

CHILDREN'S MENTAL HEALTH  
POLICY RESEARCH PROGRAM

UNIVERSITY OF BRITISH COLUMBIA

# Preventing and Treating Conduct Disorder in Children and Youth

A Research Report Prepared for the  
British Columbia Ministry of Children  
and Family Development

April 2004

Charlotte Waddell ■ William Wong  
Josephine Hua ■ Rebecca Godderis

VOLUME 1 REPORT 3





**Children's Mental Health Policy Research Program**

Suite 430 - 5950 University Boulevard

Vancouver BC V6T 1Z3

[www.childmentalhealth.ubc.ca](http://www.childmentalhealth.ubc.ca)

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# ACKNOWLEDGEMENTS

We thank the following people who commented on earlier drafts of this report:

- Child and Youth Mental Health Team  
British Columbia Ministry of Children and Family Development
- Provincial Advisory Committee on Child and Youth Mental Health  
British Columbia Ministry of Children and Family Development

We also thank the following people who provided research and editorial assistance:

- Susan Cuthbert
- Orion Garland
- Raket Kling
- Simone Leung
- Longena Ng
- Cody Shepherd

Funding for this work was provided by:

- Child and Youth Mental Health  
British Columbia Ministry of Children and Family Development
- Canadian Population Health Initiative  
Canadian Institute for Health Information

# PREFACE

This report is one in a series of research reports being prepared by the Children's Mental Health Policy Research Program at the University of British Columbia at the request of British Columbia's (BC's) Ministry of Children and Family Development (MCFD). At any given time, over one in seven or 140,000 children in BC experience mental disorders serious enough to impair their development and functioning at home, at school and in the community.<sup>1</sup> MCFD has made it a goal to improve children's mental health in BC. To support MCFD, in 2002–2003 we produced four reports: on population health and clinical service considerations;<sup>2</sup> on practice parameters for treating attention-deficit/hyperactivity disorder, conduct disorder, depression, obsessive-compulsive disorder and schizophrenia;<sup>3</sup> on child psychiatric epidemiology;<sup>1</sup> and on performance monitoring.<sup>4</sup> In 2003, MCFD announced a new *Child and Youth Mental Health Plan* (the *Plan*)<sup>5</sup> to better address the needs of children and families in BC.

Our research reports will support MCFD's *Plan* by identifying the most effective prevention and treatment approaches available for a variety of children's mental health problems. This report focuses on conduct disorder. Future reports will focus on anxiety, depression, eating disorders, comorbidity, attention problems and other mood and developmental problems. Future reports will also address knowledge exchange, parenting and service models. In addition, other groups will be producing reports on the mental health of First Nations children, on the treatment of early psychosis and on suicide prevention. These reports will be a resource for policy-makers, practitioners, families, teachers and community members working with children in BC. We recognize that research evidence is only one component of good policy and practice. Our goal is to nevertheless facilitate evidence-based policy and practice by making summaries of the best research evidence available to everyone concerned with improving children's mental health in BC.

# EXECUTIVE SUMMARY

Conduct disorder is a serious and persistent mental health problem that involves antisocial behaviour and impaired functioning in multiple domains in a child's life. It is likely caused by a web of interacting factors in families and communities that create disadvantage and affect children's development over time. Over 40,000 children in BC are affected. Conduct disorder is associated with significant distress and social costs for these children, and for their families and communities. Most children with this disorder can be helped. This report focuses on effective approaches to preventing and treating conduct disorder. Using systematic methods, we identified the best studies on prevention and treatment completed over the past 10 years.

## Findings

- There is strong evidence on prevention from 44 articles on 19 different programs.
- The most promising prevention programs focus on early child education and parent training beginning early in life in high risk groups.
- There is moderate evidence on treatment from nine articles on seven different programs.
- The most promising treatment programs focus on parent training in high-risk groups.



## Recommendations

- Prevention is a priority given the strong research evidence. Prevention programs need to start early and target high-risk groups. They should be modelled after the most promising programs that focus on early child education and parent training programs.
- Treatment is also important and should be modelled after the most promising programs that focus on parent training in high-risk groups.
- For populations where the research evidence does not directly apply (such as children with concurrent mental health problems), prevention and treatment programs should emulate the model programs described in the research.
- Approaches that are not supported by the best available research evidence should be discontinued or carefully evaluated. These approaches may include treating children in groups with peers who are also at risk or conducting one-to-one psychotherapies without taking children's larger social context into account.
- Many promising policies and practices have not yet been evaluated in the research. Consequently, it is imperative to evaluate all programs to ensure that they lead to positive outcomes for children. Where new programs are developed based on the research evidence, fidelity to the research programs should be ensured and outcomes should be evaluated.

