2008

Updates to the catalogue of evidence-based strategies for children's health and wellbeing: part 1

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Publication Details

Williams, K., Fildes, D., Grootemaat, P., Marosszeky, N. & Magee, C. (2008). Updates to the catalogue of evidence-based strategies for children's health and wellbeing: part 1. Wollongong, Australia: Centre for Health Service Development.
https://www.eduweb.vic.gov.au/edulibrary/public/earlychildhood/healthwellbeing/catalogueupdates-dec08.pdf

Updates to the catalogue of evidence-based strategies for children's health and wellbeing: part 1

Abstract
This is the first of two reports updating the Catalogue of Evidence-based Strategies for improving the health and wellbeing of Victoria's children. This work was commissioned by the Victorian Department of Education and Early Childhood Development (DEECD) and completed by the Centre for Health Service Development, University of Wollongong. In this report, revised narrative reviews and, where necessary, new catalogue entries are provided for five of the original 15 catalogue indicators. A second report later in 2008 will update another five indicator areas.

Keywords
updates, evidence, children, health, part, 1, catalogue, strategies, wellbeing

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CHSD

Centre for Health Service Development

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Suggested citation

Williams K, Fildes D, Grootemaat P, Magee C and Marosszeky N (2008) ***Updates to the catalogue of evidence-based strategies for children's health and wellbeing: Part 1.*** Centre for Health Service Development, University of Wollongong.

Table of Contents

List of Tables

1 Introduction

This is the first of two reports updating the Catalogue of Evidence-based Strategies for improving the health and wellbeing of Victoria's children. This work was commissioned by the Victorian Department of Education and Early Childhood Development (DEECD) and completed by the Centre for Health Service Development, University of Wollongong. In this report, revised narrative reviews and, where necessary, new catalogue entries are provided for five of the original 15 catalogue indicators. A second report later in 2008 will update another five indicator areas.

The five indicators updated in this report are:

- Oral health
- Physical activity
- Smoking during pregnancy
- Immunisation
- Re-notifications to child protection

1.1 Background

In 2006, CHSD was commissioned by the Victorian Department of Human Services (DHS) to develop a catalogue of evidence-based strategies for the health and wellbeing of children aged 0-8 years. The original catalogue was created for the Best Start program, which has a particular focus on prevention and early intervention with vulnerable families, including socially disadvantaged families, Aboriginal and Torres Strait Islander (ATSI) families, people from culturally and linguistically diverse (CALD) backgrounds, and families living in rural areas.

Best Start projects involve collaborations between local government, community health, non-government organisations, social service agencies, education providers such as schools, child care and kindergartens (preschools), and other community organisations such as service clubs and churches. The goals of Best Start are to promote:

- Improvements in access to child and family support, health services and early education for families and children
- Improvements in parents' capacity, confidence and enjoyment of family life
- Communities that are more child- and family-friendly

The catalogue now has wider application beyond the Best Start program, and is a key element in the Victorian Child and Adolescent Monitoring System (VCAMS), providing practical guidance to policy makers and program developers. Nevertheless, the above goals, priorities and service delivery models remain relevant. It is available via the web at:

http://www.education.vic.gov.au/ocecd/catalogue_of_evidence.html

1.2 Purpose of the updates

The catalogue is promoted by the DEECD as a dynamic document which is regularly updated.

Our task in updating the catalogue was to check whether any relevant, new evidence had emerged in the academic or grey literature for each of the five indicators being reviewed. This may mean adding a new strategy and catalogue entry for an indicator, instead of or in addition to existing strategies. Narrative reviews would be updated, and we would revisit the evidence both for the recommended strategies and those that were mentioned in the catalogue but missed out on inclusion last time. Our searches may turn up an innovative and well-evaluated new strategy to include, although this would not necessarily be the case for each indicator.

2 Methods

The following sections set out methods for updating the searches for each indicator.

2.1 General approach and documentation

The scope of our literature searches was time-limited (2006-2008) and focused, as described below.

First, we looked at the recommended strategies in the existing catalogue. We checked whether any new evidence had appeared to support or discount the use of these programs. We used the contact information in the catalogue entries to check websites and/or email contact people to look for new reports or journal articles. We scanned our bibliographic database search results for articles about these programs.

Second, we looked at the strategies described in the narrative reviews but not included in the catalogue and checked for new evidence that might suggest we should reconsider inclusion.

Finally, we used bibliographic databases and targeted web-based searching to look for any promising new strategies not previously identified.

For each indicator, we devised a search checklist, which was a worksheet within an Excel file. This set out the databases and websites we believed would be useful for that indicator. Team members were encouraged to explore the web further and to record any sites that proved useful.

2.2 Search strategies

Each catalogue indicator has a documented search strategy for bibliographic databases, designed by a university librarian. These can be found in the appendix to the catalogue's Technical Report. Many of these searches used Scopus, which is no longer available at the University of Wollongong library. Consequently, we ran the searches in the databases which together made up the Scopus database, namely Medline, Psychinfo, CINAHL, Cochrane Library and, for some indicators, ERIC.

The following limiters were added to these title and keyword searches:

- Publication year 2006-2008
- English language
- Peer-reviewed journal (where available)

If necessary, additional limiters were added to define the age of the study participants (that is, to find only studies evaluating interventions for children aged 0-8 years).

Citations were culled initially on title and then on a reading of the abstracts. Selected citations were downloaded to EndNote, a program for managing references.

In addition to a list of suggested websites, team members searched the internet for grey literature (government reports, university and research institute studies, clearinghouses and so on) relevant to the indicator and to the specific strategies included in the original catalogue.

3 Updated narrative reviews and catalogue entries

3.1 Oral health

A search of the academic and grey literature was conducted to identify relevant studies published between 2006 and 2008. The search strategy was performed using Medline, Psycinfo, Cinahl, Science Direct, Cochrane Library, Google (limited to .edu.au, .gov.au, .org.au), government department websites (Victorian Department of Human Services, Commonwealth Department of Health and Ageing), and relevant organisations such as the World Health Organization and the Center for Disease Control. Reference lists of relevant articles were also searched manually to supplement the electronic searches. The following keywords were used for the search: teeth or dental and child* and program* or intervention.

3.1.1 Background

Dental caries is the formation of cavities in the teeth by the action of bacteria - otherwise known as tooth decay. This remains one of the most common childhood diseases in the world, although during the past two-three decades there has been a substantial reduction in dental caries in many developed countries (Adyatmaka, 1996).

However, oral health in children under the age of five has probably deteriorated, or at best remained stable, in recent years (Jackson, 2005). This is certainly the case in Victoria with recent statistics indicating that over the past twenty years there remains a significant burden of disease in the 0 - 5 years age group. Data available in 2002 showed that forty two percent of children in this age group had dental caries with seventy five percent of these children with untreated disease (Dental Health Service Victoria, 2003).

This problem is particularly acute in children from lower socio-economic backgrounds. In fact, recent data reveals that children in the lowest socioeconomic quartile experience almost twice as many caries as those children in the highest socioeconomic quartile (AHMAC, 2001). These high risk children live in more materially deprived neighbourhoods, tend to have parents with lower educational levels, have diets high in sugary foods and drinks, and brush their teeth less often (Pine, 2000). This is also the case in children from CALD and Indigenous backgrounds with Indigenous children also likely to experience twice the caries rates of non-Indigenous children together with particularly high levels of untreated decay (AIHW, 2003).

Almost half of all children in Victoria will have developed dental caries at school entry age (Gussy, 2008). This caries experience in children's teeth varies markedly by region. The most recent Child Dental Health Survey revealed that clinically detectable decay was lowest in the four metropolitan regions and highest in the Grampians and Hume regions. This pattern is repeated with regard to deciduous missing and filled teeth, with children in rural regions having a greater mean number of missing and filled teeth than children in metropolitan regions (Armfield, 2006). Furthermore rural Victorian children under the age of four are four times more likely to be admitted to hospital for a dental related problem (Gussy, 2008).

This is a real issue for children in Victoria as research demonstrates that deciduous caries leads to permanent caries later in life.

3.1.2 The evidence base

As mentioned above, the overall prevalence of dental caries is on the decline. Most expert opinion believes that this is due to the introduction and regular use of fluoride toothpaste. In fact, there is widespread belief among researchers and public health authorities that the use of fluoride toothpaste is the method of choice for reducing dental caries as it is "convenient and culturally approved, widespread, and it is commonly linked to the decline in caries prevalence in many countries" (Burt, 1998).

Fluoride was first introduced as an anti-caries component in toothpaste during the late 1960's and is today the most common vehicle delivering fluoride to the oral cavity (Twetman, 2003). Despite the wide range in the type and concentration of fluoride in fluoride toothpastes, the generic ability of them to reduce dental caries has been well documented for at least 30 years.

The NHMRC report of 2002 highlighted that there is Level 1 evidence (good systematic review) that regular brushing of teeth with fluoride toothpaste is beneficial for the prevention and control of dental caries, reducing incidence by as much as 30% (Eagar et al., 2005).
A more recent systematic review of the literature highlighted the pooled results of 70 studies assessing the effect of fluoride toothpaste on the permanent dentition. The results suggest that the use of fluoride toothpaste is associated with a 24% reduction in decayed, missing and filled tooth surfaces (Marinho, 2004).

There is significant evidence that establishing regular tooth brushing (at least twice a day) with fluoride toothpaste into the daily routine of high-risk children has the potential to reduce inequalities in dental health (Curnow, 2002). This is particularly important for younger children as evidence indicates that good oral health behaviours attained in the early years will translate to good oral health behaviours, and good oral health outcomes in adult life (Wind, 2005).

However, it is generally known that tooth brushing by children under the age of ten is inefficient. This can be explained by the lack of motivation and poor manual dexterity normal to this age group (Leal, 2002). In view of this, there is considerable evidence to support the provision of knowledge and teaching skills for children in oral hygiene.

3.1.3 Selection of interventions

It is commonly understood that beliefs, behaviours and attitudes towards health are shaped during the formative years. With this in mind the importance of improving oral health care at the earliest age possible should not be underestimated. In view of this, oral health promotion/education can be most effective when it is targeted at parents of newborn babies.

One example of this focus is illustrated in NSW. NSW Health has recently made oral health information available to all parents of newborn babies through the child 'Personal Health Record' (blue book) (http://www.health.nsw.gov.au/pubs/2007/child_health_record.html). The blue book is designed to be a tool that health professionals can use to record details of the child's health and offer timely advice to parents and primary care givers. The latest version, released in March 2007, includes specific oral health guidelines together with an oral health check. This provides both health professionals and parents alike with knowledge and skills that are essential for the prevention of early childhood caries and second, to increase general health involvement in oral health promotion. (Phelan, 2006).

Cleaning teeth at least twice a day is a simple intervention that can have a very positive effect on the oral health of children. Programs or interventions that aim to encourage this activity generally fall into two broad categories: school/kindergarten based strategies and/or home based strategies.

School/kindergarten based dental programs are a common strategy and can be particularly effective for reaching children at high risk of poor dental health. It is reported that school environments can have a significant impact on sustainable healthy behaviours (Wind, 2005). Such programs can also be broadly divided into two groups: those programs that provide toothbrushing instruction only and those that combine toothbrushing instruction with educational oral health messages.

