

PRIMARY HEALTH CARE AND READINESS FOR SCHOOL:
A SYSTEMATIC REVIEW OF THE ROLE OF PRIMARY HEALTH
CARE IN PROMOTING CHILDREN'S READINESS FOR
SCHOOL

Ms Karen Gardner
Mr Shawn Lyons
Ms Dhigna Rubiano
Ms Angela Scotney
Prof Nicholas Glasgow

November 2007

ANU COLLEGE OF MEDICINE & HEALTH SCIENCES

Australian Primary Health Care Research Institute (APHCRI) ANU College of Medicine and Health Sciences Building 62, Cnr Mills and Eggleston Roads The Australian National University Canberra ACT 0200

T: +61 2 6125 0766 F: +61 2 6125 2254 E: aphcri@anu.edu.au W: www.anu.edu.au/aphcri

1. INTRODUCTION	5
BACKGROUND AND POLICY CONTEXT	5
Research Questions	7
Definitions	7
2. METHODS	9
REFERENCE GROUP FORMATION	
SEARCH STRATEGY	
BLACK LITERATURE	
Search Terms	
Selection of Studies	
Hand SearchesGREY LITERATURE	
Internet searches	
APPRAISAL	
Data Extraction	
Quality of Studies	
- ,	
3. RESULTS	12
Quality of Studies	13
DEVELOPMENTAL HEALTH ISSUES	
PRIMARY HEALTH CARE STRATEGIES	
CHILD HEALTH SURVEILLANCE AND SCREENING	
Speech and language	
Growth	
Vision	
Hearing	16
Nutrition (iron supplement)	16
Hypertension	16
Undescended testes	
Urinalysis	
Developmental delay	
Physical and Sexual abuse	
Child Health Checks	
1. Assessment	
Payelagraphy links yestions Payelagraphy links yestions	
3. Developmental interventions	
4. Delivery issues Summary of Findings	
Parent and family outcomes	
Child outcomes	
School readiness	
HOME VISITING	
Home visiting – effects on parent and child outcomes	
Injury prevention	
Alcohol and Drug Prevention	
Home visiting by public health nurses	
British home visiting programs	
Australian Home Visiting Programs	
Western Sydney programs	
Volunteer home visiting in Australia	
Summary of Findings	
Parents	36

Children	36
ChildrenHome environment	36
Delivery issues and program content	40
School Readiness	40
ORGANISED PRIMARY HEALTH CARE APPROACHES	
APPENDICES	44
1. AUSTRALIAN POLICIES AND STRATEGIES	
Current Early Years policies	
Child Health policies in four jurisdictions	44
Mental health policies with a component on children	44
2. DRAFT TERMS OF REFERENCE FOR THE REFERENCE GROUP ON THE READINESS FOR SCHOOL STUD)Y45
3. SURVEILLANCE AND SCREENING - SYSTEMATIC REVIEWS	47
4. ANTICIPATORY GUIDANCE – PRIMARY STUDIES	51
HOME VISITING – SYSTEMATIC REVIEWS	54
4. STRATEGIES FOR EARLY IDENTIFICATION AND REFERRAL	57
REFERENCES	60
STUDIES INCLUDED IN THE REVIEW	61

1. INTRODUCTION

This report describes a systematic review of the literature concerning the contribution that organised primary health care approaches can make to childhood developmental health and well being outcomes related to readiness for school in children 0-5 years. The review was conducted as part of the research of APHCRI. It focuses on distilling evidence of the effectiveness of primary health care strategies in delivering interventions that promote school readiness in children and, aims to identify how organised system-level approaches might integrate delivery of these interventions in a coordinated manner within primary care and health more broadly.

BACKGROUND AND POLICY CONTEXT

Governments are increasingly interested in the importance of early childhood development for later health and well being. This interest has arisen in the context of dramatic changes in the lives of children and families over the past 50 years that have been accompanied by changing patterns of morbidity and disease among children in industrialized countries, and renewed research interest in the social determinants of health. There is good evidence that social circumstances are embodied in health, learning and development through critical mechanisms and social processes, and that the early years of life are fundamentally important in laying the foundations for later health. (Shonkoff & Phillips 2000; McCain & Mustard 99; Keating & Hertzman 1999).

Studies in neurobiology and epidemiology demonstrate that exposure to opportunities and environments that foster early emotional, cognitive and social competence is associated with the development of social trajectories through life that are closely linked to health (Power & Hertzman 99). Early competence is related to children's readiness for school and lack of readiness has been shown to predict poor health, risky behaviour and failure at school which leads to low levels of mental health and low paid jobs. Those who remain in these kinds of jobs develop high rates of disability and absenteeism and begin to die prematurely in their fifth decade (Keating 99). The three main dimensions of early child development that underpin readiness for school are physical, cognitive and social-emotional development. A socio-economic gradient in the distribution of these developmental outcomes has been shown to exist in children as young as 3 years of age and this gradient parallels the gradient in health in later life (Hertzman 99, Fonagy 1996, McCain and Mustard 1999).

Developmental outcomes are shaped by multidimensional factors operating in the individual child, the family, the community and the broader social environment. At the level of the child, weight at birth and growth in the early years, the extent to which children are engaged in language, reading and provided with opportunities for play are important factors known to exert a powerful influence on children's readiness for school. At the broader level, parental income and level of education, parenting style, family cohesiveness, community safety and access to services are all important factors that influence early development (Oberklaid 2005). They appear to interact as a set of risk and protective factors that both facilitate and/or inhibit children's development (Oberklaid, 2005). Many of these factors have been shown to be amenable to policy intervention (Hertzman, 2002) and there is increasing interest internationally and in Australia in addressing health inequalities, focusing on outcomes for children and young people (Stanley 2001; Patton et al 2005; Stanley Goldfeld & Oberklaid 2005; Resnick 2005). It

Despite Australia's comparative wealth and high levels of education, data clearly demonstrate socio-economic inequalities in children's health (Bor et al 1993), cognitive development and emotional health (Najman et al 2004). National indicators for child health and well being are of increasing concern and health inequalities are most pronounced in the Aboriginal population where significant health issues relate to high levels of infant mortality (three time higher than for non aboriginal children); low birth weight; higher rates of hospitalization for asthma and respiratory infections and injury than for other children (National Early Agenda for Children). In the broader population one in five Australian children aged between 5 and 18 is overweight or obese, almost 20% of school-aged children have asthma as a long term condition and around 14% of children are reported to have mental health problems (National Early Agenda for Children; Al-Yaman 2002). The incidence of Type 1 diabetes is increasing and injuries continue to be the leading cause of death among children and a main cause of illness. One-third of deaths in children aged 1-4 years are preventable (Al-Yaman 2002). Developmental and behavioural problems, education difficulties and substance abuse are thought to be increasing (Stanley 2003).

It is now a decade since Australia's first national policy on child and adolescent health "The health of young Australians" put children's health into the broader context of social development. Since then, a number of important policy initiatives and strategies have built on these earlier ideas. The National Agenda for Early Childhood provides a national basis and rationale for policy development and the National Public Health Action Plan for Children (2005-2008), developed through the Child and Youth Health Intergovernmental Partnership, highlight the importance of strengthening the capacity of parents, communities and providers in prevention and early intervention for child health and development. Most states and territories now have early childhood initiatives and policies which share a common orientation in stressing ecological approaches to the promotion of child health and development with a focus on adopting:

- Lifecourse approach
- Risk assessment
- Focus on transition points
- Prevention and promotion
- Universal service base integrated with secondary and tertiary services
- Integration within and between sectors for planning and delivery of services
- Focus on infrastructure including workforce, performance assessment, data requirements, IT systems.

In the research sector, the establishment of the Australian Research Alliance for Children and Youth provides a vision for integrated cross disciplinary research into early childhood and work on developing longitudinal datasets and measures of readiness for school are now underway. These measures capture information across the domains of child development and are powerful predictors of children's future well being including development of a child's likely propensity to learning, success at school and later health status. Australia is currently trialing a Readiness for School index in a number of states and territories.

At the level of practice, the role that health professionals might play in addressing early determinants to promote health and reduce inequalities is the subject of discussion (Swi and Henry 2005; Harris et al, 2005; Harris & Mercer 2001). How this might best be done in the context of the Australian primary health care system has not yet been examined. The particular nature of the structural and payment arrangements in primary health care and general practice that have tended traditionally to favour

episodic rather than preventive care and promote a lack of engagement with population health (Swi and Henry 2005) are among the issues that require careful examination in considering what an organised primary health care response might look like and how it might relate to a broader agenda for early childhood development.

Research Questions

The review addressed the following question:

What can organised primary health care approaches contribute to childhood developmental health and well being outcomes related to readiness for school in children aged 0 -5 years?

This primary question is broken down into 4 components, outlined below: Sub Questions

- 1. What are the major developmental health issues underpinning readiness for school (as defined above) in children aged 0-5 years that are amendable to primary health care intervention?
- 2. What are the organised primary health care approaches currently in place for addressing these major developmental health issues in Australia and comparator countries (Canada, UK, NZ) and what are the theoretical approaches that underpin them?
- 3. What evidence is there of the success of these approaches in improving readiness for school in children 0-5? Which populations of children benefit from these arrangements and how?
- 4. What are the strategies and institutional arrangements that support these approaches, how are services configured and provided, and what are the service linkages involved? (universal or targeted; comprehensive; quality standards; integration, accountability)

Definitions

We developed and used the following definitions in this Review.

School readiness

Drawing on ecological definitions, healthy child development which underpins children's successful participation in school and later life is the outcome of patterns of risk and protective factors that operate at the levels of the child, the family and the broader community. Readiness for school is therefore not a characteristic of the child, but an outcome of the relationship between the child and the community context. In this review, we draw on the California Children and Families Commission description of Ready Children, Ready Families and Communities, and Ready Schools (below) to consider the areas in which primary health care plays a role in promoting readiness for school:

Ready Children

- health and physical development;
- social and emotional development;
- approaches to learning;
- language and communicative skills, and
- cognition and general knowledge.

