



Cost Effectiveness of Early Intervention Programs for Queensland

November 2007

**Report prepared for the
Queensland Council of Social Service Inc
by the Social Policy Research Centre, UNSW**

Kylie Valentine and Ilan Katz

***Review Paper on the Cost Effectiveness of Early
Intervention Programs for Queensland***

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EXECUTIVE SUMMARY

Decades of research in Australia and internationally have demonstrated the benefits of early interventions for children, families and communities. Early intervention has been shown to achieve, at relatively modest cost, changes to prevent harms that are very expensive to remediate. The lifelong harms associated with child abuse and neglect, problems in school, and early behaviour problems include adult criminality and loss of life. Because these harms are so expensive to individuals, families and society, any intervention which reduces the incidence of child abuse, or facilitates better school attainment, will represent a net benefit, especially as prevention services are relatively inexpensive. However, this does not mean that any kind of intervention will make a difference. Early intervention programs tend to be short term, underfunded and ill-focused. Research demonstrates that, to be effective, early intervention programs must be long term, evidence based and comprehensive.

This paper reviews the research (including cost-benefit analyses where possible) of early intervention *programs* and early intervention *service systems*. Both components are important. Early intervention programs include home visiting by professionals or volunteers, parent education and training, quality child care and preschool, family support, school based programs and community wide interventions. There are a large number of evaluations of individual programs which provide information on the characteristics of successful programs and lessons on what the key components of those programs are. Effective programs also require a robust and integrated service system to be delivered effectively.

Lessons from research on individual programs include:

- More intensive programs are more successful than less intensive programs
- Programs that have clear goals, and multiple components and means to reach those goals, are more effective than those without a specific focus
- Program fidelity (delivering the service as designed) and program adaptation (changing the program to meet family needs as required) are both important

Service systems include processes for collaboration between agencies, methods for targeting vulnerable children and families, training and support for workers and quality assurance. Lessons from research on service systems include:

- Service systems should be sufficiently resourced to be flexible and capable of change.
- Service systems need to be capable of delivering services across the breadth of community needs.
- Early intervention policies should support service integration, and engage all agencies and individuals with the responsibility to deliver services to families.
- Policies, planning and practice should combine ‘top-down’ resources and leadership with ‘bottom-up’ expertise and local knowledge. Holistic views should be taken of the risks and vulnerabilities experienced by families and communities, and the points at which interventions can be made to ameliorate those risks and build on strengths and protective factors.
- There should be a mix of universal and targeted programs to deliver an effective, comprehensive early intervention strategy.

- Partnerships and collaboration between agencies and between service types require resources to set up and maintain, but these costs are low relative to the benefits that can be delivered.

Summary of costs and cost-benefits cited in this report

This report summarises from selected studies the costs selected interventions and the cost-benefit ratios that have been calculated or estimated from these interventions (Table 1.1).

Table 1.1 Summary of intervention cost-benefits

Category of study or intervention	Cost-benefit return	Source	Report reference
Cost-benefit analyses of child abuse and child abuse prevention for the U.S state of Michigan	19:1	(Caldwell, 1992)	Section 3.1
Reductions in class size in kindergarten through second grade (U.S)	6 to 11 percent annual real rate of return on investment	(Aos et al., 2007).	Section 3.2
Fiscal impacts of expanding prior-to-school programs in three U.S states	1.18 – 1.64:1	(Belfield, 2006)	Section 3.2
Nurse Family Partnership (home visiting program)	2.88:1	(Karoly et al., 2005)	Section 3.3
Abecedarian (preschool and family support program)	3.23: 1	(Karoly et al., 2005)	Section 4.4
Chicago Child-Parent Centres (preschool and school education and family support)	7.14: 1	(Karoly et al., 2005)	Section 4.4
Perry Preschool (preschool and family support) (follow up to middle adulthood)	17.07: 1	(Karoly et al., 2005)	Section 4.4
Meta-analysis of early intervention programs	2.36: 1	(Aos et al., 2004; Isaacs, 2007).	Section 4.4

The report also summarises the costs of failing to intervene early; that is, the costs to individuals and society of the harms that are lessened or prevented by early intervention programs (Table 1.2).

Table 1.2 Summary of costs

Category of harm or need	Estimated cost	Source	Report reference
Child abuse and neglect in Australia	\$1,944 million	(Keatsdale Pty Ltd, 2003)	Section 2.1
Special education (US)	\$US6,780 per child, or 1.9 times the average	(Belfield, 2004)	Section 2.2
Grade repetition in school	\$US4,494 per child	(Belfield, 2004)	Section 2.2
Conduct disorder in Queensland (until age 28)	\$1.4 billion	(Mihalopoulos et al., 2007)	Section 2.3

1 INTRODUCTION

There is an increasing body of research which indicates the wide range of social, health and economic benefits of investment in early intervention. Despite the evidence, governments continue to invest far more in tertiary services such as out of home care, child protection and prisons than they do in early intervention. Even where governments set up early intervention programs, these all tend to be short term, underfunded and ill-focused. Research demonstrates that, to be effective, early intervention programs must be long term, evidence based and comprehensive.

This paper reviews the literature on the potential benefits to Queensland of funding a comprehensive suite of early intervention programs. The cost effectiveness of early intervention programs is relatively well established. Interventions that are well developed, adequately resourced and implemented successfully can produce tangible effects on children and families. The specific effects of these programs include:

- Improvements in parent/child relationships
- Fewer behavioural problems
- Higher levels of cognitive functioning
- Improved 'school readiness' and school attainment
- Lower levels of domestic violence

These effects are all beneficial to the children and families who engage with the programs. However they are also beneficial to the wider society. One significant benefit is that children with improved cognitive, emotional and social functioning are likely to cost the public purse considerably less than children with problems. Some program evaluations include cost-benefit analyses. These translate the effects mentioned above into dollar savings for the public purse over the long term and then compare the benefits with the cost of the program. The few cost benefit analyses indicate that relatively modest changes brought about by interventions that aim to prevent child abuse and neglect, and improve children's life chances, bring about significant economic and social benefits.

The paper also presents a review of the evidence for early intervention and the early years, and the theoretical and practical challenges of delivering holistic services in these areas. This is because a single program or even a suite of programs is insufficient for a comprehensive, state-based early intervention strategy. Such a strategy would combine several programs – both targeted and universal, in a way that would ensure that vulnerable children and families were identified and were offered the range of interventions which matched their need. It would ensure effective inter-agency working, information sharing and planning so as to optimise resources.

1.1 Types of early interventions

There are a number of different types of early intervention programs. Many specific programs combine different interventions. In addition, as we discuss below, the mode of implementation and the context in which programs are implemented are fundamentally important to the overall effectiveness of the programs.

The most common types of programs are:

- Home visiting programs staffed by nurses, para-professionals or volunteers.

- Parent education and training.
- Early education and care programs - child care and preschool.
- Broad based family support.
- Community interventions.
- School based programs such as anti-bullying, emotional literacy, school counsellors and mentoring.
- Educational or activity programs aimed at preventing specific issues including substance misuse, crime/anti social behaviour, depression/suicide, sexual abuse and teenage pregnancy.

1.2 Structure of the report

This section briefly summarises the very large literature on the importance of the early years and intervening early; and the theory of change or logic behind effective interventions. Section 2 describes the economic costs to society associated with poor outcomes for children. Section 3 describes the current public expenditure on children and the costs of interventions for children and families. Section 4 reviews examples of programs that have been shown to be successful in and issues of implementation. However, regardless of the specific programs implemented and their specific aims and target populations, the systems that deliver services need to have a number of capabilities. Section 5 describes the principles on which systems of early intervention should be based.

1.3 Evidence base for the early years

Since the mid-1990s there has been a proliferation of policy initiatives and interventions to promote the development of young children and support their families and communities. There has also been increasing research evidence of, on the one hand, the importance of the early years on children's later outcomes, and on the other hand the impact of the family and community environment on children's development. In addition, there is an increasing body of knowledge in a range of areas, including health, criminal justice, and education that it is more effective to intervene in problematic and vulnerable families early – i.e. that 'prevention is better than cure'. This evidence base indicates that is beneficial for governments to invest in programs which focus on the early years as well as other transitional points in the lives of children and families (such as the transition from home to school and from school to work). It also indicates that programs should be able to target children and families who are vulnerable but whose difficulties have not escalated so that they need specialist treatment. Programs should also include interventions for the child, the family and the community context.

The importance of the early years is well-known and relatively uncontested. Each state and territory and the Commonwealth has, or plans to implement strategies, to improve services to young children and their families, and to enhance inter-agency collaboration in this area. The most cited and influential documents in early years policy are summarised in Appendix 1. Nevertheless, according to a recent OECD report, Australia spends less on early education and care services than any other OECD country except Canada (Organisation for Economic Co-operation and Development, 2006). A recent major report, for the World Health Organisation, concludes that early childhood is the most important developmental phase throughout life, that inequities in economic resources result in inequities in early childhood development, and argues that 'the overarching goal of the global community should be to find means of providing universal access to effective early childhood development programs and services' (Irwin et al., 2007: 11).

1.4 The importance of intervening early and key transition points

The first eight years of life are recognised as very important in determining future outcomes. This stage of life is also recognised as a very promising point for intervention. However, this does not mean that policies should only be directed towards young children and their families. Key transition points through development and around important life events are also key points at which support should be readily available and could make a significant impact: for children, these included starting school; starting high school and leaving school. For parents, they include planning a family; pregnancy and childbirth; their children starting school, and so on (National Crime Prevention, 1999).

In addition, it is not the case that interventions early in life are all that is required. Additional or 'booster' programs may be required, and the quality of schools, services and neighbourhoods are also important. One recent review of the most promising enhanced early education and care programs makes the argument that: '[i]f policy makers believe that offering early childhood intervention for two years will permanently and totally reduce [socioeconomic] disparities in children's achievement, they may be engaging in magical thinking [...] there is no quick fix, in education or anything else' (Brooks-Gunn, 2003: 9).

