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Review of early childhood parenting, education and health intervention programs for Indigenous children and families in Australia

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Summary

This paper provides a review of prevention and early intervention research literature that is focused on improving outcomes for Australian Indigenous children in the early childhood years. For the purposes of this paper, early childhood is defined as the years from conception to school entry. The included literature was drawn from 3 key areas of early childhood research: parenting, early childhood education, and early childhood health.

What we know

- Early childhood inequalities between Indigenous and non-Indigenous people in Australia are well documented. These inequities set in motion the beginning of significant lifelong discrepancies—in health, educational achievement and wellbeing—between these groups.
- Most Indigenous early childhood research into parenting, education and health is descriptive and tends to focus on identifying and describing ‘gaps’. As a result, the collective research story is one of deficits within the Indigenous community. It needs to be acknowledged that the Indigenous experience in Australia is one marked by strength and resilience as much as by inequity and disadvantage.
- Issues of early childhood health, education and parenting cannot be separated from the history of disempowerment and separation from land, family and culture experienced by Indigenous Australians.
- The difference in research design of programs affects the relative confidence that can be placed in their findings. The higher the quality of research design, the more confidence can be placed in findings that indicate positive outcomes from intervention programs.

What works

- Parenting programs that involved active skills training for Indigenous parents (for example, Indigenous Triple P program; Let’s Start—see Appendix 2) had positive outcomes for parents and their children.
- Early childhood education programs that had positive learning outcomes for Indigenous children included HIPPY and Let’s Start (see Appendix 3). HIPPY, a combined home and centre-based early childhood enrichment program, resulted in children having fewer problems with peers and higher pro-social behaviours. The Let’s Start Parent Child program, which focussed on parents and their 4–6 year old children with challenging behaviours, saw a reduction in problem and risk behaviours at home and school, with a particularly strong program response for Indigenous girls.
- The range of health programs (see Appendix 4) that research showed had positive outcomes included programs targeting particular disorders and diagnoses (including new treatment methods and ways of encouraging treatment compliance) and community-embedded maternal and infant health programs (for example, the Mums and Babies program). However, given the complex social determinants that affect Indigenous health and wellbeing, there is a clear place for accompanying broad health interventions such as the provision of housing with appropriate social, behavioural and community-wide environmental interventions.
- Appropriate program implementation is a key element of success in early intervention programs in health, education and parenting for Indigenous children and families in Australia.
- Program characteristics that seem to be associated with successful implementation in Indigenous communities have a strengths-based, family-centred approach; flexibility and sustainability; adaptations to suit the local needs and context; and models of service integration and collaboration.
- Program engagement of Indigenous people and communities depends on building trust and establishing relationships.
- To be successful, program funding should take into account the time involved in establishing a relationships-based approach that is built on trust and reciprocity.



- An important factor in program success is the extent to which it has community support. For programs initiated outside the local context, it is crucial that the support and engagement of local leaders has been obtained before program commencement.
- The employment of local community members to participate in and guide the delivery of the program is a key element of successful implementation.
- Appropriate levels of training and support, along with realistic expectations and work requirements that do not bring Indigenous workers into conflict with their community, are vital to make the service environment a safe place for them.
- The choice of non-Indigenous program staff is crucial, and programs work best where non-Indigenous workers are willing to connect with the community, value the trust and respect placed in them, and are able to let go of rigid western notions of time.
- In addition to the right choice of non-Indigenous staff, high-quality cultural competence training is essential and needs to form an ongoing part of professional development.
- The location of the program is an important element in successful implementation. Program engagement is strengthened when a program is run in places that are perceived as safe and where participants feel a sense of ownership and control.
- Evidence-based programs increase the likelihood of positive outcomes for program participants.
- Key to successful adaptation of evidence-based programs in differing contexts is ensuring that core program elements are retained and any adaptations documented.

What doesn't work

- Programs implemented in a less-than-respectful manner or in a way that sends negative messages about Indigenous people's knowledge of what is best for them or about their parenting, teaching or care of their children will not produce any outcomes beyond mistrust and antagonism.
- Program implementation in Indigenous communities cannot be approached in the same way program implementation is approached in mainstream communities. It cannot be assumed that programs that are successful with non-Indigenous people will always be successful with Indigenous people.
- It is not possible to develop an Indigenous version of a program with the assumption that this version will be relevant to all Indigenous communities. The types of adaptations required for a program are likely to be unique to the context and culture of each community.
- Decision making about replication of programs and strategic investment is significantly hindered when good quality evaluation that measures program success in terms of child and family outcomes is not included as part of program investment.

What we don't know

- More comprehensive longitudinal research is needed, including longitudinal cohort studies with Indigenous children to understand their health, learning and development following intervention programs.
- There is a need for research that examines the extent of health inequity for Indigenous children in urban areas (53% of Indigenous children live in urban areas, and yet only 11% of Indigenous child health research includes this group).
- The development of a high-quality evidence base that involves randomised controlled trials (or at least the establishment of comparison groups) and longitudinal research can be problematic in Australia where research funding is often inadequate for 'gold standard' research design. Without more funding for rigorous research and evaluation designs, much of the evidence base will continue to be of generally low quality.



Focus of this issues paper

The data presented in this paper paint a concerning picture. If we are to ‘close the gap’ in health, education and wellbeing between Indigenous and non-Indigenous Australians, action is needed at all levels of government, both through universal services—such as health, education, housing, employment, and family and community services—and through targeted intervention services that bring more specifically designed services to Indigenous people. Health, education and parenting have been the major areas targeted by early intervention programs. This issues paper provides a review of the intervention programs in these areas that target Indigenous children and their families in the early childhood years.

Definition of early childhood

For the purposes of this paper, the early childhood years refer to the years between a child’s conception and entry to school, which is generally at ages 5 or 6 years, with some variation by state and territory in the age of entry (Edwards et al. 2011). Intervention programs for Indigenous children in this age range and their families have increased in Australia and in other parts of the world such as the USA, Canada and New Zealand as considerable research evidence has emerged of the importance of the early years in children’s development and subsequent life trajectory (Mustard 2008), and the cost-effectiveness of intervening at this stage of life compared with later years (COAG 2009).

Aims

One aim of this paper is to bring together up-to-date information about the range of evaluated intervention programs for Indigenous children and their families, where the information is targeted at the early childhood years. A second aim is to review research on the programs’ effectiveness in bringing about positive change in the lives of Indigenous children and their parents. The third and primary aim of the paper is to assess the quality of published or publicly available research and evaluation of early intervention programs for Indigenous children and families in Australia: the intent is to assist practitioners and policy makers in their choice of intervention programs for use in Indigenous communities.

In doing so, the paper omits discussion of programs that have not yet been evaluated or whose evaluations are not publicly available. Such programs may well be as effective, or even more effective, than those reviewed here. It also needs to be kept in mind that using the quality of research design as a primary criterion for program adoption can be problematic in Australia, where research funding is difficult to obtain and often inadequate to conduct the randomised controlled trials and longitudinal research designs that are the ‘gold standard’ for a high-quality evidence base.

Background

Early childhood inequalities between Indigenous and non-Indigenous people in Australia are well documented. These inequities set in motion the beginning of significant lifelong discrepancies in health, educational achievement and wellbeing for this group of Australians.

Most Indigenous early childhood research into parenting, early childhood education and health is descriptive. This is in response to ongoing calls from researchers, such as Freemantle et al. (2007), for rigorous data that track the extent of inequalities and change over time. In addition to the need for more comprehensive longitudinal research, there is also a need for research that examines the extent of health inequity for Indigenous children in urban areas. For example, Eades et al. (2010) point out that about 53% of Indigenous children live in urban



areas, and yet only 11% of Indigenous child health research includes this group. The National Health and Medical Research Council's (NHMRC) Road Map document also calls for longitudinal cohort studies with Indigenous children to understand their health, learning and development over time (NHMRC 2008). Studies like the Longitudinal Study of Indigenous Children, also known as *Footprints in Time* (FaHCSIA 2012), the SEARCH study (Sax Institute 2013), and the Gudaga study (Comino et al. 2010) have responded to provide these longitudinal data. A large cross-sectional study conducted in Western Australia, the WA Child Health Study (Zubrick et al. 2004), has also contributed significantly to our understanding of the health and development of Indigenous children.

Because the majority of recent research focuses on identifying and describing the 'gaps', the collective research story is one of deficits within the Indigenous community. A brief summary of research on early childhood parenting, early childhood education and health deficits for Indigenous Australians is presented below. It must be acknowledged that this is not a balanced picture, and the Indigenous experience in this country is one marked by strength and resilience as much as inequity and disadvantage. The story of strength and resilience is the one rarely told. Our intention here is not to reinforce a deficit-driven approach, but to review research on early intervention programs in parenting, early childhood education and health for Indigenous children and families.

Parenting

The research literature identifies the following parenting issues in relation to the differences between Indigenous and non-Indigenous families in Australia:

- Rates of reported child abuse and neglect are higher for Indigenous than non-Indigenous children, although rates vary across Australia (Cashmore 2012; CCYPCG 2012; Silburn et al. 2011). Rates of substantiated abuse and neglect notifications are 2–12 times higher than for non-Indigenous children (AIHW 2012a).
- Indigenous children are over-represented in out-of-home care: they are 11 times more likely than non-Indigenous children to be in care (AIHW 2012a).
- In Wave 1 of *Footprints in Time*, 84% of responding families of Indigenous children described their family as strong, and 49% reported that the children's grandparents provided care for them when their parent was not able to be there (FaHCSIA 2009).
- A finding from Wave 2 of the *Footprints in Time* study suggests that separation of Indigenous children from their families continues to affect parenting in Indigenous families. In the study, 34% of responding families said that either they or their relatives had been taken away from their families (FaHCSIA 2010). Family separation resulting from government policy is a source of inter-generational trauma, which along with a lack of experience of parenting in institutional care, has had a negative effect on parenting in Indigenous families (Burns et al. 2012).
- Findings related to Indigenous parenting from Wave 3 of *Footprints in Time* show that there are high levels of unemployment among parents (46% of the study's children lived in jobless families), low levels of parental education (60% had no education beyond high school), and a high exposure to family risk factors in terms of major life events (average of 4.13 over the past 12 months) (FaHCSIA 2012).

Early childhood education

Information from the research literature on Indigenous children's early childhood education includes:

- Wave 3 of *Footprints in Time* found that about a third of children who were part of the cohort recruited in their first year of life attended a playgroup or other baby group, most of which had a paid facilitator with early learning qualifications (Harrison et al. 2012). This is consistent with (a) the greater use of supported and intensive support playgroups over community playgroups (without trained facilitators) by Indigenous families (ARTD Consultants 2008), and (b) the under-enrolment of disadvantaged families (including Indigenous families) in mainstream playgroup programs (Berthelsen et al. 2012).



- It was also reported in the Wave 3 of Footprints in Time report that about a third of children in the cohort recruited in their first year of life attended some form of child care, day care or family day care (FaHCSIA 2012). This is similar to the results from the representative sample of Australian children in the Longitudinal Study of Australian Children, which found that 35% of children attended some form of child care in their first year of life (Harrison 2011).
- Of Indigenous children in child care in Wave 3 of Footprints in Time, 38% attended fewer than 15 hours of child care per week, 33% attended 15-30 hours, and 30% attended 30 hours or more (FaHCSIA 2012). In contrast, the representative sample of Australian children in the Longitudinal Study of Australian Children attended an average of 20.5 hours of child care a week (Harrison 2011).

Health

The research literature describes the following health discrepancies between Indigenous and non-Indigenous children:

- Compared to non-Indigenous babies, Australian Indigenous babies have higher rates of stillbirth, low birthweight and prematurity. They are more likely to be born into disadvantaged circumstances to young, single mothers, mothers who smoked or used alcohol during pregnancy, and mothers with low education levels (AIHW 2012a; Comino et al. 2012; Eades et al. 2008; Johnston & Coory 2005; Leeds et al. 2007; Silburn et al. 2011). Indigenous mothers in both urban and rural/remote areas are more likely to present for hospital-based antenatal care late in pregnancy (Chamberlain et al. 2001; Robinson et al. 2012; Trinh & Rubin 2006).
- Urban Indigenous mothers have lower rates of breastfeeding initiation than non-Indigenous Australian mothers (Craig et al. 2011). There is some evidence that breastfeeding initiation rates are higher for Indigenous women than non-Indigenous women in rural and remote areas (Zubrick et al. 2004). Overall, initiation of exclusive breastfeeding is lower and Indigenous infants are breastfed for shorter times (AIHW 2009, 2012a; Craig et al. 2011).
- While overall childhood immunisation rates are high and comparable to non-Indigenous rates, Indigenous children are less likely to receive their vaccinations on time (AIHW 2009). Timely vaccination is essential to reducing the burden of disease due to pertussis and Haemophilus influenza type b (Hib) (Turner et al. 2009).
- In the first 2 years of life, Indigenous children are more likely than non-Indigenous children to be admitted to hospital. They also stay in hospital for longer periods of time, and they are more likely to die in hospital. The most common reason for admission to hospital is infection (respiratory or gastrointestinal), and Indigenous children are admitted for pneumonia 14 times more often than non-Indigenous children (Carville et al. 2007).
- Indigenous children have higher death rates, including injury, than the national average. Indigenous infant mortality rates are 1.7 times higher than the national average, and child mortality rates are 2.1 times higher (AIHW 2012a).
- Indigenous boys are 5 times as likely to be hospitalised as the result of assault than the national average, and Indigenous girls are 11 times more likely to be hospitalised as the result of assault than the national average (AIHW 2012a).
- Pyoderma is reported to be as high as 70% of children in some communities. It is associated with later renal failure and acute rheumatic fever (Lehmann et al. 2003). Skin infection is associated with certain living conditions, including poor temperature control of houses, the presence of pets in the house, concrete floors, overcrowding and dwellings lacking functioning toilets and running water (Bailie et al. 2005, 2010).
- Impaired hearing affects between 10% and 67% of Indigenous children. Rates of perforated tympanic membranes are high and more prevalent in rural/remote Indigenous communities than in urban communities (Lehmann et al. 2003).
- Indigenous children are about twice as likely to have dental caries as the Australian average (AIHW 2012b; Jamieson et al. 2007).



Justification for review of research quality

The higher the quality of research design, the more confidence can be placed in findings that indicate positive outcomes as the result of the intervention program. There are risks in the adoption of programs without any evidence base or without knowledge of the evidence base, in that these programs may not have the elements likely to lead to positive outcomes or may lead to no change or even negative consequences for participants. For example, research on the Homestart program in the United Kingdom, a home visiting program for disadvantaged families with young children delivered by volunteers, led to no positive change in visited families and some negative consequences, compared to similar families who had not received the program (Lexmond et al. 2011).

For these reasons, it is important to review and assess the research base for the early childhood intervention programs that have been used and evaluated in Australia with Indigenous children and families.