With regard to the provision of toothbrushing instruction only, Leal (2002) studied the effectiveness of different types of teaching methods to promote toothbrushing in preschool children. He established that instruction and supervision are particularly important to establishing effective toothbrushing habits in children under the age of five. Mere instruction was not enough for this age group as the children were not familiar with phrases such as 'on top of', 'inside', 'behind' etc.

Therefore a more 'hands-on' or audiovisual approach is required for this age group if effective instruction is going to be achieved.

The first recommended intervention in this target area has been provided by a recent study carried out in London on five and six year old children (Jackson, 2005). Children in the intervention group received daily toothbrushing instruction with fluoridated toothpaste supervised by a teacher on school days. No concurrent dental health education was provided to the students. Significantly, children in the intervention group had a significantly reduced caries increment than the children in the non-intervention group. This is a particularly straightforward initiative that can be easily achieved provided the teaching staff are trained in appropriate toothbrushing technique for young children.

However, evidence suggests that such strategies have mixed success in changing toothbrushing practice in the long term in older children. A recent study into the effects on toothbrushing behaviour and habit strengths in Holland revealed that during the intervention period, brushing teeth at school resulted in a significant increase in the frequency of toothbrushing. However, these effects were not maintained in a one-year follow up (Wind, 2005). Therefore, simple toothbrushing instruction is not enough for older children.

For older children (five years and older) interventions in the school that are most likely to be successful involve a combination of toothbrushing instruction together with oral hygiene education. In these instances there is more likelihood of success if the intervention also has a focus on the family in order to achieve positive reinforcement at home (NSW Oral Health Promotion 2003).

The second recommended intervention for this target area incorporates all of these measures. The Dental School at the University of Dundee, Scotland developed a school and home based strategy involving supervised toothbrushing on school days with fluoride toothpaste for two years with home based incentives to promote twice daily brushing. Significantly the results highlighted that the control group who brushed once a day or less had 64% more caries than those who took part in the intervention.

A similar initiative combining a school and home based approach was trialled on kindergarten children in China. In the intervention group teachers educated parents about the importance of maintaining oral hygiene using a multi-media presentation at semi-annual parent teacher evenings. Parents were also asked to ensure that their children brushed their teeth before bedtime. This was supplemented in kindergarten with supervised toothbrushing twice a day for the intervention group. After two years the children in the intervention group had significantly less caries development than those in the control group. However, it is not possible with this study to unbundle the effects of parental education from supervised toothbrushing (Rong, 2003).

The third recommended intervention targets the issue of poor oral health in Indigenous children's teeth. The 'Top Tips for Teeth' program conducted by LaTrobe Community Health Service specifically targets local Koori primary and pre-school children with the aim of improving their oral health knowledge, attitudes and behaviours. The strategies to achieve this included an after lunch brushing program where each child brushed their teeth before commencing afternoon classes. This was supported by four culturally appropriate education sessions focussing on oral health, skill enhancement and brushing technique. Culturally sensitive educational resources were also provided to the students such as fridge magnets, newsletters and information sheets. The results to this intervention were quite impressive with improved plaque scores revealing that children in the program had significantly improved their brushing technique. Knowledge, awareness and acceptance of dentistry had also improved in the Koori children. As a result of this successful program oral health has been included as part of the school curriculum and Top Tips for Teeth is a component of the Koori Health and Wellbeing Project.

The fourth recommended intervention also targets the issue of poor oral health in Indigenous children but from a completely different perspective to the brushing teeth initiatives mentioned above. 'Tiddalick Takes on Teeth' is an oral health promotion program developed in partnership

between the Awabakal Newcastle Aboriginal Cooperative Ltd. and Hunter Area Health Services. The program focused at encouraging indigenous children to choose to drink water in between meals and to 'swig-swish-swallow' water after meals and snacks. The intervention includes the Tiddalick's Toothy Tale package comprising of a teacher's resource, oral health policy proforma, storybook, video, song, water bottles, stickers and a poster for use in early childhood centres.

This intervention has been particularly successful and has consequently been rolled out state-wide in NSW by the NSW Oral Health Branch. Also, the Secretariat of National Aboriginal and Islander Child Care and the National Aboriginal Community Controlled Health Organisation have endorsed the program for nationwide release. Interestingly, the evaluation of the project indicated that although the intervention has a culturally specific flavour it can also have benefits at non-Indigenous child care centres.

The final recommended intervention also comes from Australia. Smiles 4 Miles is a state wide oral health promotion initiative targeted at preschool aged children. The program is based on the Health Promoting Schools framework formulated by the World Health Organisation.

Smiles 4 Miles encourages close collaboration between local preschools and parents groups to develop healthy policy and practices, such as promoting water rather than sweet drinks (Drink Well) increasing the consumption of fruit and vegetables rather than pre-packaged snacks (Eat Well) and encouraging good oral hygiene (Clean Well). These initiatives are designed to promote a healthy environment for the children at preschool as well as encourage change at home.

The Smiles for Miles program has been delivered into 22 sites in Victoria reaching 225 preschools and almost 12,000 children. Early evaluation results indicate a positive change in risk behaviours e.g. decreased consumption of sugary drinks and snack foods. In recognition of its success Smiles 4 Miles was recently highly commended for a Public Health Award in the Programs category, recognising its valuable contribution in the important area of dental health by promoting healthy eating (Dental Health Services Victoria, 2008).

3.1.4 Discussion

Evidence suggests that brushing your teeth at least twice a day with fluoride toothpaste is a very simple strategy that can have significantly positive effects on oral hygiene. If this intervention is targeted at high-risk children it has the potential to reduce inequalities in dental health. This section offers four quite different evidence-based interventions that are aimed at increasing the proportion of children who clean their teeth at least twice a day.

The first strategy that focuses only on supervised toothbrushing at school for pre-school children is a particularly simple approach that has some very encouraging results for children's' dental health. However, there is strong evidence to suggest that school interventions that also have a home based strategy are more likely to be successful. This is why intervention number two has been selected as it provides a good balance of the two approaches.

The next two strategies were selected because they have achieved significant results in an area where improvements in oral health are clearly needed – that of Indigenous children.

The final strategy was selected because it is a state-wide Victorian initiative which has already been established in 255 preschools.

3.1.5 References

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3.1.6 Updated evidence table (Oral health)

Table 3-1 Oral health – updated evidence table

	Supporting evidence	Replication	Documentation	Theoretical basis	Cultural reach
(8.1) Understanding parents' beliefs	1	N	N	Y	LOW SES
(8.2) Top Tips for Teeth	5	N	N	Y	INDIGENOUS
(8.3) Supervised Toothbrushing	2	N	Y	Y	LOW SES CALD
(8.4) Tiddalick Takes on Teeth	3	Y	Y	Y	INDIGENOUS
(8.5) Smiles 4 Miles	4	Y	Y	Y	UNIVERSAL

Key
Supporting evidence:
1. Well supported practice – evaluated with a prospective randomised controlled trial.
2. Supported practice – evaluated with a comparison group and reported in a peer-reviewed publication.
3. Promising practice – evaluated with a comparison group.
4. Acceptable practice – evaluated with an independent assessment of outcomes, but no comparison group (e.g., pre- and post-testing, post-testing only, or qualitative methods) or historical comparison group (e.g., normative data).
5. Emerging practice – evaluated without an independent assessment of outcomes (e.g., formative evaluation, service evaluation conducted by host organisation).

Replication:
Has the intervention been implemented and independently evaluated at more than one site? (yes or no)

Documentation:
Are the content and methods of the intervention well documented (e.g. provider training courses and user manuals) and standardised to control quality of service delivery? (yes or no)

Theoretical basis:
Is the intervention based upon a well accepted theory or developed from a continuing body of work in its field? (yes or no)

Cultural reach:
Has the program been trialled with people in disadvantaged communities, Indigenous people and/or people from culturally and linguistically diverse backgrounds? (LOW SES/INDIGENOUS/CALD)

3.1.7 New catalogue entry (Oral Health)

Recommended Strategy: (8.5) Proportion of children who clean their teeth at least twice a day	
Name of intervention	Smiles 4 Miles
Organisation	Dental Health Services Victoria
Brief literature review	The program encourages close collaboration between local preschools and parents groups to develop healthy policy and practices, such as: ▪ Drink Well – children are encouraged to drink plenty of tap water and discouraged to consume sugary drinks. ▪ Eat Well – children are encouraged to eat a wide variety of nutritious food. Fresh fruit and vegetables are encouraged whilst pre-packaged foods are discouraged. ▪ Clean Well – cleaning teeth with the correct technique twice a day is encouraged. Parents are encouraged to supervise children in this activity up to the age of 7 years old. These initiatives are designed to promote a healthy environment for the children at preschool as well as encourage change at home.
How and why does this intervention work?	Early evaluation results indicate a positive change in risk behaviours e.g. decreased consumption of sugary drinks and snack foods
On what population does this intervention work best?	The program has been delivered broadly in Victoria reaching 225 preschools and almost 12,000 children. Children considered as high risk for oral disease are the primary focus of the program.
Where will this intervention work best?	This is a Victorian state-wide intervention. It has applicability to all other states and territories in Australia.
What is required to implement this intervention?	Specific training, resources and support are provided to assist early childhood settings in achieving a Smiles 4 Miles award.
Resources and contact information	Dental Health Services Victoria: Health Promotion Team on (03) 8481 1230 or healthpromotion@dhsv.org.au
References	Smiles 4 Miles webpage: http://www.dhsv.org.au/content.asp?z=3&c=11&p=238

3.2 Physical activity

A search of both academic and grey literature was undertaken to identify literature published since the previous review (between 2006 and 2008). The search strategy was performed using Medline, Psycinfo, Cinahl, Science Direct, EIRC, Google (limited to .edu.au, .gov.au, .org.au), government department websites (Victorian Department of Human Services, Commonwealth Department of Health and Ageing), and relevant organisations such as the World Health Organization and the Center for Disease Control. Reference lists of relevant articles were also searched manually to supplement the electronic searches. The following keywords were used for the search: physical activity, child*, intervention, program* and participation.

3.2.1 Background

The Longitudinal Study of Australian Children, an initiative of the Australian Department of Family and Community Services showed that a significant proportion of young Australian children under five years are not engaging in physical activity (AIFS, 2005). A very high proportion of Australian pre-school children (89%) watched television, DVDs or videos for more than two hours per day, while only two-thirds spent time running, walking or doing other exercise (average 1.9 hours).

Low physical activity is likely to have a long term health impact as a result of reduced levels of fitness and has been shown to affect cardiovascular risk factors such as elevated blood pressure and impaired glucose response in children as young as 12 years (Baranowski et al. 1992). Studies have shown that physical inactivity is a major factor in the development of overweight and obesity (Batch and Baur, 2005) and an independent risk factor for coronary heart disease and diabetes (Stone et al. 1998). Both cross-sectional and longitudinal studies have shown a significant association between the amount of television viewing and overweight and obesity (Robinson, 2001).