1.5 Why effective interventions and policies work

Effective interventions make improvements to several child and family domains. The best known and investigated of early childhood interventions for vulnerable children come from the United States, and many of these took place some time ago. The dramatic effects of these interventions may not be replicated in Australia, or indeed in the United States, under contemporary conditions. Different systems of taxation, service funding, access to universal services and urbanisation are also likely to affect the replication of intervention effects. For these reasons it is important to emphasise the domains behind these effects, and the fact that these have been shown to be robust and replicated. Even if the cost-benefit results of contemporary interventions are not as dramatic as earlier ones, the improvements made by the most effective interventions are still likely to be powerful. The logic of these improvements, and the reasons for their far-reaching effects, are:

School readiness. Early education and care for children, and family support programs for parents, aim to ensure that children are ready for school (some programs also try to ensure schools are ready for children). These programs aim to reduce the likelihood that children will repeat grades, need special education resources, or fail to finish school. High short- and medium-term costs are associated with children needing special education resources in school and repeating grades. High long-term costs to the individual (and society) are associated with children failing to finish school. Cognitive skills are important to school readiness, but so too are physical health and social, emotional and behavioural development. Relatively small improvements to test scores in the early years of school appear to have a significant impact in the long term (Brooks-Gunn, 2007).

Prevention of child abuse and neglect. Child abuse and neglect are expensive to individuals and to governments. Child abuse can cause difficulties in a number of different domains including physical and mental health, relationships, productivity at work, anti-social and criminal behaviour and parenting ability. Prevention of child abuse

and neglect, and amelioration of the circumstances in which they occur has significant effects.¹

Improved overall child and family well-being. Interventions can aim to increase parenting knowledge on areas such as health, nutrition, learning and other aspects of child development. They may also work to improve parent-child relationships. Other kinds of interventions may focus more specifically on parents (usually mothers), with the aim of improving health and well-being for all family members. These can bring significant effects benefits in the short-, medium- and long-term.

Reduced need for intensive and crisis services. Crisis and intensive services are more expensive than prevention and support services. This can be the case even when intensive services are delivered to relatively few families and prevention services are delivered to everyone. Early intervention into a range of child disabilities, especially behavioural disorders and speech delays, can improve transitions to school and early test scores. Although the delivery of accessible, comprehensive supportive and preventive services will not eliminate the need for intensive and crisis services, even a relatively modest reduction in the need for these services is likely to alleviate a great deal of suffering and create significant savings.

Interventions (described in Section 4.1) to address these outcomes are designed to: improve the access of families to material and social resources, to lessen the risk of neglect and improve family relationships; increase the engagement of parents with support for them and their children's education; reduce social isolation; and improve school readiness by bring children closer to their peers in the domains of social-emotional and cognitive development.

¹ Although prevention of abuse is difficult to measure (it is hard to gauge whether something has NOT happened), studies include proxy measures such as rate of immunisations and developmental assessments; and some make use of the concept of parenting capacity. However, others caution against concluding that improved competency in parenting has a direct connection to reductions in abuse and neglect (MacMillan et al., 1994).

2 THE COSTS OF FAILING TO PREVENT HARM

This section outlines estimates of economic costs to society of child abuse and neglect; problems in school; and disability. These three areas broadly describe the areas in which early intervention and prevention are thought to be most effective.

Child abuse and neglect and poor outcomes at school are both associated very strongly with poverty and social marginalisation of families. Disability is distinct from the other domains in that disability crosses social classes. In addition, children with disabilities are likely to require services throughout their lives, so program goals for children with disabilities should not be their 'independence' from public resources. However, early intervention can make a significant difference to children with disabilities and their families, especially where the child has behavioural disorders, and the costs are very high when service systems fail to intervene early.

2.1 The costs of child abuse and neglect

As discussed in Section 1.5, prevention of child abuse and neglect brings significant economic benefits, because the costs of abuse and neglect are so high. International cost-benefit analyses of child abuse and child abuse prevention include a study from Michigan in 1992. A state-level analysis of the costs associated with child maltreatment and its consequences was undertaken. These costs were then compared to the costs of providing child maltreatment prevention services to all first time parents. The costs of child abuse were estimated at \$US823 million annually. Inclusions in costs were those associated with low birthweight babies; infant mortality; special education; child protection; foster care; juvenile and adult criminality; and psychological services. The costs of prevention programming were estimated to be \$US43 million annually. This yields a 19 to 1 cost advantage to prevention (Caldwell, 1992).

In Australia, Kidsfirst (2007) reports that in 2004-5 the Queensland Department of Child Safety confirmed that child abuse or neglect had taken place in 17,473 cases, involving over 12,000 individual children; and that over the past five years in Queensland, there has been an 83% increase in the number of substantiated cases of abuse and neglect. Using four international and one Australian study as the basis for analysis, Keatsdale (2003) has calculated the costs of child abuse based under four headings: human cost of those abused; long-term human and social costs; cost of public intervention and cost of community contributions.

In Australia, the estimated annual national human cost of those abused (includes fatal abuse; suicide; permanent disability; serious injury; injury requiring treatment; additional medical service usage; psychological trauma; educational support; pain and suffering) is \$1,048m; with upper and lower bound estimates of \$511m to \$1,642m (Keatsdale Pty Ltd, 2003: 79).

The estimated annual national cost of mental health service use as a consequence of child abuse and neglect (includes mental health services; GP and private psychiatrist attendance and prescribed pharmaceuticals) in Australia is \$335.162m; with upper and lower bound estimates of \$167.6m to \$502.7m (Keatsdale Pty Ltd, 2003: 83).

The estimated annual national cost of juvenile delinquency arising from child abuse and neglect in Australia is \$288.57m; with upper and lower bound estimates of \$160.3m to \$288.6m (Keatsdale Pty Ltd, 2003: 90).

The estimated annual national cost of adult criminality arising from child abuse and neglect in Australia is \$976.9m; with upper and lower bound estimates of \$609.5m to \$1,386.2m (Keatsdale Pty Ltd, 2003: 92).

The estimated annual national cost of the intergenerational transmission of abuse (based on a 24 per cent transmission rate and the costs not being incurred until the birth of the next generation) in Australia is \$343.9 m; with upper and lower bound estimates of \$251.8m to \$447.8m (Keatsdale Pty Ltd, 2003: 97).

The estimated Australian total annual national long-term human and social costs is \$1,944m; with lower and upper bound estimates of \$1,189m to \$2,817m. The greatest contributor to costs is adult criminality, representing around half the total cost (Keatsdale Pty Ltd, 2003: 97).

In 2005-6 the Queensland Department of Child Safety made the following expenditures:

Services for children and young people at risk	\$92.2m
Services for children and young people in care	\$292.6m

(The State of Queensland (Department of Child Safety), 2006)

The budget for the Department for 2007-8 is \$551.3m (The State of Queensland (Department of Child Safety), 2007). The real costs of out-of-home care, especially foster care, are much higher (McHugh, 2002). The Department of Communities, which provides most of the funding for NGOs to deliver services across the life-course, has a total budget allocation for 2007-8 of \$597.7m, of which \$93.1m is allocated to support for children and families (support for young people, which includes youth justice programs, is the biggest cost output for the department, \$156m). New initiatives for 2006-7 with families and young children as the *primary direct* beneficiaries are significant, but they represent a very small proportion of the total state expenditure from the two departments and include:

- \$7.1m for diversionary services to lessen the risk of Aboriginal and Torres Strait Islander Communities coming into contact with the criminal justice system.
- Additional \$2m in operational funding for child care, as part of a four-year \$8.3m commitment.
- \$5m to fund capital works for Early Years Centres, which provide services for families with children aged up to eight years (The State of Queensland (Department of Communities), 2007).

2.2 Problems in school

As discussed in Section 1.5, school readiness is an important goal of early intervention programs for children and families. This is because there are high costs associated with schools failing to serve disadvantaged children well. The number of years children spend in education and training is a significant predictor of adult employment. Research suggests that transitions to school and the first years of school are important in determining later school performance. Young children who score poorly on tests of cognitive skills during their preschool years, and children with 'problems of self regulation' (cannot sit still even for a few minutes, yells and hits more than the average kindergartener, or are highly aggressive and disruptive) are 'are likely to do less well in [primary] and high school than their higher-performing preschool peers and are more likely to become teen parents, engage in criminal activities, and suffer from depression.

Ultimately, these children attain less education and are more likely to be unemployed in adulthood (Rouse et al., 2005: 6) Children who do not complete school are vulnerable to the negative effects of economic and social change throughout their life (Ross and Gray, 2005).

School-based interventions have variable effects, but can be significant in improving school performance in primary and secondary school. One study estimates that reductions in class size in kindergarten through second grade produces a 6 to 11 percent annual real rate of return on investment. (Aos et al., 2007).

It has been calculated that effective prior-to-school interventions should bring cost-savings to the school system and to public expenditure more broadly. Increases in tax revenues are often included in such calculations, as it is assumed that improved education and employment will result in higher wages and tax contributions, but benefits are significant even without their inclusion.

Cost-savings should arise from increased school system efficiency and from increases in tax revenues, arising from parental work and from higher wages when children reach adulthood. Savings to the school system come from reductions in special education placement and grade retention, as well as improvements in learning productivity. This is because 'more proficient students reduce the unit costs of education'.

Two recent studies from the US on the economic benefits of early intervention studied the impact on schools. In the first, savings to the school system in New York were estimated by reductions in special education and grade repetition. Unit-costs of grade repetition are assumed between \$US6,780 and \$US4,494. Special education programs are resource-intensive: most recent national estimates indicate that such students obtain 1.9 times as much resources as students in regular education programs (Belfield, 2004). In the second, the fiscal impacts of expanding prior-to-school programs was calculated using estimated changes in tax revenues (through parental employment and projected adult employment); reductions in criminal activity; and expenditures on child health and welfare. The costs and benefits were reviewed in three states in the US: Massachusetts, Wisconsin and Ohio. For each state the benefits are estimated to outweigh the costs: Massachusetts returning \$1.18 for each dollar invested; Wisconsin returning 1.64; and Ohio returning \$1.62. The differences in the states come from the demography of pre-K provision under current circumstances and the investment needed to expanded provision (Belfield, 2006).

2.3 Children with disabilities

Although the prevalence of disability crosses classes, children whose families live in poverty face particular needs. The relationship between poverty and disability is complex: poverty may be an *outcome* of the high material and time costs of caring; or poverty may be *causal* in the severity of the disability. In some cases the relationship between them may be more complex still: both poverty and disability may be an outcome *or* cause of other factors associated with poor child outcomes such as parental mental illness or problematic drug use. Disabilities have a very high private and public cost and children in low-income families are more likely to suffer from chronic illnesses and disabilities (Meyers et al., 1997). The focus of this section is on conduct disorders, as early intervention is thought to be especially effective with this class of disability and cost-benefit analyses of selected interventions are available.