# 1 INTRODUCTION

## 1.1 What is Conduct Disorder?

Conduct disorder (CD) refers to severe and persistent antisocial behaviour in children. For a diagnosis of CD as defined in the *Diagnostic and Statistical Manual (DSM)* of the American Psychiatric Association (APA),<sup>6</sup> a child must be under 18 years old and must exhibit several conduct problems such as aggression to people or animals, deceitfulness, theft, destruction of property or serious rule violations. These symptoms must be present for at least a year and must cause significant impairment in functioning at home, at school, with peers or in the community (detailed *DSM* criteria for assessing CD are outlined in Appendix A). There are no definitive biological or psychological tests for CD. Consequently, the diagnosis must be made clinically involving a multidisciplinary team assessment that includes reports from multiple informants (children, parents, teachers and others). Additional forensic assessment may be needed if children are involved in the justice system or if there are concerns about child abuse and neglect. However, it is also important to note that many children with CD do not become involved in the justice system and many children involved in the justice system do not have CD.

Based on large-scale community-based epidemiological surveys in Canada, the United Kingdom and the United States (US), the estimated prevalence rate for CD is 4.2%.<sup>1</sup> BC has an estimated population of one million children.<sup>7</sup> This means that at any given time, approximately 42,000 children in BC may be affected. In comparison to other childhood mental disorders, CD is the third most prevalent after anxiety and attention disorders.<sup>1</sup> CD often starts early and persists such that long-term development and functioning are affected.<sup>8-12</sup> Approximately 50% of children with CD do not maintain a pattern of severe antisocial behaviour into adulthood.<sup>13</sup> However, because many do have chronic antisocial difficulties, the social costs associated with CD are high including costs to victims, costs to the justice system and costs of lost human potential.<sup>14,15</sup> Concurrent mental health problems such as substance abuse, attention problems, learning difficulties, depression and anxiety are common and add to children's distress and impairment.<sup>16,17</sup>

Like other complex children's mental health problems, CD is likely caused by a web of interacting factors.<sup>18,19</sup> Risk factors are characteristics, events or processes that increase the likelihood of the onset of a disorder.<sup>20</sup> In contrast, protective factors can moderate the impact of risk factors by allowing children to develop resilience in the face of adversity.<sup>21</sup> While many factors may be correlated with a disorder, not all are causal. To be causal, factors must precede the outcome of concern and must be shown to alter the outcome if they are manipulated.<sup>22,23</sup> For complex problems like mental disorders in children, notions of causation must also take into account the way that factors interact over time as children develop.<sup>24</sup> A number of causal factors have been highlighted in the research on CD. Most children with CD come from disadvantaged backgrounds. Additional risk factors appear to include harsh and inconsistent parenting, lack of adult support and mentoring, and isolation with deviant peer groups.<sup>19,25,26</sup> Several factors also appear to be protective: consistent adult care-giving, good learning abilities, good social skills, easy temperament, few siblings, positive emotional supports, sense of competency and positive beliefs about the larger world.<sup>27</sup>



## 1.2 Prevention and Treatment Issues

Given the distress and high social costs associated with CD, especially for children, prevention is a priority. Prevention programs intervene early, before disorders develop, to enhance protective factors or mitigate risk factors and therefore reduce the number of new cases of disorders in the population.<sup>21,28,29</sup> Prevention programs may be either universal or targeted. Universal programs are directed at entire populations and are presumed to be desirable for everyone.<sup>21</sup> Targeted programs are directed at children identified as high-risk on the basis of having risk factors or early symptoms of a disorder.<sup>21,30</sup> Both types of prevention programs have associated advantages and disadvantages.<sup>31</sup> Universal programs avoid labelling and stigma but may be unnecessarily expensive and may provide help to many children and families who are not at risk. Meanwhile, targeted programs can be more efficient but depend on being able to accurately identify children at risk, which is difficult. Targeted programs may also expose identified children to labelling and stigma. Although more research is needed to determine the optimal mix of universal and targeted prevention programs, it is generally agreed that both are needed.

Prevention is a priority to reduce the number of children with CD. However, prevention and treatment fall on a continuum and treatment is crucial for children who have established symptoms of a disorder. Treatment programs aim to reduce the length of time a disorder exists, reduce its severity, prevent its recurrence and reduce co-morbidity.<sup>21</sup> Treatment programs tend to focus on individuals rather than populations. As with prevention, there are associated advantages and disadvantages.<sup>31</sup> Treatment programs provide much needed support to children and families and can alleviate symptoms. They can also be relatively efficient because they focus on children who are more severely affected. However, treatment programs can expose children to labelling and stigma. They are also costly and are seldom able to reach all children in need. Evidence from large-scale epidemiological surveys in Canada and elsewhere indicates that fewer than 25% of children with serious mental disorders (including CD) receive treatment from specialized mental health services (although more than 50% likely receive services through primary care and schools).<sup>2</sup> While the optimal mix of prevention and treatment programs has also not been clearly described, there is general agreement that both prevention and treatment are needed if we are to reduce the distress and impairment associated with CD.



### 1.3 Purpose of this Report

In the prevention literature, several recent reviews have examined children's issues. However, while these reviews were comprehensive, they did not deal with the issue of prevention in young children,<sup>32</sup> were not systematic<sup>14</sup> or did not specifically focus on mental health.<sup>28</sup> Similarly, recent reviews on the treatment of CD were not systematic,<sup>33</sup> did not explore interventions for a broad age range (zero to 18 years)<sup>34</sup> or focused too narrowly on certain treatment approaches (such as medication).<sup>35-37</sup> No previous reviews have examined both the prevention and treatment of CD for the full range of ages and interventions. Consequently, this report was requested by MCFD in order to inform the development of more effective policies and programs for preventing and treating CD. The overall goal of this work is to improve mental health outcomes for BC's children.