Family and community readiness for children

- Access to high-quality and developmentally appropriate early care and education experiences
- Access by parents to training and support that allows parents to be their child's first teacher and promotes ...does the next dot point follow on?
- Prenatal care, nutrition, physical activity, and health care that children need to arrive at school with healthy minds and bodies and to maintain mental alertness

School's readiness for children

- A smooth transition between school and home
- Continuity between early care and education programs and elementary grades
- A student centred environment focused on helping children learn
- A commitment to the success of every child
- Approaches that have been shown to raise achievement for each student
- A willingness to alter practices and programs if they do not benefit children
- Assuring that their students have access to services and supports in the community

Organised primary health care approaches

We define organised primary health care approaches as meso level strategies that aim to influence organisational systems, practitioner behaviour and the role of providers in promoting child development and enhancing readiness for school at the population or group level. Such approaches might include consideration of intersectoral planning arrangements; infrastructure support; linkages between services within sectors (such as integration of universal and secondary or tertiary health and development services) or between sectors and with the community (such as with the early education and care sectors); workforce profiles; health worker role definitions and other features of the delivery system. Approaches may encompass biomedical interventions, home visiting programs, family support, promotion and prevention activities such as parent and child education through anticipatory guidance.

2. METHODS

The methods involved formation of a reference group to assist in guiding the study, development of a search strategy and process for testing the relevance and quality of the papers identified, analysis of material and synthesis of policy options. The Diagram below describes the overall approach to the Review. The project has been conducted in three stages, through a process of literature searches; review of findings; and a synthesis and analysis phase to formulate policy options.

REFERENCE GROUP FORMATION

The Reference Group provided advice and feedback to the project. It consisted of experts in the research, policy and practice arenas relating to child health. An initial teleconference was conducted to seek advice and feedback on the search strategy and inclusion/exclusion criteria. The Terms of Reference and membership are included in Appendix 2.

SEARCH STRATEGY

The search strategy was conducted in two stages. The first sought out relevant systematic reviews and primary studies related to interventions and organised primary health care approaches currently in place for addressing major developmental health issues. These searches were conducted in the black and grey literatures. The second stage focused on identifying relevant reports in the grey literature. Diagram 1 provides an overview of the search strategy.

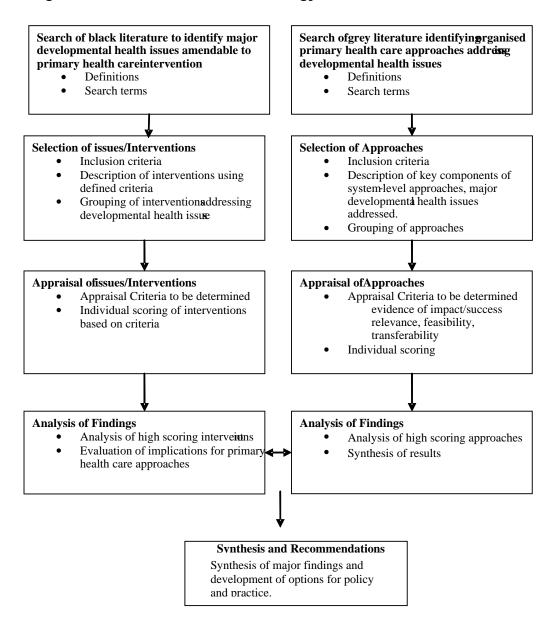
BLACK LITERATURE

The following electronic databases were searched for systematic reviews and primary studies.

Table 1: Search Databases

Black literature
Medline
Current contents
Cochrane database of systematic reviews
Proquest
Ingenta
Elselvier Science Direct
Blackwell-synergy
Cinahl
Psychlit
Pubmed
Wiley InterScience
ERIC
Databases of Abstracts of Reviews of Effectiveness (DARE).

Diagram 1: Overview of Search Strategy



Search Terms

The initial literature search was broad in an effort to determine the types of issues impacting on children's readiness for school. The search term 'school readiness' was used for this purpose. The search was further refined to include predictors of school readiness and primary health care interventions using the following search terms in appropriate combinations:

- Each of the terms primary and health and care
- The term "child* development"
- At least one of cognitive, social, emotional and physical

The search was further refined to extract systematic reviews by adding the term "systematic" to search abstract fields. Further search terms were added to identify specific papers on primary health care strategies. These were 'home visiting', 'surveillance', screening', 'anticipatory guidance'.

All citations were captured in Endnote and two members of the team independently scanned the citations and abstracts for relevant articles. All potentially relevant articles were recorded in Endnote.

Selection of Studies

Inclusion and exclusion criteria were developed and modified in an iterative fashion in accordance with the type of papers retrieved and in consultation with the reference group. For inclusion, studies had to meet the criteria outlined in the table below. Studies were excluded on the basis of the exclusion criteria listed.

Table 2: Criteria used to select studies

Inclusion criteria Exclusion criteria • The intervention, approach or strategy is • The study was conducted prior to 1990 aimed at promoting developmental • The intervention, approach or strategy health or reducing risk factors for relates to an issue in a developing development in children aged 0-5 country that is not relevant in Australia • The study seeks to answer questions of • The study relates to children older than 5 effectiveness of an intervention, years approach or strategy • The intervention, approach or strategy involves primary health care providers as key providers of care • The study reviews the intervention, approach or strategy outcomes, processes or acceptability to either users or practitioners · The study is in English

Two members of the team independently reviewed all articles for inclusion on the basis of these criteria and where there were differences, these were resolved through consensus. All relevant articles were retrieved.

Hand Searches

Hand searching of references from relevant policy reports, systematic reviews and other papers was also conducted.

GREY LITERATURE

A more targeted approach was taken to examining the grey literature. Relevant material was identified with the assistance of the Reference Group and searches of websites of Government Departments, professional organisations, non-government organisations, universities and similar organisations were undertaken.

Internet searches

Internet web pages of key stakeholder government and non-government agencies were searched using key words. These included Commonwealth Department of Health and Ageing (DoHA), Informit e-Library, Australian Education Index (AEI); Australian Government Family and Community Services; National Public Health Partnership; Australian Bureau of Statistics (ABS); Canadian Health Department; New Zealand Health Department; UK Health Department; American Indian Health Service; all state government health/ children and family services/early childhood departments. Australian early development index Project.

http://www.rph.wa.gov.au/hpnetwork/Current Research/AEDI Profile.htm) Site Commonwealth Taskforce on Child Development, Health and Well-being. National Early Agenda for Children. Australia's Children: Current state of play for children and families. 2003. Online at www.facs.gov.au/early_childhood. Early years study: Reversing the real brain drain. 1999. Online (www.childsec.gov.on.ca)

National Public Health Partnership

Australian Centre for Education Research (ACER)

Growing up in Australia. Longitudinal study of Australian Children.

APPRAISAL

Data Extraction

Standardised instruments for data extraction were used for quantitative studies and evaluation reports. Data on the demographic characteristics of respondents, the characteristics of the interventions, outcome measures and other variables were collected.

Quality of Studies

We adapted a tool developed by health-evidence.ca to appraise the quality of primary research articles included in the review. Studies were classified as being of low, medium or high quality.

3. RESULTS

1568 papers were located in the review of black literature. Of these, 350 were included as being potentially relevant based on a review of abstracts. We grouped the papers into the following categories for further examination:

- Treatments and interventions
- Screening and surveillance
- Home visiting
- Secondary prevention strategies including parenting programs
- Dental

On further inspection, a large number of papers were commentaries, editorials and opinion pieces that did not provide evidence of the benefit of an intervention or

strategy. These papers were excluded from the main analysis but were coded and those that provided useful information for setting the context of the review were retained and used as background material. There were also a large number of papers dealing with testing the efficacy of preschool programs in improving cognitive development and while the evidence is strong that preschool improves cognitive development as measured by IQ (at least in the short term), these papers were excluded from the review because preschool lies outside the primary health care domain. Also excluded was the large number of papers assessing the internal validity of a variety of developmental screening tools and studies relating to dental care. A number of studies addressing racial differences in the USA were also excluded as it is not clear that these are applicable in an Australian context. 36 papers met the inclusion criteria and were included in the review.

Quality of Studies

There are considerable methodological difficulties associated with measuring effectiveness and detecting benefits from complex interventions, particularly in relation to child development problems that may show their impacts much later in life. The sample sizes required to detect small effects may be so large that single studies may not be viable. In addition, even when effectiveness is demonstrated in controlled studies, results may not translate into changes in real life situations. Likewise when an intervention is shown to be ineffective in controlled circumstances, that result may be related to the timing of, or population into which it was delivered. Much of the evidence discussed in this review has been derived from controlled studies and is therefore evidence of efficacy of interventions but not effectiveness.

The methodological rigour of the primary studies was highly variable. This reflects the diversity of study designs adopted as well as difficulties associated with measuring outcomes, particularly in relation to complex interventions in real world settings. There was limited use of a range of outcome measures and very few studies provided detailed descriptions of program design or aimed to attribute outcomes to program components or mechanisms. A few studies used experimental design or quantitative methods, and a few mixed method studies drew on interview data and some output and intermediate outcome data to measure effectiveness. Even fewer studies used controls and relied on a small number of outcome measures, some comparing data between sites within a program. Several qualitative studies involved interviews with families and providers to examine issues of satisfaction.

Much of the evidence comes from studies conducted in the USA, far fewer from the UK and Canada and very few from Australia and New Zealand.

DEVELOPMENTAL HEALTH ISSUES

It quickly became clear that a large variety of developmental health issues relating to primary health care interventions were covered in the papers. These were language and speech delay; autism; nutrition including obesity and growth faltering; maternal health; eye health, hearing and ear health including otitis media; growth; neuromotor problems; asthma; self regulation; affective and attention deficit disorders; environmental exposures, injury and child abuse. The literature relating to each of these interventions is vast and it was apparent that a systematic analysis of the evidence regarding benefit would require a systematic review of each topic which was well beyond the scope of this project and not our primary focus. In accordance with

our focus, and on advice from the Steering committee, we chose to focus on the evidence relating to the strategies currently utilized in primary health care for delivering interventions for these developmental health conditions, as this is the area perceived as the most important gap.

PRIMARY HEALTH CARE STRATEGIES

The core strategies for delivering primary health care developmental services are Child Health Surveillance and Screening programs; Home visiting, parenting and postnatal programs. We focused on child health surveillance including screening and well child checks, and home visiting as these are the key primary prevention strategies undertaken in the primary health care domain. Parenting programs are vitally important for child development as are family support programs (and preschool) but these are generally considered as secondary care services to which primary health care will refer.