There is also evidence that physical activity or inactivity tends to 'track' during childhood, so that less active children remain less active than their peers (Pate et al. 1996). In a prospective study that followed preschool children into adolescence, Moore et al. (1995) found that preschool children with low activity levels gained more sub-cutaneous fat than children who were more active, and that physical activity and sedentary behaviours track into adolescence. Physical activity behaviours in childhood may also track into adulthood (Kelder et al. 1993) though the relationship is less strong.

Promoting physical activity and reducing sedentary activity at early ages is therefore important for improving children's fitness and reducing the prevalence of overweight and obesity in Australian children. It is especially important that that there is a strong evidence base for strategies to promote physical activity among young children, and that the settings in which these strategies can be delivered are clearly identified (Timperio, Salmon and Ball, 2004).

3.2.2 The evidence base

A wide variety of programs were reviewed for this project. The review showed that interventions aimed at increasing physical activity in children have focused on two approaches: increasing the amount and intensity of physical activity, and decreasing sedentary activities, such as watching television and playing video games, with the aim of substituting opportunities for more active leisure in their place. In many of the studies, increased physical activity or reduced sedentary activity was a secondary or intervening outcome variable, with the primary outcome being changes in body weight, measures of subcutaneous fatness, or body mass index (BMI).

Interventions can be further grouped according to settings, including school-based approaches, community approaches, and family-based interventions. The latter have included clinically-based intensive interventions for high-risk overweight and obese children that have focused on family environment and parenting skills, as well as reducing sedentary activities or increasing physical activity (Epstein et al. 2000; Harvey-Berino and Rourke, 2003).

Many interventions have been multi-factorial, for example, combining school and family-based interventions, and targeted at increasing physical activity and/or reducing sedentary activities. Some programs also have targeted dietary changes, such as children's healthy eating or changes to the school canteen or meals program.

3.2.3 Selection of interventions

The interventions recommended here are all located in school- or preschool-based settings, delivered by teachers within the curriculum. However, other potentially promising interventions that aim to increase physical activity or reduce sedentary activities are also mentioned.

There was general agreement among the large-scale reviews of programs aimed at increasing physical activity that the evidence-base for successful intervention was overwhelmingly strongest in the school-based setting. School-based settings have an advantage over other settings in that schools provide the opportunity for broad ranging approaches that can be integrated with each other and into the general curriculum. Schools also reach almost the whole child population. In addition, the school setting provides the opportunity to deliver multifaceted programs that can focus on the individual child as well as the environment in which children work and play, and provide children the opportunity for modelling against their peers and their teachers (Dietz and Gortmaker 2001; Flynn et al. 2006). Two school-based programs, SPARK and CATCH, are recommended in the Best Start catalogue.

The school-based intervention program, Sports Play and Active Recreation for Kids (SPARK), was designed to promote moderate to vigorous levels of physical activity, teach movement skills, and be enjoyable. SPARK physical education (PE) classes, run three days per week, and are of 30 minutes duration, equally divided between health-fitness and skill fitness activities. Health-related activity units include dance, games, walking/jogging, and jump rope, with intensity, duration and complexity progressively increasing over time. Motivation is enhanced by students' monthly self-assessment and recording of fitness levels. The program includes a self-management program (30 minutes per week), linked to the curriculum, that teaches behaviour change skills to promote physical activity outside school. Skills include self-monitoring, goal setting, stimulus control, self-reinforcement, self-instruction and problem solving. Initially prizes are given but phased out over time to encourage self-reward.

SPARK also includes a family oriented approach. Homework and newsletters aim to stimulate parent-child interaction and support for physical activity.

The SPARK intervention was initially trialed amongst 955 Grade 4 and 5 children in seven primary (elementary) schools in San Diego, with mostly European American children. At the end of the trial, intervention students were more physically active during PE classes, and also showed increased fitness (Sallis et al. 1997, 1999; McKenzie et al. 1997; Dowda et al. 2005). At the18 month follow-up, the trained classroom teachers continued to use the curriculum and maintained increased student physical activity levels. Further follow-up of diffusion outcomes showed that 80% of respondents sustained use up to 4 years later, and equal levels of implementation were found in affluent and disadvantaged schools. SPARK subsequently was disseminated nationally in the US with training in more than 3000 schools. In addition, the program was extended to include Kindergarten to 6th Grade PE (Owen et al. 2006). The SPARK program has potential for usefulness among pre-school children, since it is being used already among children in their first year of school. It is noteworthy that SPARK students showed the same or increased academic test scores compared to controls, although they spent fewer hours on the academic curriculum.

SPARK was also adapted for American Indian primary school children through the adoption of a unit of American Indian games to increase cultural relevance. There was also significant consultation with the American Indian communities during the implementation of the intervention (Going 2003). Although a multicentered randomised trial found no statistically significant differences between students in the intervention and control schools, students in the intervention schools were 7-10% more active. An important positive finding was the incorporation of culturally relevant activities into the SPARK program and the acceptance by the American Indian community

(Gittelsohn et al. 2003). SPARK therefore may have potential for adaptation to CALD and other groups.

The Coordinated Approach to Child Health program (CATCH) comprises four school-based program components, two of which aim to promote physical activity, but also including a food service component and a tobacco control component. The CATCH-Physical Education program is similar to SPARK, designed to increase children's moderate to vigorous physical activity during PE classes. CATCH-PE provides a series of health-related physical fitness activities on cards. Classroom curricula include specific programs (such as Hearty Heart and Friends, Go for Health) consisting of regular 30-40 min lessons spaced at intervals through the term. The curricula target psychosocial factors and skills development focused on physical activity and eating. Teachers attend 1-1.5 days of training per year. The home curriculum involved activity packs complementing classroom curricula that included parent participation to complete and invitation to a 'family fun night' (www.CATCHTexas.org).

The CATCH program was tested in a randomised controlled field trial at four US centres (San Diego, Minneapolis, Houston, New Orleans) over two years, in 96 schools, with 56 intervention and 40 control primary (elementary) schools. The trial included 5,106 3rd grade students (mean age 8.76 yrs at baseline), with considerable ethnic and geographical diversity. However, participation at baseline was only 60%. Intervention schools were further randomised into 2 equal sub-groups: one received school-based program comprising school food service modifications, PE interventions, and CATCH curricula; the other received the same school-based program plus a family-based program. The control group received usual PE curricula, PE, food services, but no CATCH components (Luepker et al. 1996; Nader et al. 1999; Perry et al. 1990).

At the end of the trial the primary physical activity outcome measure was whether moderate to vigorous physical activity reached 40% of PE class time, assessed by the SOFIT instrument. A secondary physical activity outcome was self-reported time engaged in moderate to vigorous physical activity, assessed using the Self-administered Physical Activity Checklist developed and validated as part of the CATCH program. The trial also assessed canteen food. The secondary study comparison, assessing the effect of the home/family component, examined differences in self-reported time engaged in moderate to vigorous physical activity, as well as other non-physical activity measures. Participation in the programs was reported as consistently high. Physical activity intensity in PE classes in intervention schools increased significantly more compared with control schools. Time spent in PE classes at higher levels of activity increased significantly in intervention schools (Luepker et al. 1996; Nader et al. 1999; Perry et al. 1990).

Follow up showed that the program, combining health education with behavioural components and school environmental modifications, can improve physical activity and nutrition-related behaviours over three years after the end of the intervention (Hoelscher et al. 2004).

By 2004 CATCH has been disseminated to over 1900 schools in Texas reaching an estimated 900,000 students. School staff have expressed widespread satisfaction (Coleman et al. 2005; Owen et al. 2006).

SPARK and CATCH focus primarily on increasing physical activity. The last 2 interventions focus upon reducing sedentary activities.

The Switch-Play intervention is a school based intervention that was trialled among 311 consenting Grade 5 primary school children from three government primary schools located in low socioeconomic suburbs of Melbourne (Salmon et al. 2005a and 2005b and Salmon et al. 2008). Two main intervention components were incorporated into school curriculum: a behaviour modification (BM) group participated in 19 sessions that encouraged reduction in television, video and computer games and identified alternative physical activity activities and a fundamental motor skills (FMS) group participated in 19 lessons around mastery of 6 motor skills. A combined group participated in all BM and FMS activities. The intervention was based on Social Cognitive theory, Behavioural Choice Theory and Ecological theory, and incorporated components form SPARK and

other interventions. It incorporated education and awareness-raising, self-monitoring, decision-making and behavioural choices, role playing, goal setting and contracts, and feedback/reinforcement (Salmon et al. 2008).

The Switch-Play intervention aimed to prevent excess weight gain among 10-year-old children, to prevent declines in physical activity, to reduce screen behaviours and to increase enjoyment of physical activity. The results reveal that there was a significant intervention effect from baseline to post intervention on age and sex-adjusted Body Mass Index (BMI) in the BM/FMS Group. This result was maintained at 6 and 12 month follow-up periods. The FMS group children recorded higher levels and greater enjoyment of physical activity whilst the BM children recorded higher levels of physical activity (Salmon et al. 2008).

Moving from primary school to kindergarten, Romp and Chomp is another Victorian program. It is a community-based obesity prevention demonstration project targeting children under five years of age in long day care, family day care, kindergartens and preschool settings in the Geelong region. The program includes eight objectives that are summarized by four key messages (daily water, daily active play, daily fruit and vegetables, less screen time). A social marketing campaign guides delivery of the messages to early childhood settings and families with pre-school children. Active play resources are also made available to early childhood workers in the targeted settings, and training is included (WHO Collaborative Centre for Obesity Prevention, Deakin University 2005).

Presently 45 kindergartens and 7 long day care centres throughout the Geelong and Bellarine Peninsula have activated nutrition, drink and active play policies. This process is supported by local community health workers.

The program is included in this catalogue, although it has not been evaluated, because it is an Australian program that has been developed and specifically targeted at the under fives, and is undergoing evaluation under the auspices of an internationally recognised research institution.

From an international perspective the Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC) is a program that is also specifically targeted in child care settings. It was established in 2003 as an environmental intervention to address healthy weight for children in child care settings in North Carolina, US.

The goal of the NAP SACC intervention is to improve the diet and physical activity environment at child care centers to contribute to the marketability of the child care center, and to provide child care staff with continuing education in child nutrition and physical activity practices.

NAP SACC is a practice-based intervention designed to enhance policies, practices, and environments in child care by improving the:

- nutritional quality of food served
- amount and quality of physical activity
- staff-child interactions, and
- facility nutrition and physical activity policies and practices and related environmental characteristics.

The NAP SACC program contains a number of components, including a self-assessment instrument, continuing education workshops, collaborative action planning and technical assistance materials, and an extensive resource manual that includes copy-ready materials. It has been developed to be an evidence- and theory-based intervention that is guided by a self-assessment completed by the child care center director and relevant staff (e.g., cook, lead teacher, assistant director). Technical assistance and support for change are provided by NAP SACC consultants. Ideally these individuals are already working in local communities who receive supplemental training and support materials to expand their role to include nutrition and physical activity (Ammerman et al. 2007).

The NAP SACC program shows promise of being a sustainable and easy-to-implement intervention. Currently, it is being evaluated in 33 counties and 96 child care centers in North Carolina. Early evaluation results indicate Child care centers that received the intervention improved their nutrition and physical activity policies and practices.