## 2 METHODS

Using Medline, PsycINFO and the Cochrane Database of Systematic Reviews, we searched for original studies published from 1991-2003 on preventing or treating CD in children aged zero to 18 years. Studies were included that examined *efficacy* (can this intervention work in idealized settings?) and, if possible, *effectiveness* (does this intervention work in usual settings?). Where possible, we also included information about the cost of interventions. The search terms for prevention were *prevention, early childhood development and conduct disorder*. The search terms for treatment were *conduct disorder and juvenile delinquency*, combined with *treatment, management, intervention or therapy*. Where applicable, search terms were modified to follow database indexing. We also searched for systematic reviews on the prevention and treatment of CD. Systematic reviews were then hand-searched to identify additional studies. All abstracts identified through these searches were assessed. Relevant articles were then retrieved. Two independent reviewers assessed all articles retrieved using the criteria outlined in Appendix B. To be included, studies had to meet a high standard involving randomization, use of comparison groups and evidence of both clinical and statistical significance in populations similar to BC's. A meta-analysis was not attempted due to the diversity in the methods used and the populations studied. Disagreements about which articles to include were resolved by consensus involving all the authors. The lead author reviewed all studies that were included. Studies were then summarized according to program type for both prevention and treatment.

# 3 FINDINGS

## 3.1 Summary

In total, 147 prevention and 60 treatment studies were retrieved and assessed. Of these, 44 articles on 19 different prevention programs and nine articles on seven different treatment programs met criteria. All programs demonstrated clinically and statistically significant reductions in behaviours relevant to CD. Sample sizes in prevention studies ranged from 24 to 7,560 and in treatment studies from 32 to 155. All used comparison groups comprised of usual care, wait list control or no intervention. Results are summarized here according to program (see Tables 1 through 6). The 19 prevention programs are grouped as universal, targeted or combined. The seven treatment programs are grouped as family or community. In addition there were two medication studies.

Although only efficacy was required for inclusion in this report, most prevention programs also demonstrated effectiveness because they were conducted in home, school or larger community settings that approximated "real world" settings. This was not the case for treatment programs where all studies demonstrated efficacy only.

Most prevention and treatment programs were studied in the US; three were studied in Canada (*Tri-Ministry*<sup>38,39</sup> *COPE*,<sup>40</sup> and the *Montreal Prevention Study*<sup>41-47</sup>) and two were studied in Australia (*Triple P48-51* and *Behavioural Parent Training*<sup>52</sup>). In addition, one medication was studied at multiple sites including the US, Canada and South Africa.<sup>53</sup> Aside from the *Brain Power Program*<sup>54,55</sup> and the *Montreal Prevention Study*<sup>41-47</sup> which involved only boys, both boys and girls were equally represented in the prevention studies. In comparison, most participants in the treatment studies were boys. Prevention studies included African American, Caucasian and Hispanic groups, while the treatment studies predominantly focused on Caucasian groups. Few studies were conducted in Canada, and none included First Nations populations.

Most prevention and treatment studies included follow-up, assessing participants longer term after the study was finished. Follow-up for most of the prevention programs ranged from eight weeks to seven years, whereas follow-up for the treatment programs ranged from six months to two years. Two targeted prevention programs completed exceptionally long-term follow-up. The *Nurse Home Visitation Study* conducted follow-up 15 years later and found reductions in antisocial behaviour.<sup>56-58</sup> Similarly, the follow-up for the *High/Scope Perry Preschool Program* continued up to 19 years later and found reductions in antisocial behaviours.<sup>59,60</sup>

Most studies did not assess costs. Of the 19 prevention programs, only three reported any cost information. *COPE* reported that their community-based parent training program cost approximately six times less than a similar individual clinic-based program.<sup>40</sup> The *High/Scope Perry Preschool Project* reported a return of \$7 US for each dollar invested.<sup>60</sup> The *Nurse Home Visitation Study* reported that for low-income families, program costs were recovered with a return of \$180 US per family. This figure accounted for government expenditures only and not the added social benefits for individuals.<sup>61</sup> Only one treatment program assessed costs. Henggeler and colleagues<sup>62</sup> estimated that reduced incarceration rates as a result of *Multi-systemic Therapy (MST)* saved approximately \$3,700 US per youth annually.

## 3.2 Prevention

### Universal Prevention Programs

Four universal prevention programs were described in seven articles (see Table 1). All were school-based programs developed to build protective factors by improving parents' or teachers' interactions with children, or by promoting children's social skills, reading ability or positive behaviours.