Conduct disorders

There is some debate as to whether the class of syndromes known as conduct disorders (Attention Deficit/Hyperactivity Disorder; Oppositional Defiant Disorder and Conduct Disorder) should be understood in clinical terms, in sociological terms, or both. It has been argued, for example, that a diagnosis may mean the difference between a child's behaviour being regarded as 'bad' or as deserving of extra resources in school (Lloyd and Norris, 1999). However, as these are the most common forms of childhood psychiatric problems, are strongly associated with poverty, and have long-term consequences, they are an important point of intervention whether a medical or social inclusion model is preferred. This is especially the case as support is needed for children and parents to improve outcomes in three of the domains specified in Section 1.5 (school readiness; improved family well-being; reduced need for intensive and crisis services) whatever conceptual framework is used, and most of the successful behavioural interventions are based on both clinical and social models.

Hill (2002) reports that in addition to causing significant distress to children and their families, conduct disorders increase the risks of:

- antisocial behaviours in adolescence and adult life;
- difficulties in interpersonal functioning and work;
- adult psychiatric disorders; and
- violent marriage/partnership in adulthood.

These disorders are embedded in the social context of the affected individual and their family. 'Many of the features are seen in social interactions, notably verbal and physical aggression, bullying, oppositional behaviour, and lying. This means that the symptoms of the disorders are also social behaviours that impact on family, peer, educational and wider social relationships.' (Hill, 2002: 133)

Conduct disorders are strongly associated with poverty and disadvantage. The exact causal links are not clear, but research suggests that the disorders are not a direct result of poverty but mediated through family processes and relationships that are themselves a reflection of poverty. That is

[P]overty and social disadvantage are associated with conduct problems in children, in part because family poverty is associated with family and parenting problems. The associations probably stem from the effects of poverty on risk for conduct problems, but also reflect factors that lead families into poverty and social disadvantage. (Hill, 2002: 153)

Mihalopoulos et al (2007) calculate that the costs of conduct disorder for children and adolescents in Queensland until the age of 28 years are \$1.4 billion, based on 2002 figures of approximately 12,582 children aged 6-12 years. This is based on published international literature as there are no Australian estimates. Costs include foster and residential care in childhood, special education provision, state benefits received in adulthood, breakdown of relationship (domestic violence and divorce), health and crime. Excluded costs are social services, voluntary organisations, primary health care, lost employment, divorce (other than public legal costs), undetected crime, costs of victims of crime, parents' or partner use of services, indirect costs to families and psychological impact (Mihalopoulos et al., 2007: 241). In another US study that took into account the costs of prescribed drugs, the economic impact of ADHD in children and adolescents

was estimated as \$US14,576 per child per annum, with an annual aggregate of \$US42.5 billion (Pelham et al., 2007).

Therapeutic models of early intervention, notably Triple-P and the Incredible Years (discussed in Section 4.1) have been shown to be promising in reducing or eliminating behaviour problems. Interventions that target child risk factors (aggression and non-compliance) and protective factors (problem solving, interest in learning) for children; and the interactions of parents and children, could be effective in preventing these future problems (Reid et al., 2003).

However, access to any high quality services, let alone the exemplary ones, is a difficulty for families. In 1998 a nationally representative sample of children and adolescents with ADHD in Australia found that only a minority received professional help for their problems, with costs of services and waiting lists cited as the most common barriers to receiving support (Sawyer et al., 2004). The authors of the US study cited above argue that children with ADHD are underserved by mental health treatments and the extant literature on the cost of psychosocial treatments for ADHD does not reveal what the costs would be if evidence-based behavioural treatments were used as widely as medication (Pelham et al., 2007).

Autism spectrum disorder is recognised as an increasingly complex area of concern for health and human services. Early intervention and the development of multiagency assessment services in high quality coordinated service systems have been recommended as necessary (see discussion on service integration below). The lifetime cost of autism spectrum disorder in the UK has been estimated at £3-4.6 million per individual, with a likely financial burden of between £5 billion and £30 billion (McClure and Couteur, 2007). There is some evidence that interventions that are effective in addressing conduct disorder may also have some efficacy for children with, or at risk of, autism spectrum disorder. Social and communication impairments are especially critical (Woods and Wetherby, 2003).

2.4 Summary of the costs of harms to children

The harms discussed here are not exhaustive, and others may be very expensive but not subject to specific cost analysis, but they indicate that there are significant economic and social costs of failing to intervene early. Costs are calculated through comparison with a control group or through economic modelling. The highest costs to society are adult criminality and incarceration. Lives lost (through fatal abuse or suicide) also represent very high costs. Other costs include higher welfare spending and reduced tax contributions due to unemployment or low-paying jobs, and need for health and support services. Because crime and loss of life are very expensive to both the individuals concerned and to society, almost any intervention that makes an impact on these areas will represent a net benefit, especially as prevention services are relatively inexpensive.

3 COSTS OF PREVENTION AND EARLY INTERVENTION

Services and systems for young children and their families can be conceptualised in a few different ways, but are often divided into *early education and care* and *home visiting*. In our view it is more useful to conceptualise them as *early education and care*; *parenting education*; and *family support*, mostly because ‘home visiting’ is a form of service delivery rather than a service in itself and there are significant differences between services with home visiting as a component. One of the largest non-partisan think tanks in the United States, the Brookings Institution (2007) offers the following prescription to improve outcomes and deliver sound benefit-cost ratios:

- High-quality early education experiences for three- and four-year old children.
- Services to pregnant women and children under age three to promote sound prenatal care and the healthy development of infants and toddlers.
- Initiatives to improve educational outcomes for children in public schools.
- Reducing teen pregnancy.

Support for parents and families for infant and toddler development is also an unambiguous policy objective but is less straightforward as a service model.

This section describes estimates of the current public expenditure on children in Australia. This information provides context for any increase in expenditure. It then summarises the costs of three kinds of interventions with children and families: early education and care; family support programs; and ‘enhanced’ early education and care (early education and care with family support and/or parent education components).

3.1 Public spending on children in Australia

Expenditures by government directly on behalf of Australian children have been calculated by Percival and Harding (2001), using the principal income assistance program for parents of dependent children and three types of government outlay on non-cash benefits for children (education, health and childcare) (Table 3.1). In this context it is relevant that expenditure on young children is relatively low, and that greater public expenditure would be needed to bring them into line with older children. Another way of framing this is that, despite near unanimity in policy and research that the early years are the most promising stage of the life-course in which to intervene, relatively little public money is spent on young children. Government outlays increase with the age of the child, primarily because of education costs. In 1993-94 the average subsidy for a child attending a government secondary school was \$5,260 a year (\$3,280 for a non-government secondary school).

Table 3.1: Public expenditure on children, by age of child^a

Age of child	Total public (cash transfer and non-cash) ^b
0-4	2741
5-9	5262
10-14	7180
15-19	8220

(Adapted from Percival and Harding, 2001: 339)

2006 dollars, converted from 1993 dollars based on CPI.

It has been estimated that universal provision of preschool education would cost around \$3021 in 2006 dollars (adapted from Kronemann, 1999) which would bring the total expenditure on four-year olds to \$5762.

State governments spent \$2.1 billion (\$104.08 per capita) on family and child services in 2005-06. This includes general and universal services, such as child care, and high-intensity support services, including foster care and residential institutions. In recent years Queensland has increased its expenditure on these services considerably, and now spends more than the average for Australia. In Queensland in 2005-6 per capita spending was \$115.71, compared to \$48.69 in 2001-2 (Commonwealth Grants Commission, 2007a). This data is not disaggregated to service type so it is not possible to determine the proportion spent on early intervention. However, child protection systems are very expensive, and in Queensland high-intensity services are likely to be a high proportion of this expenditure.

3.2 Intervention costs: early education and care

The provision of free, high quality early education and care is straightforward in terms of both being a clear service model (albeit with practical hurdles to its delivery) and a policy objective. In contrast to the small-scale interventions (two of them designed as experimental trials) from the US that are reviewed below, the UK provides free access to child care and since 2004 all three and four year old children have been offered twenty hours per week of preschool free. Obviously there are no long-term longitudinal studies available to show the effects of this, and a recent study indicates no significant effects on test-scores at school entry (Merrell et al., 2007). However, these policies appear to be bringing benefit to vulnerable children. A recent major study, the Effective Provision of Preschool Education, found that all children benefited from preschool, with disadvantaged children benefiting most. That study also found that 'disadvantaged children do better in settings with a mixture of children from different social backgrounds rather than in settings catering mainly for children from disadvantaged backgrounds' (Sylva et al. 2004b: 4).

New Zealand also provides free preschool, but in recent years an increasing number of children are enrolled in long-day care services (Duncan, 2007), indicating that provision of early education and care services must fit with parents' needs, especially around work, in addition to providing quality services. Preschool fees are lower than those for long day-care, but access can be difficult in many areas. In Australia most children experience some early education and care, but there is evidence that those who would

benefit most (children from two parent families where no parent is employed or single-parent families where the parent is not employed) are least likely to attend. In 2001, the four year olds least likely to attend preschool (with a participation rate of 47 per cent) were those in couple families where neither parent was employed, and those from one-parent families in which the parent was not employed (48 per cent). Children aged four years in couple families with both parents employed were the most likely to attend preschool (61 per cent) (Australian Bureau of Statistics, 2006).

In terms of access to preschool and state spending on preschool education, Queensland invests greater resources than most of the other states. Queensland expenses per capita on preschool education in 2005-6 were \$35.36, compared to the national per capita spending of \$21.22 (Commonwealth Grants Commission, 2007b). However, whereas Queensland has a higher than average proportion of its population who attend preschools, this is offset (in the Commonwealth Grants Commission's calculation of GST distribution) by lower wages: 3% lower than the average). This has implications for the capacity of the early childhood system to provide the best quality services to disadvantaged children, as the most effective early years interventions have been delivered by professionals with supplementary training and were paid above the industry standard.

3.3 Intervention costs: parent education, family support and therapeutic programs

Early education and care is a relatively homogeneous intervention, although intensity, hours of attendance and quality of care can obviously vary widely. In contrast, interventions designed to assist parents in preparing their children for school, provide material support to improve health and well-being; and reduce the risk of abuse and neglect range from very low intensity programs such as *Bookstart* (free books and resources to families of new babies) to high-intensity, tailored therapeutic programs, such as multisystemic family therapy (MST). Many of the least intensive interventions (*Bookstart* and family learning projects) have not been subject to economic evaluations, but one UK study found that they appear to be very cheap if they can provide positive results (London Economics, 2007). In Australia it has been estimated that the annual cost of a universal *Bookstart* program would be about \$2 million (Friends of Libraries Australia, 2004).