The literature in both of these categories is large and there are a number of recent systematic reviews which we identified. We therefore focused on synthesizing the evidence from systematic reviews of primary health care strategies in the first instance and then looked for primary studies where these could provide data relating to our research questions on the institutional arrangements and service linkages that support the delivery of these approaches.

We identified systematic reviews and primary studies relating to the following types of strategies:

- child health surveillance and screening strategies including developmental monitoring such as in well child checks, parent education including anticipatory guidance, and reading promotion programs;
- home visiting programs;
- strategies to improve referral and coordination.

CHILD HEALTH SURVEILLANCE AND SCREENING

Child health surveillance is part of a broad set of health promotion and disease prevention activities aimed at promoting health and detecting conditions and problems that would be expected to impact on optimal physical, social, emotional and cognitive development. Surveillance includes programs that aim to detect specific disorders such as phenylketonuria and cystic fibrosis, but also includes repeated examinations of healthy children through well child checks to assess biomedical health, development, behaviour and family functioning. In addition, well child care seeks to provide parent education through age appropriate counselling known as anticipatory guidance and link children to appropriate services. This approach involves flexible, longitudinal, continuous processes conducted by knowledgeable professionals performing skilled observations (Dworkin 04). This new emphasis reflects the changing patterns of risk for children's development and aims to engage parents in the identification of problems and provide them with support and information that can assist in optimising developmental opportunities and reducing risks.

Screening focuses on making early diagnoses of pre-symptomatic disease among well individuals in the general public (Sackett et al 2000). Screening tests sort out apparently well persons who probably have a disease from those who probably do not (Last, 88). Surveillance, on the other hand involves ongoing scrutiny, generally using

methods distinguished by their practicability, uniformity and frequently their rapidity, rather than by complete accuracy. Its main purpose is to detect changes in trend or distribution in order to initiate investigative or control measures (Last, 88)

Although surveillance is a relatively new concept in primary health care, there are increasing numbers of schedules recommending topics for child health surveillance, particularly in the USA (Moyer 07, Nelson 03). Recommendations for screening include review of developmental milestones, daily activities, nutrition, school performance, behavioural observation of parent child interactions and physical examinations to measure growth parameters (height, weight and head circumference), hypertension (measurement of blood pressure for children over 3 years), anaemia, environmental exposures such as lead, urinalysis, vision, hearing and TB infection (Dinkovich 02). Anticipatory guidance delivers age and stage appropriate information relating to child temperament and behaviours, safety issues and parenting practices. Despite this extensive list of topics, there is no shared agreement about the definitions of child surveillance (Oberklaid et al), no consensus about the group of activities that ought to be included (Moyer); no well defined statement about the specific outcomes sought from surveillance activities and no quality standards for its provision (Schor 04). Although the principles may be sound, there is little scientific evidence of benefit.

We identified two systematic reviews (Moyer 07, Regaldo 01) and one literature review (Nelson 03) examining the evidence for well child health checks, one review of routine growth monitoring, four reviews of screening for speech and language delay (Butler 03, Boyle et al 98, Nelson 06, Law 06, Bamford 98), one review of vision screening (Bamford 98) and one broad based Australian review of screening and surveillance (Oberklaid 02). A summary of the key research questions and findings in each of these studies is provided in the table in appendix 3.

In Australia, Canada, NZ and the UK where there are established systems of maternal and child health services, surveillance activities are conducted by nurses through baby and child development checks as well as by GPs. In Australia GPs are now able to utilize Medicare items for child health checks to do this. There are major issues of program quality, monitoring of compliance with referrals for assessment, and availability of facilities in many communities for assessment and follow up (Oberklaid). We include only those conditions for which screening has relevance for or is conducted in Australia in the primary health care setting.

Speech and language

With respect to routine screening for speech and language delay, the reviews found insufficient evidence to support universal screening (Oberklaid, Law, Bamford, Nelson). The most recent 2006 review of speech and language delay in American preschool children (Law) found little evidence to support current practices in routine screening and little consistency in method of screening. It could not identify studies to answer key questions related to the effectiveness of screening, optimal age and frequency of screening, adverse effects of screening, the role of enhanced surveillance in primary care, the effectiveness of interventions on non-speech outcomes and adverse effects of interventions. Although risk factors have been identified for speech and language delay, their role in screening has not been evaluated. Law recommended determining optimal approaches for identifying preschool-aged children with speech and language delay in primary care settings who would be appropriate candidates for additional evaluations and possibly speech and language interventions, a finding reiterated by Bamford and Oberklaid. Law also found a paucity of evidence relating to the long-term effects of interventions and their cost-effectiveness.

For populations already identified as having language difficulties, there is evidence to support the effectiveness of therapy (Oberklaid, Law). Law found evidence to support the effectiveness of speech and language therapy for children with phonological and expressive vocabulary difficulties, but weaker evidence relating to therapy for children with receptive language disorders (Bamford)

Growth

Screening for growth is conducted via measurement of head circumference, height and weight throughout early childhood for the identification of obesity and failure to thrive. There is insufficient evidence to suggest that routine growth monitoring is beneficial to child health as rigorous evaluation has not been undertaken (Oberklaid, Moyer, Garner). In relation to monitoring for the purpose of failure to thrive, there is insufficient evidence to make a recommendation against routine screening, and for obesity, reasonable evidence to recommend against screening. However, routine weight monitoring at birth, at 6-8 weeks, and at 8-12 months is recommended as part of routine clinical care (Oberklaid).

Vision

Vision screening takes place in a number of settings, in a number of forms and for a number of different problems. In primary care settings, screening relates to risk factors for amblyopia and for visual acuity in the preschool check. Oberklaid found insufficient evidence in relation to either supporting or rejecting routine screening in preschool children for visual acuity and evidence for rejecting screening for risk factors for amblyopia. Bamford also found no justification for routine screening of preschoolers with non-obvious squint or refractive errors and recommended that further research into the most effective treatments for amblyopia is needed. Moyer found no trials that reviewed vision screening conducted in office settings.

Hearing

Universal screening of neonatal hearing for permanent childhood hearing impairment is conducted during the postnatal period and is supported by the evidence (Oberklaid, Bamford). Routine screening for the detection of otitis media with effusion is sometimes included as part of the preschool check and is not supported by the evidence (Oberklaid, Butler).

Nutrition (iron supplement)

Screening for iron deficiency is recommended as part of regular GP checks for children in the UK but not in Australia. It does not meet criteria for routine screening (Oberklaid) and trial results regarding impact on developmental outcomes is mixed (Moyer). However, there is strong evidence that iron supplementation decreases anaemia. Oberklaid recommended that health professionals provide parents with age appropriate diet related information to assist in the prevention of anaemia and that health professionals remain vigilant in detecting iron deficiency in children.

Hypertension

In Australia, assessment of the cardiovascular system is part of the routine neonatal medical examination, at the 6 week postnatal check and, in some programs, at preschool or school entry. It has also been recommended as part of well child checks in some programs. No evidence is available to suggest that routine measurement of blood pressure in children improves child health outcomes (Oberklaid, Moyer).

Undescended testes

Examinations of the infant at birth, at the 6 week postnatal check, and at other milestones in the pre-school years have been performed in various screening

programs, as well as re-examination at school entry. There is insufficient evidence to make a recommendation for or against screening but examination at the newborn and at the 6 week check is recommended provided that it is in the context of an early detection and intervention system (Oberklaid).

Urinalysis

Screening urinalysis is examination of the urine at the time of a routine 'well child' visit or opportunistically at the time of a clinic visit. No evidence of effectiveness for screening urinalysis was identified (Oberklaid, Moyer).

Developmental delay

Screening for developmental delays aims to detect those children with subtle delays, or at risk for delay, who would not otherwise be detected. There is insufficient evidence to recommend for or against screening (Oberklaid).

Physical and Sexual abuse

Screening for signs of physical and sexual abuse has not been rigorously evaluated. (Moyer and Butler 2007).

Child Health Checks

We used the "developmental services typology" developed by Regaldo and Halfron (2001) to organize the papers we identified into categories for analysis. It identifies the surveillance services provided in primary health care for child development as follows:

1. Assessment

- Evaluation of information from parents
- Developmental monitoring (including screening for developmental problems)
- Psychosocial assessment
- Parent-child observation
- Assessment of child behaviour

2. Education

- Anticipatory guidance addressing parent infant relationships, child behaviour and various developmental challenges (eg. Healthy sleep habits and discipline practices)
- Parenting education provided in different formats

3. Intervention

 Activities include problems focused counselling in the office setting or as a telephone service or through home visiting.

4. Care Coordination

• The management of service needs. Referrals for diagnostic assessments or other specialists for care.

1. Assessment

Two systematic reviews included studies investigating the efficacy of assessment activities conducted in well child checks (Regaldo & Halfron 01, Moyer 07). Regaldo reviewed studies on the efficacy of methods to evaluate parental concerns about their child's development. He concluded that structured approaches using checklists or questionnaires improve communication at health visits and appear to be reliable and accurate in the detection of developmental problems. Four studies were reviewed on the effectiveness of methods for assessing risk of developmental disability. Two of these studies reviewed physicians' effectiveness, both suggesting that relatively few developmental problems were identified prior to school and that only clinically obvious disabilities are likely to be detected early. In another study of a large program based in Scotland, developmental screening was found to be most accurate when done at ages

9 months and two years. Regaldo concluded that current efforts to identify children with developmental problems are not effective. Moyer could not locate any Randomised controlled trials of developmental assessments that addressed health outcomes.

In relation to the psychosocial assessment of risk factors for poor parenting, eight studies of the efficacy of short questionnaires compared with clinician judgment were reviewed. They showed that the use of questionnaires in office settings improved the identification of risk factors and that there is some evidence supporting the validity of screening in home environments and parent child assessments.

In relation to child behaviour, Regaldo could not identify any approaches to the identification of behavioural problems that were specific to 0-3 year olds. Standardised behaviour problem checklists are available for children from 3 years of age but these had not been evaluated in terms of their use in paediatric care.

2. Parent Education for promoting child health development - Anticipatory Guidance

Anticipatory guidance is the core component of child health checks, consisting of information that clinicians give families about what they should expect in their child's development, how to promote development and what the benefits of healthy lifestyle practices are. Written information, discussion and other multimedia forms such as posters and videotapes are used by clinicians to provide information. Anticipatory guidance is provided by GPs or paediatric physicians, nurses, health educators or other staff members. The studies we included on anticipatory guidance were all American.