TABLE 1. Universal Programs for Preventing Conduct Disorder

Program	Sample	Description	Main Findings
<b>Catch 'Em Being Good (US)</b> <sup>63</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children attending urban schools</li> <li>• <i>Age:</i> 6-7 years</li> <li>• <i>Sex:</i> 48% male</li> <li>• <i>Ethnic majority:</i> 46% Caucasian</li> </ul>	<ul style="list-style-type: none"> <li>• Family + school intervention over 2 years</li> <li>• Parents received 7 sessions on family management + positive parenting</li> <li>• Teachers trained in classroom management + interpersonal cognitive problem-solving for children</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour for Caucasian boys + in self-destructive behaviour for</li> <li>• Caucasian girls</li> <li>• No effects found for African American children</li> <li>• No follow-up</li> </ul>
<b>Good Behavior Game (US)</b> <sup>64-66</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children attending urban schools</li> <li>• <i>Age:</i> 5-9 years</li> <li>• <i>Sex:</i> 49% male</li> <li>• <i>Ethnic majority:</i> 65% African American</li> </ul>	<ul style="list-style-type: none"> <li>• Child + school intervention over 1 year</li> <li>• Token economy-based behaviour management</li> <li>• Targeted both shy + aggressive behaviour</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour</li> <li>• Effects maintained at 4-yr follow-up with greatest progress for most aggressive children</li> </ul>
<b>STEP (US)</b> <sup>67</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children attending urban, suburban + rural schools</li> <li>• <i>Age:</i> 11-12 years</li> <li>• <i>Sex:</i> Not reported</li> <li>• <i>Ethnic majority:</i> Not reported</li> </ul>	<ul style="list-style-type: none"> <li>• School intervention over 2 years</li> <li>• Reorganization of homeroom teacher's role + of school environment</li> <li>• Teachers served as primary administrator + counselling link between children, parents + school</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour, depression + anxiety</li> <li>• No follow-up</li> </ul>
<b>Tri-Ministry (Canada)</b> <sup>38,39</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children attending urban schools</li> <li>• <i>Age:</i> Avg 6 years</li> <li>• <i>Sex:</i> 51% male</li> <li>• <i>Ethnic majority:</i> Not reported</li> </ul>	<ul style="list-style-type: none"> <li>• Child, family + school intervention over 1 to 5 years</li> <li>• Compared a class-wide social skills program, a partner reading program + a combined program</li> <li>• Parents continued skillbuilding at home</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in prosocial + antisocial behaviour</li> <li>• No follow-up</li> </ul>

## Targeted Prevention Programs

Thirteen targeted prevention programs were described in 32 articles (see Table 2). Eight programs were school-based and five were family-based. Targeted programs increased protective factors by improving parenting ability or children's coping skills.

TABLE 2. Targeted Programs for Preventing Conduct Disorder

Program	Sample	Description	Main Findings
<b>Brain Power Program (US)</b> <sup>54,55</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children of low socioeconomic status who are aggressive</li> <li>• <i>Age:</i> 8-12 years</li> <li>• <i>Sex:</i> 100% male</li> <li>• <i>Ethnic majority:</i> 86% African American</li> </ul>	<ul style="list-style-type: none"> <li>• Child + school intervention over 6 weeks</li> <li>• Groups of 4 aggressive + 2 non-aggressive children trained to recognize accidental causation versus hostile intent</li> <li>• Twelve 1-hr group sessions offered twice weekly during regular school day</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour + hostile attributions</li> <li>• Effects not apparent at 1-year follow-up</li> </ul>
<b>COPE (Canada)</b> <sup>40</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children with behaviour problems at home</li> <li>• <i>Age:</i> 4-5 years</li> <li>• <i>Sex:</i> 51% male</li> <li>• <i>Ethnic majority:</i> Not reported</li> </ul>	<ul style="list-style-type: none"> <li>• Family intervention over 11-12 weeks</li> <li>• Community-based group parent training compared to clinic-based individual training</li> <li>• Identical curriculum used (weekly training in problem solving, positive parenting + communication)</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour for both community group + clinic-based training</li> <li>• Effects in community group significantly better than clinicbased training at 6-month follow-up</li> </ul>
<b>Fast Track (US)</b> <sup>68-72</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children of low socioeconomic status with behaviour problems</li> <li>• <i>Age:</i> 6-7 years</li> <li>• <i>Sex:</i> 69% male</li> <li>• <i>Ethnic majority:</i> 51% African American</li> </ul>	<ul style="list-style-type: none"> <li>• Child, family + school intervention over 1 year</li> <li>• <i>Promoting Alternative Thinking Strategies</i> school curriculum (2-3 sessions/week; 57 total) on emotional understanding, communication + problem solving</li> <li>• Twenty-two 2-hr sessions of social + academic training for parent + child groups; individual home visits or phone calls</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour</li> <li>• Effects maintained at 3-year follow-up</li> </ul>