Also of interest is the small study of 60 obese children, of whom 50 were followed up seven years later, reported by Golan and Crow (2004), which compared a parent-only targeted program compared with a control intervention where only children were targeted. The Israeli study found the mean reduction in children's overweight was 29% greater in the parent-only group compared to the children-only group. The program for parents included 14 support and educational group sessions over 48 weeks, targeted at enhancing parenting skills in order to improve parents' ability to create a healthy environment to support an increase in children's physical activity and encourage healthy eating. The authors suggest that focusing on parenting skills shifts the focus from weight issues to a focus on a healthy home environment, and builds children's esteem.

3.2.4 Discussion

The review of published interventions to promote physical activity showed that there is a critical shortage of programs aimed at preschool aged children, despite the stated importance of establishing increased physical activity patterns early in childhood. In Australia, 95% of all pre-schoolers attended a school, kindergarten, preschool or day-care centre at least one day per week (AIFS, 2005). These would appear to be ideal settings in which to promote increased physical activity.

Only one program targeted at preschool children was tested in a trial of sufficient quality to consider recommending as a Best Start strategy: The TOP Start program, trialled in the MAGIC study in the UK (Reilly et al. 2006). Although this program was not found to have an impact on habitual physical activity of preschool aged children outside the preschool environment, it should be considered to have the potential to increase physical activity if introduced as part of the normal, regular curriculum in preschools. Several researchers have noted that regular and more frequent carefully structured physical education classes have the most potential for increasing the level of physical activity in children (Flynn et al. 2006).

While the SPARK, CATCH and 'Switch-Play' programs included in the Best Start catalogue here have been trialled in children from lower socio-economic areas, there are few trials of interventions to increase physical activity among children from CALD groups, especially recent immigrants. While SPARK has been adapted for Indian Americans, and found culturally relevant and acceptable, it had limited success in demonstrating increased physical activity.

There have been almost no evidence-based interventions focused on the family environment, although a family and home-based approach would seem appropriate for promoting physical activity among very young children.

One other promising program but currently untested program, the "Romp n' Chomp" intervention was included in this catalogue, because it is an Australian program being trialled in the Greater Geelong Region, it is targeted specifically at preschool children, and aimed at increasing structured play at preschool and increased physical play and reduced television viewing at home. It also has been developed with social marketing principles as a framework, has developed resources, and is being evaluated in association with an internationally recognised collaborative research centre at Deakin University.

3.2.5 References

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3.2.6 Updated evidence table (Physical activity)

Table 3-2 Increased Rate of Children who Participate in Physical Activity: recommended strategies

	Supporting evidence	Replication	Documentation	Theoretical basis	Cultural reach
(7.1) SPARK	1	Y	Y	Y	LOW SES
(7.2) CATCH	1	Y	Y	Y	LOW SES CALD
(7.3) Switch Play	2	N	N	Y	LOW SES
(7.4) Romp n' Chomp	5	N	N	Y	UNIVERSAL
(7.5) NAP SACC	2	Y	Y	Y	UNIVERSAL

Key
Supporting evidence:
1. Well supported practice – evaluated with a prospective randomised controlled trial.
2. Supported practice – evaluated with a comparison group and reported in a peer-reviewed publication.
3. Promising practice – evaluated with a comparison group.
4. Acceptable practice – evaluated with an independent assessment of outcomes, but no comparison group (e.g., pre- and post-testing, post-testing only, or qualitative methods) or historical comparison group (e.g., normative data).
5. Emerging practice – evaluated without an independent assessment of outcomes (e.g., formative evaluation, service evaluation conducted by host organisation).

Replication:
Has the intervention been implemented and independently evaluated at more than one site? (yes or no)

Documentation:
Are the content and methods of the intervention well documented (e.g. provider training courses and user manuals) and standardised to control quality of service delivery? (yes or no)

Theoretical basis:
Is the intervention based upon a well accepted theory or developed from a continuing body of work in its field? (yes or no)

Cultural reach:
Has the program been trialled with people in disadvantaged communities, Indigenous people and/or people from culturally and linguistically diverse backgrounds? (LOW SES/INDIGENOUS/CALD)

3.2.7 Revised catalogue entry (Physical activity)

Recommended Strategy 7.3: Increased rate of children who participate in physical activity	
Name of intervention	'Switch-play' intervention
Organisation	Centre for Physical Activity and Nutrition Research, School of Exercise and Nutrition Sciences, Deakin University, Melbourne, Australia
Brief literature review	Australian study, with 311 children enrolled in Grade 5 in 3 government primary schools at 4 campuses in low SEC suburbs of Melbourne (77% of eligible pupils). The study is a cluster-randomised trial using a 2x2 factorial design: classes given one of four 'treatments': behaviour modification (BM), fundamental motor skills (FMS) development, combined BM and FMS, and a control. Assessment is being undertaken at base-line, immediately post-intervention and 6 and 12 months post-intervention. Preliminary results show that more than half the children reported reducing TV viewing, but less than half reported increasing PA. Evaluation of the program is not complete, however 'Switch-play' is included in the catalogue because preliminary results have been promising and reported in a peer reviewed publication. Also 'Switch Play' is based on a program that has been rigorously evaluated with excellent sustained results (See Spark, above).
How and why does this intervention work?	Intervention components are aimed at reducing sedentary activities, and substitution of physical activity, especially outside of school time, and were incorporated into school curriculum. The behaviour modification (BM) group participated in 19 sessions that encouraged reduction in TV, video and computer games and identified alternative physical activities. The fundamental motor skills (FMS) group participated in 19 lessons that focused on mastery of 6 motor skills. The combined group participated in all BM and FMS activities. The intervention was based on Social Cognitive theory, Behavioural Choice Theory and Ecological theory, and incorporated components from SPARK, and other interventions, and incorporated education and awareness-raising, self-monitoring, decision-making and behavioural choices, role playing, goal setting and contracts, and feedback/reinforcement.
On what population does this intervention work best?	The intervention is being trialed among Grade 5 primary school children in low SES suburbs of Melbourne.
Where will this intervention work best?	School based intervention (primary school).
What is required to implement this intervention?	Trained teacher. The program was designed to be practical, incorporated into the school curriculum and does not require expensive equipment to implement.
Resources and contact information	Dr Jo Salmon, Centre for Physical Activity and Nutrition Research, School of Exercise and Nutrition Sciences, Deakin University, Burwood VIC 3125
References	Salmon J, Ball K, Crawford D, Booth M, Telford A, Hume C, Jolley D and Worsley A (2005) *Reducing sedentary behaviour and increasing physical activity among 10-year-old children: overview and process evaluation of the 'Swith-Play' intervention.* Health Promotion International Vol. 20, No. 1, pp 7-17 Salmon J, Hume C, Ball K, Booth M, and Crawford D (2005) *Individual, social and home environment determinants of change in children's television viewing: the Switch-Play intervention*. Journal of Science and Medicine in Sport. Vol 9. No. 5, pp 378-356 Salmon J, Ball K, Hume C, Booth M and D Crawford (2008) Outcomes of a group-randomized trial to prevent excess weight gain, reduce screen behaviours and promote physical activity in 10-year-old children: Switch-Play. International Journal of Obesity, Vol.32, pp.601-612.

3.2.8 New catalogue entry (Physical activity)

Recommended Strategy: (7.5) Increased Rate of Children who Participate in Physical Activity	
Name of intervention	Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC) program
Organisation	University of North Carolina at Chapel Hill
Brief literature review	NAP SACC uses an organizational assessment of 14 areas of nutrition and physical activity policy, practices and environments to identify the strengths and limitations of the child care facility. Following the self-assessment, a health consultant (i.e., child care health consultant, nurse, health educator or other trained professional) works with the child care facility staff to set goals for change and develop plans for follow-up actions to improve practice. Collaborative goal-setting is followed by staff training and targeted technical assistance to promote organizational change.
How and why does this intervention work?	Data available at the time of the review suggest that NAP SACC centres are more likely to make significant changes in nutrition policies together with positive changes in physical activity policies, environments and practices. Preliminary data from a research study indicate that NAP SACC may also have a modest impact on behaviour of children while in child care.
On what population does this intervention work best?	Young children attending child care.
Where will this intervention work best?	This intervention is targeted at child care settings. Children ages 2-5 years.
What is required to implement this intervention?	A NAP SACC tool kit, manual and background materials are available to provide technical assistance and to facilitate effective intervention in child care settings. All relevant materials are available online at: http://www.centertrt.org/index.cfm?fa=opinterventions.intervention&intervention=napsacc&page=intent The intervention is relatively easy to implement at a relatively low cost.
Resources and contact information	Corresponding Author: Sara E. Benjamin, PhD, MPH, Post-doctoral Research Fellow, Department of Ambulatory Care and Prevention, Harvard Medical School and Harvard Pilgrim Health Care, 133 Brookline Ave, 6th Floor, Boston, MA 02215. Telephone: 617-509-9794. E-mail: Sara_Benjamin@harvardpilgrim.org. NAP SACC Website: http://www.napsacc.org/ Program contact: Sarah Ball, UNC Center for Health Promotion and Disease Prevention. ball@email.unc.edu
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3.3 Smoking during pregnancy

A search of both academic and grey literature was undertaken to identify literature published since the previous review. Academic databases included in the search strategy were Cochrane Library, Cinahl, Medline, Psychinfo and ERIC. Search terms used were smoking cessation or tobacco, relapse prevention, nicotine replacement therapy, evaluation and infant or antenatal or pregnant or pregnancy. Searches were limited to the years 2006 – 2008. A Google search was also conducted on 'pregnancy and smoking' and limited to .edu.au, .org.au and .gov.au pages. Websites of relevant government departments and organisations searched included Victorian Department of Human Services, Australian Government Department of Family and Community Services, Australian Government Department of Health and Ageing, Campbell Collaboration, EPPI-Centre, Promising Practices Network and National Drug and Alcohol Research Centre. Reference lists of relevant articles and documents were also searched to identify any additional documents.

3.3.1 Background

In 2003 approximately 17% of Australian women reported smoking while pregnant and over half of Aboriginal and Torres Straight Islander mothers report smoking during pregnancy (Laws, Grayson and Sullivan, 2006). In some Australian states and territories the prevalence of smoking during pregnancy is even higher than the incidence of smoking in the overall population (Lassen and Oei, 1998).

Smoking during pregnancy doubles the risk of having a low birth-weight baby and significantly increases the rate of perinatal mortality and other adverse pregnancy outcomes (Walsh, Lowe and Hopkins, 2001). Several factors have been identified with smoking during pregnancy including younger age of the mother, lower educational level, being unmarried and living with a partner who smokes (Walsh et al. 1997).

The effects of smoking during pregnancy have been linked with sudden infant death syndrome, asthma, attention deficit hyperactivity disorder (ADHD) and obesity (Laws, Grayson and Sullivan, 2006). Children's later physical and mental functioning may also be affected by smoking during pregnancy with evidence of a dose response relationship present (Lassen and Oei, 1998).