Universal services are obviously very important to children and families, and improving the quality of services used by everyone could benefit many disadvantaged children. However, many families will need specific programs or enhanced provision within universal programs. There is a strong case to be made for comprehensive interventions for vulnerable individuals and communities (difficult as that will sometimes be; Section 5.4) despite the relatively high expense that represents. Programs for at-risk families can be delivered in different ways. For those families with multiple or complex needs, one-on-one intensive services can be most effective. The most-studied services are home visiting programs, and one has been subject to rigorous evaluation and is regarded as an exemplary or model program. The **Nurse Family Partnership** is a home-visit program to at-risk pregnant women. Randomised controlled trials were conducted in three sites in the US: Elmira, New York (1977); Memphis, Tennessee (1988); and Denver, Colorado (1994) and the program is ongoing across the country. The program goals are to improve pregnancy outcomes, child development and the economic self-sufficiency of the family. Visits occur as often as every 1-2 weeks, varying according to the mother's needs and the age of the child. Visits last between 75 and 90 minutes and focus on changing parental behaviour that is in conflict with the program goals. Specific interventions are developed depending upon the results of maternal, child and family functioning assessments. Nurses are highly trained, with a minimum of a bachelor's

degree and they receive specific training over the first year of their involvement with the program.

Cost-benefit analyses of the Nurse Family Partnership show a return of \$2.88 for every \$1.

Program	Age at last follow up	Costs per child	Total benefits to society per child	Benefit-cost ratio
Nurse Family Partnership (full sample)	15	9,118	26,298	2.88

All dollar values are 2003 dollars per child
(Karoly et al., 2005: 109-111)

Other family and parent programs have also been studied in terms of unit cost and likely return. Some of the most effective interventions have relatively high unit costs compared with current expenditure on children, and are also estimated to bring significant benefits. Brief examples are given below to indicate their costs and returns.

One cost-effectiveness study of the Incredible Years program found that if an agency is not able to spend at least \$US1,164.48 per child, the per-child cost of the cheapest treatment category (the child-based program called Child Dinosaur Training) then no treatment category should be implemented (Olchowski et al., 2005). The three treatment modalities are a child-based program, a child-based program with teacher skills training and a child-based program with parent skills training, with costs ranging from \$US1,164.48 per child to \$US2,713.31 per child. These costs include teacher training, training and group materials, staff time, and babysitting and transport costs to allow families to participate. The group format of the Incredible Years (led by trained therapists) costs about \$600 for parent training; child training about \$240 per child, including materials (Barth et al., 2005).

Triple P is a tiered program with five levels of intensity, from provision of information to individual, repeated parent-training sessions. Mihalopoulos et al (2007) calculated the annual costs of implementing the program across Queensland for all families with children aged 2-12 years old, based on prevalence ratios of conduct disorder and hence levels of intervention intensity required. Level 1 will be received by all families with children aged 2-12; Level 2 (health promotion information and specific advice) received by all families with children aged 2 and 3; Level 3 (four-session primary care intervention) received by 33 per cent by all families with one child aged two or three; Level 4 and Level 5 (intensive parent training program) received by six per cent of families. The total cost is \$19.7 million, with an average cost of \$34 per child. Using conservative costs estimates for conduct disorders, it is estimated that Triple P would have to avert less than 1.5 per cent of all cases of conduct disorder to pay for itself, and would be cost-effective even with modest improvements as the costs of conduct disorder are so substantial.

Multi-systemic therapy is effective for adolescents with severe behaviour problems, who are at risk of out-of home placement. It costs around \$US4,500 per intervention, based on a therapist being available 24 hours a day seven days a week, with an average duration of four months (Barth et al., 2005).

Although it has been calculated that a population-level intervention of a program like Triple-P could significantly reduce the prevalence of conduct disorders and prevent them

escalating into the kinds of severe disorders that require an intervention like multi-systemic therapy, early intervention is not a panacea. The need for intensive programs is likely to remain even if a comprehensive system of early intervention strategies is implemented. It should also be emphasised, as noted above, that some children and families will continue to need support and services over time, and it is unrealistic to expect that all public expenses in children will be recouped.

3.4 Intervention costs: enhanced early education and care

A relatively small number of interventions from the United States, that combine early education and care with parent training and family support, have provided cost-benefit analyses and rigorous study design. These have built strong evidence for service models to improve outcomes for disadvantaged children. Three are described below.

The **Perry Preschool** project in Ypsilanti, Michigan was a centre-based program, plus weekly home visits, and ran between 1962 and 1967. Its aims were to promote intellectual, social and emotional development for three and four year old African American children living in poverty. Children were randomly allocated to a treatment (n = 58) or control (n = 63) group. Teacher: child ratios were 1:6, all teachers had masters degrees and training in child development and the program had an enhanced curriculum.

The **Carolina Abecedarian** project ran between 1972 and 1985 and involved an infancy, preschool and school age component. At birth, children were randomised into a treatment (n = 57) or control (n = 54) group. The preschool component involved a full year (eight hours per day, five days per week) centre based program, nutritional supplements, paediatric care and social work from birth to age five.

Chicago Child-Parent Centres are located in or close to public primary schools and provide educational and family support programs to children between the ages of three and nine. The preschool component runs three hours per day. School services are provided in affiliated schools under the direction of a curriculum parent-resource teacher. Participation in the school-age intervention is open to any child in the school. The intervention emphasises the acquisition of basic skills in language and mathematics. Each of the twenty-four centres serve approximately 100 children aged three to five.

Head Start was launched in 1965 and operates across the United States. It is designed to help break the cycle of poverty by providing preschool children of low-income families with a comprehensive program to meet their emotional, social, health, nutritional, and psychological needs. Head Start is locally administered by community-based non-profit organisations and school systems. A range of activities are involved, but all funded programs must provide classroom or group socialisation activities for children as well as home visits to parents.

Each of these programs is very well known, in part because they are among the very few that stand up to the most rigorous assessments of evaluation using an experimental methodology, in part because their effects have been promising, and in part because they are known to be relatively resource-intensive and recoup these expenses. Currie (2001: 221) reports that Head Start costs \$US5021 per child for a part day program over 34 weeks in a year (1999 dollars).

The 'rate of return' on these and other programs have been calculated using benefit-cost analyses, based on calculations of increased tax payments, reductions in educational and welfare payments, and reductions in crime per child, when compared with the control group (Table 3.2). Perry Preschool has been calculated to return the biggest

gain, with a 17.07 benefit-cost ratio. Abecedarian and Chicago Child-Parent Centres have also been calculated as returning considerably more than their cost (Karoly et al., 2005). Head Start has not been subject to the same cost-benefit analyses as randomised evaluations have not been carried out, but extrapolations from short and medium term outcomes, and comparisons with Perry and others, indicate that reduced expenses in special education costs and other benefits offset the costs of public investment (Currie, 2001: 234).

Table 3.2: Cost-benefit analysis of selected early years interventions

Program	Age at last follow up	Costs per child	Total benefits to society per child	Benefit-cost ratio
Abecedarian	21	42,871	138,635	3.23
Chicago Child-Parent Centres	21	6,913	49,337	7.14
Perry preschool (follow up to middle adulthood)	40	14,830	253,154	17.07

All dollar values are 2003 US dollars per child (Karoly et al., 2005: 109-111)

A strong caveat against replicating the effects of Perry Preschool and the other well-known American interventions is their small treatment groups. However, one meta-analysis from the Washington State Institute for Public Policy (Aos et al., 2004) showed that effect sizes are still positive, even when factoring in the disappointing effects found in a few key studies. This finding held true even if the assumptions about costs and benefits were varied in different ways, for example: assume that the real-world programs will have only 50 per cent of the impact of model programs such as Perry Preschool and Abecedarian; apply a 25 per cent reduction to the reported effects of other, quasi-experimental studies such as the Chicago Child-Parent Centres; and apply a decay rate to achievements observed only at younger years. Even with these fairly conservative assumptions, a program for low-income three- and four-year olds is estimated to return \$2.36 in benefits for every \$1.00 in costs (cited in Isaacs, 2007: 8).

3.5 Summary of early intervention costs

The costs of early intervention vary considerably, not least because of differences in their levels of intensity. The most cited benefits of early-years programs come from targeted, intensive programs such as the Nurse Family Partnership nurse home-visiting, and offer long-term evidence, such as the Perry Preschool program. Children attending Perry received 2.5 hours of the program per day, 180 days a year, for two years; the Abecedarian children up to 10 hours per day, 250 days per year, from early in the first year of life until they started kindergarten (Barnett and Masse, 2007). In contrast, interventions targeted at parents are of much shorter duration: the most intensive home visit programs involve around 100 hours of intervention with families in total, while parent training generally consists of around 20 hours of classes (London Economics, 2007: 50). Programs that are longer in duration are more expensive than short-term programs, and one-on-one programs are more expensive than group programs; however, it will not be cost-effective to deliver short group-based programs to everyone.

Early education and care is not universal in Australia, but is used by increasing numbers of children and families and represents a promising foundation for early intervention. The

provision of high quality early education and care – especially with distinct family support or parental education components – is one of the strongest messages from early intervention research; however, many families face difficulties with quality, access and affordability of these services. Family support programs can also be very effective, although unit costs can be fairly high and it is important to note that adaptation or dilution of these programs (such as using volunteers or paraprofessionals rather than professionals) can diminish their effects (Olds et al., 2002).

The dimensions of early education and care, especially process and structural quality, are very important determinants of good outcomes. It is not possible to review the (quite large) literature on these components of early education and care in this paper, which will focus on the content of family support and parent programs and the implementation of early intervention strategies more generally. The programs described in this section have been selected because they are among the most rigorously evaluated, and have also been subject to analysis of their costs, cost-effectiveness and in some cases cost-benefit ratios. However, while these analyses are useful in providing parameters for interventions, they do not describe what the programs do. The next section reviews the detailed program models for selected individual interventions.

4 PROMISING PROGRAMS, POLICIES AND STRATEGIES

This section describes the programs and service models that are proven to be effective or shown to be promising, with a particular focus on proven effectiveness in Australia.

4.1 Selected proven and promising programs

There is a large literature assessing and ranking the efficacy of individual programs: for example, *Blueprints for Violence Prevention* from the Center for the Study and Prevention of Violence (<http://www.colorado.edu/cspv/blueprints/promising/overview.html>); the *National Registry of Evidence-based Programs and Practices from the Substance Abuse and Mental Health Services Administration* (<http://nrepp.samhsa.gov/>); the *Promising Practices Network* from the Rand Corporation (<http://www.promisingpractices.net/>); and the *What Works* series from Child Trends (www.childtrends.org). Examples of these are given below, and have been chosen because they have been shown to be effective in a range of contexts, including in Australia.