TABLE 2. Targeted Programs for Preventing Conduct Disorder, *continued*

Program	Sample	Description	Main Findings
<b>High/Scope Perry Preschool (US)</b> <sup>59,60</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children of low socioeconomic status with low IQ</li> <li>• <i>Age:</i> 3-4 years</li> <li>• <i>Sex:</i> Not reported</li> <li>• <i>Ethnic majority:</i> 89% African American</li> </ul>	<ul style="list-style-type: none"> <li>• Child, family + school intervention over 1-2 years</li> <li>• Active learning class interventions + home visitations adapted to both impulse control routine +Piaget's developmental levels</li> <li>• Five 2.5-hr weekly class sessions plus 1.5-hr bi-weekly educational home visits by teacher</li> </ul>	<ul style="list-style-type: none"> <li>• Antisocial behaviour data not collected at post-test</li> <li>• Improvements in antisocial behaviour (misconduct + arrests) at follow-up (age 23 years)</li> </ul>
<b>Incredible Years (US)</b> <sup>73-76</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children of low socioeconomic status attending day care + Head Start programs</li> <li>• <i>Age:</i> 2-6 years</li> <li>• <i>Sex:</i> 54% male</li> <li>• <i>Ethnic majority:</i> Diverse</li> </ul>	<ul style="list-style-type: none"> <li>• Family + school intervention over 3-6 months</li> <li>• Videotape modelling used to teach positive parenting, coping skills, children's social strengthening skills + classroom management</li> <li>• Twelve 2-2.5-hr weekly sessions plus up to four weekly boosters of parent training + 24-36 hrs of teacher training</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour in school + home for parents attending at least 50% of sessions</li> <li>• Effects maintained at 1-year follow-up only for parents identified as high-risk</li> </ul>
<b>Johns Hopkins (US)</b> <sup>77,78</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Schools in low socioeconomic areas</li> <li>• <i>Age:</i> 5-7 years</li> <li>• <i>Sex:</i> 53% male</li> <li>• <i>Ethnic majority:</i> 87% African American</li> </ul>	<ul style="list-style-type: none"> <li>• Family + school intervention over 2 years</li> <li>• Classroom-centered curriculum enhancement with\ behaviour management (<i>Good Behavior Game</i>)</li> <li>• Family-school partnership includes teacher training (3 days), weekly home-school learning + parent training</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour</li> <li>• Classroom-centered curriculum appears more effective than the family-school partnership</li> <li>• Effects maintained at 5- year follow-up</li> </ul>
<b>Montreal Prevention Study (Canada)</b> <sup>41-47</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children of low socioeconomic status with behaviour problems</li> <li>• <i>Age:</i> 7 years</li> <li>• <i>Sex:</i> 100% male</li> <li>• <i>Ethnic majority:</i> 100% Caucasian</li> </ul>	<ul style="list-style-type: none"> <li>• Child + family intervention over 2 years</li> <li>• Avg 17.4 sessions (maximum 46) of parent home-based training on effective child rearing</li> <li>• Nineteen bi-weekly meetings with groups of 4-7 prosocial peers for each disruptive boy</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour</li> <li>• Effects not apparent until 2-year followup; maintained at 7-year follow-up</li> </ul>

TABLE 2. Targeted Programs for Preventing Conduct Disorder, *continued*

Program	Sample	Description	Main Findings
<b>Nurse Home Visitation (US)</b> <sup>56-58</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> At risk first-time pregnant women</li> <li>• <i>Age:</i> Prenatal-2 years</li> <li>• <i>Sex:</i> Not reported</li> <li>• <i>Ethnic majority:</i> Caucasian + African American (% indeterminate)</li> </ul>	<ul style="list-style-type: none"> <li>• Family intervention over 2 years</li> <li>• Pre- + post-natal nurse home visitation promoted positive health behaviours, competent care + personal development</li> <li>• Avg 7-9 prenatal + 23-26 postnatal visits plus links to health/human services + family/friend supports</li> </ul>	<ul style="list-style-type: none"> <li>• Antisocial behaviour data not collected at post-test</li> <li>• Improvements in antisocial behaviour (crime + behaviour problems) at 15-year follow-up</li> <li>• Effects greatest for those at greatest risk if intervention conducted by trained nurses</li> </ul>
<b>Peer Coping Skills Training (US)</b> <sup>79</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Aggressive children</li> <li>• <i>Age:</i> 6-8 years</li> <li>• <i>Sex:</i> 46% male</li> <li>• <i>Ethnic majority:</i> 71% both African American + Hispanic</li> </ul>	<ul style="list-style-type: none"> <li>• Child + school intervention over 22 weeks</li> <li>• Groups of 4 aggressive + 4 non-aggressive children learn coping + communication skills</li> <li>• Twenty-two 50-min weekly sessions</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour</li> <li>• Effects maintained at 6-month follow-up</li> </ul>
<b>Second Step Violence Prevention (US)</b> <sup>80,81</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children of low to middle socio-economic status attending rural + urban schools</li> <li>• <i>Age:</i> 7-11 years</li> <li>• <i>Sex:</i> 54% male</li> <li>• <i>Ethnic majority:</i> 79% Caucasian</li> </ul>	<ul style="list-style-type: none"> <li>• Child + school intervention over 15-30 weeks</li> <li>• Training in empathy, impulse control + anger management using photographs + social scenarios</li> <li>• Thirty 35-min lessons taught once or twice weekly</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial + prosocial behaviour</li> <li>• Effects maintained at 8-month follow-up</li> </ul>
<b>SHIP (US)</b> <sup>82</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Aggressive children + children with reading difficulties</li> <li>• <i>Age:</i> 5-8 years</li> <li>• <i>Sex:</i> 55% male</li> <li>• <i>Ethnic majority:</i> 59% Hispanic</li> </ul>	<ul style="list-style-type: none"> <li>• Child, family + school intervention over 2 years</li> <li>• Parents + children received <i>Incredible Years</i>-based behavioural training</li> <li>• Daily supplementary readings for 13-14 months</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour</li> <li>• Effects maintained at 1-year follow-up</li> </ul>