We identified four systematic reviews that examined the evidence base for clinical preventive services conducted as part of well child checks for children (Moyer, Nelson, Regaldo, Bass). These related to activities delivered in office settlings such as parent education and the promotion of reading for cognitive development. We have not included immunization as this is well covered in many reviews and papers.

Promotion of positive parenting – Temperament, sleep and discipline information

Promotion of positive contact between parents and children is a core aim of anticipatory guidance for families with children under three years of age (Regaldo 01). This is based on studies suggesting that the strongest predictor of child development outcomes is the mother's reported use of positive contact (Chamberlin et al). Regaldo (2001) and Nelson (2003) reviewed the literature in relation to the provision of temperament information, promotion of healthy sleeping habits and effective discipline practices. In all three cases, there is evidence that suggests that preventive counselling and written materials are well received by parents and that they impact positively on parenting practice. However, it is not known whether these efforts to improve parents' knowledge of child development actually impacts on child development outcomes.

Temperament information

Two studies evaluated anticipatory guidance in relation to enhancing parent interaction through the provision of temperament information. Both found that parents find temperament information helpful and that it influences their approach to parenting. Materials were found particularly helpful by parents of high energy infants. However, the role of temperament counselling in relation to later mental health has not been addressed (Regaldo 01).

Promoting sleep

Four studies examined the effectiveness of advice and information for promoting sleep and discipline. Preventive counselling and written materials on healthy sleep patterns were shown to be effective in promoting better infant sleep patterns in one RCT, and in improving parents' confidence and reducing their stress in the first 2 months in another. Written information about sleep practices was also found to be effective in reducing night waking during infancy in a third study.

Discipline

One RCT evaluated the impact of written information promoting the use of time out as a discipline strategy. Along with clinician training, written material increased the use of timeout in a two to three week follow-up period amongst parents who had not used it previously.

The impact of prevention advice on health behaviours and outcomes Injury prevention

Nelson identified two critical reviews of the effectiveness of injury prevention counselling which concluded that anticipatory guidance in the office setting is associated with increased knowledge about injury prevention. Moyer sought evidence on whether prevention advice delivered in clinic settings changed health related behaviours or health outcomes. She found no clinical trials available to support choking prevention, drowning, pedestrian injuries, or lead poisoning counselling. However, she and Nelson both identified systematic reviews that found modest benefits of counselling in relation to car seat use (2 studies), bicycle helmet use, safe road crossing behaviour, smoke alarm use (2 studies) and safe tap water temperature (2 studies), inconsistent evidence relating to seat belt use and no effect for brief counselling in relation to child proofing, poison prevention, or firearm use. No trials of counselling for the prevention of smoking, drinking and drug use were identified despite these being recommended in a number of guidelines for the provision of well child health checks. No trials of brief interventions for violence prevention have been undertaken (Moyer).

One RCT examined the use of tailored injury prevention anticipatory guidance compared with generic information. It found that parents who received tailored handouts on issues identified through a pre-visit computerized risk assessment, reported significantly more home and safety practices than those who did not.

Television watching

One study evaluated the impact of written information on television viewing on the amount of television watched by 3-5 year olds. No change was found in the 2-3 week follow-up period.

Obesity prevention

Moyer identified two studies showing that tailored counselling, providing written materials focused on a single physical activity rather than multiple preventive strategies, and using other health care professionals, increased physical activity. She found no trials of primary care interventions to prevent obesity among children although one is currently in progress in Australia (McCallum et al 03). A recent Australian systematic review of primary health care interventions to prevent obesity in 2-6 year olds (Hearn et al) identified 11 promising interventions but none of these programs met a full range of best practice criteria or were the subject of evaluation by clinical trials.

Prevention of sudden infant death syndrome

Counselling for the promotion of supine sleep position to prevent sudden infant death syndrome has not been demonstrated in clinical trials (Moyer).

Health promotion

Breastfeeding promotion

Moyer identified systematic reviews of breastfeeding promotion in a number of settings including in the primary care office which provided evidence that one-on-one health education may enhance the initiation of breastfeeding among low-income women but that multifaceted interventions coupled with changes in hospital procedures have greater effects.

Literacy promotion

Literacy promotion is increasingly being conducted as part of child health checks for 6 month to 5 year olds in the USA. It includes anticipatory guidance and providing books to children at each child visit as well as having volunteers reading to children in the waiting rooms. Nelson identified nine studies of the effectiveness of literacy promotion conducted through the Reach Out and Read Program (ROR). The studies demonstrated that ROR was associated with increased reading activities in the home. Silverstein also examined the impact on Spanish speaking families, showing a similar effect in terms of increased reading activities at home. Three studies examined the impact on language outcomes (Mendelsohn et al 07, Sharif et al 02, Atkinson et al 02) finding that intervention children had higher receptive and expressive language outcomes. Sharif et al compared 200 parent/child matched pairs (child mean age 3.8 years) between 2 city clinics and found higher receptive reading scores among exposed children but no difference in expressive vocabulary scores.

3. Developmental interventions

Infant crying and sleep problems

Regaldo examined evidence from controlled studies on counselling approaches to helping parents manage sleep disturbances, finding that they were effective in treating night waking, crying or tantrums at bedtime, except for children with severe sleep problems. The evidence on using written information in managing sleep problems was unclear, with 2 studies providing conflicting results. In relation to managing fussy infants, four studies demonstrated the efficacy of counselling parents to use specific settling strategies, and one further study found that counselling techniques were not more effective than reassurance or the use of a vibratory stimulus.

4. Delivery issues

Parent expectations, timing and barriers to uptake

Barkin et al conducted a randomised control trial of the extent to which paediatricians and parents concur on topics discussed during a health maintenance visit, the recall of topics 1 month later and the effect of the number of topics discussed on recall. They found that parents and practitioners have good agreement on the topics discussed, and that limiting the number of topics discussed should lead to increased parental recall of information. Cheng found that not all parents value information about the same topics however, and time constraints have been found to limit the number of topics discussed (Schuster 2000).

Schor (2004) concluded that agreed schedules need to be established for the delivery of well child checks. Timing of the schedules should be adapted to coincide with periods of developmental transition and the focus of visits should be on issues related to development transitions. McLearn examined timing of maternal depression and its impact on parenting practices such as safety, child development, discipline whether earlier maternal depression (2-4month olds) has a greater impact on parenting behaviours of mothers than later depression (30-33 month olds) in order to look at how to target anticipatory guidance. He recommended that screening for depression be conducted in early postpartum period and toddler period.

Advice, guidance, information and counselling should be reinforced by providing printed material and standards need to be developed by the profession to guide practice and allow measurement of quality of care (Schor 04).

Uptake also needs to be improved (in the US).

Group verses individual well child care

Regaldo examined the efficacy of educational activities conducted in group versus individual well child care visits. Three studies demonstrated that groups are as effective as individual care and that groups promote more discussions of personal issues, parenting and child behaviour concerns amongst parents. It has also been found to improve the mother-child interaction and decrease social isolation. However, benefits were not found for higher risk populations.

Healthy Steps – a systems approach to improving the promotion of child development

Healthy Steps for Young Children is a US program that enhances and expands traditional paediatric care by including a child development specialist, usually a nurse, social worker or early childhood educator, as part of the paediatric team. Services offered by this person include more time to discuss preventive issues during well-child visits, home visits, telephone information line addressing developmental and behavioural concerns, written material, seamless linkages to community resources and parent support groups. The target group is families of children from birth to age 3 years. Five published studies drawing on program evaluation data examined clinician perceptions of the effectiveness of the program, impacts such as service uptake and outcomes for children, women and families.

In general, benefits were found for intervention clients. Those in the intervention group were more likely than controls to receive more services; discussion on more anticipatory guidance topics; more timely well child visits and vaccinations and remain at the practice for 20 months or longer. In addition, parents were more satisfied with care and were more likely to improve their parenting practice in relation to avoiding the use of severe discipline. Mothers who were at risk for depression were more likely to talk to someone at the practice. Zuckerman also found improvements in the processes of care but no impact on outcomes in relation to initiation or duration of breastfeeding, development knowledge, sense of competence, self reported nurturing behaviour and expectation of children, reports of children's language development, or safety practices. However, Healthy Steps mothers were more likely to report aggressive behaviour.

Summary of Findings

How successful is Child Health Surveillance and Screening in improving children's developmental outcomes related to readiness for school?

The evidence discussed above demonstrates substantial gaps in supporting evidence for much surveillance activity. There is little evidence to support universal screening for many child developmental health issues and the effectiveness of interventions on health outcomes for a number of issues has not been demonstrated. Risk assessment for identifying children at risk of delays or developmental problems is not effective and needs to be further developed. While these findings do not automatically imply a lack of effectiveness, they do point to a need for ongoing critical examination of the benefits of surveillance programs.

However, there are also indications that parents like the information provided to them through anticipatory guidance sessions and this may impact positively on their parenting practices. There is some evidence that anticipatory guidance improves parenting practice in some areas and that literacy advocacy increases parent reading to children and may improve children's language development. We summarise the findings below in terms of how surveillance activities may impact on improving readiness for school.

Existing studies have measured impacts and outcomes for parents and children across a broad range of maternal and child health outcomes and behaviours. These include

Parenting and family outcomes:

Promotion of parent-child relationships and positive parenting (temperament, sleep and discipline information)

Health promotion for breastfeeding and literacy

Prevention advice on injury, obesity, Sudden Infant Death, television watching Counselling interventions infant crying and sleep

Child outcomes:
Speech and language
Growth
Vision
Hearing
Hypertension
Iron deficiency
Sexual abuse

The evidence suggests that benefits are more likely to be experienced by parents than by children. Results are summarized in the table below.

Parent and family outcomes

The most consistent results of child health surveillance programs are in relation to parenting skills, attitudes, and behaviours. In relation to the promotion of parent child relationships, counselling and written materials are effective in changing behaviours related to promoting infant sleep, and child discipline. Reading promotion is also associated with increased reading activities in the home.

Less effective are efforts to prevent injury. However, there are indications that modest benefits of counselling are associated with car seat use, bicycle helmet use, safe road crossing behaviour, smoke alarm use and safe tap water temperature. Parents receiving tailored injury prevention anticipatory guidance reported significantly more home and safety practices than those who did not.