- **Triple P Positive Parenting Program** (Triple P) is designed to prevent severe emotional, behavioural and developmental problems in children by increasing parenting knowledge, skills, confidence, self-sufficiency and resourcefulness; enhance family environments; fostering emotional etc competence in children. Triple P is a multi-level, multi-disciplinary preventative family intervention designed to reach families with varying levels and types of support needs. Its reach varies from entire population to only 'at risk' children. Dosage determined by assessed severity of child behaviour problems. There are five levels: from universal media information campaign with no practitioner contact to 'enhanced' family intervention including intensive behavioural parent training. Existing evidence shows that program is effective in enhancing parental efficacy and competence, and reducing disruptive behaviour.
- **Parents Under Pressure** (PUP) draws from the ecological model of child development by targeting multiple domains of family functioning including the psychological functioning of individuals in the family; parent-child relationships; and social contextual factors. A randomised control trial with parents enrolled in methadone maintenance treatment in showed that parents who participated in the PUP intervention showed significant improvements across multiple domains of family functioning (Dawe and Harnett, 2007).
- **Webster-Stratton/Incredible Years** has been shown to be effective in preventing, reducing and treating aggression and conduct problems in young children, enhancing child social competence. Target populations are 2-10 year old children without clinically significant behavioural problems, or identified as at risk of developing behavioural problems; parents of children with conduct problems aged 3-10 years; and parents at risk for child abuse and/or neglect. The intervention comprises a comprehensive set of interventions including videotape modelling, group discussion, role-playing and rehearsal techniques, homework activities, supportive telephone calls. The program has been evaluated in a large number of randomised control trials which demonstrated high effectiveness on a range of child and parent outcomes.

- **The Resourceful Adolescent Program (RAP)** is a universal school-based program designed to foster psychological resilience and prevent depression in adolescents aged 12-16 years. The efficacy and effectiveness of RAP have been systematically researched over the past eight years through a series of randomised controlled trials. Results suggest that a universal approach to preventing adolescent depression provides advantages in terms of increased reach and can significantly reduce future depressive symptoms, and that these interventions are also effective in 'the real world', using sustainable resources (Shochet and Ham, 2004).
- **The Pathways to Prevention Program** is distinct from the interventions cited above in that it is not a single program but a community-based initiative with a range of services in a single disadvantaged community in Queensland. It is delivered in schools, preschools, and the community by teachers, preschool teachers, child care staff and volunteers. The program is managed by Mission Australia and Griffith University. School-based and family-based programs are designed to improve parental efficacy, networks and skills; and children's social and emotional development and communication skills. The program goal is a positive transition to school. The *Family Independence Program* conducts family support activities such as individual counselling and support; behaviour management for adults (including Triple P, described above); parent support groups; adult skills workshops; playgroups and programs for preschoolers; child and youth programs; and community development activities. The *Preschool Intervention Program* is a school-based program for four and five-year olds and focuses on communication and social skills.

However, there are limitations to the evaluations of individual programs, and especially the typologies of proven and promising programs that are used. Evaluations of early education and care programs, and services to support parents and/or prevent child abuse and neglect, have yielded a handful of model or proven programs and an ever-growing list of promising ones. However, the limitations of these classifications should be noted: very few programs will ever be subject to these kinds of stringent experimental/clinical evaluations; not every program that makes a difference suits the techniques and criteria of these evaluation techniques; and individual programs, no matter how effective, are sufficient to identify, engage and support the families who need them. There is also a lack of consensus in research and evaluation as to 'what counts' as evidence, what's valuable in approaches to evaluation, and how useful experimental approaches are to human services delivery. Problems include finding appropriate outcome measures; timescale; small samples; disagreement over objectives and outcomes that should be measured; and complexity of family life (Statham, 2000). This is one reason the Pathways to Prevention program is recognised as so promising: it is not an individual program but a range of programs delivered by state and non-government agencies that uses a community-development approach and, uniquely in Australia for a program of this type, is being rigorously evaluated. Such an approach is possible because of the nature of the program model and its partners (state and non-government agencies; philanthropic organisations; a university; and the Australian Research Council).

4.2 Elements of successful programs

Research from the United States has shown that interventions that are less intensive and frequent, and do not provide extra training to a professional workforce, have been less effective in achieving 'school readiness' for children from economically impoverished families; children with biological risk factors; children with combined psychosocial and biological risks; and children with developmental disabilities diagnosed

in infancy (Ramey and Ramey, 1998). That is, it appears² the most successful interventions for those groups in achieving school readiness have the following characteristics.

- Intensive, as ‘indexed by variables such as number of home visits per week, number of hours per day, days per week, and weeks per year’. Moreover, individual children and parents who participate most often and actively show the greatest progress (Ramey and Ramey, 1998: 115).
- Comprehensive and flexible. Interventions that provide more comprehensive services and use multiple routes to enhance children’s development generally have larger effects than do interventions that are narrower in focus (Ramey and Ramey, 1998: 116). This may involve elements such as parent skills training, information on child development and behaviour, and concrete services. For example, the Pathways to Prevention program (Section 4.1) has a focus on transition to school, and has conducted a very wide range of activities to reach this.
- A review of parent support programs found that the most effective are also multi-modal, or address more than one area of need while retaining a core set of objectives. Services have been found to be more successful across a range of outcomes when they have a clearly articulated set of aims and goals and a mapped-out route for achieving them. Generic ‘family support’ is less effective than matching family needs and resources and matching them with well-defined goals for parents and children (Moran and Ghate, 2005).

4.3 Implementation

An important dimension of any program or strategy is implementation. Although there is an increasing consensus that implementation and process issues are crucial determinants of program impact, there is debate around what is actually meant by a ‘well implemented’ program. Briefly there are two schools of thought in this area. On the one hand are proponents of program fidelity who gauge the quality of programs according to the degree to which they have been implemented in accordance with the original program design. According to this view, deviations from the original program will inevitably lead to decreasing effectiveness. On the other hand are proponents of program adaptation – i.e. the belief that the key to successful programs is to adapt programs to the needs of the particular communities and service users it intends to engage (Schorr, 2003). In some cases evaluations of programs have determined what the key elements are – that is, what can be adapted and what can not while preserving the effects – but this is not always known. In any case, the importance of engagement with families and agencies, relationships, and communication should always be recognised. Trusted workers and agencies, local knowledge, and the flexibility to adapt programs with the knowledge of what should not be changed, are all critical. The project leaders in the Pathways to Prevention program decided to employ staff for each of the different cultural groups in their community (with all the resource requirements this entailed) in order to ensure that the services provided were culturally safe and accessible across the community (Homel et al., 2006: 24).

² Again, there have been fewer interventions and limited research in Australia, and it is not clear how much findings can be generalised from the United States. However, as Section 5.8 describes, a number of interventions have been implemented and evaluated in Australia and the United States, and there are no strong reasons emerging from these to ipso facto discount the applicability of United States research to Australia. Important caveats around extrapolating American research to the Australian context include access to health insurance; national incarceration rates and the likelihood of imprisonment; changes over time to the availability of any early childhood service (especially important when considering Perry Preschool); and, in some cases, rurality/regionalty.

In addition to determining the balance between fidelity and adaptation, the factors that will determine the adoption of a program are also important, because new programs need champions, buy-in and engagement at all levels. Four factors have been identified as most influential in determining adoption:

- information about characteristics;
- information about efficacy;
- identification of necessary resources; and
- responding to dynamics of change such as fears and resistances, and building participation and 'ownership' (Center for Substance Abuse Prevention, 2002).

A review of home visiting programs found that every program found it difficult to deliver high quality services, and that program quality is directly related to benefits. The primary components of program quality are:

- family engagement;
- curriculum;
- home visitor characteristics;
- cultural consonance between the program and its clientele; and
- the program's ability to deliver appropriate services to high-risk families (Gomby, 2005: 39).

Similarly, a review of programs for juvenile offenders found program quality and implementation was so important that it made the difference between whether programs worked or not, and it argued that quality control should be embedded in any new program (Aos et al., 2004: 9).

While it is often not known what are a successful program's 'active ingredients', and this is an area in need of research, ease of implementation is likely to be important most of the time. A study of parent-training programs for families in the statutory child protection system concludes that the components of programs that can be incorporated into agencies are 'brevity, low cost per family, not requiring advanced degrees for trainers, applicability to families with children at home and those endeavouring to achieve reunification [...] and concepts that are easy to communicate' (Barth et al., 2005: 361). Programs that are evidence-based and very effective when implemented exactly, but that are very difficult to implement exactly in most settings, should not be included in any broad-based early intervention strategies. That study also proposes that programs that are easy to communicate are those that do not require massive changes in parenting or everyday practices.

4.4 Summary of programs and program components

Rigorous evaluations of programs to improve family relationships and parental efficacy, and reduce the risk of child abuse, have provided a strong evidence base for effective programs. There are limitations to this evidence base in that experimental-model evaluations necessarily exclude programs, and questions of implementation are not always considered. However, there are a range of single program models and program components on which policy-makers can draw. Important messages from the research include the need for intensive services and program fidelity: that is, programs that are designed to be delivered on an individual basis over several occasions of a specified duration, will not be effective if they are delivered in group settings once. Services that have clear goals (for example, increasing school readiness, improving the home learning environment, or reducing the incidence of harsh and punitive disciplinary styles), and

have multiple components and means to reach those goals (for example, information for parents, play sessions for children, and material support where necessary) are among the most effective.