Method

Criteria for selection of programs for review

We have used the following criteria to select programs for inclusion in this paper:

- The program involved Indigenous children and families in Australia, USA, Canada or New Zealand, with a strong focus on Australia.
- The program was targeted at the early childhood years (defined in this paper as conception to school entry).
- The program was a formal, structured program conducted on a regular basis.
- The program and its aims related to at least 1 of the 3 focus areas for this issues paper: parenting, early childhood education, and health.
- The program has been evaluated in some way and the results made public (through journal articles, research reports and websites).
- Information about the program and its effectiveness has been published in the past 10 years (2003–2012).
- The program could be mainstream or Indigenous-specific in its delivery, but outcomes for Indigenous children, families or communities had to be included in the research report.

Locating relevant literature

Several methods were used to locate relevant journal articles and research reports on early childhood intervention programs that had been used with Indigenous children and families:

- a search of electronic databases (assisted by the library at the Australian Institute of Family Studies) using the following search terms:
 - research, evaluation
 - Indigenous, Aboriginal, Australia
 - Early childhood, early childhood education, parenting education, home visiting, health, ear health
 - otitis media, prevention programs, early intervention programs, playgroups, preschool, child care
- consultation with representatives of relevant government portfolios—Commonwealth, state, and territory—facilitated by the Australian Institute of Health and Welfare

- reading of relevant review, policy and position papers related to early intervention programs for Indigenous children and families for mention of programs and research reports. These papers were then located through electronic searches using the search terms listed above, or through the authors or relevant government departments.

Determining the primary focus of programs

Many of the programs addressed 2 or even 3 of the areas under review (parenting, early childhood education and health). In this case they have been reported as part of each relevant area with the findings related to that particular area. This approach was particularly needed for programs that involved parent education. If the program related exclusively to health issues and only health outcomes were reported, the program was included in the Health section. If programs involved parent education about health as well as other parenting issues such as child behaviour or parenting practices, programs were included under both Health and Parenting.

Assessing the quality of the research design

To assess the quality of the research design, the NHMRC designation of levels of evidence was used (NHMRC 2000). This provides a stringent way of categorising into 4 levels (with subcategories) the research design of intervention studies. It has been developed to apply particularly to research on health interventions, but it is relevant for all areas of intervention. For the purposes of this paper, programs were considered to have a strong evidence base if they were assessed as Level I, II or III in the NHMRC designation of levels of evidence (see Table 1).

Table 1: NHMRC designation of levels of evidence

Level	Designation
Level I	Evidence obtained from a systematic review of all relevant randomised controlled trials
Level II	Evidence obtained from at least 1 properly designed randomised controlled trial
Level III-1	Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method)
Level III-2	Evidence obtained from comparative studies (including systematic reviews of such studies) with concurrent controls and allocation not randomised, cohort studies, case-control studies, or interrupted time series with a control group
Level III-3	Evidence obtained from comparative studies with historical control, 2 or more single arm studies, or interrupted time series without a parallel control group
Level IV	Evidence obtained from case series, either post-test or pretest/[and] post-test

Source: NHMRC (2000:8).



Research on parenting programs

The 13 parenting programs listed in Appendix 2 can be grouped into 3 broad categories: mainstream parenting programs for disadvantaged families, Indigenous-specific parenting programs, and home visiting programs.

Mainstream parenting programs for disadvantaged families

The 5 evaluated government programs of this kind were designed to provide parenting support for Indigenous and non-Indigenous disadvantaged families. Communities for Children and Invest to Grow were national programs that were part of the Stronger Families and Communities Strategy in 2000–2004 (Muir et al. 2009). They offered place-based interventions that could include a variety of programs targeted at children under 5 years and their families. Brighter Futures (Hilferty et al. 2010; Tannous et al. 2009) and Schools as Community Centres (Department of Education and Communities, NSW 2012) are NSW-based programs that also offered families a variety of programs rather than a single program to support their parenting of children who were younger than school age. Family by Family (Community Matters 2012) is a new program developed in South Australia to train disadvantaged families to support other disadvantaged families.

The rigour of the evaluation of these programs differs. The Communities for Children and Brighter Futures evaluations were the only ones to include control groups and pre- and post-measures of parenting (both studies had elements at NHMRC Level III-2). The Invest to Grow and Schools as Community Centres evaluations were at Level IV or below, relying on case studies involving stakeholder interviews with some pre- and post-designs in individual Invest to Grow local evaluations. In terms of reported outcomes for Indigenous parents, the Brighter Futures evaluation found that Indigenous parents were more positive in their parenting than non-Indigenous parents after the program, although they were found to be lower in parental self-efficacy (Tannous et al. 2009). There was also a decrease in risk-of-harm reports for Indigenous infants found at the end of 2 years. The evaluation of the Family by Family program was based mainly on stakeholder interviews.

In the Communities for Children evaluation, parenting-related findings involving Indigenous families revealed a mix of positive, negative and no change after the 3-year program (Flaxman et al. 2009). Positive changes included perceived neighbourhood social cohesion, a more positive view of their neighbourhood as a place to bring up children, and improved levels of available support, all of which support the community-level intervention approach used in Communities for Children. A reported negative change was a decline in home-learning environments for both Indigenous and non-Indigenous families, and no change was apparent after the program in the degree of hostile parenting for Indigenous and non-Indigenous families. It may be that changes in parenting behaviour need more than 3 years of a program to take effect.

While Indigenous families participated in 5% of the 3 programs (Invest to Grow projects, Schools as Community Centres sites, and the Family by Family program) no specific findings were reported in the published evaluations for Indigenous families. On the basis of this evidence and the relatively low numbers of Indigenous families participating in the research, it is difficult to conclude from the evidence that these mainstream government parenting programs were beneficial for Indigenous families.

Indigenous-specific parenting programs

Five parenting program evaluations were based on parenting group sessions targeted at Indigenous participants. Two programs, Hey Dad! (Beatty & Doran 2007) and Men in Families (UnitingCare Burnside 2003) focused on Indigenous fathers and covered multiple aspects of parenting for men. Core of Life (Communities and Families Clearinghouse Australia 2008) is a similarly broad pre-parenthood program aimed at Indigenous teenagers



and delivered through schools, at camps, and in Indigenous communities. Let's Start (Mares & Robinson 2012; Robinson et al. 2009; Stock et al. 2012), and Indigenous Triple P (Turner et al. 2007) are group programs aimed mainly at Indigenous parents learning to manage their child's behaviour (one aspect of parenting).

The evaluations vary in the rigour of their research design. Two of the programs (Indigenous Triple P and Men in Families) used evaluation designs at NHMRC Level III, indicating the use of a control group. Of the two, Indigenous Triple P used the more rigorous randomised method of assigning parents to the intervention and wait-list control groups. Two other programs were rated as Level IV, with the Hey Dad! and the Core of Life evaluations relying on multiple case studies (Beatty & Doran 2007; Communities and Families Clearinghouse Australia 2008), and the Let's Start evaluation using a pre-test and post-test design (Robinson et al. 2009).

In terms of findings related to parenting outcomes, the evaluations of programs for fathers indicated that fathers in the Hey Dad! program and fathers and mothers commenting on the effects of Men in Families reported positive learning about parenting (UnitingCare Burnside 2003), enhanced parenting skills and social benefits for participants (Beatty & Doran 2007), and appreciation of aspects of the programs such as newsletters (UnitingCare Burnside 2003). The programs addressing parent management of their children's behaviour—Indigenous Triple P and Let's Start—both reported improvements in child behaviour from pre-test to post-test (based on parental reports of child behaviour) as well as continuation of the children's improved behaviour levels 6 months later (Turner et al. 2007; Robinson et al. 2009).

Home visiting programs

Three of the evaluated parenting programs—Family Home Visiting (Sivak et al. 2008), HIPPY (Liddell et al. 2011), and Parents as Teachers (Watson & Chesters 2012)—used home visiting as their method of service delivery. All programs are mainstream home-visiting programs; the evaluations for Family Home Visiting (Sivak et al. 2008) and HIPPY (Liddell et al. 2011) are based on trials with Indigenous families. The Parents as Teachers evaluation was based on mainstream delivery of the program with disadvantaged families, including Indigenous families, in the ACT. Family Home Visiting in South Australia refers to home visits by child health nurses supported by an interdisciplinary team of social workers and health professionals. The other two programs (Parents as Teachers and HIPPY) have more of an educational focus: Parents as Teachers is focused on the first 3 years of a child's life and HIPPY on the 2 years leading up to school entry. All involve a trained home visitor working with parents in the home to enhance their parenting of children in the early childhood years.

The evaluations vary in design. The HIPPY evaluation, rated Level III-2 on the NHMRC scale, used a control group derived from the Longitudinal Study of Australian Children. It used a longitudinal design over 2 years to evaluate the effectiveness of the program over 5 sites and it included a high proportion of Indigenous families. The evaluation of Parents as Teachers was rated at Level IV (Watson & Chesters 2012). It used a multi-method process evaluation involving interviews and observations of home visiting, as well as an analysis of exit interviews from over 7 years of the program. More rigorous evaluations of Parents as Teachers have been undertaken by the New Zealand Government (Praat 2011). The Family Home Visiting program was evaluated in a less rigorous way using interviews with key stakeholders following the first 12 months of the program (Sivak et al. 2008) and was rated as < Level IV.

Parenting outcomes in the HIPPY evaluation were: a less hostile parenting style; greater involvement in children's learning; and more contact with the school than parents in the control group (Liddell et al. 2011). Indigenous parents in the HIPPY program reported improved patience and skill responding to difficult behaviour, as well as increased confidence in parenting and in relation to school personnel, more time and improved quality time spent with their children, better awareness of their child's abilities and needs, and greater understanding about school requirements (Liddell et al. 2011). The Family Home Visiting Evaluation reported increased knowledge about children's health as an indirect effect of the program for Indigenous parents (Sivak et al. 2008). Other findings from these evaluations related to parents' appreciation of particular aspects of the programs.



Conclusion: research on parenting programs

Parenting involves a complex set of knowledge, attitudes and skills. Parenting programs range from a general approach to a more targeted approach in the array of knowledge, attitudes and skills they attempt to encompass. Parenting outcomes from program evaluations more often involve knowledge (for example, improved knowledge of child health or how schools work) or attitudes (for example, improved confidence in parenting or more positive judgements of the local neighbourhood), than they do skills or new learned parenting behaviours. The programs that teach Indigenous parents specific skills, such as how to manage their child's behaviour, are an exception to this rule. The Indigenous Triple P program, for example, found differences in child behaviour between the intervention and control groups, indicating that parents had successfully learned and used new skills. The differences in research design of the programs do affect the relative confidence that can be placed in their findings, but all the parenting programs that were reviewed appeared to have been well evaluated, well received by participants, and the Indigenous-specific programs implemented their programs in close consultation with the local Indigenous community.

Research on early childhood education programs

The 10 evaluated programs that are summarised in Appendix 3 represent some of the ways in which Indigenous children might experience an early childhood education program in the years before they start school. None of the early childhood education programs reviewed was evaluated using a randomised controlled trial. All used existing groups of families or communities who were participating in programs, although some evaluations used a control or contrast group, and several used a pre-test and post-test design to gain a measure of change for participants over the course of the program. Early childhood education programs have been presented in this issues paper under 4 headings: 'Mainstream intervention programs for disadvantaged families', 'Indigenous-specific programs in early childhood education', 'Programs targeting specific aspects of learning', and 'Specific formats for early childhood education programs'.

Mainstream intervention programs for disadvantaged families

Early childhood education through playgroups, child care, preschool or transition-to-school programs is often one of the components of wide-scale early intervention programs for disadvantaged families, including Indigenous families. Communities for Children, a national program that operated in disadvantaged communities across Australia, worked with communities to improve current services or introduce new sustainable services related to children's development and parenting for families with young children (Muir et al. 2009, 2010). Its evaluation showed few direct developmental outcomes for children, but there were some clear benefits for their circumstances in terms of increased levels of parental employment and less harsh parenting practices. Brighter Futures is a NSW intervention for disadvantaged families that operates across the state and includes placement of children into child care as part of its program options (Tannous et al. 2009; Hilferty et al. 2010). The NSW program Schools as Community Centres takes a community-based approach, like that of Communities for Children, and works with local families using a community primary school as a base (Department of Education and Communities, NSW 2012).

Evaluations of these programs varied in rigour and level of detail provided in their reports. Of the 3 programs, Communities for Children had the strongest design features as it used a contrast group of families in matched non-program sites to test the effect of the program over 3 years. The Brighter Futures evaluation also used a contrast group for a subgroup of families who were part of an intensive study, but they did not do so for their large survey of families before and after 2 years in the program. Both evaluations found some direct outcomes for some children in their behaviour and language. The Communities for Children evaluation could not assess the



program benefits for Indigenous children and families due to low numbers participating in the research, and the Brighter Futures evaluation concluded that Indigenous families were among the most disadvantaged families in the study. The lack of measurable outcomes for these families was attributed to the short time spent in the program by the very disadvantaged families, who tended to leave the program rather than remain in it for 2 years. The evaluation of the Schools as Community Centres program was based on 2 interview studies—of the pilot and of the extended program—without a control group or pre-test and post-test design. Reports from program facilitators, families and teachers in the children's first year at school suggested there were many benefits for children who attended, including their learning, social development and attendance at transition programs offered by schools. This last outcome was noted specifically for Indigenous children.

Indigenous-specific programs in early childhood education

The evaluated programs that had been adapted or developed specifically for Indigenous families or children included Families as First Teachers (FaFT) in the Northern Territory (Abraham & Piers-Blundell 2012), Foundations for Success in Queensland (Perry 2011), and the Home Interaction Program for Parents and Youngsters (HIPPY) (Liddell et al. 2011), which is a program trialed in disadvantaged communities with a high proportion of Indigenous families across Australia. FaFT operates mainly in remote sites across the Northern Territory using a playgroup format to deliver an adapted version of the evidence-based US early childhood education program Abecedarian (Ramey et al. 2012; Sparling 2011) as well as parenting information and family support. The Foundations for Success program in Queensland (Perry 2011) is a program for early childhood educators to assist them in implementing the Early Years Learning Framework with Indigenous children and families in centre-based programs. HIPPY (Liddell et al. 2011) is an evidence-based program to involve parents in preparing their 3- and 4-year-old children for school entry; HIPPY operates in a home-visiting model.

The evaluations of these programs vary in research design. FaFT is a new program in its first years of implementation, and its evaluation is based so far on a parent satisfaction survey and project descriptions. A rigorous evaluation is planned and underway, but no results are yet available. A qualitative multiple-case-study design was adopted for evaluation of the Foundations for Success program in 6 Indigenous communities. Neither a control group nor additional measurement points were involved. Of the 3 programs in this category, the HIPPY program had the strongest evaluation design as it included measures over a 2-year period, a control group derived from the Longitudinal Study of Australian children, and multiple case studies. The findings for the 3 programs indicate a likelihood of programs making a difference for Indigenous children. Informants for the FaFT and Foundations for Learning programs reported change in parents' views of the importance of early learning and their role in that learning (FaFT), and developmental outcomes for children's learning and social development (Foundations for Learning). The HIPPY program evaluation reported gains in children's learning and social development during the course of the program compared to the control group.