There is some evidence that educational activities conducted in group settings are as effective as individual well child care visits in some populations but not in higher risk populations. Limiting the number of topics discussed with parents leads to increased recall of information. Timing of the anticipatory guidance advice should be adapted to coincide with periods of developmental transition and should focus on issues related to development transitions. Advice, guidance, information and counselling should be reinforced by providing printed material.

Regarding counselling interventions, there is evidence that helping parents manage sleep disturbances is effective in treating night waking, crying or tantrums at bedtime, except in cases of children with severe sleep problems.

Child outcomes

Surveillance systems may not be as effective in promoting children's outcomes as they are in promoting changes in parenting practices. Evidence of impact on cognitive, social, emotional and language development in children is weak. This may be associated with the difficulties of measuring such outcomes from small interventions. The strongest evidence relates to reading promotion which has been associated with improved higher receptive language outcomes and some mixed results have been demonstrated for expressive language outcomes in children.

Table 3: Screening

	Speech and language Screening	Growth screening	Vision	Hearing	Hypertension	Iron deficiency	Sexual abuse
Oberklaid	insufficient evidence to support universal screening for speech and language therapy effective for children with speech and language problems	insufficient evidence for routine growth screening for failure to thrive. Evidence against routine screening for obesity.	insufficient evidence to support or reject routine screening of preschoolers	Evidence supports universal neonatal hearing screening for permanent childhood hearing impairment Evidence does not support routine screening for the detection of otitis media with effusion	No evidence available	No evidence to support routine screening for iron deficiency	
Moyer		insufficient evidence for routine growth screening			No evidence available	trial results on impact of iron supplementation on child outcomes is mixed	Screening for physical and sexual abuse has not been rigorously evaluated
Butler				Evidence does not support routine screening for the detection of otitis media with effusion			
Law	insufficient evidence to support universal screening for speech and language therapy effective for children with speech and language problems						
Nelson 06	insufficient evidence to support universal screening for speech and language						
Bamford	insufficient evidence to support universal screening for speech and language therapy effective for children with speech and language problems		insufficient evidence to support or reject routine screening of preschoolers	Evidence supports universal neonatal hearing screening for permanent childhood hearing impairment			
Garner		insufficient evidence for routine growth screening					

Table 4: Well Child Check

	Regaldo	Moyer	Nelson
Assessment	current efforts to identify children with developmental problems are not effective Use of questionnaires improves psychosocial assessment of risk factors for poor parenting Standardised behaviour problem checklists not available for children under 3yrs		
Preventive counselling		Temperament, sleep, discipline Preventive counselling and written material on temperament, promotion of healthy sleeping habits and effective discipline practices is effective Injury No clinical trials available examining the impact of written information on behaviour for choking prevention, drowning, pedestrian injuries, choking, or lead poisoning counselling Modest benefits of counselling in relation to car seat use, bicycle helmet use, safe road crossing behaviour, smoke alarm use and safe tap water temperature Inconsistent evidence relating to seat belt use and No effect found for brief counselling in relation to child proofing, poison prevention, firearm use. Smoking, drug and alcohol No trials of counselling for the prevention of smoking, drinking and drug use Obesity Tailored counselling, providing written materials focused on a single physical activity rather than multiple preventive strategies, and using other health care professionals, increased physical activity. SIDS Counselling for the promotion of supine sleep position has not been demonstrated in clinical trials	Television Written information on television viewing is not effective Injury Written information is associated with increased knowledge about injury prevention Modest benefits of counselling in relation to car seat use, bicycle helmet use, safe road crossing behaviour, smoke alarm use and safe tap water temperature Inconsistent evidence relating to seat belt use and No effect found for brief counselling in relation to child proofing, poison prevention, firearm use. Smoking, drug and alcohol No trials of counselling for the prevention of smoking, drinking and drug use Literacy promotion Literacy promotion in the clinic settings improves reading activities in the home and is associated with increased receptive language scores. Findings for expressive language scores are mixed.

	Regaldo	Moyer	Nelson
		Breast feeding promotion One-on-one health education may enhance the initiation of breastfeeding among low-income women but multifaceted interventions coupled with changes in hospital procedures have greater effects.	
Developmental interventions	Crying and sleep The evidence on using written information in managing sleep problems was unclear Counselling parents to use specific settling strategies is efficacious, but may not be more effective than reassurance or the use of a vibratory stimulus.		

While there is insufficient evidence to support universal screening for speech and language, therapy has been shown to be effective for children already identified with speech and language problems. Optimal approaches for identifying children at risk of speech and language delay is needed in primary care settings.

Further evidence of the benefits of routine vision screening in preschoolers is needed and research into the most effective treatments for amblyopia is also needed. Evidence does not support routine screening for the detection of otitis media with effusion and there is insufficient evidence that routine growth screening results in improved health outcomes for children.

In other areas of child health, no evidence is available to support routine screening for hypertension, urinalysis, child physical and sexual abuse or developmental delay. Screening for iron deficiency does not meet criteria for routine screening and trial results on impact of iron supplementation on child outcomes are mixed.

School readiness

In relation to the typology of ready children, ready families and communities, and ready schools, child health surveillance programs contribute to promoting children's school readiness by improving environments for children through improving parenting practices.

Impacts are across two of the three domains associated with promoting families' and communities' readiness for children. These are:

- Access by parents to training and support that allows parents to be their child's first teacher and promotes
- Access to prenatal care, nutrition, physical activity, and health care that children need to arrive at school with healthy minds and bodies and to maintain mental alertness.

Screening and surveillance programs may promote children's outcomes across four of the five child development domains associated with readiness in children:

- child's health and physical development;
- social and emotional development;
- language and communicative skills,
- and cognition and general knowledge.

However, to what extent activities currently improve children's development remains unclear. The literature suggests that strengthening early detection through developmental surveillance will involve work in the following areas. Better methods for identifying children with developmental problems are required. Anticipatory guidance should be individualized to parent needs and may be provided both individually and in group settings to target different parent groups and issues. Devising systems that improve linkages and referral to effective services and treatments is needed. Evaluation of the effectiveness of many treatments for child development problems is needed. In relation to child surveillance, the literature recommends that consensus statements on the definitions of child surveillance are needed and that these need to include determination of the activities to be included. Specification and measurement of the specific outcomes sought from surveillance activities and quality standards for their provision may also act as a basis for strengthening early detection systems.

HOME VISITING

Home visiting is an umbrella term that refers to a strategy or way of delivering a number of different interventions for families and children, rather than to a specific type of intervention itself. Home visiting programs share a prevention focus and operate on the assumption that parents mediate changes for children and that by supporting parents, better outcomes for children and families can be achieved. Home visiting programs generally aim to support parents to adopt better prenatal health behaviours, to improve the care of their children and their own life-course development in order to improve their children's social, emotional and cognitive development. There are indications that early home visitation programs are successful in assisting optimal child development possibly through the benefits known to be associated with increased breastfeeding, early child nutrition, immunization and smoking cessation (Boocock 1995) and through the promotion of secure maternal-infant attachment in the early period after birth (Armstrong et al 99).

However, many different interventions or combinations of interventions are provided under different home visiting programs and there is great variability in the population groups targeted, the types of services provided, the duration and intensity of those services and the types of providers who deliver them. This makes a single meta-analysis of the effectiveness of home visiting impossible and broad questions such as 'do home visiting programs work' redundant (Sweet & Applebaum 04, Scott). There are considerable challenges associated with assessing the impact of programs across a range of child, maternal and family outcomes and the emerging evidence is somewhat mixed and at times inconclusive.

Few programs operate on the basis of well derived theoretical frameworks making it difficult to evaluate the extent to which program components are related to outcomes (Vimpani 02, Kemp). The vastly different health systems in which these programs operate contributes additional layers of complexity that makes inferring results from programs in one country to programs in another very difficult. It is unclear for example how transferable the results from home visiting in the USA are to Australia, as those programs operate in the context of a system that has no universal maternal and child health service system (Scott, Vimpani 02) and were established primarily for the purpose of preventing child abuse and neglect (Roberts). In the UK, home visiting is a program of extended visits with a focus on accident prevention and home safety (Roberts). In Australia, home visiting sits within a system of universal maternal and child health services and there is a reasonably well developed secondary system that offers family support and parenting programs. While home visiting operates more as an outreach service that links new mothers in to centre based services by providing several post natal visits, it does not offer extended visits for all women. However, there is increasing interest in targeting sustained home visits to groups at risk and how and by what methods this should be done is of interest in the Australian setting.

We identified eight systematic reviews of the effectiveness of home visiting that each examined a range of impacts and outcomes in relation to different populations. Much of the published evidence we identified comes from the USA but more recent reviews have tended to examine effectiveness within single country systems, drawing on evidence from other countries only in cases where the components of program delivery appear similar.

Home visiting – effects on parent and child outcomes

Sweet and Applebaum (2004) undertook the first comprehensive meta analysis of the effectiveness of home visiting programs established after 1965, examining a range of outcomes. They included data from 60 programs whose primary service delivery strategy was home visiting and analysed effectiveness across 5 child and 5 parent outcomes groups. Child outcomes included cognitive outcomes; socio-emotional outcomes; prevention of child abuse outcomes (actual abuse, potential abuse and parent stress). Parent outcomes included enhanced childrearing; parenting behaviours; parent attitudes, enhancement of maternal life-course outcomes and mother's education since the child was born or program inception and mothers' employment.

In general, the authors found that children in families participating in home visiting programs fared better than controls. Within the child outcomes, only the indicators for potential child abuse did not show effects greater than zero. For parents, the enhancement of maternal life-course and parent mediation of child improvement were not as influenced by home visiting. However, home visited parents showed improved attitude and behaviour and they were more likely than controls to return to school or some type of education which may be expected to benefit children in the longer term. Children in visited families also showed higher cognitive and social emotional outcomes towards the end of treatment compared with controls and the levels of actual abuse were lower. While the authors suggest these results demonstrate benefits for home visited families, they also identified a number of limitations to the study. For example, although greater than zero, effect sizes were relatively small and they questioned the practical significance of statistical significance in some cases. In relation to cognitive development, their finding of an average standardized effect size of 0.184 translates into a difference of only a few points on a standardized intelligence scale, which typically has a standard deviation of at least 10 points.