TABLE 2. Targeted Programs for Preventing Conduct Disorder, *continued*

Program	Sample	Description	Main Findings
<b>STAR (US)</b> <sup>83</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Families of low socioeconomic status that use excessive verbal + corporal punishment</li> <li>• <i>Age:</i> Avg 1-5 years</li> <li>• <i>Sex:</i> 54% male</li> <li>• <i>Ethnic majority:</i> 54% African American</li> </ul>	<ul style="list-style-type: none"> <li>• Family intervention over 10 weeks</li> <li>• Psychoeducation for parents about strengthening families, developmental capabilities + positive parenting</li> <li>• Program delivered 1.5-hrs weekly either individually or in groups; 1-hr audiotapes + workbooks for home</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour</li> <li>• Effects maintained at 1- month follow-up</li> </ul>
<b>Temperament Focused Parent Training (US)</b> <sup>84</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children with difficult temperament from families with maternalfamilial difficulties</li> <li>• <i>Age:</i> 3-5 years</li> <li>• <i>Sex:</i> 60% male</li> <li>• <i>Ethnic majority:</i> Caucasian (% not reported)</li> </ul>	<ul style="list-style-type: none"> <li>• Family intervention over 9 weeks</li> <li>• Temperament-based group parent-training intervention (psychoeducation on child temperament + behaviour management)</li> <li>• Nine weekly 1.5-2-hr sessions</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour</li> <li>• Effects maintained at 8-week follow-up</li> </ul>

### Combined Prevention Programs

Two programs described in five articles combined both universal and targeted components (see Table 3). One was school-based and one was community-based. Both programs focused on whole populations while concurrently providing more intensive programs for high-risk subgroups. These programs increased protective factors such as parenting ability and children's coping skills.

**TABLE 3. Combined Programs for Preventing Conduct Disorder**

Program	Sample	Description	Main Findings
<b>Coping Power (US)</b> <sup>45</sup>	<ul style="list-style-type: none"> <li>• <i>Focus for targeted intervention:</i> Children with behaviour problems at home</li> <li>• <i>Focus for universal intervention:</i> Children attending elementary school</li> <li>• <i>Age:</i> 10-11 years</li> <li>• <i>Sex:</i> 66% male</li> <li>• <i>Ethnic majority:</i> 78% African American</li> </ul>	<ul style="list-style-type: none"> <li>• Child, family + school intervention over 16 months</li> <li>• Sixteen behavioural parent group sessions + 34 40-50 min cognitive behavioural child group sessions plus some individual sessions</li> <li>• Universal component includes 5 2-hr parent + teacher meetings on homeschool involvement + substance abuse</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour</li> <li>• Effects strongest when both universal + targeted components are combined</li> <li>• No follow-up</li> </ul>
<b>Triple P (Australia)</b> <sup>48-51</sup>	<ul style="list-style-type: none"> <li>• <i>Focus for targeted intervention:</i> Families of low socio-economic status with children at risk for conduct problems</li> <li>• <i>Focus for universal intervention:</i> urban families</li> <li>• <i>Age:</i> 2-8 years</li> <li>• <i>Sex:</i> Avg 57% male</li> <li>• <i>Ethnic majority:</i> Either unreported or Caucasian (% not reported)</li> </ul>	<ul style="list-style-type: none"> <li>• Multi-level intervention including media-based selfhelp materials + variants of targeted behavioural family intervention of variable program length</li> <li>• All levels focused on positive parenting training with intensive training + support for families at high risk</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in antisocial behaviour</li> <li>• Effects maintained at 1-year follow-up</li> </ul>

### 3.3 Treatment

#### Family Treatment Programs

Three family programs were described in five articles (see Table 4). All three focused on developing and improving parenting skills.