3.3.2 The evidence base

Smoking cessation programs in pregnancy can reduce the proportion of women who continue to smoke and can reduce low birth weight and preterm birth (Lumley et al. 2004). Effective interventions for pregnant smokers include promoting cessation before and at the beginning of pregnancy, increasing delivery of the intervention early in the pregnancy, assisting spontaneous and intervention assisted quitters to remain tobacco free post-partum, aiding late pregnancy smokers and involving the partner of the pregnant smoker (DiClemente, Dolan-Mullen and Windsor, 2000). Implementing smoking cessation and relapse prevention programs have been estimated to provide a 3:1 cost benefit with $3 of downstream health-related costs saved for every $1 spent on programs (Ruger and Emmons, 2008).

A review by Melvin and colleagues (2000) of evidence underlying recommended counselling for pregnant women found there were 5 important steps for counselling during pregnancy. These included asking the patient about their smoking status, advising the pregnant smoker to quit using personalised messages, assess their willingness to quit, assist the pregnant smoker to quit and arranging for follow-up or referral (Melvin et al. 2000).

Telephone counselling can help pregnant smokers quit when provided as part of a program or separately and can reach a large number of people (Stead, Perera and Lancaster, 2006; Soloman & Flynn, 2005). Telephone counselling can be offered to antenatal clinic patients identified as smokers or recent quitters at their first clinic visit. A review of trials found telephone counselling to be effective and likely to be most effective when it involves multiple sessions (Stead, Perera and Lancaster, 2006). A recent study by Parker and colleagues (2007) found that telephone based motivational smoking cessation counselling is both feasible and cost-effective in assisting low

income pregnant women stop smoking. Women receiving three calls had a quit rate of 23% (Parker et al. 2007). Difficulties can arise in maintaining contact with low income women who may change phone numbers frequently or rely on mobile phones (Dornelas et al, 2006), however, a screening question determining a woman's access to a phone may help in identifying those women most suited to this type of intervention (Parker et al, 2007).

An issue for smoking cessation interventions is the number of women who relapse after quitting smoking during pregnancy. Postpartum relapse may be as high as 70%-80% among women who smoke but quit at some time during their pregnancy (Fang et al. 2004). Smoking cessation programs for women who have quit for the pregnancy should shift focus towards the end of the pregnancy to the continuation of cessation for the health of the mother as well as the baby (DiClemente, Dolan-Mullen and Windsor, 2000).

A review of group sessions for pregnant women found them to be ineffective (Dollan-Mullen, Ramirez and Groff, 1994). There is currently insufficient evidence for developing guidelines for the use of nicotine replacement therapy (NRT) during pregnancy (Trotter and Montague, 2003), however NRT may be useful for women who have otherwise not been able to quit (TUDCPGP, 2000).

A review of tobacco interventions among Aboriginal and Torres Straight Islander people found only a few published interventions of which none were able to demonstrate an effect (Ivers R, 2003). None of these interventions were aimed at assisting pregnant Aboriginal and Torres Straight Islander smokers.

3.3.3 Selection of interventions

Almost all interventions aimed at reducing smoking during pregnancy found were based in a pre-natal care setting.

The **Smoke Free Families** (SFF) program was set up to assist women to stop smoking during and beyond pregnancy. Results of the SFF research, reviews and meta-analyses confirmed that a brief (five to fifteen minute) counseling intervention, delivered by a trained provider and paired with pregnancy-specific self-help materials, can increase cessation rates among pregnant smokers by 30 to 70 percent (Pletsch and Morgan, 2002). The evidence-based intervention is based on the following five steps:

- Ask the patient about their smoking status;
- Advise them about the benefits of quitting if they smoke and the effect of smoking and quitting on the woman and the fetus;
- Assess the willingness of the patient to make a quit attempt within the next 30 days;
- Assist them with ways to quit by providing pregnancy-specific, self-help smoking materials; suggesting problem-solving methods and skills for quitting; providing social support as part of the treatment and helping to arrange social support for the woman among family, friends and co-workers; and
- Arrange during follow-up visits to track the progress of the patient's attempt to quit smoking.

The Five step Strategy is based on the US clinical practice guideline for treating tobacco use and dependence (US Public Health Service Report, 2000) and incorporates a five-step strategy similar to the Smoke Free Families:

- Ask: to identify smokers and document tobacco use
- Assess: motivation and confidence to quit and stay stopped
- Advise: all smokers to quit based on the health effects of smoking and benefits of quitting; to congratulate those who have quit and encourage them to stay stopped

- Assist: appropriately, dependent on the stage the person is at
- Ask Again/ Arrange Follow-up: to provide further support and encouragement.

Quit Victoria provides training for professionals as well as printed resources and take home material for pregnant women.

Three Centres guidelines for smoking cessation in ante-natal care - These guidelines are for promoting smoking cessation in pregnant women during routine antenatal care (Trotter and Montague, 2003). The three hospitals who developed the guidelines (Mercy Hospital et al. 2001) have developed manuals, training and systems for monitoring of guidelines. They use a five-step model for offering smoking interventions to pregnant women who smoke or have recently quit. For the guidelines to be of any value they must be used as part of routine care and staff need to be trained in the guidelines and their practice monitored.

Telephone counselling - A pilot study of a telephone counselling service was conducted at the Royal Women's Hospital, Melbourne between April 1998 and September 1998 (Trotter, 2000). This pilot study utilised the Quitline Callback service. Pregnant women were asked if they would like to have a telephone counsellor contact them to assist them with smoking cessation. Counsellors, who have been trained to work with this particular group of smokers, make calls to patients as needed (approximately seven calls) both throughout the pregnancy and for three months post partum. Calls are arranged to occur frequently around critical times such as the planned quit day and weaning. Patients may also initiate calls.

Women who were current smokers or recent quitters presenting at the antenatal clinic were invited to participate. The study recruited 98 smokers and 102 recent quitters. This intervention was provided as part of a smoking cessation program. As a result of this pilot study this tailored Quitline callback service for pregnant women who smoke or have recently quit is now provided throughout pregnancy and the postpartum period.

3.3.4 Discussion

There is strong evidence to indicate that there are definite benefits to implementing interventions to assist pregnant women with smoking cessation. Prenatal and postpartum care are the most accessible settings to provide effective smoking cessation interventions. The most effective interventions involve a five step strategy that assists women throughout pregnancy and into the postpartum period when the risk of relapse is very high. The use of telephone counselling services is also an effective resource for assisting women to quit smoking and continue with smoking cessation.

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3.3.6 Updated catalogue entries (Smoking during pregnancy)

Recommended Strategy 2.1: Decreased rate of women smoking during pregnancy	
Name of intervention	Three Centres Consensus Guidelines on Antenatal Care
Organisation	The Cancer Council Victoria and Quit Victoria.
Brief literature review	The guidelines include a section on promoting smoking cessation in pregnant women during routine antenatal care. This advice is based on a five-step model for offering smoking interventions to those who smoke or have recently quit. The five steps are: ask all women about their smoking using a multiple choice question; advise all women who smoke or have recently quit about the health risks to their babies and themselves of smoking and to quit; assess the woman's willingness to quit; according to willingness, provide assistance (take-home materials, set a quit date, put support in place, provide information for partner); follow-up again by asking about smoking and giving appropriate support and encouragement.
How and why does this intervention work?	The guidelines were developed using four steps. Search questions were developed to scrutinise literature, followed by a systematic search of literature using search questions. The literature was then reviewed and conclusions drawn. Findings were integrated clinical expertise through consultation with field experts. The evidence indicated that the most effective interventions are intensive with multiple formats such as brief counselling, self-help written materials and multiple contacts, including follow-up.
On what population does this intervention work best?	The guidelines are to be used as part of routine antenatal care. All women who are current smokers and recent quitters may benefit from the implementation of the guidelines.
Where will this intervention work best?	This intervention is designed to be implemented by health professionals providing antenatal care.
What is required to implement this intervention?	For the guidelines to be of any value they must be used as part of routine care. Staff need to be trained and their practice monitored.
Resources and contact information	The three hospitals which developed the guidelines (Mercy Hospital et al. 2001) have developed manuals, training and systems for monitoring of guidelines. Quit Victoria (www.quit.org.au) also offers training courses and a flow chart for easy reference. The guidelines can be accessed at http://www.health.vic.gov.au/maternitycare/anteguide.pdf Information about The 3 Centres can be accessed at http://www.3centres.com.au/
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Recommended Strategy 2.3: Decreased rate of women smoking during pregnancy	
Name of intervention	Smoke Free Families.
Organisation	Robert Wood Johnson Foundation
Brief literature review	The Smoke Free Families (SFF) program was set up to assist women to stop smoking during and beyond pregnancy. The evidence-based intervention is based on the following five steps: 1. Ask the patient about their smoking status; 2. Advise them about the benefits of quitting if they smoke and the effect of smoking and quitting on the woman and the foetus; 3. Assess the willingness of the patient to make a quit attempt within the next 30 days; 4. Assist them with ways to quit by providing pregnancy-specific, self-help smoking materials; suggesting problem-solving methods and skills for quitting; providing social support as part of the treatment and helping to arrange social support for the woman among family, friends and co-workers; and 5. Arrange during follow-up visits to track the progress of the patient's attempt to quit smoking.
How and why does this intervention work?	Results of the SFF research, reviews and meta-analyses confirmed that a brief (five to fifteen minute) counselling intervention, delivered by a trained provider and paired with pregnancy-specific self-help materials, can increase cessation rates among pregnant smokers by 30 to 70 percent (Pletsch and Morgan, 2002).
On what population does this intervention work best?	This intervention is best used with pregnant women in the pre-natal and post-partum period.
Where will this intervention work best?	This intervention is best used in a pre-natal and post-natal care setting.
What is required to implement this intervention?	Contact Smoke-Free Families below to discuss various needs and requirements
Resources and contact information	Smoke-Free Families National Dissemination Office Cecil G. Sheps Center for Health Services Research CB# 7590, 725 Airport Road, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-7590 Telephone: 919/843-7663 Fax: 919/966-9764 E-mail: smokefreefamilies@unc.edu Smoke-Free Families National Program Office University of Alabama at Birmingham, School of Medicine, Department of Obstetrics and Gynecology, CIRC 320, 1530 3rd Avenue South, Birmingham, AL 35294-0021 Telephone: 205/975-8951 Fax: 205/975-4411 E-mail: SFF@obgyn.uab.edu Website: http://www.smokefreefamilies.org New Website: http://www.helppregnantsmokersquit.org/
References	Findings from phase I SFF projects appear in the September 2000 (Volume 9, Supplement 3) Supplement of Tobacco Control: Smoking and Pregnancy: Research Findings from the Smoke-Free Families Program. Phase II trials and projects have been reported in *Nicotine and Tobacco Research* Vol. 6, Supplement 2, April 2004.

3.4 Immunisation

A search of the academic and grey literature was conducted to identify relevant studies published between 2006 and 2008. The search strategy was performed using Medline, Psycinfo, Cinahl, Science Direct, google (limited to .edu.au, .gov.au, .org.au), government department websites (Victorian Department of Human Services, Commonwealth Department of Health and Ageing), and relevant organisations such as the World Health Organization and the Center for Disease Control. References lists of relevant articles were also searched manually to supplement the electronic searches. The following keywords were used for the search: immunisation or immunization, immunization rate or immunisation rate, vaccination coverage, vaccination rate, immunisation program or immunization program or immunisation programme, immunisation intervention or immunization intervention, vaccination program, and vaccination intervention

3.4.1 Background

Immunisation via vaccination is an effective technique for producing immunity and protecting against the spread of infectious diseases. Vaccination involves introducing, usually via injection, harmless copies of antigens that cause specific diseases (e.g. measles) into the body (Center for Disease Control, 2007; World Health Organization, 2005). This stimulates the immune system to produce antibodies which act to block and destroy the antigens (CDC, 2007; WHO, 2005). Once the antigens are destroyed the antibodies remain in the body so that the individual is protected if exposed to the disease in later life (WHO, 2005).