Programs targeting specific aspects of learning

Two evaluated programs targeted specific aspects of learning and development of children: for literacy the Early Literacy Program in Western Australia (Hewer & Whyatt 2006) and for child behaviour Let's Start in the Northern Territory (Mares & Robinson 2012; Robinson et al. 2009; Stock et al. 2012). The Early Literacy Program is a program in which child health nurses give children's books to families with infants to encourage reading to children at home. The evaluation took part in one regional area of Western Australia. Let's Start is a program adapted from an Australian-developed program called Early Start, and it is specifically for Indigenous families who have young children with challenging behaviours. The weekly sessions with parents and children are facilitated by Indigenous staff and use culturally appropriate art-based strategies. The program has been trialed in urban and remote sites in the Northern Territory.



The Early Literacy Program had a very basic evaluation that was based on the records kept by nurses about book distribution. No measures were taken of how the books were used in the home or if they made a difference to children's literacy levels. The evaluation of Let's Start had a stronger design, with a pre-test and post-test design, but no control group. Basic data from the Early Literacy Program indicated that, although some Indigenous families benefited, the program was largely unsuccessful in distributing books to Indigenous families because of the low numbers bringing their infants to the child health nurse for a check-up at 7–9 months. The findings for Let's Start indicated improvement in children's behaviour at home and at school.

Specific formats for early childhood education programs

Although many different formats for early childhood education for Indigenous children have been described in the literature, only 3 evaluations of specific formats were found. Two related to playgroups and the other to transition-to-school programs. Both playgroup evaluations concerned playgroups for disadvantaged families, and in both cases, the playgroups involved a large proportion of Indigenous families. The evaluations were of The Playgroup Program operated by the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) (ARTD Consultants 2008), and of Orana Supported Playgroups operating in an area of regional NSW (Johnston & Sullivan 2004).

The FaHCSIA program was evaluated using case studies that represented a small sample of 3 kinds of playgroup funded under the program: intensive supported playgroups, supported playgroups, and community playgroups. It was pointed out in the report that Indigenous families tended not to participate in community playgroups, which are coordinated by participating parents (ARTD Consultants 2008). Both intensive supported playgroups, with long-term support from a paid facilitator, and supported playgroups, with an initial 12 months' support of this kind, were attended by Indigenous families: some 42% of participants in intensive supported playgroups had an Indigenous background. While the evaluation did not report on outcomes for children, it did confirm that this form of early childhood education was used by Indigenous families and that playgroups often served as a 'soft entry' to other services. The evaluation of 9 supported playgroups in regional NSW (Orana) was conducted as a process evaluation using a range of qualitative methods. Although outcomes for children were not measured directly, informants reported positive outcomes for parents and children, especially when the co-facilitator was Indigenous and had Indigenous community support, and when barriers to attendance (location, venue, visibility, time, transport) were addressed.

The Dockett et al. (2008) study presented 10 case studies of successful transition-to-school programs that involved a high proportion of Indigenous children. The case studies involved multiple research methods—including interviews, document analysis and observation—but outcomes for children were available only through a stakeholder report. The findings were presented in terms of common features of program implementation that the authors linked to the success of the transition programs for Indigenous children and their families.

Conclusion: research on early childhood education programs

Based on the 10 evaluations of programs related to early childhood education, Indigenous-specific programs, supported playgroups, and transition-to-school programs seem to offer the most promise for promoting change in the early learning and development of Indigenous children through interventions external to the family. Most evaluations were at NHMRC Level IV or lower, without a longitudinal design involving pre- and post-tests and without a control or comparison group. This means that the findings for child outcomes are not as reliably tied to the effect of the program as they are in more robust evaluations. However, two Indigenous-specific programs were at NHMRC Level 111—HIPPY and Let's Start. HIPPY, a combined home and centre-based early childhood enrichment program, resulted in children having fewer problems with peers and higher pro-social behaviours. The Let's Start Parent Child program, which focussed on parents and their 4–6 year old children with challenging



behaviour, involved weekly sessions of constructive parent-child interaction, strategies for managing children's behaviour, and the use of facilitated play to develop children's social skills. The evaluation found a reduction in problem and risk behaviours at home and school, with a particularly strong program response for Indigenous girls. A common characteristic of programs that found outcomes for children was that they attracted and retained Indigenous families, sometimes through use of Indigenous co-workers (for example, HIPPY and Let's Start).

Research on health programs

Recent intervention studies designed to address the health inequities in early childhood for Indigenous children are summarised in Appendix 4. The published intervention research included in this appendix has been grouped together under the following headings: 'Interventions targeting particular disorders/diagnoses'; 'Community-embedded Maternal and Infant Health programs'; and 'Broad health interventions including the social determinants of health'.

Interventions targeting particular disorders and diagnoses

New treatment methods

This literature includes intervention research that is trialing new treatment methods. The swimming-pool research provides an interesting example of a potential new treatment method. This research was built on the hypothesis that saltwater pools would provide a community-wide way of cleansing the skin and flushing out ears, noses and throats, reducing the very high rates of pyoderma as well as ear, nose and throat infections in Indigenous children. While initial findings in Western Australia seemed to support the efficacy of this strategy (Lehmann et al. 2003; Silva et al. 2008), replication trials in South Australia and the Northern Territory were not able to produce the same results (Healthcare Planning and Evaluation 2009; Sanchez et al. 2012). The strongest support across the studies is for a reduction in pyoderma. The findings relating to ear health and infection are mixed. The issue of the sustainability of this strategy is significant. The report by Healthcare Planning and Evaluation (2009) for the Department of Health and Ageing highlighted the difficulties of pool maintenance and the reluctance of local Indigenous people to take on pool management roles because of a fear that the community would hold them responsible if someone were to be hurt or drowned in the pool.

Other research looking at new treatment methods included a comparison of single-dose azithromycin with 7 days of amoxicillin to treat otitis media (Morris et al. 2010). Both treatments were found to be equally effective, but the single-dose option may be the better option if treatment compliance is an issue. There has also been oral health research demonstrating effective methods for reducing dental caries, including the fluoridation of water (Armfield 2005), and use of a fluoride varnish on teeth combined with health worker training and community information (Roberts-Thomson et al. 2010; Slade et al. 2011).

Encouraging treatment compliance

Also collected under this heading is research that is not focused on trialing new interventions, but on new ways of encouraging compliance. For example, in the East Arnhem Regional Healthy Skin program (La Vincente et al. 2009) the questions were not around whether or not permethrin cream would work to treat scabies, but around how to encourage Indigenous people in rural areas to use the cream. A program of providing free cream to all households, an annual healthy skin day, clinic follow-up, and widespread community information and health promotion had not been effective in reducing the very high rates of scabies in 2 remote target communities in Northern Australia. La Vincente et al. (2009) intensified the level of intervention further by



providing 3 follow-up home visits. Nonetheless, compliance remained very low. La Vincente et al. (2009) suggest that perhaps the people had become used to scabies as a part of life. It may also be that the use of the cream was impractical and unpleasant because of the heat and humidity, limited opportunities for privacy in crowded households, and poor infrastructure for washing it off. The high likelihood of rapid reinfestation may also have led to low motivation to treat the condition.

Other research looking at early identification and increased treatment compliance included programs that have grown out of the Northern Territory Emergency Response in 2007 (FaHCSIA 2011). The level of investment in health that accompanied this initiative has produced some positive results in the development of new programs. The Close the Gap Oral health program is a mobile dental program that improves access for children to dental treatment (Allen and Clarke 2011). The Child Health Check Initiative in the Northern Territory is part of the Northern Territory Emergency Response. There is evidence that this program has contributed to improved health for children in the Northern Territory (AIHW 2011) as the result of early detection of health issues.

A randomised controlled trial of an asthma education program (Valery et al. 2010) demonstrated improved knowledge of asthma and fewer days of missed school. In relation to nutrition, most of the research measured satisfaction with programs and participant perceptions and did not contribute to an understanding of health outcomes (Gui & Lau 2007; Wiese et al. 2011). Jones and Smith (2007) reported preliminary findings from a program that involved the provision of fruit and vegetables combined with healthy cooking classes, indicating that this program led to improved levels of vitamin C and iron in the blood, and a reduction in skin and ear infections. Further research is required to support improved health outcomes as the result of nutrition programs. Vaccination is another area of health that has attracted interest in relation to compliance. A targeted program for Indigenous families, involving Indigenous health workers and appropriate, easy-to-read reminder information, seems to have had a moderate effect from the perspectives of service providers (Brindell 2006; Thomas et al. 2008). Once again, more research is needed to determine whether or not this program increased compliance and improved health outcomes.

Community-embedded maternal and infant health programs

The very concerning health discrepancies between Indigenous and non-Indigenous children relating to low birth weight, prematurity and infant mortality have prompted considerable investment in exploring new and more culturally sensitive models of Indigenous maternal and infant care. The NSW Aboriginal and Maternal Infant Health Strategy (AMIHS) program has been widely embraced. Specially trained midwives and Aboriginal Health Workers work in partnership to deliver this program of antenatal care. About 75% of Indigenous women who give birth in NSW have come through the AMIHS program (Murphy & Best 2012). Evaluation research suggests that this program has increased rates of participation in antenatal care, and decreased the rate of preterm births (NSW Health 2005).

Other maternal and infant health services have moved from a clinic-based model to a community-based model. The Strong Women, Strong Babies, Strong Culture program is run by well-respected Indigenous women in the community (Tursan d'Espaignet et al. 2003). Their role includes providing information to support healthy pregnancies, and encouraging use of antenatal services. This program has also led to an increase in mother engagement with antenatal care services, and preliminary results suggest that it may have had an influence in increasing infant birth weight (Tursan d'Espaignet et al. 2003; Mackerras 2001).

The Mums and Babies program is a shared antenatal care program run out of the Townsville Aboriginal and Islander Health Service. An evaluation of this program points to an increase in hospital births and antenatal care. Results relating to a decrease in preterm births and perinatal mortality were not present 4 years after program commencement (Panaretto et al. 2005), but were present 7 years after program commencement (Panaretto et al. 2007), highlighting the importance of taking into account that a positive shift in outcomes may take some time to achieve. The Daruk Midwifery service is run out of an urban Indigenous medical centre.



Compared to Indigenous women in the local area who did not participate in this service, those who participated had higher levels engagement with antenatal services and high levels of mother satisfaction with the service. Jan et al. (2004) were not able to demonstrate an impact on maternal and infant health outcomes over a 5-year period.

A sustained nurse home visiting program in South Australia involves a partnership between child and family health nurses and Indigenous health workers (Sivak et al. 2008). The home-visiting model is designed to bring care into the community and the environments in which mothers feel most comfortable to engage. This program focuses on maternal and infant wellbeing after the baby is born. In a home visit soon after the baby is born, the child and family health nurse determines whether or not the family is in need of support. If it is felt that they are in need of support, regular visits commence with the parent's consent until the infant is 2 years old. The report from Sivak et al. (2008) describes high levels of parent satisfaction with this program. Future reports will describe whether or not there are positive maternal and infant health outcomes as the result of engagement.

A model of moving services out of clinics to culturally safe places, and involving Indigenous paraprofessionals, is a model that has also been embraced in delivering maternal and infant services to other Indigenous people in the westernised world, such as in the United States of America, Canada and New Zealand (for example, Barlow et al. 2006; Del Grosso et al. 2012). Collectively, the Australian and international research presents a clear message on the importance of culturally appropriate service models to improving family satisfaction and service engagement. Less clear is the extent to which program participation leads to improved maternal and child health outcomes.

Broad health interventions including the social determinants of health

The health challenges within Indigenous communities are complex due to a range of factors, including the effects of a brutal history in this country since colonisation, which has led to a mistrust of authority figures and services, a sense of disempowerment and diluting of cultural knowledge. Other factors are harsh living conditions in remote areas and high rates of socio-economic disadvantage. Armstrong et al. (2012) point out that thinking about health can be quite different within Indigenous communities. This thinking extends beyond physical wellbeing to a deep sense of spirituality and connection with the land. Approaches to health intervention will need to take account of this more holistic view if they are to be meaningful to the community they are intended to serve. The Family Well Being program is an example of a program that seeks to capture this complexity and cultural approach. It focuses on encouraging a sense of personal empowerment and helping others, and draws on the spiritual traditions of the local people. This program is based on the premise that change will come when there is internal change in thinking, and when Indigenous people embrace a sense of control over their own health. Program evaluation suggests that, while participating individuals report feeling more empowered, we are yet to see translation of this into health outcomes (Tsey et al. 2010). It is likely that changes in health outcomes as the result of a program like this will take some time to emerge.

Problematic housing conditions, including overcrowding and poor bathroom infrastructure, has been associated with childhood illnesses that are common within Indigenous communities, such as pyoderma and otitis media. The research of Bailie et al. (2011, 2012) demonstrates that simply building new houses is not enough. This does not significantly change the number of people living in a house, it does not improve individual hygiene, and it does not, on its own, improve child health outcomes. The research concludes that there is no simple answer, and the provision of improved housing must be accompanied by social, behavioural, and community-wide environmental intervention if we want to see change. An example of community-wide behavioural intervention is the use of social media. The research of McDonald et al. (2011) suggests that social media may have a role to play in influencing personal hygiene habits.



It may be that health intervention needs to take very broad forms. For example, in discussing the social determinants of health, Priest et al. (2012) argue that poor child health outcomes are associated with ‘vicarious racism’, meaning that a child has witnessed someone they know or love being treated in a racist and disrespectful way.

There is no denying that traditional medical interventions have had a very important impact on the health of Indigenous people. For example, diseases that were previously devastating in Indigenous communities, such as measles, smallpox, and tetanus, have now been almost completely eradicated (Menzies et al. 2008). Continued high-quality research on effective treatment and treatment compliance is essential. Nonetheless, it is clear that of equal importance is high-quality research examining the complex social determinants that affect health and wellbeing. It is also important to trial intervention approaches that address this complexity.

Conclusion: research on health programs

Australian Indigenous people experience significant health inequality from the earliest years of life. Their experiences have many parallels with the Indigenous people of other westernised countries such as the USA, Canada and New Zealand, although Australian Indigenous people have the most concerning health outcomes (Freemantle et al. 2007).

Interventions targeting particular disorders and diagnoses included programs trialling new treatment methods (for example, swimming pool research found positive effects on rates of pyoderma) and ways of encouraging treatment compliance (for example, the use of single-dose treatment to address acute otitis media). Community-embedded maternal and infant health programs can take some time to achieve positive shifts in outcomes (see Mums and Babies program and impact on perinatal mortality). Given the complex social determinants that affect Indigenous health and wellbeing, there is a clear place for accompanying broad health interventions such as the provision of housing with appropriate social, behavioural and community-wide environmental interventions.

In Australia there is considerable investment in health interventions to address the inequities, not only from state, territory and federal governments, but also from large corporations such as Rio Tinto (Hayward et al. 2008). The level of program investment needs to be balanced with investment in high-quality evaluation research that looks beyond satisfaction and output measures, such as the number of visits at a clinic, to health outcomes. This kind of research requires gold-standard, randomised controlled trials wherever possible, or at least the establishment of comparison groups. While this level of research evidence is present amongst the reviewed papers, there were a surprising number of published papers that did not include comparison groups, or ask questions beyond program satisfaction.