In addition, they were unable to draw firm conclusions about which program characteristics were associated with variations in effect sizes partly because of difficulties related to potential confounding and small cell sizes. However, they did find that staff type was related to effect sizes for child cognitive outcomes, where professional home visitors were associated with higher effect sizes than were nonprofessionals. In relation to potential child abuse outcomes, paraprofessionals had a greater positive impact than professionals or non-professionals which was interpreted as lending support to the argument that women who have been helped by home visiting are better able to provide help. However, the same effect was not found for the other outcomes.

The number and amount of home visits predicted the effect size only for child cognitive outcomes, where more visits and more hours of visits tended to increase effect size, though the overall magnitude was small. These findings in relation to program design were seen as largely inconclusive. So too were results for analyses related to targeted populations where findings were contradictory and conflicting. Programs targeting one or more populations showed greater effect sizes for some outcome groups but not others when compared against programs with universal enrolment targeting the same behaviour. It was not clear why such results were obtained and the authors lacked confidence that the results were reliable.

In summary, due to the limitations described, the authors concluded that this metaanalysis should not be seen as a definitive analysis of the current literature but as a 'starting place for practitioners, program developers, evaluators, and funding agencies to begin thinking about the utility of home visiting as a strategy to deliver interventions to families'.

Kendrick et al (2000) included 34 RCTs and quasi experimental studies of home visiting to examine its impact on parenting and the quality of the home environment. Twenty-six studies had participants at risk of adverse maternal or child health outcomes; 2 had preterm or low birth weight infants; 2 had infants with failure to thrive; 8 had participants considered not at risk for maternal or child outcomes. Of these, 17 studies reported home environment measures (HOME), 27 studies reported other measures of parenting; 10 reported both types of outcomes. Twelve studies were included in a meta analysis which demonstrated significant results in relation to HOME scores. Twenty-one of 27 studies of other measures of parenting showed significant findings for intervention clients. The authors concluded that home visiting programs are associated with improvements in the quality of the home environment.

Injury prevention

Two systematic reviews specifically addressed the effectiveness of home visiting programs in preventing child abuse and injury.

Roberts, Kramer & Suissa (1996) selected 11 Randomised controlled trials to investigate the effectiveness of home visiting programs in the prevention of child injury and child abuse. Four studies examined the effect of home visiting on injury in the first year of life and nine trials examined their effects on the occurrence of suspected abuse, reported abuse, or out of home placement for child abuse. Eight of these studies were conducted in the USA, one in Canada, one in England and one in Ireland.

Six of the eight trials that examined the effect of home visiting on the occurrence of childhood injury reported a lower incidence of injury in the group that received home visits. In the nine trials that examined the occurrence of suspected abuse, four trials demonstrated a lower frequency of occurrence in the visited group and in five trials, the frequency of occurrence was higher in the visited group. The authors note the difficulty in interpreting these results because of the potential for bias in the outcome measures. This relates to the presence of a home visitor which may have resulted in increased surveillance for child abuse and hence an increase in the number of reports of abuse. In conclusion, they argue that their results show a significant preventive effect of home visiting on the occurrence of childhood injury.

Gutterman (1999) conducted a meta-analysis of home visiting programs aimed at reducing child abuse and neglect. They compared child maltreatment measures of parenting and protective services' data as outcomes for population based and screening based programs in order to examine the evidence for universal versus targeted services. Population based programs were those that enrolled families in the whole population on the basis of area or demographic characteristics and screening based programs were those that used individual psychosocial risk factors to assess eligibility. Nineteen programs were included. Results showed positive effects for both population and screening based programs but the population strategies showed stronger effect sizes in reducing reported abuse and improving parent behaviours. Three possible explanations were put forward for these findings. Firstly, as individual screening approaches are known to have high false positive rates and perform poorly in predicting actual abuse, programs using these may screen in families who are not likely to maltreat children and for which services are not likely to have much benefit. Alternatively, they may screen in higher proportions of families who are high risk and therefore less amendable to change or for whom home visiting strategies are not well matched to family need. The authors conclude that all programs whether population based or screening based must better tailor services to meet family needs.

Alcohol and Drug Prevention

Dogget et al (2005) selected 6 studies involving 709 women in their systematic review examining the impact of home visiting programs on drug and alcohol use amongst women with a drug and alcohol problem. The programs provided home visits beginning in the postpartum period and were delivered by a variety of different visitors including midwives, community health nurses, paediatric nurses, counsellors and trained lay workers. There were considerable methodological problems with four of the six studies which related to loss to follow up, resulting in limited conclusions being drawn. However, there was evidence that home visits from trained counsellors resulted in increased enrollment and attendance at drug and alcohol treatment services, improved contraceptive use and a trend towards reduction in non-voluntary foster care or non accidental injury. Of three trials that performed a developmental intervention for children, no effect was found on mental or psychomotor development.

Home visiting by public health nurses

Cliska et al (2001) examined 20 studies of the effectiveness of nurses in delivering home visiting services to women in the ante and post natal period. They included studies of programs for which nursing content was in scope with practice of public health nursing in Ontario, in order to make recommendation for Canadian programs. They found no negative effects of home visiting and positive outcomes were found in relation to children's mental health development, physical growth, reduction in mother's depression, improvement in maternal employment, education, nutrition and other health habits and government cost saving. No improvements were found in relation to low birth weight, gestational age or neonatal morbidity or mortality. However, these findings were inconclusive given the numbers were too low to demonstrate effects in such rare occurrences.

British home visiting programs

Elkan et al reviewed 102 studies of 86 home visiting programs to examine effectiveness and cost effectiveness of domiciliary health visiting, focusing primarily on the British health visiting literature with inclusion of some non-British studies in which home visiting was undertaken by personnel with responsibilities that are within the remit of British health visitors. Their conclusions are as follows.

There is evidence to suggest that home visiting results in:

- Improvements in parenting skills and in the quality of the home environment
- Improvements in child behaviour problems including sleep
- Improved intellectual development especially among children of low birth weight or with failure to thrive
- A reduction in the frequency of unintentional injury and in the reduction of home hazards
- Improvements in the detection and management of postnatal depression
- Enhancement of the quality of social support to mothers
- Improved rates of breastfeeding.

There is insufficient evidence (defined as four studies or less) to suggest that home visiting improves:

- Physical development (weight and height)
- Incidence of child illness

- Mothers' use of informal community resources or the size of mothers' informal networks
- Children's diet
- Mothers' return to education
- Participation in the workforce or use of public assistance
- Family size or number of subsequent pregnancies.

There is no evidence that suggests that home visiting:

- Improves children's motor development
- Increases uptake of immunization
- Increases uptake of other preventive child health services
- Reduces hospital emergency medical services
- · Reduces hospital admission rates.

They also concluded that because of the problem of surveillance bias, conclusion could not be drawn about the effectiveness of home visiting in reducing the incidence of child abuse and neglect.

Australian Home Visiting Programs

Kemp and April conducted a systematic review of the international literature on home visiting to describe programs that were associated with positive outcomes for clients. A total of 55 papers were reviewed. They also examined home visiting programs operating in Western Sydney through a series of interviews with program managers to develop a generic framework for planning and evaluating home visiting programs as part of the NSW Government Families First initiative.

While home visiting is undertaken internationally by a variety of professionals and non professionals, the single largest professional group involved is nurses. Very few studies published in the academic literature have examined volunteer home visiting programs. Regarding which families get visited, most studies were of programs targeted at populations considered at risk, either because of maternal or child related risk factors. In the case of maternal factors, these related to having low socioeconomic status, being unmarried, of African descent (US), being isolated and lacking social support, having postnatal depression or using drugs. In the case of child factors, these were pre-term infants or those with low birth weight or failure to thrive, or toddlers with behaviour or sleep problems.

The content of home visiting programs was found to vary widely and was categorized by the authors into seven main types. These were provision of information or resources, parenting skills, child development, counselling, problem solving, social support and parent-infant interaction. Most programs reported in the literature commenced postnatally. Those most likely to benefit women however, begin antenatally and provide parenting skills, resource parents and encourage parent-infant interaction. There were no patterned differences in the content of programs delivered by nurses or other professionals or lay visitors. However, the content of programs tended to vary in relation to the group being visited. Teenage parents received greater focus on parenting skills, and postnatally depressed women received more counselling and psychological support. In relation to child risk factors, no difference in the content of programs was detected.

Most programs identified commenced postnatally. Those beginning antenatally were generally for teenage, unmarried or first time mothers. Programs containing social

supports were more likely to commence postnatally. The duration of the visiting period varied enormously ranging from 1 to 156 visits over a period that ranged from 1-36 months. The type of visitor did not vary according to the length of program.

The most commonly reported positive outcomes related to home environment. Significant results were reported in the studies for home environment, child behaviour, maternal depression and self esteem, child health, breast feeding and less risky behaviour. Non significant results were found for child mental development and uptake of preventative services. In general, a greater number of positive outcomes were reported by programs using visitors other than nurses. However, more positive outcomes for use of acute care, child health and breastfeeding were reported by nurse home visitors. Positive outcomes in child behaviour and maternal depression were reported by those using psychologists.

Because the intensity of delivery was so variable, there was no clear pattern in outcomes relating to intensity. However, those programs providing greater numbers of visits over longer time periods tended to report more positive outcomes, except in the case of maternal depression and home environment outcomes which were associated with few visits over a short duration. Programs beginning antenatally reported a greater number of significant outcomes compared with those commencing postnatally. Child behaviour outcomes were better when programs commenced antenatally and depression outcomes positive for programs commencing postnatally.

Women of low socioeconomic status were more likely to benefit from home visiting programs than others, particularly in relation to child behaviour, child health and home environment. Programs specifically for depression were also associated with better outcomes for depression and self esteem. The outcomes for teenage women were mixed and the small number of studies of women with drug use problems and children at risk of abuse and neglect were unlikely to report significant positive outcomes.

Programs that included child development, parenting skills, parent-infant interaction and resources provision were more likely to report higher numbers of significant positive outcomes in relation to home environment, maternal depression and child behaviour. There was less evidence of positive outcomes associated with interventions relating to problem solving, social support and parent-child interactions and child health.