TABLE 4. Family Programs for Treating Conduct Disorder

Program	Sample	Description	Main Findings
<b>Videotape Modelling (US)</b> <sup>86-88</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children with CD or oppositional defiant disorder</li> <li>• <i>Age:</i> 3-8 years</li> <li>• <i>Sex:</i> 76% male</li> <li>• <i>Ethnic majority:</i> 87% Caucasian</li> </ul>	<ul style="list-style-type: none"> <li>• Twelve-26 week parent-only, child-only or parent + child intervention</li> <li>• Used videotape modelling, role-playing + group discussion to emphasize positive parent-child interactions + develop social skills</li> <li>• Weekly 2-hr group sessions</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in conduct problems + parenting skills</li> <li>• Similar gains found when parent-only basic training + parent-only basic plus additional social skills training compared</li> <li>• Effects for all interventions maintained at 1-year follow-up</li> </ul>
<b>Behavioural Parent Training (Australia)</b> <sup>52</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children with CD or oppositional defiant disorder</li> <li>• <i>Age:</i> Avg 5 years</li> <li>• <i>Sex:</i> 69% male</li> <li>• <i>Ethnic majority:</i> Not reported</li> </ul>	<ul style="list-style-type: none"> <li>• Eight-week intervention that used child management + ally support training to develop parenting skills + reduce parent's social isolation</li> <li>• Ally is a family member or friend consistently available to provide support</li> <li>• Six parent group sessions plus 2 additional parent + ally sessions</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in conduct problems and parent's depression</li> <li>• Effects maintained at 6-month follow-up</li> </ul>
<b>Parent Training (US)</b> <sup>89</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Youth with a history of chronic delinquency</li> <li>• <i>Age:</i> Avg 14 years</li> <li>• <i>Sex:</i> 100% male</li> <li>• <i>Ethnic majority:</i> Not reported</li> </ul>	<ul style="list-style-type: none"> <li>• One-year intervention that taught parents to actively monitor child's behaviour + emphasized parent's contact with schools</li> <li>• Avg time spent with individual families was 21.5 hrs; avg 23 hrs of telephone support</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in delinquency + days youth spent incarcerated</li> <li>• Initial significant drop in offence rate for parent training group but a similar drop occurred in controls over 2-year follow-up</li> </ul>

## Community Treatment Programs

Two community programs were described in two articles (see Table 5). These programs were applied across children's diverse social domains (at home, at school and with peers).

TABLE 5. Community Programs for Treating Conduct Disorder

Program	Sample	Description	Main Findings
<b><i>Multidimensional Treatment Foster Care (US)</i></b> <sup>90</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Youth with a history of serious + chronic delinquency</li> <li>• <i>Age:</i> 12-17 years</li> <li>• <i>Sex:</i> 100% male</li> <li>• <i>Ethnic majority:</i> 85% Caucasian</li> </ul>	<ul style="list-style-type: none"> <li>• One-year intervention focused on the foster family environment + links with other systems (school + community)</li> <li>• Taught foster parents to create structured environment for youth</li> <li>• Used individual + family therapy</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced days spent in detention</li> <li>• Improvements in self-report measures of delinquency + criminal activity at 1-year follow-up</li> </ul>
<b><i>Multi-Systemic Therapy (US)</i></b> <sup>62</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Youth with a history of violent + chronic delinquency</li> <li>• <i>Age:</i> 11-17 years</li> <li>• <i>Sex:</i> 82% male</li> <li>• <i>Ethnic majority:</i> 81% African American</li> </ul>	<ul style="list-style-type: none"> <li>• One-6-month, family-driven intervention that developed links between multiple systems (school, community, peers + family)</li> <li>• Used variety of therapies to address difficulties in diverse areas of youth's life</li> <li>• Avg treatment spanned 4 months</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in psychiatric symptoms</li> <li>• Reduction in days incarcerated at 1-year follow-up</li> </ul>

## Medications

Two medications were described in two articles (see Table 6). Methylphenidate, a stimulant, was used in one study. Risperidone, an anti-psychotic, was used in the other. For these studies, the additional criteria of blinding and placebo controls were applied.

TABLE 6. Medications for Conduct Disorder

Treatment	Sample	Description	Main Findings
<b>Methylphenidate (US)</b> <sup>91</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children with CD, 69% with co-morbid attention-deficit / hyperactivity disorder</li> <li>• <i>Age:</i> 6-15 years</li> <li>• <i>Sex:</i> 89% male</li> <li>• <i>Ethnic majority:</i> 65% Caucasian</li> </ul>	<ul style="list-style-type: none"> <li>• Five-week intervention</li> <li>• All parents received weekly supportive counselling</li> <li>• Maximum dose: 60 mg/day</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in conduct problems</li> <li>• Avg dose: 41.3 mg/day</li> <li>• No follow-up</li> </ul>
<b>Risperidone (Canada, US + South Africa)</b> <sup>53</sup>	<ul style="list-style-type: none"> <li>• <i>Focus:</i> Children with CD, oppositional defiant disorder or disruptive behaviour + low IQ</li> <li>• <i>Age:</i> 5-12 years</li> <li>• <i>Sex:</i> 75% male</li> <li>• <i>Ethnic majority:</i> 75% Caucasian</li> </ul>	<ul style="list-style-type: none"> <li>• Six-week intervention</li> <li>• Focused on children with low IQ because conduct problems commonly occur in children with intellectual handicap</li> <li>• Maximum dose: 0.1 mg/kg/day</li> </ul>	<ul style="list-style-type: none"> <li>• Improvements in conduct problems</li> <li>• Rapid onset of drug effects</li> <li>• Avg dose: 1.0 mg/day</li> <li>• No follow-up</li> </ul>

# 4 DISCUSSION

Overall, there is a large body of research evidence on preventing and treating CD. Most evidence was found for prevention (19 programs versus seven for treatment). Prevention programs were usually targeted, focusing on parent skill-building in high-risk populations. Most prevention programs also focused on younger children and looked at effectiveness in addition to efficacy. Although only three assessed costs, all three found evidence that these prevention programs paid for themselves. Benefits of prevention programs were maintained for up to 19 years following the end of the study. In contrast, the treatment studies focused on older children and looked only at efficacy. Only one assessed costs and found that the program (MST) paid for itself. Most treatment programs demonstrated benefits at approximately one-year follow-up. The two medication studies were short (five to six weeks) and did not involve follow-up.