The research presented in this and the preceding sections throws into sharp attention the importance of appropriate program implementation as a key element of program success. Issues of implementation will be explored further in the next section.

Program implementation

For those working in a research or service context to support positive outcomes in Indigenous communities, implementation is a key issue. In other words, every bit as important as what is being delivered is how it is being delivered. Issues of early childhood health, education and parenting cannot be separated from the history of disempowerment and separation from land, family and culture experienced by the Australian Indigenous people. These experiences of strong government intervention are not only located in a historical context, but are current, as seen in the stark over-representation of Indigenous children in out-of-home care settings, juvenile detention centres (AIHW 2012a), and relatively recent legislation such as the legislation that supported the Northern Territory Emergency Response (FaHCSIA 2011). Offers from services, predominantly staffed by non-Indigenous Australians wanting to help Indigenous families, are understandably viewed with scepticism and mistrust.



The National Health and Medical Research Council (NHMRC) has released 2 key documents to support culturally appropriate partnerships between researchers and Indigenous communities. The first is the 'Values and Ethics' document (NHMRC 2003). While this document is written with researchers in mind, the principles it espouses are equally relevant to those engaged in program implementation. It presents guidelines framed around 6 values: spirit and integrity, reciprocity, respect, equality, survival and protection, and responsibility. A second important document, the 'Keeping research on track' document (NHMRC 2005), is designed to support Indigenous communities in their engagement with researchers. Once again, this document is also relevant to Indigenous communities and their engagements with service providers. These documents support the view that program implementation within Indigenous communities cannot be approached in the same way program implementation is approached in mainstream communities.

The research reviewed for the purposes of this paper collectively document a range of strategies to address barriers to service and research participation. A summary is presented below.

Safe people

The program engagement of Indigenous people and communities depends on building trust and establishing relationships. Essential to the building of trust is the support and endorsement of the program by community Elders and other community leaders whenever possible (NHMRC 2003). The employment of local community members to participate in and guide the delivery of the program is another key feature of successful implementation (for example, Mackerras 2001). Often, programs will also require the employment of non-Indigenous people who bring particular skills and expertise, such as child and family health nurses or early childhood teachers. The research literature supports that non-Indigenous staff need to be selected, not only on the basis of their skills, but on their ability to embrace a relationships-based approach involving respect, reciprocity and flexibility (Del Grosso et al. 2012).

Community leadership and endorsement

An important factor in program success is the extent to which the program is community controlled and endorsed (Herceg 2006; Mildon & Polimeni 2012). There are many examples in this issues paper of programs and other forms of intervention to support improved early childhood and family outcomes that have been initiated by Indigenous community members (for example, Panaretto et al. 2005). Programs that are initiated outside the local context may also secure the support and engagement of local leaders, and this kind of engagement is crucial before program commencement (Flaxman et al. 2009; Mustard 2008). Responding to community identified and community led initiatives, and ensuring community support for externally generated initiatives, is part of a commitment to an underlying philosophy that should drive all research and service provision in Indigenous communities: a philosophy of genuine partnership and working alongside Indigenous people in a way that is meaningful to them (Mason-White 2012). Establishing relationships and a shared understanding of community needs and priorities, as well as appropriate program governance structures is a process that requires considerable time and investment from all involved. Maintaining these relationships and ensuring ongoing community input and support continues well beyond program commencement, throughout the life of the program (Herceg 2006).

Employment and capacity building of local Indigenous people

The employment of local Indigenous people to deliver services, or work alongside those delivering programs is another important element of successful implementation. Employing members of the local community is one part of the reciprocity required of program providers (NHMRC 2003), as it both engages existing local capacity and builds capacity within the local community. It is also a strategy of great significance to community engagement because the Indigenous workers can facilitate community trust of the program and relationship



building between community members and program staff (Brindell 2006; Tursan d'Espaignet et al. 2003; Sivak et al. 2008; Trudgett & Grace 2011). Indigenous workers have a key role to play in:

- guiding appropriate service delivery practices
- providing insight into how traditional and spiritual elements meaningful to the local cultural context may be included in the program
- understanding the best ways of dealing with difficult topics within the specific cultural context
- facilitating involvement and support of community leaders.

Indigenous workers should be provided with appropriate levels of training and extensive support (Department of Education and Training, NT 2012; Herceg 2006). It is vital that the service environment is not only a safe place for participating Indigenous children and families, but also a safe place for Indigenous workers where the expectations are realistic, the requirements placed on them do not bring them into conflict with their community, and where their position as representatives of the community is well respected (Mares & Robinson 2012).

Non-Indigenous program staff

Napoli and Gonzalez-Santin (2001) report on intensive home-based services to Native American families. They write about the importance of the 'right kind of person' working in these communities. They describe the right kind of non-Indigenous service worker as a person who will not wish to remain disconnected from the community, a person who will value the trust and respect that is placed in them, a person who is willing to let go of rigid western notions of time and what constitutes the work day, a person who is willing to share part of themselves. This message is echoed in Australian research. The choice of service practitioners is crucial (ARTD Consultants 2008; Cortis et al. 2009; Herceg 2006). In addition to careful consideration of personality traits in the employment of non-Indigenous staff, high-quality cultural competence training is essential and needs to form an ongoing part of professional development.

Safe places

Another important element to successful implementation is the location of the program. Program engagement is strengthened when it is run in places that are perceived as comfortable and safe, and where participants feel a sense of ownership and control. Home-visiting programs provide an example of services delivered in a space perceived as safe (for example, Sivak et al. 2008). Other programs rely on locations that have served as hubs within the community, such as schools (for example, ARTD Consultants 2008), and Indigenous medical services (for example, Panaretto et al. 2005). Sometimes, programs need to provide external cues to assure Indigenous families that the program and its staff are not a threat. For example, Sivak et al. (2008) described the importance of dressing staff in a uniform so they are not mistaken for government workers, and placing magnetic stickers on the doors of their cars so families do not mistake them for government cars.

Safe programs

It should not be assumed that programs that have been successful with non-Indigenous people will always be successful with Indigenous people. The program characteristics that seem to be associated with successful implementation with Indigenous communities include the following: a strengths-based, family-centered approach; flexibility and sustainability; adaptation to suit the local needs and context; and models of service integration and collaboration.



A strengths-based, family-centred approach

The research literature supports the importance of a strengths-based approach that sees children and families in a holistic way, and seeks to reinforce a positive sense of identity (Borg & Paul 2004; Mason-White 2012). An inclusive policy that welcomes family members even when they are not the 'target client' is also potentially important to family engagement (ARTD Consultants 2008). While positive child outcomes require a strong early-childhood education component delivered directly to children, engagement of the parent and support for parents in their role of providing health care, educating and parenting their child is essential.

Flexibility and sustainability

Program flexibility can be seen in increasing staff numbers to provide additional support to families (Cortis et al. 2009); establishing flexible options in the payment of program fees or waiving fees whenever possible (Ware 2012); and flexibility in terms of time and schedules to fit with family availability and their need to respond to unexpected family responsibilities. For example, rigid program discharge policies such as 3 missed appointments leading to exclusion from the program are inappropriate in a cultural environment where individuals may regularly return to 'country' for extended periods of time and where there is an expectation that family responsibilities such as 'sorry business' will be prioritised.

Service sustainability, or continuity, also contributes to the development of community trust and family engagement. The level of investment needed to develop meaningful community partnerships and relationships with families requires long lead-in times for programs. Short-term program funding tied to electoral cycles is likely to support lead-in time and the early phases of implementation only. In addition, research trials demonstrating program effectiveness are of little value if there are no mechanisms for ongoing program delivery once researchers have withdrawn from the community. An interesting example is the swimming-pool research. In the Northern Territory trial (Healthcare Planning and Evaluation 2009), it became apparent that there was great reluctance from community members to take on the role of running the swimming pools because people were afraid the community would hold them responsible and banish them if any harm came to a child. This cultural concern leaves infrastructure like swimming pools difficult to maintain in a remote community, and a program that relies on the presence of well-kept pools is potentially unsustainable.

Program adaptation to local contexts and needs

The issue of program adaptation could be perceived as difficult because the need to adapt a program can be viewed as conflicting with an evidence-based approach that requires program fidelity. In other words, if a program has been shown to bring about positive outcomes, changing the program could be seen to compromise its effectiveness.

To be relevant and meaningful to Indigenous communities, program adaptation is important and need not come into conflict with an evidence-based approach. The key is to understand the core (or potent) elements of a program and to be uncompromising in remaining true to these elements, while adapting other aspects of the program to be appropriate to the context in which they are being delivered. To draw on an analogy employed by Associate Professor Lynn Kemp (personal communication November 2012), a cake recipe will usually require butter, flour, eggs, milk and sugar. It is possible to change the flavour of the cake by adding cocoa to make it a chocolate cake, or banana to make it a banana cake, but the core ingredients cannot be compromised.

Similarly, a program may be adapted in a range of ways to ensure its relevance and appeal to a particular context, so long as the core elements of the program remain. It is important, therefore, that in the selection of programs, the following is taken into account: the strength of the existing evidence-base; how well documented the program is in a manual or guide; and whether or not the core program elements are clearly identified. High-quality evaluation to assess the appropriateness and effectiveness of an adapted program or new program can provide important quality-control feedback mechanisms.



To be more culturally relevant, program adaptations have included the use of local Indigenous languages whenever possible (Borg & Paul 2004), and incorporation of Indigenous artwork and photographs into program logos and materials (Comino et al. 2012; Mares & Robinson 2012). Traditional stories, music and food may also be incorporated into programs. The style of program delivery may also be adapted. For example, information could be delivered in a story-telling style rather than more formal lesson style. The nature of the adaptations required are likely to be unique to the contexts and culture of each community, and so it is not possible to simply develop an Indigenous version of a program with the assumption that this version will be relevant to all Indigenous communities.

Service integration and collaboration

Service engagement and quality is likely to be enhanced by integrated service delivery. An integrated model can improve service responsiveness to family needs, reduce service fragmentation, and improve service continuity (Robinson et al. 2009; Ware 2012). A collaborative, integrated way of working acknowledges that early life outcomes are complex and influenced by a wide range of factors. Robinson et al. (2012) point out that many of the most important determinants of health and learning lie beyond the direct influences of health services and schools. Effective communication between services is essential. Bar-Zeev et al. (2012) suggest that improved communication and integration of services requires the employment of a person whose primary role is to support collaboration and information sharing.

Conclusion

There are many challenges surrounding the effective implementation of health, education and parenting programs in Indigenous communities. The key message from the literature is the importance of safety for Indigenous communities as they engage with services: safe people, safe places and safe programs. This section provides a brief summary of the implementation issues identified in the research literature, and adds its voice to the call for further research on effective program development and delivery with Indigenous communities.

Discussion

High-quality research for a strong evidence base

It is clear from this review that there is an ongoing need for high-quality research and evaluation of programs. Investment in programs without also investing in good quality evaluation to provide quality feedback and measure program success in terms of child and family outcomes significantly hinders decision making about the replication of programs and strategic investment. Noteworthy is the number of studies described in this review that do not include comparison groups, but instead focus to issues such as client satisfaction and outputs (such as number of visits to a service) rather than to child and family outcomes. While satisfaction and output data are important and tell us a great deal about family engagement, they tell us little about whether or not a program was successful in bringing about the changes in child and family outcomes it set out to achieve. The quality of the research in Australia is, undoubtedly, influenced by the level of funding available for such research.

For Australia to develop a quality evidence base for its policy decisions about early childhood and closing the gap for Indigenous children, there is a need for adequate funding to do the research. While there is some industry research funding available in Australia, there is limited funding for Australian Indigenous issues from international sources. Government funding is the main source of support for research in Indigenous early childhood health, education and parenting research. Until more funding is available to researchers and program



providers to use rigorous designs such as randomised control trials, much of the evidence base will continue to be of generally low quality in terms of the NHMRC criteria.

In addition to the issue of funding to support high-quality research, there are also issues around the acceptability of some research designs within Indigenous communities and the need to compromise level of evidence in the interest of community partnership. For example, it is not uncommon for community leaders to object to randomised controlled trial designs because they do not want any members of their community to miss out on a potentially beneficial program. They see methodologies like this as unethical within their cultural context. This view must be respected, as research partnership requires responding to the views of the community. In these instances, the strongest possible research design that is acceptable to community should be employed.

Implementation

Issues of implementation are key elements in the delivery of programs with Indigenous communities. Intervention strategies found to be important to effective implementation are summarised under the following headings:

- *Safe people:* the building of trust and the establishment of relationships is essential. This requires program endorsement by community Elders and other community leaders, the employment of local community members to participate in and guide the delivery of the program, and the employment of non-Indigenous workers who are able to embrace a relationships-based approach.
- *Safe places:* programs should be run in places that are perceived as comfortable and safe, and where participants feel a sense of ownership and control. Examples include home-visiting programs and programs run in community hubs.
- *Safe programs:* the successful implementation of programs has been found to require the following characteristics: a strengths-based, family-centred approach; flexibility and sustainability; adaptation of the program to suit the local needs and context; and models of service integration and collaboration that are in operation.

Programs that are successful are those that invest significantly in ensuring that they are culturally safe, meaningful and accepted within the local community. If programs are implemented in a less-than-respectful manner or in a way that sends the message, 'non-Indigenous people know what is best for Indigenous people' or 'your parenting or teaching or care of your children is not good enough', these programs will not produce any outcomes beyond mistrust and antagonism. In relation to these implementation issues, service funding plans and timelines need to take into account that the relationships-based approach required for successful implantation of programs in Indigenous communities takes some time to develop, and it requires a level of flexibility and reciprocity that are generally not required in mainstream settings.

Workforce safety, support and professional development

Non-Indigenous workers require ongoing professional training and development to equip them to work in the ways required by Indigenous communities. To quote Napoli & Gonzalez-Santin (2001), most non-Indigenous workers have no idea how 'culturally blind' they are. The importance of training points in turn to the need for careful evaluation of the effectiveness of current cultural sensitivity training. There is very little research literature that examines whether or not current training models are effective and influence practice positively.

Another important issue is the workplace support of Indigenous workers. It is essential that services constantly review the extent to which their workplace is a culturally safe place for Indigenous employees. This is again an area where there is currently very little research literature beyond service policy documents.



Anecdotally, we are aware of many examples of Indigenous people being placed in culturally unsafe positions. For example, an Indigenous worker was employed as a project officer. Her job was to recruit Indigenous people to a particular program, then visit them regularly to gather research data. In this particular case, there were many complaints from the families who felt the program was not delivered in the way it had been promised, and that the non-Indigenous workers involved were inappropriate in the way they treated the families. The Indigenous project officer had no control over how the program was delivered, but was held responsible for poor program delivery by the local families, who felt that her promises of service delivery at recruitment were not fulfilled. The project officer felt that her position in the community had been compromised by placing her in this position of representing a program she had no influence over. More policy attention and appropriate funding needs to focus on workplace preparation and professional development for people working in early childhood services and in interventions with Indigenous families and communities.