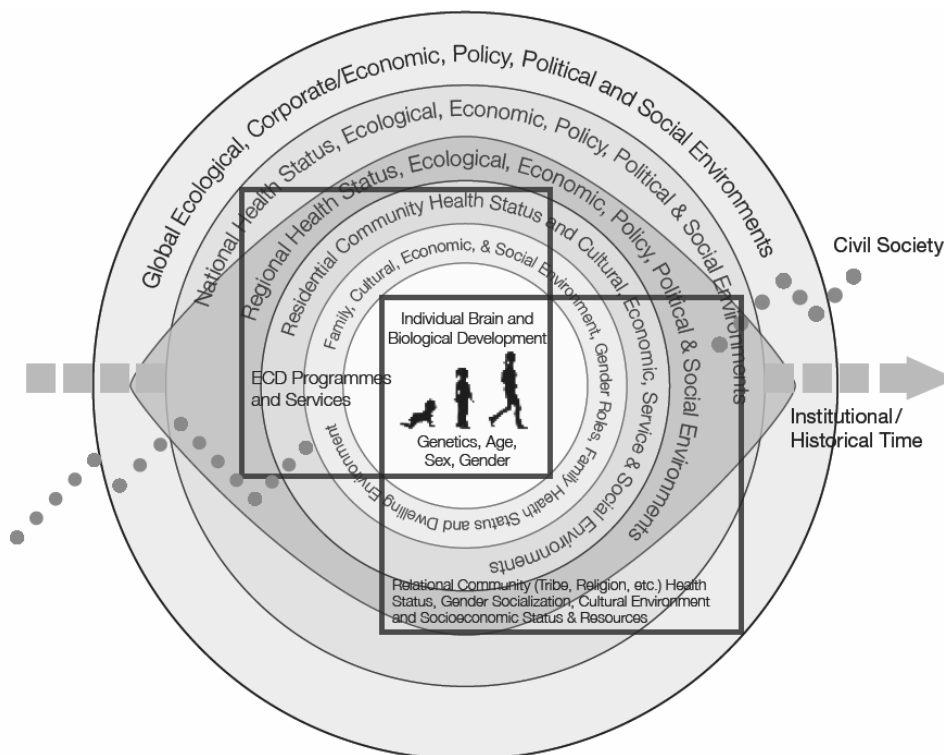
5 PRINCIPLES ON WHICH AN EARLY INTERVENTION SYSTEM SHOULD BE BASED

5.1 Service Integration

Single programs are much more ‘proven’ as effective in improving outcomes for children and families than are policies to improve the integration of service systems. There is very little evidence that improving service integration, without a corresponding increase in the quality of services, is an effective strategy. However, even the most effective program cannot make a substantial difference to many in the absence of a comprehensive, accessible system of services that can link families to what they need. Policy strategies should therefore include both improvements to the quality of services and the integration of services.

Integration at the levels of policy, planning and practice is based on theoretical and empirical research. The theoretical basis is recognition of children’s lives and needs as embedded in a complex ecology of family; neighbourhood; and political, social and economic forces. Since Bronfenbrenner (1979) first developed the ecological model of childhood in the 1970s there have been a number of refinements. One of the most recent is from a World Health Organisation report, (Figure 1) which presents a variety of interacting and interdependent spheres of influence, including the ‘individual, family, and dwelling; residential and relational communities; early childhood development programs and services; and regional, national and global environments. In each sphere of influence, social, economic, cultural and gender factors affect its nurturant qualities’. Temporal or life course factors are also critical.

Figure 1: Early childhood development schematic



(Irwin et al., 2007)

There are a number of rationales for integration and collaboration:

- Collaborative and integrated work should be more efficient, simultaneously serving multiple needs through one service and saving labour for staff as well as time and effort for families.
- Expanded roles for significant and trusted family workers such as nurses; teachers; community workers and representatives; and social workers should improve the quality and accessibility of services for families.
- Improved integration and communication between agencies should stop families 'falling through the cracks', as has happened in several catastrophic failures of services systems associated with child deaths or near deaths.
- Attempts to integrate service delivery have a number of policy and practice implications. At the level of *government policy*, the purpose of integration is to ensure that:
 - Non-government and state agencies, and key community representatives, work together towards common aims, and are provided resources to do so.
 - The program is 'owned' by all the relevant government agencies that have a stake in the wellbeing of children, rather than being seen as the domain of only one department or portfolio.
 - The tensions which are inherent in any such programs are minimised (for example, to ensure that data on newborns can be shared between health and non-government organisations).

The bureaucratic obstacles to implementation of the program are addressed (for example, that schools can be opened at weekends to house family support programs).

At the level of *regional and local planning*, new governance structures, planning and management committees and interagency working groups may be formed. At the level of *practice*, there have been many different strategies to integrate service delivery, including co-location of services; outreach; multi-service neighbourhood hubs; and community development approaches to building new services.

Service integration is mainly concerned with the way government departments, non-government organisations and practitioners work together, rather than with new initiatives or programs. Nevertheless, there is some cost associated with 'joined up' policy and practice. Time has to be spent by officials and practitioners at all level developing new ways of working. It is likely that training will be required, and structural re-organisation is very likely. However, these costs are fairly minimal compared to the potential benefits for families and children.

5.2 Long term vision

Investments in time are often necessary to evaluate the benefits of early years interventions. New programs may take significantly longer than planned to get up and running, and the benefits to children may not appear for some years. In addition, the changes brought about by interventions may initially appear to be modest and then increase over time.

One cost-benefit analysis of early childhood interventions found that the Perry Preschool returns \$17.07 for every dollar, at follow-up to age 40 (Karoly et al., 2005), compared to \$5.15 at the age of 27. Similarly, the effect sizes of the Nurse Family Partnership in

Elmira were larger at fifteen years follow-up than during or immediately after the intervention. This suggests that other interventions that have not been subject to longitudinal evaluations may also show positive results over the long term (London Economics, 2007: 37).

Other medium- to long-term strategies required are:

- Workforce development, especially in the early education and care sector.
- Data sharing protocols and a common assessment framework.

5.3 Top down and bottom up approaches

Should interventions and policies be driven by practitioners and people ‘on the ground’ who know the needs of families best because they work with them every day? Or should it be driven by high-level policy, informed by the latest research, with the resources and influence to ensure that change happens? There are no perfect examples of either approach, but significant examples of different approaches to this question include:

- The UK program Sure Start: driven by local identification of needs; outcomes (not outputs) based; closely monitored by a central office with responsibility for approving all local plans and budgets.
- The Nurse Family Partnership and the US program Head Start: a single service models with strict program fidelity monitored in terms of process and services delivered.
- In other cases, program models are fairly prescriptive but have variable individual components depending on the assessment of family needs. These include the Early Start program in Christchurch, New Zealand (Fergusson et al., 2005) and Early Head Start in the US (Love et al., 2002). Project managers for Pathways to Prevention found that Triple P required levels of literacy that were too high for participating families, and it was adapted accordingly.

It seems clear that the question of ‘top down’ or ‘bottom up’ forces a false dichotomy. There is a large evaluation literature on new initiatives that indicates that failing to support change at the level of practice, or failing to engage managers and policy agencies, both have negative impacts. A high level policy framework with commitment at ministerial level, to generate ‘top-down’ change is needed; as are resources and time given to practitioners and facilitators at practice level to generate ‘bottom-up’ change.

5.4 Vulnerability and risks

Hart’s law, or the law of inverse care, is a polemical argument that ‘the availability of good medical care tends to vary inversely with the need for it in the population served’ (Hart, 1971: 405). That is, those who are in greatest need are those *least* well served by what is available. Those with less severe needs have access to the best services. First published in 1971, and focusing on medical care in the context of market-based economies, Hart’s argument has since been supported by empirical research and can be extended to other kinds of service provision as well. One implication of this is that targeted strategies are needed to improve the provision of existing services to disadvantaged families, and that these strategies must include the geographic, economic, gendered and racialised dimensions of disadvantage. Another is that improvements to particular elements of the service system, or even the service system as a whole, will not be sufficient to improve the outcomes of disadvantaged children if resources are not dedicated to meeting their particular needs.

For example, research shows that preschool in the UK is of significant benefit to all children, including disadvantaged children. Nevertheless, although preschool education is universal and free in the UK, not all children attend, and the Effective Provision of Preschool (EPPE) study found that those children in the comparison group – that is, those not attending preschool – had significantly poorer environments for learning and school readiness than those that did. The study concluded that strategies to increase the availability and uptake of preschool for vulnerable families is needed, and that those families may also benefit from other services, such as Sure Start local programs, to improve the home learning environment and thus facilitate a smoother transition to school (Sylva et al., 2004: 50). This is especially the case for those who do not attend because their parents are more likely to be recent arrivals to the country with few resources; have significant illnesses or disabilities themselves; or who are alienated from the service system. A hypothesis from the Sure Start evaluation, which found that the worst off families did not benefit from living in a Sure Start area, is that families who have fewer needs are easier and more pleasant to work with than those in greatest need, so service providers may spend a lot of time working with them (National Evaluation of Sure Start, 2005: 34-5). This indicates that even free, high quality interventions will not be sufficient to reach all families, and those they do not reach are likely to be among those in greatest need.

Many of the risks faced by children are associated with poverty and deprivation. These include physical and mental health issues, school-related problems, neglect, safe communities and anti-social behaviour. However, some risks are thought to occur across the socio-economic spectrum and, while poverty is a risk factor, wealth is not protective (Durlak, 1998). Table 5.1 represents a conceptualisation of risk factors for children and young people based on a large study from the United States.

Table 5.1: Risk factors by level of analysis and outcomes

	OUTCOMES							
	Behaviour problems	School failure	Poor physical health	Physical injury	Physical abuse	Pregnancy	Drug use	AIDS
LEVEL OF ANALYSIS								
Community								
impoverished neighbourhood	X	X	X	X	X	X	X	
ineffective social policies	X	X	X		X	X	X	
School								
poor quality school	X	X	X			X	X	X
Peer								
negative peer pressure/modelling	X	X	X					
peer rejection	X				X			
Family								
low SES	X	X	X	X	X	X	X	X
parental psychopathology	X	X	X	X	X	X	X	X
marital discord	X	X			X	X	X	
punitive childrearing	X	X	X	X	X		X	
Individual								
early onset of target problem	X	X	X	X	X	X	X	X ¹
problems in other areas	X	X	X	X	X	X	X	X
Other								
Stress ¹	X	X	X	X	X	X	X	X

¹ Stress can occur at all levels and affect children directly through parents, peers and teachers (Durlak, 1998: 515)

Table 5.2 is from the Australian report *Pathways to Prevention*, which led to the Pathways to Prevention program, authored by a consortium of academics led by Professor Ross Homel at Griffith University.