Immunisation through vaccination has been identified as one of the most effective preventive clinical services ever developed (CDC, 1999). For example, a global immunization campaign between 1967 and 1977 eradicated the natural occurrence of smallpox, which had previously threatened 60% of the population and killed one in four victims (WHO, 2005). In Australia, the Immunise Australia Program is a state and commonwealth initiative developed to increase immunisation rates (Immunise Australia Program, 2008), and immunisation coverage has now reached approximately 90% (Brotherton et al., 2004). This has been associated with substantial reductions in the occurrence of diseases such as measles, rubella and mumps, and haemophilus influenzae type b (Brotherton et al., 2004).

It is now widely acknowledged that vaccination is critical for the prevention and eradication of disease. For optimal results, it is important that children receive all required immunisations in a timely manner. However, although vaccination coverage has improved, a considerable proportion of children are undervaccinated or receive delayed vaccination. For example, 52% of children in the US are undervaccinated for more than six months in the first 24 months of life, and only one-third of children aged 0-24 months are age appropriately vaccinated (Luman et al., 2004).

There are several major barriers to the age-appropriate vaccination of children. Children not immunised on time are more likely to be from families of low socio-economic status and members of certain ethnic minority groups (Roberts et al, 2002; Wood and Haflon, 1996). For example, vaccination coverage for the standard vaccines in Australia is 6%–8% lower in Indigenous compared with non-Indigenous infants at 12 months of age; this is largely the result of delayed vaccination in Indigenous children (Menzies et al, 2008). This difference dissipates after 24 months of age, when the immunisation coverage increases to over 90% and is comparable with non-Indigenous populations (Menzies et al, 2008).

Other risk factors for limited uptake of immunisation include access issues, parental resistance to immunisation, parental distrust towards medical practitioners, low parental educational level and single parent families (Levi et al., 2007; Pruitt, Kline and Kovaz, 1995). There is also a strong association between inadequate antenatal care and poor immunisation levels (Swignoski et al, 1995; Stevens-Simon et al, 1996). The section of this report addressing ‘increasing attendances to maternal child health (MCH) services,’ identifies the inclusion of immunisation interventions in the selected MCH programs.

3.4.2 The evidence base

The National Immunisation Program Schedule for Victoria recommends and provides the following vaccines at no cost to children 0-8 years: hepatitis B, diphtheria, tetanus, pertussis, polio, haemophilias influenzae type B, pneumococcal, measles, mumps, rubella, meningococcal C and chickenpox (Victorian Department of Human Services, 2005). Despite the availability of these services, Victoria has not reached 100% coverage. Efforts are being made through certain Best Start projects aiming at improving immunisation coverage and targeting hard-to-reach families.

The US Task Force on Community Preventive Services recommends that the starting point for addressing vaccine-preventable disease problems in communities is to assess activities currently being performed, current levels of immunisation coverage and information regrading disease rates. These assessments should then be compared with local and national goals. It is vital not only to select strategies that work in general but also those that are well matched to local needs and capacities. Effective implementation of these strategies is important in improving immunisation coverage at the local level (Task Force on Community Preventive Services, 2000).

Findley, Iriyogen and Sanchez (2004) suggest the following guiding principles when setting up immunisation strategies: sourcing community leadership and support; integrating with current community programs; parental empowerment and education; training peer health educators; tracking with feedback; and linkage with health providers. These are the guiding principles behind the community-based Start Right Program in New York, a program that has successfully raised immunisation rates in children from low socio-economic backgrounds through outreach and tracking for children under five.

There is widespread agreement that the promotion of immunisation is a repetitive, ongoing activity and requires tracking, personalised reminders, and positive feedback to parents (Szilagy et al, 2002; Szilagy et al, 2000; Barnes et al, 1999; Rodewald et al, 1999; Findley et al, 2003).

3.4.3 Selection of interventions

There are a large number of strategies that have been developed to increase immunisation rates in young children. These can be grouped into the following three categories (Briss et al., 2000):

- Strategies that aim to increase knowledge and community demand for immunisations (patient-oriented interventions). E.g. client reminder programs, multi-component interventions including education, client incentive programs.
- Strategies that aim to improve access to immunisation services (system-oriented interventions). E.g. reducing out of pocket expenses for parents, home visits, vaccination programs in schools.
- Provider based interventions, where the goal is to reduce missed opportunities. E.g. provider reminder, provider education.

Each category includes several specific interventions, with a strong focus on strategies targeting children from low socio-economic backgrounds. The four strategies outlined in this report have been recommended on the basis of strong scientific evidence that they improve immunisation coverage, and are patient or system oriented. Provider based strategies have also been shown to be effective in increasing childhood immunisation coverage. For example, training programs such as RITE have led to improvements in immunisation services and increased immunisation coverage (Boom et al, 2007; Franzini et al, 2007; Uskun et al, 2008). However, these are not included in this catalogue as they were not appropriate for non-medical based Best Start programs. Table 3-3 outlines immunisation strategies recommended by the Task Force on Community Preventive Services.

Table 3-3 Recommended Immunisation Strategies

Intervention Category	Intervention	Recommendation
Patient-oriented	Multi-component interventions that include education	Strong evidence
	Client Reminder/recall systems	Strong evidence
System-oriented	Home Visiting and case management	Sufficient evidence
	Immunisation programs for women, infants and children (WIC) in non-medical settings	Sufficient evidence

Client reminder/recall systems inform clients when immunisations are due (reminder) or overdue (recall), as well as when to contact their immunisation provider to determine if immunisations are needed. These reminders are provided via telephone (including automated messages) or mail. Several randomised controlled trials (RCTs) have demonstrated that client reminder/recall systems are effective in improving immunisation coverage in a range of settings and populations (including those from low socio-economic backgrounds). For example, client reminder/recall interventions have been shown to increase immunisation rates by between 5% and 20% (Fiks et al., 2007; Dini et al., 2000; Szilagyi, 2000; Lieu et al, 1998; Alemi et al, 1996; Stehr-Green et al, 1993; Irigoyen et al, 2000). These interventions have been successful in increasing the proportion of up-to-date immunization rates at 24 months of age from 81.7% to 90.1% (Fiks, Grundmeier, Biggs, Localio, & Alessandrini, 2007). Importantly, client reminder/recall systems are cost effective, particularly letters, postcards and automated telephone messages (Franzini et al, 2000; Lieu et al, 1997, 1998; Irigoyen et al, 2000; McLeod et al, 1998).

Home visiting interventions are also effective in increasing immunisation rates (Bond et al, 1998; Department of Human Services, 2008; Task Force on Community Preventive Services, 2000; Browngoehl et al, 1997). Home visits usually involve face-to-face services to clients in their home. Services can include education, assessment of need, referral, and/or provision of vaccinations. Home visiting programs can also involve telephone or mail reminders. According to Browngoehl (1997), clients who received home visits have significantly higher completed immunisation rates than other clients.

An example of a home visiting intervention is the City of Kingston's Immunisation Service in Victoria (Department of Human Services, Victoria, 2008). This provides a home-based immunisation service to under-vaccinated children and has been successful in increasing immunisation rates (Department of Human Services, Victoria, 2008). As a consequence, home visiting interventions are included in this catalogue.

Although effective, these interventions can be highly resource intensive (Task Force on Community Preventive Services, 2000). Four economic evaluations of home visiting programs identified by the Task Force on Community Preventive Services (2000) can be found at http://www.thecommunityguide.org/. Potential barriers to implementing home-visiting programs include the need for staff training and concerns regarding staff safety.

Certain home visiting programs include a case management component. These programs have been shown to be effective at increasing immunisation rates but are not cost effective (Wood et al, 1998). It is clear that home visiting programs involve many activities and can therefore be classified as multi-component interventions.

Assessment and referral (A/R) systems involving incentives have also been shown to be effective in improving childhood immunisation rates. These operate by assessing children's immunization

records and referring those in need of vaccination to their health care providers (Ashkar et al., 2003). The Special Supplement Nutrition Program for Women, Infants and Children (WIC) is an example of an A/R system. This program aims to improve immunisation in low-income preschool US children by examining the immunisation records of children and identifying those who require immunisation (George et al., 2007).

Immunisation programs in WIC involve efforts to encourage immunisation of clients from low socio-economic backgrounds in non-medical settings. At a minimum, immunisation promoting strategies in WIC require assessment and referral. Other services can include education and incentives (Task Force on Community Preventive Services, 2000). Several studies have found that WIC programs lead to increases in childhood immunisation rate (e.g. Birkhead, 1995; Hutchins et al, 1997; Askar et al, 2003; Birkhead et al, 1995; WIC Program, 2006). For example, over a 15 month period, the immunisation rate amongst low socio-economic children increased from 56% to 89% (Hoekstra et al., 1998).

There is strong evidence to suggest that A/R systems are most effective when combined with other more intensive strategies (Birkhead et al, 1995, 1996; Hoekstra et al, 1998; Hutchins et al, 1997). For example, in the WIC program, parents are provided with a monthly food voucher to encourage immunisation. The parent must return a month later for the child's immunisation record to be assessed and then receive another voucher. Children that are not up to date are escorted with the parent to a health clinic to be immunised. Since WIC programs involve several activities, they can also be classified as multi-component interventions (discussed below).

The most effective programs are multi-component interventions which aim to provide knowledge about immunisation to at-risk populations (and sometimes immunisation providers), and incorporate at least one additional strategy to improve immunisation coverage. These additional strategies often include including patient reminders (e.g. via mail or telephone), assistance with transportation, home visiting, case management, outreach services, assessment and referral to medical providers and incentives (Ashkar et al, 2003; Foley et al, 1998; Szilagyi et al, 2002; Browngoehl et al, 1997; Hutchins et al, 1997; Hambidge et al, 2004).

Multi-component interventions including education address health concerns and barriers to immunisation in an integrated manner. They are based on the premise that pre-requisites to health include the physical, social, and political environment in which health risks occur. The programs are aimed at raising community awareness on available immunisation services and incorporate a variety of associated strategies to improve coverage (Task Force on Community Preventive Services, 2000).

Data indicate that multi-component interventions are effective in improving immunisation rates (Zimmerman et al., 2006). For example, the immunisation coverage for influenza was significantly higher in community based practices employing multi-component strategies (59.3%) compared to controls (43.7%) (Britto, Schoettker, Pandzik, Weiland, & Mandel, 2007). Education combined with patient reminders has also been shown to lead to significant increases in immunisation rates (Gaglani, Riggs, Kamenicky, & Glezen, 2001).

3.4.4 Discussion

On the basis of the available data, four types of interventions aimed to improve immunisation rates in young children are included in this catalogue. These include client reminder/recall systems, A/R systems (i.e. WIC programs), home visits and multi-component interventions including education.