A formal process of review of the cultural safety of work environment and tasks needs to be a regular part of the professional support processes for Indigenous employees. In addition, Indigenous employees should be respected as cultural experts and consulted on all aspects of program delivery, from recruitment through to appropriate methods of program delivery.

Program fidelity and adaptations of programs

Implementation science cautions against assuming the same outcomes found for evidence-based programs if those programs are not implemented with fidelity. If programs require adaptation to meet the needs of local programs, as programs for Indigenous communities do, there may be concerns that program fidelity has been compromised. Interestingly, flexible implementation rather than program fidelity is most often argued to be the reason for program success in the early childhood intervention literature relating to Indigenous communities. This paper argues that adaptation and fidelity are not necessarily inconsistent, so long as the core elements of the program remain uncompromised. Key to successful adaptation is ensuring that the core program elements are clearly identified and any adaptations documented.

The need for program adaptation should not be seen as a reason for disregarding the importance of an evidence-base to support program effectiveness. In an ideal scenario, a program with a strong evidence-base will be selected, carefully adapted to suit the cultural context without compromising well-defined core program elements, and evaluated to examine whether or not this program and the adaptations required produce the same outcomes in an Indigenous community. Obviously there are occasions when there is not one particular program with a strong evidence base, and so issues of implementation and compatibility with a local context will take precedence in program decision making. In addition, there may be no suitable program to address a community concern, and an entirely new program will be developed. Both of these scenarios are entirely reasonable, so long as they are accompanied by high-quality research to assess their effectiveness.

Conclusions

In conclusion, evidence-based programs should be adopted whenever possible—this is in keeping with our understanding that this significantly increases the chance of producing positive outcomes for participants. Adaptation of program materials and processes are likely to be essential to ensure engagement by Indigenous participants and its relevance to the local community. Decisions about adaptation need to be made in partnership with the community, and should not compromise core program elements. Along with adoption of evidence-based programs, this paper argues for attention to be paid to the professional development of service providers in the evidence-based elements of effective program implementation with Indigenous communities.

Appendix 1

The Closing the Gap Clearinghouse Assessed collection includes summaries of research and evaluations that provide information on what works to overcome Indigenous disadvantage across the seven Council of Australian Governments building block topics.

Table A1 contains a list of selected research and evaluations that were the key pieces of evidence used in this issues paper. The major components are summarised in the Assessed collection.

To view the Assessed collection, visit <<http://www.aihw.gov.au/closingthegap/collections/>>.

Table A1: Assessed collection items for Review of early childhood parenting, education and health intervention programs for Indigenous children and families in Australia

Title	Year	Author(s)
An evaluation of the benefits of swimming pools for the hearing and ear health of young Indigenous Australians: a whole of population study across multiple remote Indigenous communities	2012	Sanchez L, Carney S, Estermann A, Sparrow K & Turner D
The impact of housing improvement and socio-environmental factors on common childhood illnesses: a cohort study in Indigenous Australian communities	2012	Bailie RS, Stevens M & McDonald E
Investing in our future: an evaluation of the national rollout of the Home Interaction Program for Parents and Youngsters (HIPPY). Final report to the Australian Government Department of Education, Employment and Workplace Relations	2011	Liddell M, Barnett T, Roost FD & McEachran J
Effect of health promotion and fluoride varnish on dental caries among Australian Aboriginal children: results from a community-randomized controlled trial	2011	Slade GD, Bailie RS, Roberts-Thomson K, Leach AJ, Raye I, Endean C et al
Evaluation of an Australian Indigenous housing programme: community level impact on crowding, infrastructure function and hygiene	2011	Bailie RS, McDonald EL, Stevens M, Guthridge S & Brewster DR
The national evaluation of the Communities for Children initiative	2010	Muir K, Katz I, Edwards B, Gray M, Wise S & Hayes A
Single-dose azithromycin in the treatment of otitis media in Aboriginal children	2010	Morris P, Gadil G, McCallum G, Wilson C, Smith-Vaughton H, Torzillo P & Leach A
An education intervention for childhood asthma by Aboriginal and Torres Strait Islander health workers: a randomised controlled trial	2010	Valery PC, Masters IB, Taylor B, Laifoo Y, O'Rourke PK & Chang AB
A comprehensive approach to health promotion for the reduction of dental caries in remote Indigenous Australian children: a clustered randomised controlled trial	2010	Roberts-Thomson KF, Slade GD, Bailie RS, Endean C, Simmons B, Leach AJ et al.
Brighter Futures Early Intervention Program: interim evaluation report	2009	Tannous K, Hilferty F, Griffiths M & McHugh M
National evaluation (2004–2008) of the Stronger Families and Communities Strategy 2004–2009. Occasional paper no. 24	2009	Muir K, Katz I, Purcal C, Patulny R, Flaxman S, Abelló D et al.
Randomised clinical trial of a group parent education programme for Australian Indigenous families	2007	Turner KMT, Richards M & Sanders MR
Sustainable antenatal care services in an urban Indigenous community: the Townsville experience	2007	Panaretto KS, Mitchell MR, Anderson L, Larkins SL, Manassis V, Buettner PG et al.



Table A1 (continued): Assessed collection items for Review of early childhood parenting, education and health intervention programs for Indigenous children and families in Australia

Title	Year	Author(s)
Public water fluoridation and dental health in New South Wales	2005	Armfield JM
NSW Aboriginal Maternal and Infant Health Strategy evaluation: final report 2005	2005	NSW Health
An holistic economic evaluation of an Aboriginal community-controlled midwifery programme in Western Sydney	2004	Jan S, Conaty S, Hecker R, Bartlett M, Delaney S & Capon T
Men in Families and Families First: evaluation report	2003	UnitingCare Burnside
Monitoring the 'Strong Women, Strong Babies, Strong Culture Program': the first eight years	2003	Tursan d'Espaignet E, Measey ML, Carnegie MA & Mackerras D

Table A2 contains a list of Closing the Gap Clearinghouse issues papers and resource sheets related to this issues paper.

To view the publications, visit <<http://www.aihw.gov.au/closingthegap>>.

Table A2: Related Clearinghouse issues papers and resource sheets

Title	Year	Author(s)
Improving the early life outcomes of Indigenous children: implementing early childhood development at the local level	2013	Wise S
Improving access to urban and regional early childhood services	2012	Ware V-A
Parenting in the early years: effectiveness of parenting support programs for Indigenous families	2012	Mildon R & Polimeni M
Early learning programs that promote children's developmental and educational outcomes	2012	Harrison LJ, Goldfeld S, Metcalfe E & Moore T
Early childhood and education services for Indigenous children prior to starting school	2011	Sims M
School readiness: what does it mean for Indigenous children, families, schools and communities?	2010	Dockett S, Perry B & Kearney E
School attendance and retention of Indigenous Australian students	2010	Purdie N & Buckley S
Community development approaches to safety and wellbeing of Indigenous children	2010	Higgins DJ

Appendix 2: Early childhood years parenting program research

Table A3: Summary of early childhood years parenting program research

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Mainstream parenting programs for disadvantaged families					
Brighter Futures					
Hilferty et al. (2010)	Voluntary 2-year multi-component early intervention program that provided intensive support and services to vulnerable families with young children to prevent the progress of participant families through the child protection system	Administrative data analysis, state-wide family survey, process evaluation on implementation and administration of the program and economic evaluation on outcome and cost data	Level IV and Level III-2	Decrease in average number of risk-of-harm reports for Indigenous children of 3 months and 6 months of age	The study provides some evidence for the effect on positive feelings about parenting and safer practices of Indigenous parents
Tannous et al. (2009)	It included case management, home visiting, placement of children in child care, brokerage services and access to parenting programs. 24% of families who took part were Indigenous. 13% of families responding to the Family survey were Indigenous	Pre- and post-test study, no control group, using parent reports of child's social-emotional development and behaviour on standardised measures: survey of 1,024 parents (136 identified as Indigenous), and interviews with 45 client families and 48 program staff		Indigenous parents found to be significantly more positive in their parenting than non-Indigenous parents	
	The program was conducted across NSW	Intensive study of a smaller number of intervention and control families		Indigenous parents found to be significantly lower in parental self-efficacy than non-Indigenous parents	
Wong (2009)	Brighter Futures was implemented in this service as a voluntary, targeted program designed for families encountering problems that affect their ability to care for their children. The program provides families with the necessary support and services to help prevent an escalation of the problems they are facing	Case study Data gathered from a number of key stakeholders, including families, Brighter Futures and early childhood professionals, using a range of methods including: a Family Satisfaction Survey, a Family Child Care Survey, interviews with families, a Child Care Survey, examination of closed case files, and professional reflective vignettes	< Level IV	Families and early childhood professionals reported that families had been assisted to develop social networks Families reported being assisted to understand their child better, learn about their child's development, develop skills to play with and teach their child, improve their child's behaviour and their relationships with their child and with their partner	This study offers insight into the social and parent educational benefits for families from the Brighter Futures program when it is implemented through a child care provider

Continued

Table A3 (continued): Summary of early childhood years parenting program research

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Mainstream parenting programs for disadvantaged families (continued)					
Communities for Children (CfC)					
Muir et al. (2009)	Voluntary 2-year multi-component early intervention program that provided intensive support and services to vulnerable families with young children to prevent the progress of participant families through the child protection system	Administrative data analysis	Level IV and Level III-2	There was evidence that CfC had multiple positive impacts on parenting:	The 2 Muir et al. evaluations showed multiple benefits of the CfC program for parents in ways likely to lead to positive outcomes for children
Muir et al. (2010)	It included case management, home visiting, placement of children in child care, brokerage services and access to parenting programs. 24% of families who took part were Indigenous. 13% of families responding to the Family survey were Indigenous	State-wide Family Survey Process evaluation on implementation and administration of the program Economic Evaluation on outcome and cost data		<ul style="list-style-type: none"> fewer children living in a jobless household parents reported less hostile or harsh parenting practices parents felt more effective in their roles as parents positive and significant finding in relation to Hard-to-reach groups higher level of receptive vocabulary and verbal ability among children of mothers with Year 10 education or less less hostile or harsh parenting among hard-to-reach parents higher involvement in community service activities among parents in households with lower income and mothers with Year 10 education or less fewer children in jobless households across all groups increased parental perception of community social cohesion reported in lower income households 	
	The program was conducted across NSW	Pre- and post-test research study, no control group, using: parent reports of child's social-emotional development and behaviour on standardised measures; survey of 1,024 parents (136 identified as Indigenous), interviews with 45 client families and 48 program staff			
		Intensive study of a smaller number of families who received the intervention and another group who did not			

Continued

Table A3 (continued): Summary of early childhood years parenting program research

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Mainstream parenting programs for disadvantaged families (continued)					
Flaxman et al. (2009)	The report examines service provision, service coordination, Indigenous families and children in CFC sites, factors that facilitate or hinder service provision and outcomes, and sustainability	Multiple case studies involving data collection at 3 time points Case studies involved document analysis, onsite observations, focus groups with staff and managers and interviews with parents	Level IV	Findings for Indigenous parents over the 3 years of the program: <ul style="list-style-type: none"> • self-reported general health improved slightly and the gap between Indigenous and non-Indigenous parents decreased • mental health improved for Indigenous and non-Indigenous parents • Indigenous parents reported lower levels of parent efficacy than non-Indigenous parents • neither Indigenous or non-Indigenous families experienced significant changes in hostile parenting • home learning environments significantly declined for Indigenous and non-Indigenous households, and the gap between the groups remained significant • there were significant increases in perceived neighbourhood social cohesion for Indigenous and non-Indigenous families • Indigenous and non-Indigenous families were more positive about their neighbourhood as a place to bring up children at Wave 3 than at Wave 1 • Indigenous families and non-Indigenous families reported significantly improved levels of support when they needed it. By Wave 3 there was no longer a significant difference between Indigenous and non-Indigenous families on this measure 	<p>This study focused on Indigenous families in the CFC evaluation and conducted further data collection in sites with high Indigenous populations</p> <p>There was evidence for improved health and mental health in Indigenous families in CFC sites and positive changes in their perceptions of their neighbourhood and of the support they received from services</p> <p>Some parenting factors closely linked to possible positive outcomes for children showed no change (level of hostile parenting) or a decline (home learning environment)</p> <p>There was little evidence for closing the gap except in general health</p>

Continued

Table A3 (continued): Summary of early childhood years parenting program research

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Mainstream parenting programs for disadvantaged families (continued)					
Family by Family					
Community Matters (2012)	Disadvantaged communities in South Australia	<p>Evaluation conducted in Year 2 of program</p> <p>Families' self-reports against the overall goal they want to achieve (and related actions), questionnaires on completion of 10-, 20- or 30-week link-ups, and interviews with Families SA staff and Family by Family staff</p> <p>The evaluation was based on 2 Family by Family sites in SA</p> <p>40 seeking families (included 2 Indigenous families)</p> <p>Interview with 5 Families SA staff; 5 Family by Family staff (interviewed 3 times)</p>	Level IV	<p>Analysis of seeking families' progress toward achieving goals showed some improvement at 5 weeks and an increase in the strength of outcomes over time</p> <p>The program was more effective in assisting families meet their goals in relation to family interaction and health and less effective in relation to social connections and child behaviour</p> <p>Interviews with families, Families SA workers and Family by Family staff identified positive outcomes in relation to confidence and self-esteem, becoming more involved in activities outside the house, improving family relationships and a variety of positive outcomes for children in areas likely to have positive impacts on child development</p> <p>The program had its strongest impacts in factors that were internal to the individual—self-esteem, believing one's choices make a difference, having a positive orientation to the future. It had marginally weaker impacts in other areas, including linking to the community</p>	<p>A different approach to design of a program (Radical Redesign involving ethnography in the communities) and to evaluation (realist evaluation and developmental evaluation) that take a less static view of programs and allow for their ongoing change and adaptation to different contexts</p> <p>Evaluation focus on change in individual families rather than average rates of change</p>
Invest to Grow					
Muir et al. (2009)	<p>Part of a national Stronger Families and Communities strategy in 2004–2009</p> <p>Invest to Grow funded 26 early intervention programs aimed to improve outcomes for young children (ages 0–5). They included transition to school, support for families of children with disabilities, learning or behavioural difficulties; early intervention; playgroups; promoting nutrition. About 5% were for Indigenous families. Programs operated across Australia</p>	<p>Pre- and post-analysis of 26 local evaluation reports for Invest to Grow programs</p>	Level IV	<p>Outcomes for parents included improvements in:</p> <ul style="list-style-type: none"> • awareness of and access to services • parenting and coping skills • parent–child relationships and family functioning • knowledge about child development health risks and specific disabilities • parent attitudes toward children's health, nutrition and education • support networks and confidence 	<p>An example of government-funded local early intervention initiatives that reported a range of benefits for parents with the potential to lead to positive outcomes for children, including Indigenous children</p>

Continued

Table A3 (continued): Summary of early childhood years parenting program research