In summary, the authors concluded that in the Australian context, women from low socioeconomic backgrounds gain most benefit from home visiting, and programs targeted to women with postnatal depression also show benefits. Where a broad range of outcomes is desired, nurses produce better results. Psychologist and counsellors are more effective in highly targeted programs for depression. Programs should begin antenatally and include child development, parenting skills, parent infant interaction and resources provision.

Western Sydney programs

In relation to programs in Western Sydney, Kemp and April conducted an audit of existing programs that offer some element of home visiting (n=45). They found that most programs offer a combination of home visiting, centre-based and other support activities such as parenting groups and telephone assistance. Isolation was the predominant risk factor targeted and refugee and Aboriginal families were the least

targeted population groups. Most programs use a strengths based approach, which the international literature shows to be of most benefit, and provide psychosocial, instrumental and educational interventions. Psychosocial interventions include reflecting behaviour, goal setting and empowering families; instrumental interventions include practical help such as child minding or transport, information provision and linking families to community resources and educational interventions include parenting skills, child development and health promotion.

In relation to factors affecting the capacity of the programs to deliver good services, managers identified the client group mix, the quality and retention of visitors and institutional factors as underpinning capacity. In relation to clients, those with stable housing, support and non-complex needs have most capacity to benefit and those with problems such as substance abuse benefit least. Visitors need training, particularly in relation to cultural sensitivity and boundary setting and can be adversely affected by high workloads. Organisations require the support of quality service networks and need stable funding, adequate length contracts and resources, and can be adversely affected by low retention of home visitors.

Few programs undertook systematic collection of data or measurement of outcomes and managers perceived that benefits of home visiting were more anecdotal than evidence based. The authors concluded that standardised tools for the measurement of the intervention itself, and the capacity and outcomes of the program are needed to facilitate comparative and systematic evaluation of home visiting programs.

Volunteer home visiting in Australia

Black and Kemp conducted a systematic review of evaluations of volunteer home visiting programs. They aimed to identify models of volunteer home visiting and the evaluation methods used nationally and internationally in order to provide recommendations regarding methods for evaluation and data collection for home visiting programs. They included 17 evaluation reports in their review. Analysis of these showed that all programs collected information regarding the target population including the socio-demographics of the families included; the types of services provided; the length of time clients used the services and the frequency and duration of home visiting; characteristics of the volunteers and the processes used to support them. However, few were found to be well designed quantitative studies evaluating impacts and outcomes on families. Only three used Randomised controlled trial methodology, one used a cohort design and three used before and after designs. From their examination, the authors concluded that the main theorized areas of impact for families were on:

Parents: improved emotional well-being; improved social well-being; increased use of community services and resources; improved health and improved parenting attitudes, confidence, beliefs or knowledge.

Family relationships: improved family functioning; improved parent child attachment; improved parent-child interaction; decreased child abuse or neglect; improved problem solving.

Child: improved intellectual, educational, language or cognitive development; improved social adaptation; improved mental or physical health or nutrition.

The quantitative evaluations showed improvements in measures in each of the areas relating to parents except in the case of increases in service use. Qualitative studies indicated that parents perceived benefits in terms of emotional and social well being and parenting attitudes and confidence. Family relationships were also found to improve in some studies but not in others, there were no measures of problem solving

available and improvements in parent child attachment and reductions in child abuse did not reach significance in the studies which addressed those outcomes. Inconsistent results were found for intellectual, educational, cognitive or language benefits for children and no study examined social adaptation. Health outcomes were shown to improve in one study in relation to child nutrition, but in relation to immunization rates, significance was not reached. Qualitative studies examining the impact of the program on the volunteers indicated that the experience improved emotional and social well being, increased knowledge and skills related to child rearing; improved family relationships and increased opportunities for employment.

In summary, the authors concluded that it is difficult to make definitive statements about the impact of volunteer home visiting programs on families because of the variation and limitations in the research design of currently conducted evaluations and the variation in the nature of the interventions themselves, a finding that concurs with those of other reviews (Applebaum). Recommendations were made in relation to improving the evaluation of home visiting programs. These included the identification of the types of quantitative data that need to be collected routinely about the families using, and volunteers providing home visiting programs as well as the characteristics of the services provided and the costs involved. Policies and procedures need to be documented and intermediate outcomes measured in relation to the theorized impacts of home visiting programs. Randomised controlled trial methodologies and the development of valid and reliable tools to measure processes, outcomes and cost impacts would be beneficial in the longer term.

Summary of Findings

How successful is Home Visiting in improving children's outcomes related to readiness for school? Which populations benefit from these arrangements and how?

Evidence from the systematic reviews discussed above suggests home visiting programs can be effective in promoting school readiness, although the magnitude of the effect size is small. Studies have measured impacts and outcomes for parents and children across a broad range of maternal and child health outcomes and behaviours. These include:

Parenting and family outcomes

Parenting skills

Detection and management of postnatal depression

Social support to mothers

Breastfeeding

Mothers' use of informal community resources or the size of mothers' informal networks

Mothers' return to education, participation in the workforce or use of public assistance Family size or number of subsequent pregnancies

Parent stress

Child outcomes

Child behaviour problems including sleep Intellectual developments Physical development (weight and height) Incidence of child illness Children's diet Children's motor development

Service impacts
Uptake of immunization
Uptake of other preventive child health services
Hospital emergency medical services
Reports of intentional injury
Unintentional injury and home hazards

Home

Quality of the home environment

The evidence suggests that benefits are more likely to be experienced by parents than by children. Results are summarized in the table below.

Parents

Positive effects are most commonly found in relation to parenting attitudes and behaviours and some improvements are also seen in child behaviour problems such as sleep. Effects on maternal lifecourse outcomes including on employment and education opportunities and social networks are mixed, whereby some reviews report inconclusive results and others improvements. While volunteer visited programs show some benefits in this area, the quality of these studies did not match others. Studies report benefits for postnatally depressed women.

Women most likely to benefit appear to be from lower socio-economic backgrounds and postnatally depressed women benefit from programs targeted specifically to their needs and delivered by specialist providers. Women with drug and alcohol problems may benefit least.

Children

In children, benefits were found for cognitive, social and emotional development. However, the magnitude of benefit tends to be small and results varied considerably across studies. Findings are inconclusive regarding the impacts on child health including growth and motor development and uptake of preventative health services such as immunization.

Regarding the impact of programs on rates of child abuse and intentional injury, results are mixed where some studies report decreases and others report increases. It is not known whether this is a result of increased surveillance that inevitably occurs when families are visited over time or whether there are other reasons relating to the client population mix and capacity to benefit or to the program structure and content.

Home environment

Home visiting does appear to improve the quality of the home environment.

Table 5: Home Visiting

	Children outcomes	Parent outcomes	Home environment	Type of visitor	Timing, Duration, Intensity	Targetted verses universal
Applebaum	Positive effects for cognitive, social & emotional development No significant effect for potential child abuse	Parenting attitude parenting behaviour return to education		Professional home visitors increase child cognitive outcomes	More visits increase cognitive outcomes but small increases	Contradictory and inconsistent findings
Elkan Home visiting in the UK	Improvements in child behaviour problems including sleep, cognitive development, especially children of low birth weight, failure to thrive Reduction in unintentional injury Inconclusive results due to small numbers for physical development (weight and height), incidence of child illness Children's diet No effect for improved motor development, increased uptake of immunization & other preventive child health services, reductions in hospital emergency services or admission rates.	Improvements in parenting skills Improvements in the detection and management of postnatal depression Enhancement of social support to mothers Improved rates of breastfeeding. Inconclusive results due to small numbers for mothers' use of informal community resources and size of mothers' informal networks, mothers return to education, participation in workforce, use of public assistance, family size or no of subsequent pregnancies	Improvements in quality of the home environment Reduction of home hazards			
Roberts Injury prevention	6 of 8 trials showed reduced levels of injury Inconsistent findings - of 9 trials examining suspected abuse, 4 showed decreases in abuse, 5 trials showed increases					

	Children outcomes	Parent outcomes	Home environment	Type of visitor	Timing, Duration, Intensity	Targetted verses universal
Gutterman Population and screening based programs for injury	Both types showed improved parenting and reduced reporting of injury					Population based programs were associated with stronger effect sizes
Dogget Drug and alcohol	Of 3 trials employing strategies for development none showed any effect on mental or psychomotor development			Trained counsellors were associated with increased use of drug and alcohol services, contraceptive use and a trend towards reduction in non-voluntary foster care and non accidental injury		
Cliska Public health nurses as home visitors	Positive effects for children's mental health development physical growth Inconclusive findings for low birth weight, gestational age, neonatal morbidity or mortality (small numbers)	Positive effects for mother's depression, maternal employment, education, nutrition and other health habits				
Kemp & April	Improvements in child behaviour, child health Non significant results for child mental development	Improvements in maternal depression and self esteem, breast feeding and less risky behaviour Non significant results for uptake of preventative services.	Improvements in home environment most common finding	Nurses associated with more positive outcomes for use of acute care, child health and breastfeeding Psychologists associated with more positive outcomes in child behaviour and maternal depression	No clear pattern in outcomes but greater numbers of visits over longer time periods tended to report more positive outcomes Positive outcomes for maternal depression and home environment were associated with few visits over a short duration. Programs beginning antenatally have a greater number of significant outcomes Child behaviour outcomes were better when	

				programs commenced antenatally Depression outcomes positive for programs commencing postnatally	
Black and Kemp Volunteer home visiting	Inconsistent results for intellectual, educational, cognitive or language	Improved emotional well- being Improved social well-being Improved health Improved parenting attitudes, confidence, beliefs or knowledge. One study showed improved child nutrition Immunisation significance not reached			

Delivery issues and program content

The mechanisms by which home visiting programs achieve changes are not well understood. Few programs have well developed theoretical frameworks that inform delivery.

Programs tended to report more positive outcomes when more visits were provided over longer time periods. Programs beginning antenatally have a greater number of significant outcomes. Child behaviour outcomes were better when programs commenced antenatally and were provided by nurses. However, positive outcomes for maternal depression and home environment were associated with fewer visits over a short duration. Depression outcomes were positive for programs commencing postnatally and provided by counsellors or psychologists.

Nurses were associated with more positive outcomes for use of acute care, child health and breastfeeding. Trained counsellors were associated with increased use of drug and alcohol services by drug dependent women, contraceptive use and a trend towards reduction in non-voluntary foster care and non accidental injury but it is not clear to what extent women with drug and alcohol problems can benefit from home visiting.