The most successful interventions are those that involve a combination of strategies (i.e. multi-component). For example, as noted above, a combination of patient education and reminder/recall has been effective in increase immunisation coverage. Importantly, the interventions included in the catalogue have been shown to be effective in Indigenous populations, CALD and children from low socio-economic status families.

These interventions also attempt to overcome many of the major barriers to the immunisation of young children, such as access (home visits) and education (multi-component interventions).

Finally, several researchers have reiterated that the promotion of immunisation is a repetitive, ongoing activity and requires tracking, personalised reminders, and positive feedback to parents (Szilagy et al, 2002; Szilagy et al, 2000; Barnes et al, 1999; Rodewald et al, 1999; Findley et al, 2003).

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3.5 Re-notifications to child protection

This updated literature search followed the methods outlined in first version of this narrative review. Due to their wide coverage, the PsycINFO and MEDLINE were the academic literature electronic databases chosen. The key search terms were "child abuse" and "mandatory reporting". This literature search was designed to find specific review articles and intervention articles in the publication years 2006, 2007, 2008 to present. The Cochrane Library and the Campbell Collaboration Library were also consulted to identify any relevant review articles. Additional literature searches were conducted on known practice literature web-sites. These sites included: the California Evidence-Based Clearinghouse for Child Welfare; the Promising Practices Network; and Blue Prints for Violence Prevention (see the review for web-links); as well as the Victorian Department of Human Services and the Victorian Department of Department of Education and Early Childhood Development. Finally, individual recommended programs were searched on MEDLINE and PsycINFO to see if any new intervention articles about these programs were published.

3.5.1 Background

Following the effective critique of mandatory reporting systems by Harries and Clare (2002):

> "There is no evidence that mandatory reporting increases the quality, quantity or benefits to children who are 'at risk of harm' or to families who are vulnerable. Indeed there is some evidence that it does the reverse."

Or as Eagar et al. 2005 put it:

> "Legislation requiring certain professionals to report suspected child abuse has led to increased notification of cases of abuse and neglect nationally. There is, however, no evidence that mandatory reporting legislation in Australia or elsewhere has been effective in protecting children."

There has been a policy focus on examining re-notifications of child abuse. In terms of examining the re-notification statistics, important early work has been conducted in Victoria by Thomas et al. (2004). Recently, Mathews & Kenny, 2008 have compared mandatory reporting legislation in the USA, Canada and Australia.

3.5.2 The evidence base

A literature search was conducted into relevant programs or interventions into the treatment of child abuse and neglect. The literature search included a number of components:

- Building upon the work from the Strategies for Gain report (Eagar et al. 2005), looking for reviews of the evidence base
- Review of Best Start publications
- Term Analysis (MeSH; Thes Psyc Index Terms)
- Plus feedback on search progress from the VIC Dept of Human Services
- Use of the COSI model (Bidwell and Jensen, 2003) to explore the Cochrane and Campbell Collaboration Libraries to move out into the web to search for specific programs.

This search found good coverage in the area, finding a number of reviews of the evidence. These included: A Cochrane Review by Barlow et al. 2006 and Meta-Analyses by Lundahl et al. 2006; Geeraert et al. 2004; Skowron and Reinemann 2005; plus a systematic review by Bilukha et al. 2005 and a literature update by Vandeven and Newton 2006; as well as the California Evidence-Based Clearinghouse for Child Welfare (see http://www.cachildwelfareclearinghouse.org/search/topical-area/1).

(Recently, the California Evidence-Based Clearinghouse for Child Welfare has introduced new topic areas examining interventions for neglect and secondary prevention.)

Other reviews include those of the Kauffman Best Practices Project recommending three child and parental behavioural interventions for abuse, including Parent - Child Interaction Therapy (PCIT) (Saunders et al. 2004). The Centers for Disease Control and Prevention (CDC) in Atlanta is also undertaking a number of research activities into a number of programs, including Triple P and PCIT; plus examining the issue of program attrition (see National Center for Injury Prevention and Control, 2004).

Additional interventions are described at the: California Evidence-Based Clearinghouse for Child Welfare (see Website above); Promising Practices Network (see http://www.promisingpractices.net/programs_indicator_list.asp?indicatorid=8); Blue Prints for Violence Prevention (see http://www.colorado.edu/cspv/blueprints/index.html); Thomas et al. 2003; Barlow et al. 2006; Lundahl et al. 2006; and Saunders et al. 2004.

3.5.3 Selection of interventions

Based on this search of the evidence the following strategies are recommended:

- The Incredible Years (Reid et al. 2001)
- Parent - Child Interaction Therapy (PCIT) (Chaffin et al. 2004)
- Triple P - Positive Parenting Program (Sanders et al. 2004)
- Healthy Families - Prevent Child Abuse America (Duggan et al. 1999)
- Nurse - Home Visitation - Olds Model (Olds 2002)

They represent a cross-section of recognised approaches in the area. Further details about these programs or interventions can be found in the catalogue. Two other home visiting programs from the review of Vandeven & Newton 2006 are also worthy of mention here. They are:

- Early Start Program NZ (Fergusson et al. 2005, Fergusson et al. 2006) which is a home visiting program for disadvantaged families with new infants. The program has four levels based on one hour sessions - weekly, fortnightly, monthly, and 3 monthly. (It now also includes the Triple P Parenting program for all parents involved.) It is based on a collaborative approach with the family, developing individualised family plans. Issues addressed are: Improvement of child health, reduction of child abuse, improvement in parenting skills, supporting parental physical and mental health, encouraging family economic and material well-being, encouraging stable and positive partnerships. CADI issues are address with the use of Maori workers.
- Family Connections - Baltimore (DePanfilis and Dubowitz 2005, DePanfilis et al. 2008) which is a home visiting program which targets families at risk of neglect. Home visiting is for a minimum of 1 hour per week for three months. It has a home based, family centred model of practice. Following the principles of: community outreach; individualised family assessment, tailored interventions, helping alliance, empowerment approaches, strengths perspective, cultural competence, developmental appropriateness and outcome-driven service plans. Including the components of: emergency assistance, home-based family intervention, service coordination, and multi-family supportive recreational activities. It is carried out by social work interns.

3.5.4 Discussion

In line with the Best Start Indicator on Re-notification, this examination of the evidence, places a premium on program or intervention outcomes, which reduce the number of actual injuries or hospitalisations, or notifications / re-notifications of abuse to official sources or as measured by

independent observers. The Cochrane Review by Barlow et al. 2006 into parenting programs for the treatment of physical child abuse and neglect found:

- "Studies that have incorporated measures of the incidence of physical abuse (e.g. reports of child abuse, number of injuries) provide no evidence to support the use of parenting programs to treat physical abuse." (page 9)
- Limited evidence that some parenting programs are effective on some outcomes for physically abusive parents;
- Limited evidence that programs including components that target parental anger and stress may be more effective than those that do not;
- Few studies of neglect;
- Potential value of approaches based on cognitive behaviour therapy and child-parent interaction therapy;
- "Parenting programs, particularly those that are group-based, are increasingly being recognised as being a cost-effective way of intervening to improve parenting (NICE 2005), and to provide parents with access to other sources of peer-based support." (page 9)
- "The findings of this review are suggestive that parenting programs may improve some of the outcomes associated with physically abusive parenting, but the quality of much of the included research failed to meet acceptable standards." (Page 10) Further research needs to improve on the use of standard outcome measures, the use of objective measures like child protection registers with larger sample sizes and to explore what are the key components of effective programs, improve compliance.

These findings are backed up by Lundahl et al. 2006 who found in their meta-analysis of parent training programs:

- "None of the studies the long-term impact of parent training in reducing actual abuse." (page 258)
- "Our results indicate that parent training is effective in reducing the risk that a parent will physically abuse, verbally abuse, or neglect a child. Immediately following parent training, parents reported significant and meaningful changes in attitudes and emotions linked to abuse and observed behaviours and substantiated abuse." (page 258)
- Success factors included: home visitor; combination of office and home settings; also including an individualised component; use of behavioural and non-behavioural approaches to change parental child rearing practices and attitudes.

Geeraert et al. 2004 conducted a meta-analysis of evaluations of early prevention programs for families with young children (0 – 3 years old) at risk for physical abuse and neglect. Programs included: some home visits; prenatal/post natal starting points; professional/non professional involvement; and were aimed at supporting the parent, education and skills training, parent-child interactions, child development and enhancing social networks). They found an overall positive effect (small and modest). "The study demonstrated a significant decrease in the manifestation of abusive and neglectful acts and a significant risk reduction in factors such as child functioning, parent-child interaction, parent functioning, family functioning, and context characteristics" (Abstract) Geeraert et al. 2004 also notes that direct outcome measures of abuse may be unreliable and arbitrary as official reports may not record the actual rate of child abuse; and as "abuse is a relatively rare event in the population, so large numbers of participants are therefore needed to demonstrate significant changes in its rate of occurrence." (page 287) Geeraert et al. 2004 also talks about the potential surveillance effect in studies where families have frequent contacts with social workers who are more likely to detect abuse. Geeraert et al. 2004 also calls for more process level measures in future evaluation studies (for example examining home visits vs. group sessions).

Skowron and Reinemann 2005 in their meta-analysis of the effectiveness of psychological interventions for child abuse and neglect found "Treatment effects weakest when linked to behavioural observations of family and strongest with parent self-report attitudes and behaviours" (Abstract) No variation was found for behavioural vs. non-behavioural interventions, group / individual / family modalities; and or voluntary or mandated treatment. Skowron and Reinemann 2005 also called for better designed follow-up studies, with more information on the severity and type of abuse. Plus the need for more research on moderating variables and multidimensional assessments e.g. stages of change; commitment to engage and quality of the therapeutic alliance as well as treatment drop-out and recidivism.

Bilukha et al. 2005 in their systematic review into home visitation for preventing violence in high risk populations found "strong evidence that early childhood home visitation programs are effective in preventing child maltreatment, reducing reported maltreatment by approximately 39%. Programs delivered by professional visitors (nurses or mental health workers) seem to yield greater effects than those delivered by para-professionals." (page 21) They used direct outcome measures like child abuse reports. Bilukha et al. 2005 also commented on the need to better examine program content, organisation, personnel intensity and delivery.

The common elements from these five reviews (Barlow et al. 2006, Lundahl et al. 2006, Geeraert et al. 2004, Skowron and Reinemann 2005 and Bilukha et al. 2005) can be broken down into practice and research implications. These implications are highlighted in Table 3-4 below:

Table 3-4 The practice and research implications of this review

Practice Implications: Examining the evidence for programs which effect the direct outcome measures of abuse (child protection registers, injuries or hospitalisations, independent observation) there is support for home visiting programs (Bilukha et al. 2005; Geeraert et al. 2004) and psychological interventions (Skowron and Reinemann, 2005); while there is some support for parental training and education programs (Barlow et al. 2006, Lundahl et al. 2006, Geeraert et al. 2004). **Research Implications:** Studies with a better examination of process level variables (e.g. program content, personnel, intensity) and longer follow-up periods are required (Barlow et al. 2006, Geeraert et al. 2004, Skowron and Reinemann 2005, and Bilukha et al. 2005).