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Mainstream parenting programs for disadvantaged families (continued)					
Schools as Community Centres (SaCC)					
Cant (1997) Department of Education and Communities, NSW (2012)	<p>SaCC is a universal prevention and early intervention initiative supporting families with children, aged birth to 8 years, in communities facing marked challenges</p> <p>SaCC works with local human service agencies to provide a range of activities and initiatives to engage and support families raising young children</p> <p>Common SaCC initiatives include supported playgroups, early literacy, parenting programs, transition to school, adult learning and health and nutrition initiatives</p>	Both evaluations involved interviews with parents and agency and community representatives in several sites—no control group	Level IV	<p>Outcomes reported for families included:</p> <ul style="list-style-type: none"> increased supportive connections and increased use of health and community services, resources and activities some programs gave evidence for increased parenting knowledge of parent and child development, increased parent confidence, and improved parenting practices related to early literacy of children higher rate of decline in child abuse and neglect notifications and confirmations in these areas reduction in parents' isolation and increase in their confidence some parents went to TAFE as a direct result of the project two sites initiated the Parents as Teachers home visiting program to support parents with young babies 	<p>Facilitators in this program acted as a connector for families to services in the community and in the program</p> <p>Several positive outcomes were found for parents that could improve their child's development and learning</p> <p>The location of the program in a school also has potential benefits for children and families in the transition to school</p>
Indigenous-specific parenting programs					
Core of Life — National Indigenous pre-parenting life education program					
Communities and Families Clearinghouse Australia (2008)	<p>A hands-on parenting and pregnancy training program targeted at Indigenous teens, presented in high schools, youth camps and in communities</p> <p>The program was initially conducted in Victoria and now operates nationally</p>	<p>Process and outcome evaluation by Elton Consulting included regular interviews with managers:</p> <ul style="list-style-type: none"> collection of statistical data and analysis; feedback from new facilitators feedback from youth participants 	Level IV	<p>80.2% agreed that the session made them think more carefully about the responsibilities of having a baby (82% in remote areas)</p> <p>82% reported learning things they did not already know (92% in remote areas)</p> <p>80.5% reported they understood more about the effects of drugs and alcohol on the mother and unborn child following the session (85–95% in the remote area evaluations)</p> <p>50.3% improved their knowledge and likelihood of accessing local services (78% in remote area evaluations)</p> <p>65% said they learned more about breastfeeding (62% of in remote areas)</p>	<p>An example of a preventative parenting intervention targeting young Indigenous people pre-parenting</p>

Continued

Table A3 (continued): Summary of early childhood years parenting program research

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Indigenous-specific parenting programs (continued)					
Hey Dad!					
Beatty & Doran (2007)	Parenting sessions with content, language and structure tailored to suit Indigenous men Can be delivered as a weekly program, or as a series of workshops over 2 days (weekend) Has been used in regional NSW	Process evaluation using combined feedback from 5 trial sites Feedback sheets from program facilitators, interviews and group interactions with participants	Level IV	Majority of fathers reported that the program had enhanced their parenting, communication, conflict resolution and relationship skills as well as their social connections	The evaluation shows that this is a parenting program that had positive outcomes for Indigenous fathers
Indigenous Triple P					
Turner et al. (2007)	Culturally sensitive adaptation of the mainstream Group Triple P conducted over 8 sessions in a group of 10-12 people It uses an active skills training process to help parents promote children's competence and development, and manage their behaviour	A repeated measures randomised group design methodology was used, comparing the intervention with a waitlist control condition pre- and post-intervention, with a 6-month follow-up of the intervention group	Level III-1	Parents reported a significant decrease in rates of problem child behaviour and less reliance on some dysfunctional parenting practices following the intervention in comparison to waitlist families The program led to greater movement from the clinical range to the non-clinical range for mean child behaviour scores on all measures Effects were primarily maintained at 6-month follow-up Qualitative data showed generally positive responses to the program resources, content and process Only a small number of waitlist families subsequently attended Triple P groups	Positive benefits for parents managing children's behaviour were found in a well-designed evaluation The low proportion of waitlist control families subsequently participating in the program is a caution against using such research designs with Indigenous families
Let's Start Parent-Child Program					
Robinson et al. (2009)	Program for Indigenous parents and their 4- to 6-year-old children with challenging behaviours	Pre- and post-test design with accidental sample and without randomisation or control groups	Level III-3	Strongly significant reductions in parental distress (large effect size)	By assisting Indigenous parents to manage difficult behaviour in their children, this program has the potential to increase school attendance, especially in remote areas where there is a tendency among parents not to insist on school attendance for children with difficult behaviours
Stock et al. (2012)	It involves 10 weekly sessions of guided parent-child constructive interaction, discussion of strategies for managing children's behaviour and development of children's social skills through facilitated play The program has been conducted in schools and preschools in urban and remote sites in the Northern Territory	Measures were attitudinal/perceptual inventories completed by parents and teachers on: <ul style="list-style-type: none">• child behaviour and adjustment, at referral, program end and follow-up• parents' mental health at referral and program end.		Statistically significant reductions in problem and risk behaviours at home and school at end of program (moderate effect size), effect increasing at 6-month follow up (moderate-to-large effect size) Especially strong response to program for Indigenous girls	

Continued

Table A3 (continued): Summary of early childhood years parenting program research

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Indigenous-specific parenting programs (continued)					
Men in Families ('I'm a Dad program')					
UnitingCare Burnside (2003)	The program provides ongoing support to first-time fathers that builds on networks established in antenatal classes, promotes positive parenting and relationships skills through cooperative learning, acts as an advocate for men, enhances adoption of appropriate support services and trains selected fathers as mentors for other fathers. Conducted in 1 site in regional NSW	<p>Intervention (95 mothers and 73 fathers with 1 Indigenous mother) and control group (37 mothers and 30 fathers, none Indigenous)</p> <p>Measures were:</p> <ul style="list-style-type: none"> • interview with parents (separate) on parenting, work and use of services • survey on family life, parental self-efficacy, partner's competence, family desired forms of support 	Level III-2	<p>Fathers (82%) and mothers (63%) felt the 'I'm a Dad' bag reinforced father's importance, pride and involvement in families</p> <p>Fathers (66%) and mothers (74%) felt that the Men in Families segments in antenatal classes were effective in preparing them for their new role</p> <p>The majority reported value in follow-up social activities for friendship, sharing experiences and ideas</p> <p>The <i>Parentalk</i> newsletter was appreciated for its information, tips and sharing of others' experiences</p>	<p>Although only 1 Indigenous parent took part in the evaluation, this program is rare in that it targeted Indigenous fathers and the program was appreciated by fathers and mothers</p> <p>No outcomes were measured in this evaluation</p>
Home visiting programs					
Family Home Visiting (FHV)					
Sivak et al. (2008)	<p>All SA families receive 1 home visit within first weeks of child's life; those identified as needing additional support are offered ongoing FHV up to second birthday</p> <p>Visits are provided by qualified child health nurses supported by disciplinary team of psychologists, social workers, Indigenous health workers, and family brokers</p> <p>Hilton Davis Partnerships with Parents model underpins specialised training of FHV staff</p>	<p>Process evaluation of first 12 months of program through focus groups and interviews with families, Indigenous Cultural Consultants, and implementation team</p>	< Level IV	<p>Almost all families perceived FHV very positively—they found it convenient, responsive, positive and delivered in empowering and respectful way</p> <p>Perceived benefits (varying in impact) were practical assistance, information and referrals for health and other issues (for example, housing, playgroup); feeling more socially involved, supported and confident in themselves and their parenting</p> <p>Prominent themes were the positive qualities of the FHV staff and relationships with them</p> <p>Involvement of Indigenous cultural consultants was valued: for understanding context and culture; for communicating in different ways; as role models; for accountability of FHV in Indigenous community; for improving comfort levels with professional staff</p> <p>Awareness of infant health an apparent indirect outcome</p>	<p>The level of support for home-visiting nurses and Indigenous families in this program may have led to the satisfaction expressed by families (particularly Indigenous cultural consultants)</p> <p>Care was also taken to allow Indigenous families time to decide about participation and to allow for flexible scheduling</p> <p>Visitors also followed Indigenous protocol during their visits</p>

Continued

Table A3 (continued): Summary of early childhood years parenting program research

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Home visiting programs (continued)					
Home Interaction Program for Parents and Youngsters (HIPPY)					
Liddell et al. (2011)	<p>A combined home and centre-based early childhood enrichment program targeted at disadvantaged communities</p> <p>Home tutors recruited from the local community work with parents as peers over 2 years during the child's transition to full-time school (ages 3–5)</p> <p>The program was trialed in 5 sites across Australia with a planned increase to 50 sites</p>	<p>A 2-year, quasi-experimental longitudinal design using a matched control group derived from the Longitudinal Study of Australian Children</p> <p>The 5 trial sites were evaluated and individual case studies made for each site</p> <p>All sites had a high proportion of Indigenous families and 2 were Indigenous-only sites</p> <p>Interviews were used with parents and home tutors; interviews and standardised assessments with children; and structured questionnaires with site coordinators and with HIPPY children's teachers in their first year of school</p>	Level III-2	<p>Compared with non-HIPPY parents, HIPPY parents:</p> <ul style="list-style-type: none"> • had a significantly less angry or hostile parenting style • did significantly more in-home and out-of-home activities with their child • reported that their child liked being read to for longer periods of time in any one sitting • were more involved in their child's learning and development and had greater contact with the school <p>Outcomes for Indigenous Australians from qualitative data:</p> <ul style="list-style-type: none"> • increased confidence to parent their child • increased confidence to talk to their child's teacher • improved parenting skills; patience and responding to difficult behaviour • better relationship between parent and child and improved quality time spent with their child • social connectedness from meeting other parents • more insight about school's requirements and expectations • better awareness of their child's skills, abilities and academic needs 	<p>Numerous benefits for Indigenous parents were found in this evaluation that would improve children's home environment for learning, especially in relation to school transition</p>
Parents as Teachers					
Watson & Chesters (2012)	<p>Home-based parent education and support program delivering parent education to families of vulnerable young children delivered by trained professionals on regular home visits over the first 3 years of a child's life</p> <p>Program resources customised to meet the needs families</p> <p>Program operates across ACT and NSW</p>	<p>Process evaluation</p> <p>Analysis of administrative data (exit surveys when child aged three) over 7 years from ACT</p> <p>Semi-structured interviews with policy personnel, parent advisors and parents</p> <p>Observation of 5 home visits</p>	Level IV	<p>Parent interviews indicated 3 main aspects of program that were appreciated by parents (same issues found from exit surveys):</p> <ul style="list-style-type: none"> • addressing feelings of isolation • improving their confidence and skills in parenting • helping them to access other services <p>Features of the program praised most often by parents were:</p> <ul style="list-style-type: none"> • value of home visits • relationship of trust with a parent advisor • support provided in accessing other services 	<p>An example of a home visiting program used with vulnerable families, including Indigenous families with high parent satisfaction</p> <p>No independent measurement of outcomes for parents or children</p>

Continued

Appendix 3: Early childhood education program research

Table A4: Summary of early childhood education program research

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Mainstream intervention programs for disadvantaged families					
Communities for Children					
Muir et al. (2009)	A Commonwealth government initiative to improve coordination of services for children 0–5 years old and their families, identify and provide services to address unmet needs, build community capacity to engage in service delivery and improve the community context in which children grow up	Three-year longitudinal survey of 2,202 families with children aged 2–5 years in 10 CfC communities and 5 non-CfC ‘contrast’ communities	Level III-2	Positive and significant findings compared to the contrast group after 3 years of CfC program in relation to hard-to-reach groups (includes Indigenous):	Due to insufficient numbers of Indigenous families in contrast sites, it was not possible to determine whether or not, or to what extent, CfC was effective for Indigenous families and children
Muir et al. (2010)	Non-government organisations were funded as Facilitating Partners to develop and implement a whole-of-community approach to early childhood development in consultation with local stakeholders	Measures phone interviews with service providers, interviews with CfC stakeholders in 10 sites, focus groups with CfC stakeholders, child development measures		Development and learning: <ul style="list-style-type: none"> • higher level of receptive vocabulary and verbal ability among children of mothers with Year 10 education or less Home environment: <ul style="list-style-type: none"> • less hostile/harsh parenting among hard-to-reach parents • fewer children in jobless households across all groups • increased parental perception of community social cohesion reported in lower income households 	
	The program was conducted in 35 urban, regional and remote disadvantaged communities across Australia	Included a study of Indigenous families and children: coordination and provision of services; literature review; 25 phone interviews with service providers; 125 interviews with CfC stakeholders in 10 sites; 2 focus groups with CfC stakeholders; analysis of 23 ItG reports (Invest to Grow); and SFIA (whole study) analysis			

Continued

Table A4 (continued): Summary of early childhood education program research

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Mainstream intervention programs for disadvantaged families (continued)					
Schools as Community Centres (SaCC)					
Cant (1997) Department of Education and Communities, NSW (2012)	<p>SaCC is a universal prevention and early intervention initiative supporting families with children aged up to 8 years in communities facing marked challenges</p> <p>SaCC is conducted across NSW and works with local human service agencies to provide a range of activities and initiatives to engage and support families raising young children</p> <p>Common initiatives include supported playgroups, early literacy, parenting programs, transition to school, adult learning and health and nutrition initiatives</p>	<p>Both evaluations involved interviews with parents and agency and community representatives in several sites</p> <p>No control group</p>	Level IV	<p>Parents reported that as a result of participating in SaCC initiatives:</p> <ul style="list-style-type: none"> • their children were doing better in a range of social, emotional and communication skills • they looked at or read books more often with their children <p>The number of children in transition-to-school programs, particularly Indigenous children, increased from 44 to 135</p> <p>In one site, absenteeism was reduced from 10.85 days per term to 6.24 days (bus introduced)</p>	<p>An example of a mainstream program for disadvantaged communities that has several potential educational benefits for Indigenous children</p>
Indigenous-specific early childhood education programs					
Families as First Teachers—Indigenous Parenting Support Service (FaFT-IPSS) and the Mobile Families as First Teachers (MFaFT) program					
Abraham & Piers-Blundell (2012)	<p>Child development, health and hygiene and parenting skills program for Indigenous families</p> <p>Program involves:</p> <ul style="list-style-type: none"> • Abecedarian program • dual generational playgroups • family literacy support • transition to pre-school programs • parent education • community capacity-building activities. <p>Program was conducted in 21 sites across the Northern Territory</p>	<p>Process evaluation including parent satisfaction survey</p>	Level IV	<p>Parent satisfaction surveys in 2011 and 2012 showed that parents:</p> <ul style="list-style-type: none"> • cared about their children's education and development • understood that the program offered information on how they can build strong foundations • felt more skilled and able to support their child's learning and development 	<p>The program has successfully engaged a large number of Indigenous families and met an important community need</p> <p>One of its elements is the evidence-based Abecedarian program, a high-quality early childhood education intervention for parents and children</p> <p>A full evaluation of the FaFT program is underway</p>