Table 5.2: Risk factors by level of analysis (child, family, school context, life events and community and cultural factors)

Child factors	Family factors	School context	Life events	Community and cultural factors
Prematurity	<i>Parental characteristics</i>	School failure	Divorce and family break up	Socioeconomic disadvantage
Low birth weight	Teenage mothers	Normative beliefs about aggression	War or natural disasters	Population density and housing conditions
Disability	Single parents	Deviant peer group	Death of a family member	Urban area
Prenatal brain damage	Psychiatric disorder, especially depression	Bullying		Neighbourhood violence and crime
Birth injury	Substance abuse	Peer rejection		Cultural norms concerning violence as acceptable
Low intelligence	Criminality	Poor attachment to school		Response to frustration
Difficult temperament	Antisocial models	Inadequate behaviour management		Media portrayal of violence
Chronic illness	<i>Family environment</i>			Lack of support services
Insecure attachment	Family violence and disharmony			
Poor problem solving	Long term parental unemployment			
Beliefs about aggression	Marital discord			
Attributions	Negative interaction/social isolation			
Poor social skills	Disorganised			
Low self esteem	Large family size			
Lack of empathy	Father absence			
Alienation	<i>Parenting style</i>			
Hyperactivity/disruptive behaviour	Poor supervision and monitoring of child			
Impulsivity	Discipline style (harsh or inconsistent)			
	Rejection of child			
	Abuse			
	Lack of warmth and affection			
	Low involvement in child's activities			
	Neglect			

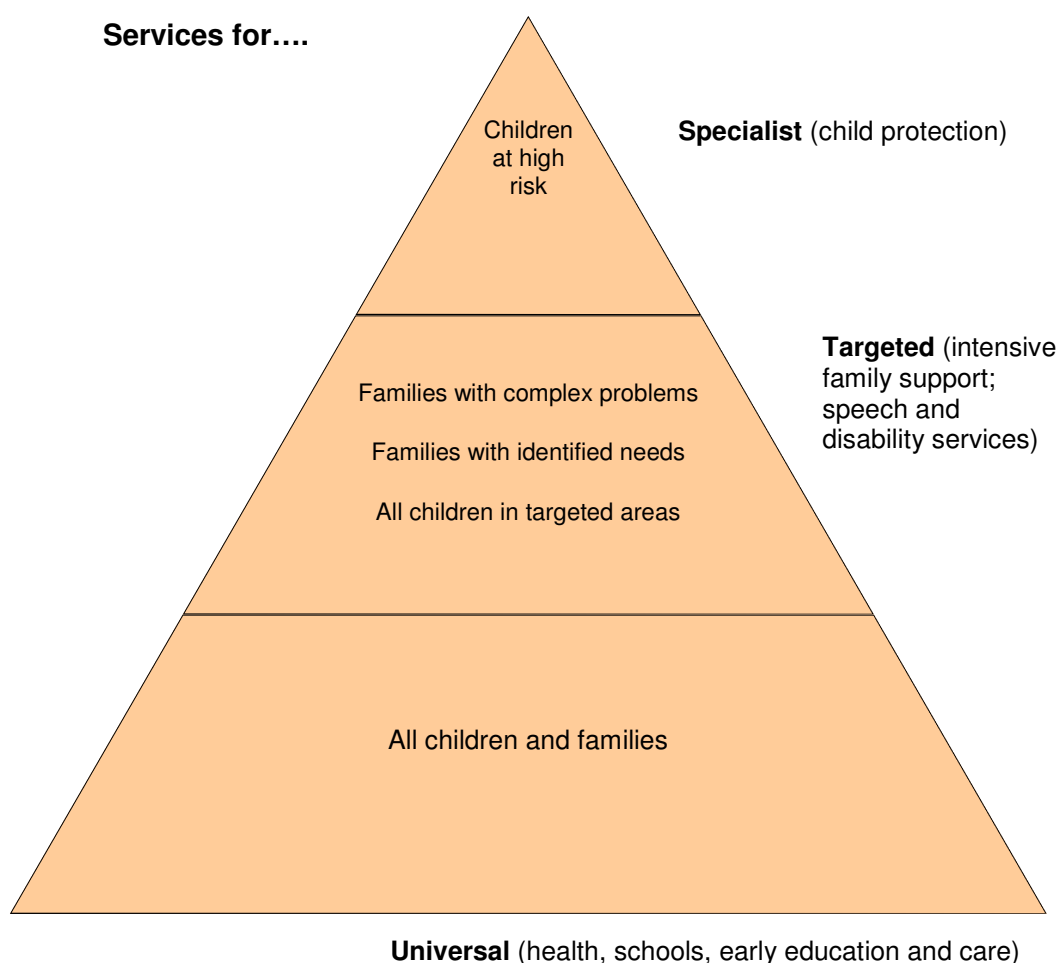
(National Crime Prevention, 1999: 136)

Risk factor research is very useful to planning services and systems for state populations, for a number of reasons. It provides a holistic view of children and families in communities. Risks are not only the products of intimate and domestic characteristics, but are also the effect of community and economic contexts. Equally, interventions can

aim to change things other than community and economic factors, as the everyday practices of families are also important. Risk factor research makes clear that single factors are less important than their interaction and accumulation. Risks represent points at which intervention can occur, and build protection against those risks. However, there are such a large number of individual and community-level risks that use of risk factors in identifying families has limited use. For example, parental risk factors for child abuse are diffuse and not readily detected in every case. Risk factors for physical abuse of children that are easily identified include low socioeconomic status, low maternal age, large family and single-parent family. Markers that are not as easily identified include parents' childhood experience of physical abuse; spousal violence; social isolation or lack of social support and unplanned pregnancy or negative parental attitude toward pregnancy (including unwanted pregnancy); recent life stress; maternal psychiatric impairment; low maternal education level; and substance abuse. Risk factors for sexual abuse are less clear but include living in a family without a biological parent, growing up in a family with poor marital relations between the parents, presence of a stepfather and poor child-parent relationship or unhappy family life; (MacMillan and Canadian Task Force on Preventive Health Care, 2000; MacMillan et al., 1993). At the level of policy and practice it is difficult to use risk factors as predictive of need.

Another use of risk factor research in conceptualising early intervention strategies is that it indicates that significant numbers of families would benefit from improvements to the service system. Relatively few families in most communities need comprehensive, intensive services and a range of fairly time- and resource-intensive strategies to ensure they receive them. So-called 'multiproblem' families with several intersecting needs and risks (domestic violence, problematic alcohol and drug use, parental mental health, insecure housing) will benefit from a comprehensive early intervention strategy, but they will also need other services. However, there are many more families who may be characterised as vulnerable, who will not present as many challenges to service providers, and will benefit from enhanced provision in universal service systems and targeted services where needed. The UK policy document *Every Child Matters* uses a typology of family need and service priority that has been adapted by the Queensland government (The State of Queensland (Department of Communities), 2006) and gives an indication of the numbers of people for whom these interventions could make a difference.

Figure 2: Targeted services in a universal context



(Adapted from Department for Education and Skills (DfES), 2003: 21)

How many children fall into each category? *Every Child Matters* reports on numbers of deaths of children from abuse or neglect each year from a total of 11 million: (50-100 per year); on the child protection register (25,700 or .2 per cent); 'looked after', or in out-of-home care (59,700 or .6 per cent); children in need (300-400 000 or 3.7 per cent); and vulnerable children (3-4 million or 37 per cent). That is, around 40 per cent of all children are vulnerable or at risk. It is difficult to make comparisons between the UK and other jurisdictions, not least because systems of out-of-home care and reporting vary. However, the Commonwealth Grants Commission reports from 2001 census data that of non-Indigenous preschool enrolments 24.6 per cent of students are 'low socio-demographic and fluent' in English, and 0.6 per cent are 'low socio-demographic and low fluency' (Commonwealth Grants Commission, 2007b). Around three per cent of enrolments were non-remote Indigenous students who were 'high socio-demographic and fluent' and a similar proportion were 'low socio-demographic and fluent'. Around 0.7 per cent of enrolments were remote Indigenous students who were 'high socio-demographic and fluent' and a similar proportion were 'low socio-demographic and fluent'. Around 0.2 per cent of enrolments were remote Indigenous students who were 'high socio-demographic and low fluency' and a similar proportion were remote

Indigenous students who were 'low socio-demographic and low fluency' (Commonwealth Grants Commission, 2007b). Assuming that, as in the UK, the most disadvantaged children do not attend preschool, it seems reasonable to assume similar proportions of at risk and vulnerable children in Australia as the UK.

At a population level, these figures indicate that a significant proportion of the population will benefit from early intervention services that can address problems before they become severe. It is important to emphasise this point as families and communities with very high needs often absorb most of the attention of service providers, for obvious reasons. (Fisher et al., 2004; Homel et al., 2006: 106). Similarly, research and policy are often preoccupied with interventions such as Perry Preschool and the Nurse Family Partnership, which were targeted at very disadvantaged communities. This can lead to an implication that disadvantage and vulnerability is an extraordinary or 'outlier' condition when, this is not the case.

5.5 Identification, assessment and referral

The enormous range and number of risk factors that affect individuals and communities mean that any straightforward clinical model of risk assessment is impractical. Risk factors are useful for assessing the neighbourhoods and communities (geographic or other) that may benefit from different kinds of programs, or who may be missing out on the best quality universal services. This is one of the bases of Pathways to Prevention project in Queensland (Homel et al., 2006). . Recruitment of families into preventive interventions is very challenging, particularly for at-risk populations. This is true even for the initial assessment stage of an intervention (Center for Substance Abuse Prevention, 2002). Vulnerability increases the likelihood of refusing the offer of services (Watson, 2005). Engaging families through a trusted agency can be effective (Watson et al., 2005).

Assessments of risk and vulnerability are complex and even the most successful and well-resourced programs are insufficient as population strategies. An integrated system of assessment, identification and engagement is necessary to ensure families get the services they need.

5.6 Sustainability

It is becoming somewhat usual for state and Commonwealth policies to attempt to implement selected components of proven family support programs. This can be conceptualised as adaption or dilution of 'what works'. For example, Families NSW includes a modified version of the Nurse Family Partnership in having families with new babies receive at least one home visit from an early childhood nurse, and a key element of Every Chance for Every Child in South Australia is home visits by nurses to the parents of babies and young children. There are a number of reasons for the existence of this kind of adaption. 'Taking to scale', or implementing a research-based experimental program for an entire population is a significant challenge for any policy, and the high-expense, low-population successes of the best known American interventions are probably not a sustainable model for all vulnerable children and families. A rationale for universal home visiting is that nurse home visitors will be able to identify the families who need more intensive services and ensure they are referred to them. The identification of families who need these services is an important challenge in any attempt to improve services and systems.

The effects of these adaptations are not yet known, although more intensive rather than less intensive interventions (such as that represented by one or two home visits rather than fortnightly or weekly home visits for one or two years) have been shown to be successful (Ramey and Ramey, 1998).

