* was more effective than usual care services, with relatively low additional costs. In preventing conduct disorder, *Perry Preschool* reduced criminal activity while providing economic returns to society estimated at between \$6.87 and \$16.14 for every \$1 invested. *Nurse Home Visitation* produced cost savings — among the highest-risk families only — by reducing other service use and increasing maternal tax revenues from improved employment. Of note, the economic evaluation of *Nurse Home Visitation* calculated costs and benefits over a four-year period while the clinical outcomes reported were achieved 15 years after the intervention was delivered. As a result, some possible savings were omitted, such as the potential for reduced use of criminal justice services. Accordingly, the cost savings of *Nurse Home Visitation* may be even greater than reported.

The authors of the *Fast Track* evaluation concluded that the program was cost-effective, for the highest-risk children only, based on the assumption that untreated children would have “a life of crime” at a cost of \$1 million per child. This assumption is questionable given that not all children in their sample would have developed conduct disorder and even among those who did, not all would engage in persistent criminal activity.

“Investments in children’s mental health are among the most important that any society can make.”

## Translating findings to Canadian settings

These findings provide critical information about the economic costs and benefits of prevention programs. Nevertheless, there are limitations in applying the results in Canada. All interventions were delivered in the United States, where there are considerably fewer baseline health and social services than in Canada. Our better services may mean that prevention programs have less impact here. As well, two of the interventions were delivered more than 25 years ago, making application of results to contemporary Canadian settings difficult. Commensurate with any large-scale Canadian implementation of these programs, rigorous evaluations need to be designed to assess the impact for Canadian children.

“Better understanding of the costs of effective interventions can help policy-makers obtain the greatest yield for children’s mental health investments.”

## Decisions that work for kids and coffers

After first providing high-quality evidence on the effectiveness of certain prevention interventions, researchers have now begun to evaluate the economic costs and benefits of these interventions. In doing so, research is beginning to answer not only the question can this intervention work, but also, is it worth doing economically?

Investments in children’s mental health are among the most important that any society can make. Better understanding of the costs of effective interventions can help policy-makers obtain the greatest yield for children’s mental health investments. Knowing the cost-effectiveness of prevention programs is particularly salient because these programs can reduce the level of demand on our overburdened treatment system, thereby allowing more children to be reached. We encourage more researchers and policy-makers to conduct careful economic evaluations of both prevention and treatment programs so that more children can be offered effective interventions that are economically sustainable. 🖐️

### Intervention resources — A click away

The following websites and references provide additional information about each program’s specific content:

#### *Coping with Stress*

- Clarke, G., & Lewinsohn, P. M. (1995). *The adolescent Coping with Stress class: Leader manual*. Portland, OR: Kaiser Permanente Center for Health Research. <http://www.kpchr.org/public/acwd/acwd.html>

#### *Fast Track*

- Teacher-delivered curriculum: [www.prevention.psu.edu/projects/PATHS.html](http://www.prevention.psu.edu/projects/PATHS.html)
- Enrichment group program, child’s social skills and parent training information: Peters, R. D., & McMahon, R. J. (Eds.). (1996). *Preventing childhood disorders, substance abuse, and delinquency*. Thousand Oaks, CA: Sage.
- Home visiting: Wasik, B. H., Bryant, D. M., & Lyons, C. M. (1990). *Home-visiting: Procedures for helping families*. Newbury Park, CA: Sage.
- Academic tutoring: Wallach, M. A., & Wallach, L. (1976). *Teaching all children to read*. Chicago: University of Chicago Press.

#### *Nurse Home Visitation*

- [www.nursefamilypartnership.org/index.cfm?fuseaction=home](http://www.nursefamilypartnership.org/index.cfm?fuseaction=home)

#### *Perry Preschool*

- [www.highscope.org](http://www.highscope.org)

### Is there a link between bullying others and suicide?

#### To the Editors:

In your most recent issue of the *Quarterly*, suicide was identified as a risk factor for victims of bullying. I understand that those who bully are as much at risk as those who are bullied. It is important to promote as accurate an understanding of the risk factors for suicide as possible. Would you please comment on the literature regarding the suicide risk for those who bully others?

Debbie Saari  
Victoria, BC



■ Of the many risk factors associated with bullying, suicide is especially concerning.

Research evidence clearly finds that bullying takes a negative toll on all involved, including the bullies, the victims and the children who witness bullying. Of the many risk factors associated with bullying, suicide is especially concerning. The link between suicide attempts and being a victim of bullying has been well established.<sup>30</sup> The association between suicide and bullying others is also now beginning to be documented. Many studies have found that children who bully others are at increased risk for both having thoughts of suicide<sup>30-35</sup> and for making suicide attempts<sup>30,31</sup> compared to children not involved in bullying.

A newly published systematic review<sup>36</sup> examined the relative risk for suicide among children involved in bullying. Based on the results of 37 studies, the authors concluded that children who were both victims and perpetrators of bullying had the strongest risk for suicide.

#### Avoiding the worst outcomes

When children are exposed to bullying — whether as a victim, bully or both — they suffer. Sometimes the suffering is so great that children contemplate suicide or actually attempt suicide. These devastating outcomes can be avoided when adults intervene to end bullying by using effective interventions such as those outlined in [our previous issue](#).

“Bullying takes a negative toll on all involved, including the bullies, the victims and the children who witness bullying.”

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## Links to Past Issues

### 2008/Volume 2

- 4 - [Assessing Bullying Behaviour in Children](#)
- 3 - [Diagnosing and Treating Childhood Bipolar Disorder](#)
- 2 - [Preventing and Treating Childhood Depression](#)
- 1 - [Building Children's Resilience](#)

### 2007/Volume 1

- 4 - [Addressing Attention Problems in Children](#)
- 3 - [Children's Emotional Wellbeing](#)
- 2 - [Children's Behavioural Wellbeing](#)
- 1 - [Prevention of Mental Disorders](#)