Continued

Table A4 (continued): Summary of early childhood education program research

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Indigenous-specific early childhood education programs (continued)					
Foundations for Success					
Perry (2011)	Foundations for Success comprises Early Years Learning Framework-related guidelines to assist educators to plan, implement and reflect on an early learning program for Indigenous children The approach is being used in pre-prep classes (in the year before school entry) in sites across Queensland	Multiple case studies (6) involving conversational interviews, informal interviews and observations within 6 of the 35 program communities with children, families, educators and community members (individually or in groups)	Level IV	Positive outcomes were reported for children's literacy, numeracy and social development	This program is an intervention with early childhood educators to guide their use of the national Early Years Learning Framework when working with Indigenous children and families Stakeholders have reported positive developmental outcomes for children Further research could be done to verify these reports using direct measures of child development and a control group of pre-prep classes in which educators have not been trained in the guidelines
Home Interaction Program for Parents and Youngsters (HIPPY)—Indigenous adaptation					
Liddell et al. (2011)	A combined home and centre-based early childhood enrichment program targeted at disadvantaged communities Home tutors recruited from the local community work with parents as peers over 2 years during the child's transition to full-time school (ages 3–5 years) The Indigenous adaptation of this program was trialed in 5 sites across Australia and the plan is to increase this to 50	A 2-year, quasi-experimental longitudinal design using a matched control group derived from the Longitudinal Study of Australian Children The 5 trial sites were evaluated and individual case studies made for each site. All sites had a high proportion of Indigenous families and 2 were Indigenous-only sites Interviews were used with parents and home tutors; interviews and standardised assessments with children; and structured questionnaires with site coordinators and with HIPPY children's teachers in their first year of school	Level III-2	Outcomes include: • the gap observed in HIPPY children's early numeracy and early literacy skills at the beginning of the program, compared with the Australian norm, had closed by the end of the program • HIPPY children had fewer problems with their peers • the children of parents who had completed more of the program displayed higher levels of pro-social behaviour	A well-designed study with promising results for preparing Indigenous children for transition to school and for involving their parents in the early education of their children

Continued

Table A4 (continued): Summary of early childhood education program research

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Programs targeting specific aspects of learning					
Early Literacy Program					
Hewer & Whyatt (2006)	Child health nurses supplied parents with a package including suitable books and information on reading to infants at the 7–9 month check-up The program was conducted in regional and remote Western Australia	Analysis of health nurse records Check of book stocks against check-up visits	< Level IV	No measures taken about use of books or outcomes for children Only 68% of non-Indigenous children and 31% of Indigenous children with an existing child health record attended the 7–9 month health check Book stocks revealed number of books handed out was similar to children attending check-ups	Books for infants were distributed successfully through the child health nurse system but reached only a third of eligible Indigenous families (those who attended the 7–9 months check-up) There were no measures of child outcomes
Let's Start Parent-Child Program					
Mares & Robinson (2012)	Program for Indigenous parents and their 4–6-year-old children with challenging behaviours. It involves 10 weekly sessions of parent–child constructive interaction, strategies for managing children's behaviour and development of children's social skills through facilitated play	Pre- and post-test design with accidental sample and without randomisation or control groups Measures were attitudinal and perceptual inventories completed by parents and teachers on: • child behaviour and adjustment, at referral, program end and follow-up • parents' mental state at referral and program end	Level III -3	Statistically significant reductions in problem and risk behaviours at home and school at end of program (moderate effect size); the effect increases at 6-month follow up (moderate-large effect size). Especially strong response to program for Indigenous girls	By assisting Indigenous parents to manage difficult behaviour in their children, this program has the potential to increase school attendance, especially in remote areas where there is a tendency among parents not to insist on school attendance for children with difficult behaviours
Robinson et al. (2009)	The program has been conducted in schools and preschools in urban and remote sites in the Northern Territory				
Stock et al. (2012)					
Specific formats for early childhood education programs					
Orana Supported Playgroups					
Johnston & Sullivan (2004)	Weekly or fortnightly mobile playgroups for families not usually accessing playgroups (Indigenous and non-Indigenous) delivered by an early childhood-trained program co-ordinator and Indigenous program co-facilitator 9 playgroups in regional NSW with 65% of families Indigenous	Qualitative process evaluation Interviews with referring service providers, managers and staff, and advisory group members Focus group for service providers Site visits, including informal one-on-one discussions with parents Review of written material and statistical data	Level IV	Of the 9 playgroups, none reached target group size of 12–15 families Children were less exposed to abuse and neglect	The report concluded that the playgroups were producing positive outcomes for parents and children, especially when co-facilitator was Indigenous and had Indigenous community support and that barriers to attendance (location, venue, visibility, time, transport) needed to be addressed Outcomes for children were not measured

Continued

Table A4 (continued): Summary of early childhood education program research

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Specific formats for early childhood education programs (continued)					
Playgroup Program					
ARTD Consultants (2008)	Two kinds of playgroup: 1. Intensive Support playgroups for particularly disadvantaged families 2. Supported playgroups are facilitated by a paid coordinator and designed to operate for up to 12 months and then transition to facilitation by parents as a community playgroup Playgroups operate across Australia	12 case studies of playgroups using a focus group and a survey with parents and carers, analysis of available program data, interviews with key informants involved in management and delivery, and identification of 9 promising practice stories to illustrate good practice	Level IV	Outcomes included: • 42% of families engaged in Intensive Support playgroups from an Indigenous community • 12% of all established Supported playgroups targeting Indigenous families • Intensive Support playgroups and Supported playgroups were gateways to local services	Playgroups with a trained facilitator attracted Indigenous families This was not the case for playgroups facilitated by parents
Transition-to-school Programs					
Dockett et al. (2008)	Use of transition programs and activities to ease transition to school The study involved a sample of successful transition programs for Indigenous children in NSW public schools	10 case studies involving discussions with staff, community, family members and children, collection of demographic information, and observation of transition programs using interviews, drawings, observations and document analysis	Level IV	Findings were reported in terms of features of successful transition programs: • high-quality programs and experiences • active involvement of a wide range of stakeholders • specific focus on relationship building across and between different stakeholders • recognition of strengths that exist within the community • recognition of the complexity of transition with a flexible response	Case studies were all of nominated successful transition programs for Indigenous children Criteria for their nomination were not specified Educational outcomes for children were not measured

Appendix 4: Early childhood health intervention research with Indigenous children

Table A5: Summary of early childhood health intervention research with Indigenous children

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Public Swimming Pools					
Lehmann et al. (2003)	This program involved installing public salt water pools in remote communities without easy access to places to swim.	In WA study 162 children (< 17 years) underwent a health check every 6 months for 2 years (Lehmann et al. 2003)	Level III-3	The WA studies found:	Research in WA showed promising results for swimming pools as a public health intervention
Silva et al. (2008)	Pools in remote communities	Also in WA a retrospective review of clinical records for children < 17 years for a 6–7 year period was conducted (Silva et al. 2008)	Level III-2	<ul style="list-style-type: none"> • Significant decline in pyoderma tympanic membrane • Improved school attendance in 1 community 	These results have not been replicated with the same level of significance in the NT and SA
Healthcare Planning and Evaluation (2009)	Salt water provides a nasal and ear washout and cleans the skin	In NT children underwent a health check every 6 months for 4 years This study experienced high attrition due to community mobility: 262 seen once, 81 seen twice 26 seen 3 times, and 10 seen 4 times (Healthcare Planning and Evaluation, 2009)		<ul style="list-style-type: none"> • Pools associated with reduced prevalence of skin conditions • In the community where disease prevalence was high, the pool was also associated with reduced antibiotic prescription, middle early infections and respiratory tract infections 	The strongest research support is for a decrease in pyoderma
Mathew et al. (2009)	Pools were built in communities in WA. Children were rewarded for school attendance with pool passes	In SA, children aged 1–10 were screened for before the pool opened, then 6 and 18 months after the pool opened		The NT study was not able to replicate these findings fully. They did not find any improvement in ear health or school attendance. They did, however, see a significant reduction in pyoderma	
Sanchez et al. (2012)	This strategy was replicated in 3 remote communities in NT	In addition, a retrospective record review for children 1–15 years was conducted to assess rates of middle ear infection, skin infections and antibiotic prescriptions		The WA findings were also not replicated in SA. These studies did not show any impact on school attendance, the proportion of children with follicular trachomatous remained unchanged and there was no effect on ear health or hearing. There was a trend towards increased rates of infection and antibiotic prescriptions	
	It was also replicated in 4 remote communities in SA	There was also a questionnaire for key community stakeholders, such as health workers and teachers (Mathew et al. 2009)		In all the studies there was acknowledgement that the pool was of general public good in that it provided a place for exercise and recreation	
		Sanchez et al (2009) describes a retrospective longitudinal intervention cohort study. They compared 4 remote communities with swimming pools with 4 remote communities in the same area of the state without swimming pools. Children were assessed between 1 and 6 times during a bi-annual visit from an ear, nose and throat specialist (45% on at least 3 occasions). This research did not look at the relationship between swimming pools and skin health			

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Table A5 (continued): Summary of early childhood health intervention research with Indigenous children

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Ear, nose, throat and skin health (continued)					
East Arnhem Regional Healthy Skin Program					
La Vincente et al. (2009)	This program involves: an annual mass community treatment day where all individuals receive and are encouraged to apply topical permethrin 5% cream; education and resources to teach people about scabies and skin health; and follow-up clinic programs	All households were visited, and permethrin treatment provided if scabies was identified within the household Households were then visited the following day to assess treatment uptake Household screening repeated 2 and 4 weeks later to assess scabies acquisition	Level III-3	<ul style="list-style-type: none"> 40 homes with scabies identified Low levels of treatment uptake (44%) Males and people from households with a lot of scabies were less likely to use the cream Among 185 susceptible individuals, 17 new diagnoses of scabies were made at 4 weeks Remaining scabies free was 6 times more likely in households where treatment was used 	<p>Treatment uptake remained very poor</p> <p>There is a need for other treatment options</p>
Treatment of acute otitis media (AOM)					
Morris et al. (2010)	<p>The study compares 2 treatment methods for AOM, single-dose azithromycin and 7 days of amoxicillin treatment</p> <p>This is a randomised controlled trial comparing the above treatment options</p> <p>This research was conducted in rural and remote communities</p>	<p>Children aged 6 months to 6 years were screened in 16 Indigenous communities in the NT</p> <p>Those diagnosed with AOM were randomly allocated to a treatment group</p> <p>Children were then examined to assess treatment effectiveness (n = 306)</p>	Level II	<ul style="list-style-type: none"> Single-dose azithromycin did not reduce risk of clinical failure (50% compared to 54% for the amoxicillin group) The azithromycin group demonstrated reduced nasal carriage of <i>S. pneumoniae</i> and <i>NGHi</i> 	<p>Whilst a single-dose treatment did not lead to significantly stronger (or poorer) outcomes, it may be a good treatment option to address the problems of treatment adherence</p>

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Table A5 (continued): Summary of early childhood health intervention research with Indigenous children

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Asthma					
Asthma Education Intervention					
Valery et al. (2010)	Children and their carers aged 1–17 years were given 3 asthma education lessons. The lessons were delivered by an Indigenous Health Care Worker This paper describes a randomised controlled trial of this program conducted on Thursday Island, Horn Island and Bamago in the Torres Strait Region of Australia	Randomised controlled trial Pre-intervention assessment and post-intervention assessment 12 months later 88 children with asthma randomly allocated to an intervention group (n = 35) and a control group (n = 53)	Level II	<ul style="list-style-type: none"> No significant difference between the groups in the number of unscheduled medical visits for asthma Intervention group missed fewer days of school due to wheezing More carers in the intervention group could answer questions about asthma, knew where their asthma action plan was kept and were able to describe the plan Both groups had a significant decrease in the frequency of asthma exacerbations Both groups increased on the Quality of Life scale and functional severity index 	This program reduced the number of days absent from school due to wheezing, and improved carer knowledge of asthma and their asthma action plan
Dental health					
Fluoridated Water Supply					
Armfield (2005)	This project evaluates whether access to fluoridated public water in NSW is related to a reduction in dental health problems	Cross-sectional population data gathered on 248,944 children in NSW who attend school dental services (aged 3–15 years) Looked at whether or not fluoridated water was associated with less dental caries Also examined data in relation to socio-economic disadvantage and by Indigenous status	Level III-2	<ul style="list-style-type: none"> Dental health was better in fluoridated areas There were less caries in fluoridated areas regardless of socioeconomic status Both Indigenous and non-Indigenous children had reduced caries in fluoridated areas 	Fluoridated public water is an effective intervention in reducing the number of dental caries experienced by children

Continued

Table A5 (continued): Summary of early childhood health intervention research with Indigenous children

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Dental health (continued)					
NT fluoride varnish program					
Roberts-Thomson et al. (2010)	This program was delivered to 15 communities in NT. It involved: application of fluoride varnish to children every 6 months for 2 years; training of primary care workers in preventative health care; promotion of oral health care at individual, family and community level	A community-clustered randomised controlled trial	Level II	<ul style="list-style-type: none"> There was no significant change in the oral health behaviours or oral hygiene between intervention and non-intervention communities There was no change associated with oral health programs within the community Training of health care workers to provide preventative services failed—possibly due to workload, staff turnover and feeling of redundancy due to presence of researchers Children in the intervention communities had significantly fewer dental caries (31% fewer caries) 	<p>This program was successful in reducing the number of child dental caries, although the level of caries remained high</p> <p>This program was not successful in changing personal dental hygiene behaviours, or supporting health care workers to provide preventive services</p>
Slade et al. (2011)		15 intervention communities and 15 non-intervention communities			
Closing the Gap Child Oral Health Program					
Allen and Clarke (2011)	<p>This is a mobile (dental vans) program running in the NT. It originated from the Child Health Check Initiative (CHCI) as part of the Northern Territory Emergency Response in 2007. There was a clear need for follow-up dental services after the CHCI</p> <p>This study looks at the prevalence of dental problems and feasibility of this mobile service model as part of a much larger evaluation study of the CHCI</p> <p>This research was conducted in rural and remote communities</p>	<p>Methods include: key informant interviews; case studies of 5 communities; workshops; analysis of existing population health datasets; review of program-related data; research of program documents and research literature</p>	Level IV	<ul style="list-style-type: none"> As of July 2010, 4,346 Indigenous children had received a dental check—3,223 were referred on to dental services About 60% received the required follow-up dental services The authors argue that this is a feasible model, particularly when there is continuity of care with the same dental practitioners returning to the same areas Due to family mobility, 40% of children were in a different area when they received follow-up services 	<p>This mobile program seems to be moderately effective in providing the follow-up dental services required by Aboriginal children</p>

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Table A5 (continued): Summary of early childhood health intervention research with Indigenous children