5.7 Universal and targeted programs

There is a dilemma in the question of universal vs. targeted programs, even though many existing strategies aim to combine both. The dilemma is that, on the one hand, 'the broader the agenda, the more chance of a social justice outcome' (Connell, 1994: 145) while, on the other, universal services fail those who need them least. Skocpol's (1991) influential model is of targeted within universal, as universal services are less stigmatising and more sustainable.

Universal services include education and health services, and at present universal services are experienced by the majority of families at the very beginning of early childhood, through the health system when babies are born, and from the beginning of the school years. The period of early childhood can represent a gap in provision for families, as children experience so many different kinds of early education and care and government provision of these services is fragmented.

Targeted programs are typically designed to address a specific set of problems (for example, poor parenting skills) in a specified population (parents in a particular demographic category such as race, age or income). They have the potential to offer more intensive services, although to a smaller population than universal programs.

Universal services offer different benefits from short-term, targeted interventions. They are non-stigmatising and therefore more likely to be accessible to 'hard to reach' families. They are also more likely to be sustainable than targeted services. However, as noted in Section 5.4, universal services do not provide benefits to all, that is, they are not universal in practice. Universal services such as health and education should therefore be a resource and partner in early intervention programs, but specific strategies are needed to ensure that inequities of access and provision are addressed. A comprehensive program that is firmly embedded in the local community's needs is likely to be more successful than any one single intervention or anything that could be achieved by one single agency. Community-based organisations can be vital in engaging families that are not necessarily well-served by universal services, and can also work in partnership with universal services to enhance the quality of service that vulnerable families receive.

A strategic, long-term and comprehensive framework for the early years should also delimit the numbers and types of programs trialled and funded. The typical career of many programs is to be piloted, minimally evaluated, and then replaced either with another program or with nothing much at all.

Extra resources are needed to ensure that high quality services are made available to most disadvantaged families and communities, which has implications for cost-effectiveness in the short term. Without these extra resources, expectations of universal effects are unrealistic. Universal services, especially schools and health services, can be viewed as the foundations of improved service delivery. Interventions without the context of universal systems are unlikely to be sustainable; universal systems alone are insufficient.

5.8 Summary of service system principles

Effective programs and policies can be delivered most effectively and broadly in a service system that is responsive to family needs, sufficiently resourced to be flexible where change is necessary, and capable of delivering services across the breadth of community needs (that is, not just to those who are in crisis, and not just to those with the resources to seek out what they need). In order to have these capacities, early intervention systems should be integrated and engage all the agencies and individuals

with the responsibility to deliver services to families. Policies, planning and practice should combine 'top-down' resources and leadership with 'bottom-up' expertise and local knowledge. Holistic views should be taken of the risks and vulnerabilities experienced by families and communities, and the points at which interventions can be made to ameliorate those risks and build on strengths and protective factors. Neither universal systems nor targeted programs (or the agencies that deliver them) are sufficient to deliver an effective, comprehensive early intervention strategy. Partnerships and collaboration between agencies and between service types require resources to set up and maintain, but these costs are low relative to the benefits that can be delivered.

6 KEY LESSONS AND RECOMMENDATIONS

All children, especially the most disadvantaged, benefit from high quality early education and care.

Different levels of need require different kinds and intensities of service provision and access.

The best service provision for families with multiple or intensive needs takes the form of: programs that combine centre-based early education and care with home visits to provide parent support and education, and the capacity to meet material needs.

The best service provision for vulnerable families with less intensive needs takes the form of: programs that provide high quality centre-based care, with additional services for families as they need them.

The most effective way to ensure universal provision of early education and care is to make it free, available at times that allow parents to meet work and other obligations, and located in integrated family centres or schools.

High quality centre based care is characterised by highly trained, well-paid staff with low child: staff ratios.

Proven programs are intensive, comprehensive and flexible.

Both universal services and targeted programs should be included as components of an early intervention strategy

There is a growing body of evidence that a very large number of individual, neighbourhood and broad socio-cultural risk factors are associated with poor outcomes for children and families.

Risk assessment is costly and inefficient. Rather than relying on risk assessments for identifying the most vulnerable families, a system involving outreach and engagement of 'hard to reach' individuals and communities is more appropriate.

Service systems need to be comprehensive, culturally safe and accessible, with multiple entry points and the capacity to meet families' immediate material needs.

Integration strategies are necessary to ensure a comprehensive, accessible system of services that can link families to what they need.

The workforce providing services to children and families should be professionally trained and be well remunerated. There is limited evidence that paraprofessionals or volunteers can deliver services needed by vulnerable families, especially those that are most vulnerable.

There are a number of evidence based programs and service models that have demonstrated effectiveness in addressing family problems and difficulties. However, relationships between service providers and families, and the capacity to adjust programs to meet family needs, are also integral to successful recruitment and retention of families.

Although it has been argued that scarce resources should be invested in young children rather than older children (for example, reducing class sizes in primary/high school), it is

also the case that older children can benefit from interventions; and that improvements to school systems are needed to sustain the improvements made to young children's outcomes.

In recent years Queensland has increased its expenditure on child and family services, including free preschool services. Some of the best international research into individual-level interventions (Triple P, Parents Under Pressure, and the Resourceful Adolescent Program) and community interventions (Pathways to Prevention) also originated in Queensland. The state is therefore well-placed in many respects to improve its universal service systems and to develop a suite of targeted, intensive programs for those families that need it. In order to do so, resources will need to be expended on integrating service systems, improving accessibility and cultural safety, and developing a well-trained, professionally remunerated workforce.

APPENDIX A: Extracts from key publications establishing the importance of the early years

Publication	Extract from summary/findings
<p><i>From Neurons to Neighbourhoods</i> (Shonkoff and Phillips, 2000).</p>	<p>Key findings include the following: The traditional “nature versus nurture” debate is simplistic and scientifically obsolete. Human development is shaped by a dynamic and continuous interaction between biology and experience. Early experiences clearly influence brain development, but a disproportionate focus on the stage from “birth to three” begins too late and ends too soon. Healthy early development depends on nurturing and dependable relationships. Human relationships, and the effects of relationships on relationships, are the building blocks of childhood development. Early intervention programmes can improve the odds for vulnerable young children, but those that work are rarely simple, inexpensive, or easy to implement. There is little scientific evidence that special stimulation activities above and beyond normal growth-promoting experiences lead to advanced brain development in infancy. Substantial scientific evidence indicates that poor nutrition, specific infections, environmental neurotoxins, drug exposures, and chronic stress can harm the developing brain. Significant parent mental health problems (particularly maternal depression), substance abuse, and family violence impose heavy developmental burdens on young children. Recommendations include the following: Early childhood programmes must balance their long-standing focus on cognition and literacy skills with comparable attention to the emotional, regulatory, and social development of all children. In addition, greater commitments must be made to address significant unmet mental health needs in young children. The early childhood years lay a foundation that influences the effectiveness of all subsequent education efforts. Major investments must be made to enhance the skills and compensation of providers of early care and education. Research is needed to advance our understanding of how experience is incorporated into the maturing nervous system, and how biological processes interact with environmental influences to affect the development of complex behaviours. There is a need for improved preventative and ameliorative interventions for children who are exposed to biological or environmental risks. There is a need to improve evaluations of early childhood interventions.</p>
<p>Human Capital Policy (Carneiro and Heckman, 2003)</p>	<p>This paper considers alternative policies for promoting skill formation that are targeted to different stages of the life cycle. We demonstrate the importance of both cognitive and noncognitive skills that are formed early in the life cycle in accounting for racial, ethnic and family background gaps in</p>

Publication	Extract from summary/findings
	<p>schooling and other dimensions of socioeconomic success. Most of the gaps in college attendance and delay are determined by early family factors. Children from better families and with high ability earn higher returns to schooling. We find only a limited role for tuition policy or family income supplements in eliminating schooling and college attendance gaps. At most 8% of American youth are credit constrained in the traditional usage of that term. The evidence points to a high return to early interventions and a low return to remedial or compensatory interventions later in the life cycle. Skill and ability beget future skill and ability. At current levels of funding, traditional policies like tuition subsidies, improvements in school quality, job training and tax rebates are unlikely to be effective in closing gaps.</p>
<p><i>Reversing the Real Brain Drain</i> (McCain and Mustard, 1999)</p>	<p>New knowledge has changed our understanding of brain development and complements what has been learned about the early years from epidemiology, anthropology, sociology, developmental psychology and pediatrics. We know now that early experiences and stimulating, positive interactions with adults and other children are far more important for brain development than previously realized.</p> <p>It is clear that the early years from conception to age six have the most important influence of any time in the life cycle on brain development and subsequent learning, behaviour and health. The effects of early experience, particularly during the first three years, on the wiring and sculpting of the brain's billions of neurons, last a lifetime.</p> <p>A young child's brain develops through stimulation of the sensing pathways (e.g. seeing, hearing, touching, smelling, tasting) from early experiences. A mother breastfeeding her baby or a father reading to a toddler on his lap are both providing essential experiences for brain development. This early nurturing during critical periods of brain development not only affects the parts of the brain that control vision and other senses, it influences the neural cross connections to other parts of the brain that influence arousal, emotional regulation and behaviour. A child who misses positive stimulation or is subject to chronic stress in the first years of life may have difficulty overcoming a bad early start.</p> <p>Given that the brain's development is a seamless continuum, initiatives for early child development and learning should also be a continuum. Learning in the early years must be based on quality, developmentally attuned interactions with primary caregivers and opportunities for play-based problem solving with other children that stimulates brain development.</p> <p>The evidence is clear that good early child development programs that involve parents or other primary caregivers of young children can influence how they relate to and care for children in the home, and can vastly improve outcomes for children's behaviour, learning and health in later life. The earlier in a child's life these programs begin, the better. These programs can benefit children and families from all socioeconomic groups in society</p> <p>This period of life is as important for an educated, competent</p>

Publication	Extract from summary/findings
	<p>population as any other period. Given its importance, society must give at least the same amount of attention to this period of development as it does to the school and post-secondary education periods of human development.</p> <p>Our future depends on our ability to manage the complex interplay of the emerging new economy, changing social environments and the impact of change on individuals, particularly those who are most vulnerable in their formative early years – our children.</p> <p>There is evidence of significant stress on families and early child development in the present period of major economic and social change.</p> <p>A key strategy for improving the capabilities for innovation of the next generation of citizens is to make early child development a priority of the public and private sectors of society. n</p> <p>Facing the work, family and early child development challenge is a shared responsibility among governments, employers, communities and families.</p> <p>Since a competent population that can cope with the socioeconomic change is crucial for future economic growth, the subject of early child development must be a high priority for a society and its governments.</p>

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