In their recent review, Klevens & Whitaker 2007 identified 188 primary prevention programs for physical abuse and neglect, however less than 25% had a rigorous evaluation, and only 9 showed reductions in child maltreatment.

Other noteworthy papers were by:

- Zubrick et al. 2005 which examined universally delivered Triple P in Western Australia;
- Fergusson et al. 2006 who found that nurse home visiting produced child related outcomes in the absence of parent / family related outcomes;
- Duggan et al. 2004 which provides a good example of how to use hospitalisation data and substantiated reports to child protection as outcome measures;
- DuMont et al. 2008 in their subgroup analysis of 1 year and 2 year outcomes for Healthy Families New York found better outcomes for young first time mothers enrolled during the prenatal period and psychologically vulnerable women. (This work highlights the importance of targeting programs to make the best use of resources);
- Windham et al. 2004 explored parent and child characteristics in the first 3 years of life for families at risk for child abuse. They found maternal depression and partner violence was

associated with severe child physical assault. There was no association with household income level;

- Stone et al. 2006 compared the reporting of accidental childhood injury in the medical record and from maternal interview, estimating that 25% of childhood injuries are not recorded in the medical record;
- Analysing outcomes for the Incredible Years program, Gardner et al. 2006 found that "changes in parenting skill appear to be a key mechanism for change in child behaviour."
- Hindley et al. 2006 reviewed the literature and identified four key risk factors for the reoccurrence of maltreatment. They were: the number of previous episodes of maltreatment; neglect; parental conflict; and parental mental health problems;
- A number of cost-effectiveness studies of the recommended programs have been published in recent times (see Edwards et al. 2007, Foster et al. 2007, DePanfilis et al. 2008, Mihalopoulos et al. 2007);
- In one of the few papers of this type, Thomas and Zimmer-Gembeck 2007 directly compared and reviewed the available evidence for two programs (PCIT and Triple P), showing positive effects for both programs on parent-reported child behaviour and parenting problems.

Two additional references were found which may be useful as alternative approaches. First, there was a paper by Garbarino et al. 2001 on children growing up in violent urban neighbourhoods. And second, there was a paper by Wright 2004 describing a community development approach to the issue of child protection in the United Kingdom.

Other noteworthy interventions include: the new Parents Under Pressure (PUP) program (Dawe and Harnett, 2007) and the extensively evaluated Child-Parent Center program (Reynolds et al. 2001). The PUP program is an intensive home based intervention for parents with substance misuse problems (10-12 weeks). The program includes modules on parental skills training, relapse prevention, stress reduction / mindfulness techniques, and extending social networks. Additional case management can be undertaken outside the treatment program. The Child-Parent Center program is an early childhood education program which provides education, health and family support services to children aged 3 to 9 from poor neighbourhoods in Chicago. Family support services include: encouraging parental involvement in the classroom, a resources room, parental educational workshops and parent-program activities, access to local resources, outreach and home visiting.

Finally, there is a new Cochrane Review examining the evidence base for cognitive-behavioural interventions for sexually abused children (see Macdonald et al. 2006). Zwi et al. 2007 in another recent Cochrane Review examined the evidence for school-based education programs for the prevention of child sexual abuse. They found, that overall, prevention programs did improve knowledge and self-protective behaviours in children but also increased their anxiety. A Campbell Collaboration review is also underway into the best screening tools to predict child maltreatment in the community and the best risk assessment tools to predict occurrence and re-occurrence of maltreatment (Shlonsky, 2005). Another Campbell Collaboration review (Newman, 2006) looks at the evidence for the use of formal family group conferences and the development of an agreed family plan for decision making about children at risk of abuse and neglect. A published systematic review by Govindshenoy & Spencer 2007 looks at the association between abuse and childhood disability, finding that the evidence is weak and limited. While Carter et al. 2006 in their published systematic review examined the evidence for child protection training and reporting documentation procedures.

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3.5.6 Revised catalogue entries (Re-notifications to child protection)

Recommended Strategy 13.1: Decreased rate of re-notifications to child protection	
Name of intervention	The Incredible Years
Organisation	The Incredible Years, Seattle Washington (Company) and Parenting Clinic, University of Washington
Brief literature review	This group-based Parent Training Program involves parents in 1 - 2 hrs of training sessions per week for 12 - 14 weeks. The education addresses parenting issues such as negative affect (emotions), negative comments, poor parental bonding and ineffective limit setting.
How and why does this intervention work?	The evidence base supports the use of parent training and education programs (see cachildwelfareclearinghouse.org). The research study (random allocation to treatment) cited here involves 634 low income families, across 23 centres in the USA with CALD populations. In terms of experimental design, the control group was a control condition (regular Head Start Program) but without parent training. The outcome measures were: Home observation of parent-child behaviour, parental reports, and child behaviour problems. Plus satisfaction with the program. Positive improvements on all these measures were found at 12 months post program. This program has also been evaluated within the context of the Sure Start program in the United Kingdom (Hutchings et al. 2007)
On what population does this intervention work best?	The Incredible Years is aimed at parents of children aged 4-8 years, particularly low-income and/or CALD families.
Where will this intervention work best?	Parent education and training can be delivered in ambulatory health care settings (community or outpatient clinics) or through schools.
What is required to implement this intervention?	The program is delivered by group leaders and mentors, who may come from a variety of disciplines including nursing, psychology, psychiatry, social work, and education. Ideally, the group leaders will have Masters or Doctoral Degrees in their professions and a strong background in child development, counselling and clinical experience with families. Specific training in the use of the program is not required, but is highly recommended. If any research projects are planned using the program, certification is required.
Resources and contact information	http://www.incredibleyears.com/ http://www.son.washington.edu/centers/parenting-clinic/
References	Hutchings et al. 2007 cachildwelfareclearinghouse.org Reid et al. 2001

Recommended Strategy 13.2: Decreased rate of re-notifications to child protection	
Name of intervention	Parent-Child Interaction Therapy (PCIT)
Organisation	A therapy originally developed by Dr. Sheila Eyberg
Brief literature review	This parent training program involves either individual or group sessions. Parents attend 1–2 hour sessions per week, to a total of 10-20 sessions. The program aims to correct ineffective parenting styles (i.e. permissive parenting, authoritarian parenting and overly harsh parenting) and encourage an authoritative approach to parenting.
How and why does this intervention work?	The evidence base supports the use of psychological interventions (see cachildwelfareclearinghouse.org). The research study (random allocation to treatment) cited here involves 110 abusive parents with low incomes, significant levels of depression, substance abuse and antisocial behaviour. In terms of experimental design, the control group was a standard community based parent group. The outcome measure was physical abuse re-reports. At approximately 2 – 3 years post treatment, only twenty percent of parents in the treatment group had a re-report of physical abuse on a statewide database. This was compared to half of the control group. (This difference was statistically significant using survival analysis).
On what population does this intervention work best?	The intervention is designed for families in which child abuse has been confirmed. It is targeted at parents of children aged 4-12 years.
Where will this intervention work best?	Parent education and training and therapy can be delivered in ambulatory health care settings (community or outpatient clinics).
What is required to implement this intervention?	The intervention is designed to be delivered by child therapists, treatment researchers, and therapy trainers at the Masters or Doctoral level.
Resources and contact information	http://www.pcit.org/ University of Florida, Department of Clinical and Health Psychology http://devbehavpeds.ouhsc.edu/pcit.asp, Child Study Center, University of Oklahoma Health Sciences Center http://www.pcittraining.tv/about.asp UC Davis CAARE Diagnostic and Treatment Center UC Davis Children's Hospital, Sacramento http://www.griffith.edu.au/centre/gphrc/Research/parentchild.htm Family Interaction Program (FIP), Griffith University
References	cachildwelfareclearinghouse.org Chaffin et al. 2004

Recommended Strategy 13.3: Decreased rate of re-notifications to child protection	
Name of intervention	Triple P Positive Parenting Program
Organisation	Parenting and Family Support Centre, University of Queensland and Triple P International Pty. Ltd.
Brief literature review	This is a group-based parent training program with sessions of up to one hour. There are various levels of intervention. At Levels 2-5, the intervention is delivered over a period of 2 to 12 weeks and addresses issues such as attribution and anger management.
How and why does this intervention work?	The evidence base supports the use of parent training and education programs (see cachildwelfareclearinghouse.org). The research study (random allocation to treatment) cited here involves 98 families, parents concerned about their anger. In terms of experimental design, the control group was a standard group behavioural family invention vs. the treatment condition of an enhanced group behavioural intervention. The outcome measures were observed and parent reported disruptive child behaviour, parent reported dysfunctional parenting, self-efficacy, distress, and relationship conflict. Plus satisfaction with the program. Positive improvements on all these measures were found at 6 months post program. Recently, Sanders et al. 2007 have published 3 year outcomes data for standard, enhanced and self-directed versions of the Triple P positive parenting program showing that treatment / preventative gains were maintained.
On what population does this intervention work best?	This intervention is aimed at parents concerned about their anger management. It has a series of levels, starting with universal. Higher levels focus in on families in which there are confirmed problems. It is suitable for families with children aged from birth to 18 years.
Where will this intervention work best?	Parent education and training is delivered in ambulatory health care settings (community or outpatient clinics).
What is required to implement this intervention?	Practitioners running Triple P are required to have completed an approved training course and be an accredited provider. The paper by Sanders 2002 provides further details about the program.
Resources and contact information	http://www1.triplep.net/
References	cachildwelfareclearinghouse.org Sanders et al. 2004 Sanders 2002

Recommended Strategy 13.4: Decreased rate of re-notifications to child protection	
Name of intervention	Healthy Families – Prevent Child Abuse America
Organisation	Healthy Families America / Prevention Child Abuse America (non profit organisations / National reach / Head office in Chicago Illinois)
Brief literature review	This program delivered an average of 13 home visits in the first year by trained para-professionals. It involves early identification of at-risk families before their day-to-day stresses, isolation, and lack of parenting knowledge and good role models give rise to abusive and neglectful parenting behaviours. Home visitors work to build trust, and focus on family strengths to reduce environmental risk and prevent child abuse and neglect.
How and why does this intervention work?	The evidence base supports the use of home visiting (see Vandeven & Newton 2006). The research study (random allocation to treatment) cited here involves 730 at risk families with new born infants, across six sites in Hawaii. In terms of experimental design, the control group received no home visits but was followed up at year one and year two. The outcome measures were links to paediatric medical care, parenting efficacy, stress, use of non-violent discipline, decreasing injury from partner violence. No significant results for reports or hospitalisation rates were found. Similar results were found in a recent study (Caldera et al. 2007) of the program in Alaska, showing improvements in child development and home environment. Again no significant results for reports or hospitalisation rates were found (Duggan et al. 2007). Finally, Caldera et al. 2007 advises, that due to variations in service content and quality, there is a need for strong implementation procedures when model programs are taken to scale across a state system.
On what population does this intervention work best?	At-risk families with new born infants.
Where will this intervention work best?	This intervention is delivered in the home.
What is required to implement this intervention?	Team of support workers with suitable training.
Resources and contact information	http://www.healthyfamiliesamerica.org/home/index.shtml
References	Caldera et al. 2007 Duggan et al. 2007 Vandeven & Newton 2006 Duggan et al. 1999