There were common elements in the prevention programs that were most effective. They started early, in one case in the prenatal period, rather than waiting until problems were entrenched. They targeted high-risk families. They also acknowledged that conduct problems arise within a social context such that it is imperative to intervene at the family and community levels, not just at the level of the individual child. The treatment programs that were most effective also focused on the broader social context and on reducing factors such as poor parenting.

While an array of prevention and treatment approaches have been studied, there are several limitations in the research that require interpretation before it can be applied by policy-makers and practitioners in BC. First, there were few studies in Canadian populations. This issue is important because differences between health, social and education programs in different countries can affect outcomes. For example, while the MST treatment program in the US found reductions in incarceration rates at follow-up, a replication study being conducted in Canada has not found similar results.<sup>92</sup> It is also problematic that First Nations populations are not included. Second, most studies did not assess co-morbid disorders. In large-scale epidemiological surveys, most children diagnosed with a mental disorder have more than one disorder.<sup>1</sup> Consequently, policy-makers and practitioners need research evidence that considers this issue. Finally, few studies included long-term follow-up, particularly for treatment programs. The medication studies were too short to even properly assess side effects. Policy-makers and practitioners also need to know which programs are worth investing in over the long term.

Overall, despite the limitations in the research, this systematic review suggests that there is good evidence to warrant new public policy investments, particularly in preventing CD. Targeted approaches to improving parenting in high-risk families with younger children look particularly promising. Treatment is also important and should focus on parenting programs. New policies and programs need to be modelled after the programs that have been shown to be effective. Where issues such as co-morbidity have not been addressed in the research, new programs can also be modelled after programs that have been shown to be effective. Careful evaluation of all programs is imperative and would make a valuable contribution to both research and policy development in Canada.

# 5 RECOMMENDATIONS

- Prevention is a priority given the strong research evidence. Prevention programs need to start early and target high-risk groups. They should be modelled after the most promising programs that focus on early child education and home-based parent training programs.
- Treatment is also important and should be modelled after the most promising programs that focus on parent training in high-risk groups.
- For populations where the research evidence does not directly apply (such as children with concurrent mental health problems), prevention and treatment programs should emulate the model programs described in the research.
- Approaches that are not supported by the best available research evidence should be discontinued or carefully evaluated. These approaches may include treating children in groups with peers who are also at risk or conducting one-to-one psychotherapies without taking children's larger social context into account.
- Many promising policies and practices have not yet been evaluated in the research. Consequently, it is imperative to evaluate all programs to ensure that they lead to positive outcomes for children. Where new programs are developed based on the research evidence, fidelity to the research programs should be ensured and outcomes should be evaluated.

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## Criteria for Assessing Conduct Disorder

For a diagnosis of conduct disorder, three or more of the following criteria must have been present in the past 12 months, with at least one criterion present in the past six months. The child must also be under 18 years of age and conduct problems must significantly impair functioning at home, at school, with peers or in the community.

### **Aggression to people or animals**

- Often bullies, threatens or intimidates others
- Often initiates physical fights
- Has used a weapon that can cause serious physical harm to others
- Has been physically cruel to people or animals
- Has stolen while confronting the victim
- Has forced someone into sexual activity

### **Destruction of property**

- Has deliberately engaged in fire setting with the intent to cause serious damage
- Has deliberately destroyed others' property (other than by fire setting)

### **Deceitfulness or theft**

- Has broken into someone else's house, building or car
- Often lies to obtain goods or favours or to avoid obligations ("cons" others)
- Has stolen items of value without confronting the victim

### **Serious violations of rules**

- Often stays out at night despite parental prohibitions, beginning before age 13 years
- Has run away from home overnight at least twice while living in parental home
- Is often truant from school, beginning before age 13 years

(Adapted from the American Psychiatric Association<sup>33</sup>)

## Criteria for Evaluating Research Articles

### Basic Criteria

- Original or review articles in English about humans
- About topics relevant to children's mental health in BC communities

### Reviews

- Clear statement of relevant topic
- Clear description of the methods including sources for identifying literature reviewed
- Explicit statement of criteria used for selecting articles for detailed review
- At least two studies reviewed meet criteria for assessing original research studies

### Research Studies

- Clear descriptions of participant characteristics, study settings and interventions
- Random allocation of participants to comparison groups
- Maximum drop-out rate of 20% (post-test)
- Outcome measures of both clinical and statistical significance
- For treatment, diagnostic "gold" standard or chronic and serious juvenile delinquency
- Double-blinding procedures for medication studies

(Adapted from *Evidence Based Mental Health*<sup>93</sup>)