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Nutrition and growth					
Crunch and Sip®					
Wiese et al. 2011	Schools in SA, WA and NSW are required to implement a formal break in the classroom for children to drink water and eat fruit and vegetables supplied by parents This evaluation looks at implementation of the program and program satisfaction This research was conducted in rural, remote and urban communities	Mixed-methods approach using surveys and interviews with school representatives, teachers, parents, and partner organisations in 48 schools 6 schools examined as case studies	< Level IV	<ul style="list-style-type: none">• Most schools are satisfied with the training provided• Teachers were positive and believed it encouraged children to make healthy food choices• Most teachers reports increased water, fruit and vegetable intake for children• Parents and teachers expressed desire for program to be more fully integrated across the school• Parents were supportive and satisfied• 30% felt there had been an increase in their child's consumption of fruit, vegetables and water• Cost and availability of food were a burden for some families• Positive outcomes reports for establishment and development of partnerships	Broad evaluation suggests high levels of satisfaction with the program and perceived increases in child intake of fruit, vegetables and water The evaluation to date gives no indication of any impact on child health outcomes
Quick Meals for Kooris (QM4K)					
Gui & Lau (2007)	This is a 2 session program (3 hours per session) that teaches budgeting for food, nutritional information and cooking. It primarily operates within urban environments An evaluation was conducted in urban communities to evaluate the effectiveness of program dissemination strategies and implementation	Telephone administered survey (n = 59)	< Level IV	<ul style="list-style-type: none">• Importance of using multiple strategies to ensure information about programs is disseminated widely• High levels of satisfaction with the program	Evaluation to date has not looked at whether or not this program changes family eating or brings about positive health outcomes

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Table A5 (continued): Summary of early childhood health intervention research with Indigenous children

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Nutrition and growth (continued)					
Nutrition program through AMS					
Jones & Smith (2007)	This is a program run in a remote community. This program provides fresh fruit to a primary school, and offer a subsidised weekly delivery of fruit and vegetables to families. A dietitian runs a healthy cooking program with students, and a separate healthy cooking program for parents	Pre- and post-intervention blood tests ran with 27 children Also assessment of ear and skin health	Level IV	<ul style="list-style-type: none"> Preliminary results suggest that participation in this program led to improved levels of Vitamin C and iron in the blood Participating pre-schoolers (n = 8) had reduced levels of skin and ear infections 7 months after intervention commenced 	This program supported increased fruit and vegetable intake, which seems to be associated with improved ear, skin, and blood health
Growth Screening in Schools					
Paterson et al. (2001)	<p>This is the practice of screening children for height and weight within school settings</p> <p>This study looks at screening in schools in 11 remote communities in the NT</p>	Retrospective review of health centre records for children who were identified as being stunted or wasted	Level IV	<ul style="list-style-type: none"> All of the children identified as stunted or wasted were known to have these problems by 18 months old—growth monitoring did not identify new problems Growth monitoring did not result in new interventions 	Growth monitoring at school beyond 5 years of age is unlikely to identify new, treatable growth problems
Hygiene					
Social marketing campaign to promote handwashing					
McDonald et al. (2011)	This social marketing campaign targeted remote Indigenous communities. It involved TV advertising, posters, give-away promotional materials, and point of sale materials promoting purchase of soap in community stores	Pre- and post-intervention surveys to evaluate community knowledge, recall of key messages, and practices	Level IV	<ul style="list-style-type: none"> Recall of key messages was high Knowledge of the importance of washing hands increased Number who reported now washing hands increased 	This research suggests that social marketing campaigns may be effective in changing personal hygiene behaviours

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Table A5 (continued): Summary of early childhood health intervention research with Indigenous children

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Maternal and infant health					
NSW Aboriginal Maternal and Infant Health Strategy (AMIHS)					
NSW Health (2005)	This program is funded by NSW Health and commenced implementation in 2001. A team of midwives and AHO/AHEO's deliver antenatal/postnatal care according to a culturally sensitive, continuity of care model. The goal is to improve the health of Indigenous women during pregnancy and decrease perinatal morbidity and mortality	The NSW Health (2005) study tool a mixed-methods approach. They conducted Interviews and focus groups with clients, clinicians, managers, and other stakeholders	Level III-2	The NSW health (2005) study found:	This strategy has been effective in improving the engagement of Indigenous women with antenatal services and reducing the number of preterm births
Murphy & Best (2012)	There were two longitudinal evaluations reviewed. The first (NSW Health, 2005) examined data over 4 years	Program-specific information and population-based data from the NSW Midwives Data Collection was also gathered	Level III-3	<ul style="list-style-type: none">No change in women under 20 accessing the service (high representation)Significant increase in women receiving antenatal care before 20 weeks gestationRates of smoking unchangedSignificant decrease in preterm birthsRates of low birth weight unchangedPerinatal mortality decreased (not statistically significant)	
	The Murphy & Best (2012) evaluation looked at data over 3 years	Murphy & Best (2012) based their analysis on data from the Aboriginal Maternity Data Collection		The Murphy & Best (2012) study found: <ul style="list-style-type: none">AMIHS now covers about 75% of Indigenous birthsThe program has expanded to include secondary programs, including mental health, drug and alcohol programs, Quit for Life Smoking cessation programsResults are consistent with earlier findings of an increase in women receiving antenatal care before 20 weeks gestation, and a reduction in pre-term births	
Sustained Nurse Home Visiting					
Sivak et al. (2008)	This program runs in urban SA. Soon after an Indigenous baby is born the family receives a home visit from a Child and Family Health Nurse (CFHN). If a need is identified, families continue to receive home visits regularly until the child is 2 years old (34 visiting in total). The team is made up of CFHNs, Psychologist, Social Worker and Indigenous Cultural Consultants	In-depth qualitative interviews with 60 participating mothers	Level IV	<ul style="list-style-type: none">Mothers felt that the program provided practical assistance and support—they felt less isolated and better linked in to other servicesMothers also reported feeling more confident and more aware of child health and development	While parent levels of satisfaction with this program are high, the available evaluation does not explore maternal and infant health outcomes
	This is not a full program evaluation, but a qualitative study of parent experiences within this program				

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Table A5 (continued): Summary of early childhood health intervention research with Indigenous children

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Maternal and infant health					
Strong Women, Strong Babies, Strong Culture					
Mackerras (2001)	This is a community-based maternal education and support program. It is run by well-respected Indigenous women within the community and targets pregnant women. It provides information about nutrition and safe use of alcohol and tobacco, and encourages use of formal antenatal services. The goals are to achieve infant birth weight and improve maternal weight status	Macherras (2001) conducted a data audit of the Midwives Data Collection	Level IV	Mackerras (2001) found: <ul style="list-style-type: none">• An increase of 171g in infant birthweight in pilot communities• Changes in maternal weight associated with changes in birth weight over time	Preliminary results suggested this program may be effective in increasing infant birth weight
Tursan d'Espaignet et al. (2003)	Mackerras (2001) examined infant and maternal outcomes in 2 rural and 1 remote community in the NT	Tursan d'Espaignet et al. (2003) matched all 5 communities with a community that is not implementing this service to serve as control groups Pre- and post- intervention birth weights were gathered from the NT Perinatal data collection records	Level III-2	Tursdan d'Espaignet et al. (2003) found: <ul style="list-style-type: none">• Overall there was no significant difference in birth weights between intervention and control communities• When the 2 groups were examined separately, there was a significant difference between the birth weights of the Group 1 intervention group compared to controls	These results were not strongly supported in subsequent research, although there was a significant increase in birthweight when control communities were compared to those where this program had been established for 7 years or more, suggesting that improved outcomes may emerge over time
Tursan d'Espaignet et al. (2003)	Tursan d'Espaignet et al. (2003) looked at birth weights in 3 long established programs and 2 more recently established programs, all in rural and remote communities				

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Table A5 (continued): Summary of early childhood health intervention research with Indigenous children

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Maternal and infant health (continued)					
Mums and Babies Program					
Panaretto et al. (2005)	This is a shared antenatal care program run out of the Townsville Aboriginal and Islander Health Service	The evaluations were cohort studies with an intervention group (n=456 in the first evaluation and n=781 in the second evaluation), an historical control, and a contemporary control group	Level III-2	Panaretto et al (2005) found: <ul style="list-style-type: none"> • Increase in rates of giving birth in hospital • Number of antenatal care visits increased • 88% of intervention group had at least 1 ultrasound • There was a significant reduction in pre-term births • No differences in birth weight or infant mortality 	This program looks to have increased the number of women engaging with antenatal care and giving birth in hospital
Panaretto et al. (2007)	Panaretto et al. (2005) evaluated the program 4 years after it commenced	A review of medical record data was also conducted	Level III-2	The second evaluation found: <ul style="list-style-type: none"> • Number of antenatal visits increased • Significant improvements in care planning • Completion of cycle of care • 90% screened for sexually transmitted diseases • 89% screened for haemoglobin level and serological tests for hepatitis B and syphilis • Increased attendance for dating and morphology scans • Significant reduction in perinatal mortality 	Results relating to reductions in pre-term births and perinatal mortality appear have emerged over time
	The program was evaluated again 7 years after it commenced (Panaretto et al., 2007). By this time the program's focus has expanded to include all pregnant women and families of children aged 0-8 years				
	This research was conducted in an urban community (Townsville)				
Daruk AMS Midwifery Service					
Jan et al. (2004)	This midwifery service is run out of a community-controlled AMS in and urban outer-Sydney suburb. It is staffed by a midwife, 2 GPs, and an Indigenous health worker	Economic evaluation of program costs and savings to the health system	Level III-2	<ul style="list-style-type: none"> • Cost per client to the health system was modest • No significant difference in birth weight and infant mortality • Intervention group had a lower gestational age at first visit and mean number of antenatal visits was higher • Intervention group had higher rate of attendance at antenatal tests • Client satisfaction high 	This service was successful in increasing levels of antenatal service engagement; this evaluation did not demonstrate significant improvements in birth outcomes
	This study provided an economic evaluation, as well as an evaluation of birth outcomes	Comparison of birth outcomes between women attending this service compared with Indigenous women not attending this service			
		Data collected from Antenatal Clinic Records, NSW Midwives Data Collection, Interviews and Focus Groups			

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Table A5 (continued): Summary of early childhood health intervention research with Indigenous children

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
General childrens health outcomes					
Child Health Check Initiative (CHCI)					
AIHW (2011)	<p>This initiative was one part of the Northern Territory Emergency Response (NTER), which was announced in July 2007 and continued until June 2009. It involves a voluntary medical check-up for children aged birth–15 years. It's follow up services were continued under the National Partnerships on Closing the Gap in Indigenous health outcomes program in the NT until June 2012</p> <p>This provides data collected from child health checks as part of the NTER</p>	<p>Data collected using CHCI data collection forms that were completed by health professionals who conducted the health check</p>	Level IV	<p>Information collected from CHCI showed that:</p> <ul style="list-style-type: none"> • 65% of children who lived in the NTER prescribed areas received at least 1 health check • a health condition was identified in 97% of the children who received a health check • 99% of children who received a health check got some form of management during the check • 70% of children received at least 1 referral for follow-up services 	<p>The CHCI seems to have contributed to improved health outcomes for children in the Northern Territory as the result of early identification and treatment</p>

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Table A5 (continued): Summary of early childhood health intervention research with Indigenous children

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Vaccination					
Prevenar					
Brindell (2006)	Prevenar™ is administered to children at 2, 4 & 6 months old. It vaccinates children against pneumococcal disease	Both studies reviewed here involved interviewing practitioners.	< Level IV	Brindell (2006) provided Anecdotal information only	This strategy seems to have made a moderate difference
Thomas et al. (2008)	Uptake of this vaccine was very low for Indigenous children in an urban area of NSW. A strategy was developed: <ul style="list-style-type: none"> • A postcard with information for parents was adapted for Indigenous families • An Aboriginal Liaison Officer visited Indigenous mothers on the maternity ward • A sticker to go in the Blue Book was developed as a reminder for parents and practitioners This research was conducted in an urban community	Thomas et al. (2008) also conducted an analysis of the NSW Child Immunisation Register	Level IV	<p>This strategy seems to have increased uptake</p> <p>Thomas et al. (2008) found the program had a moderate impact on uptake</p> <p>The sticker in the Blue Book was helpful for GPs in identifying Indigenous children</p>	<p>It points to the importance of accurate identification of Indigenous parents and children and the need to address this as the first barrier to targeted programs</p>
Social determinants of health					
Family Well Being					
Tsey et al. (2010)	This project was begun by Indigenous leaders in Adelaide and spread to North Queensland. Its focus is on empowerment and improving health outcomes through better management of disease, adopting healthier lifestyles and using health services more effectively. It draws on spiritual traditions	Primarily qualitative: survey, journal keeping, interviews	Level IV	<ul style="list-style-type: none"> • This program is perceived as relevant to the Indigenous context • Participants report individual level change and a stronger desire to help and connect with others • Participants report increased leadership and advocacy activities 	<p>This program is valued and seen as making a difference</p> <p>There is a need for research to examine whether or not it has had an impact on health outcomes</p>
	This paper provides a synthesis evaluation studies to date across 4 rural/remote settings, 1 in NT and 3 in North Qld				

Continued

Table A5 (continued): Summary of early childhood health intervention research with Indigenous children

Programs and references	Brief description	Research design and methods	NHMRC level of evidence	Outcomes	Comments
Vaccination					
Indigenous Housing programme					
Bailie et al. (2011)	This intervention involves the construction of new houses in 10 rural and remote areas in the NT as part of the National Aboriginal Health Strategy Environmental Health program.	Bailie et al. (2011) employed a Before and after design	Level III-2	Bailie et al. (2011) found:	Housing programs that focus on the provision of infrastructure alone are unlikely to lead to positive health outcomes
Bailie et al. (2012)	An average of 11 new houses was constructed in each area	Data gathered using:	Level III-2	• There was a small non-significant decrease in the mean number of people per bedroom	The programs need to be accompanied by social, behavioural, and community-wide environmental interventions
	The two Bailie et al. papers cited here are both part of a larger study called the Housing Implementation and Child Health study (HICH)	• housing infrastructure surveys • structured interviews with the main householder • interviews with staff of community housing office and/or council and inspection of housing records		• Marginally significant overall improvement in infrastructure function scores • No clear overall improvement in hygiene	
	This research was conducted in rural and remote communities. It focuses on program on the occurrence of common childhood illnesses in Indigenous communities for children 7 years and younger (skin sores, scabies, respiratory infection, diarrhoeal disease, ear infection)	Bailie et al (2012) employed a cohort study design		Bailie et al. (2012) found:	
		Data collection:		• There was not a consistent reduction in carers' reporting of childhood illnesses • No clear overall improvement in household hygiene	
		• structured interviews with main carer and main householder • surveys of functional and hygienic state of infrastructure of houses • carer report of child health			
		Baseline data collected 6 months before occupation of new houses, and follow-up about 10 months after occupation of new houses			



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Abbreviations

ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
AMIHS	NSW Aboriginal Maternal and Infant Health Strategy
CfC	Communities for Children
CHCI	Child Health Check Initiative
COAG	Council of Australian Governments
FaFT	Families as First Teachers
FHV	Family Home Visiting
HIPPY	Home Interaction Program for Parents and Youngsters
IPSS	Indigenous Parenting Support Service
LSIC	Longitudinal Study of Indigenous Children
MFaFT	Mobile Families as First Teachers
NHMRC	National Health and Medical Research Council
NSW	New South Wales
NT	Northern Territory
SA	South Australia
SaCC	Schools as Community Centres
USA	United States of America
WA	Western Australia

Terminology

Indigenous: ‘Aboriginal and Torres Strait Islander’ and ‘Indigenous’ are used interchangeably to refer to Australian Aboriginal and Torres Strait Islander people. The Closing the Gap Clearinghouse uses the term ‘Indigenous Australians’ to refer to Australia’s first people.

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