Evidence relating to the effectiveness of targeting verses universal delivery is inconclusive but in relation to injury prevention programs, population based programs using demographic criteria were associated with stronger effect sizes than those using psychosocial risk assessment to identify individuals at risk. This result could be related to the population mix.

School Readiness

Home visiting programs may promote children's development across four of the five child development domains associated with readiness in children. These are

- child's health and physical development;
- social and emotional development;
- language and communicative skills, and
- cognition and general knowledge.

In relation to family and community readiness for children, home visiting impacts on two of the three domains identified for improving readiness. These are

- Access by parents to training and support that allows parents to be their child's first teacher and promotes healthy functioning families
- Access to prenatal care, nutrition, physical activity, and health care that children need to arrive at school with healthy minds and bodies and to maintain mental alertness.

The literature suggests that further work is required to develop sound conceptual frameworks for home visiting programs. This will enable better evaluation of programs and facilitate the development of frameworks that can monitor and measure service components and outcomes of care over time. Devising programs for specific needs such as postnatal depression, violence prevention and drug and alcohol prevention is needed. Trialing different methods for different population groups and linking targeted home visiting programs to a universal surveillance system will be important in the Australian context.

ORGANISED PRIMARY HEALTH CARE APPROACHES

Despite modest findings in relation to the impact of home visiting and child surveillance programs on children's health and development, much research has pointed to the importance of integrated early child development approaches that incorporate strategies from across different sectors to address the multiplicity of determinants of developmental risk. Improving the environments in which children grow up, live and learn is the key to developing responses that address concerns about children's developmental health (Hertzman). This involves an environmental perspective that links health care with early childhood education, care and parenting support. Primary health care currently plays a role in providing preventive health care to children and support to parents to develop practices that promote emotional attachment, secure care giving and safe and stimulating environments that reduce the risk of injury and promote physical, social and emotional growth. Primary health care services need to be linked with secondary services for parents and children, and with high quality, early child development programs such as child care and preschool.

Integrating service delivery is a major challenge, particularly in the Australian context where services are provided through a multiplicity of state and commonwealth funded programs and by a variety of different professional groups operating in different service contexts and with different theoretical frameworks. Integrating care shifts the focus of health care delivery away from what is delivered by separate organisations (eg. maternal and child health services, aboriginal community controlled organisations, other community organisations and GPs) to a focus on providing care across organisations for a regional population (Jackson 07). In the case of child development services, health promotion and prevention strategies need to address child-specific risks to development by organizing services into a continuum that can assess needs and respond to developmental risks. This involves developing a health service system that is integrated horizontally, vertically and longitudinally (Halfron) and that operates out of a universally accessible base. Whether this system functions as a tightly integrated organisation, a set of more loosely joined systems, or a set of more informal networks is a question for future research (Halfron). What is clear is that integration needs to be accompanied by new models of governance and organisational management (Dwyer 02 in Jackson). The question according to Dwyer is not about whether state or regional authorities do better in health care governance but about which governance structures do better at integrating care. (Dwyer 04).

We sought studies of meso level strategies that promote child development at the population level through innovations seeking to influence planning arrangements, organisational systems, practitioner roles and behaviours. We aimed to examine the strategies and institutional arrangements that support these approaches, how services are configured, provided and linked.

Using the definition described earlier, a large number of strategies operating at different levels of the system could be identified, both nationally and internationally but few studies of effectiveness were identified. We found 5 studies in the black literature that examined system level approaches to improving early identification of developmental problems and referral to services. A description of these is contained in Appendix 4.

Of interest however, are the larger scale strategies that include population level planning and integrated delivery arrangements. A list of these is attached at Appendix

5. Few of these strategies have been thoroughly evaluated as they are relatively new and interviews with key stakeholders are required to examine the governance, funding, delivery arrangements and infrastructure support that aim to facilitate integration. Examination of these issues in the Canadian context where province level strategies have been signed under a national agreement may be instructive in the Australian context. The UK's approach to developing universal home visiting arrangements within a geographically targeted framework through the Sure Start program may also provide an interesting comparison for Australian strategies such as the Families First Initiative in NSW which offers targeted home visiting within a universal framework of early child development services.

Evidence of effectiveness of integration in primary health care currently comes from studies of coordinated and integrated care, particularly in relation to chronic disease management and aged care. In Australia, coordinated care trials and more recent models providing care for chronic disease management have experimented with new governance arrangements, pooled funding, population approaches to planning service delivery, identification of key providers as care coordinators and infrastructure support and development for data collection and analysis. Two recent systematic reviews of the effectiveness of strategies for coordination (Powell Davies) and models of governance that support integration (Jackson) provide evidence that may be extrapolated to the child health agenda.

Powell Davies identified three components of coordination:

- 1) Supporting coordination of clinical activities such as through developing service networks between general practice, allied health and other community based care, to clarify relationships between service providers and ensure more coordinated access to and provision of services.
- 2) Strengthening relationships between service providers such as through strengthening multidisciplinary teams or co-locating general practice and other services, and investing in the systems to support coordination of care within co-located systems or strengthening the link between patient and primary health care providers, particularly for those with complex care needs
- 3) Use of tools, instruments or systems to support coordination of care e.g. common assessments, care plans, decision supports that can be used by a range of providers; improving systems for sharing information between primary health care and other service providers and structures, particularly at regional level which can develop systems to support coordination of care.

Jackson identified 3 different models of governance that have been used to support integration. These are

- 1. The creation of an incorporated body, with governance responsibility shared across integrating organisations and with resource allocation capability for a given population or region
- 2. An incorporated body with its own funding pool, established by integrating organisations, with responsibility for defined areas of common business overlap 3. A formal and agreed governance arrangement between organisations to 'share' resources in delivering services across a finite geographical area.

In relation to child developmental health, the key partners are maternal and child health services, general practice, Aboriginal community controlled services, NGOs and consumer groups. Each of these groups currently has regional or state level agencies that may participate in forming partnerships to improve child health at a regional level.

They also have national organisations that can support work in areas such as the development of nationally agreed standards and guidelines, evidence based models of care, workforce development and training arrangements, child health indicators, approaches to evaluation and development of common data sets, nationally consistent performance frameworks. Much of this work at the national level is already underway. Child health indicators have been developed, models of best practice in home visiting are being investigated, performance frameworks in several large programs delivered by Divisions of General Practice and Community Controlled Services are outcomes focused and based on the same conceptual framework for performance measurement in primary care.

The evidence discussed above suggests that there is scope to better integrate services through innovations at the meso level.

Governance

- Formalized governance arrangements between organisations to share resources for care provided in a specific regional area (with or without pooling)
- Development of area/regional profiles of child health and family needs and determination of priority areas for action

Strengthening relationships between service providers

- Strengthening multidisciplinary teams or trialing co-located arrangements Supporting coordination of clinical activities
 - Agreements between providers about roles and responsibilities in delivering promotion and preventive care, particularly well child checks
 - Agreements for referral arrangements and care coordination
 - Trialing different models of care such as home visiting for specific population groups or group delivery of anticipatory guidance

Use of tools, instruments or systems to support coordination of care

- Using agreed assessment tools for surveillance and home visiting activities
- Development of information systems for sharing information between providers
- Use of agreed performance frameworks and data sets to enable comparison of processes and outcomes.

APPENDICES

1. AUSTRALIAN POLICIES AND STRATEGIES

Current Early Years policies

- Families First (NSW Govt)
- The Start of Good Health: Improving the health of children in NSW (NSW Health)
- Best Start, a whole-of-government policy (Victorian Department of Human Services and Department of Education and Training)
- Queensland the Smart State: Putting Families First (QLD Govt)
- Healthy Start (SA Dept of Human Services)
- Every chance for every child: a healthy start for our children (SA)
- Early Childhood Services Initiative and Early Years Policy (SA Dept of Human Services)
- Our Kids Strategic Policy Framework (Tasmanian Department of Health and Human Services)
- Our kids' action plan Tas
- National Agenda for Early Childhood (NAEC)
- An early years strategy, NT
- Early Childhood Policy Framework (Vic Dept of Human Services)
- The Early Years Taskforce for Early Years Strategy (Joint Dept initiative in WA premier and cabinet, dept community development, dept health, dept local govt and regional development)

Child Health policies in four jurisdictions

- ACT Health Action
- NT children's and young people's health policy\
- QLD strategic policy framework for children's and young people's health 2002-2007 and Smart State: Health 2020
- WA Child and Community Health Services Birth to Age Two Years policy

Mental health policies with a component on children

- Caring for Mental health: A framework for mental health care in NSW
- WA Infancy to young adulthood, mental health promotion and illness prevention, attentional problems in children and pathways to reliance
- Better Health Outcomes in Mental Health Care (Aust Govt Cwth agencies working group, national suicide prevention strategy)

2. DRAFT TERMS OF REFERENCE FOR THE REFERENCE GROUP ON THE READINESS FOR SCHOOL STUDY

Background

The Australian Primary Health Care Research Institute (APHCRI) is undertaking a study to examine what organised primary health care approaches can contribute to childhood developmental health and well being outcomes related to readiness for school in children aged 0 -5 years.

Reference Group

A Reference Group will be established to provide advice to APHCRI on the study development and implementation issues. The Working Group will comprise members with expertise in research, policy and practice. The table below outlines the proposed members of the Reference Group.

Dr Donna	School of Early Childhood, QUT
Berthelson	School of Early Childhood, Qo'i
Ms Karen Gardner	Australian Primary Health Care Research Institute, ANU
Professor Nick	Australian Primary Health Care Research Institute, ANU
Glasgow	Additional filling fredict eare research institute, 7440
Mr John Glover	Public Health Information Development Unit, University of Adelaide
Dr Sharon Goldfeld	Centre for Community Child Health, Royal Children's Hospital, and the University of Melbourne. Senior Child Health Policy Advisor in the Victorian Office for Children
Dr Lydia Hearn	Child Health Promotion Research Unit, Edith Cowan University
Dr Lyn Kemp	Centre for Health Equity Training, Research and Evaluation University
·	of New South Wales
Mr Shawn Lyons	Australian Primary Health Care Research Institute, ANU
Mr Daniel McAullay	Australian Primary Health Care Research Institute, ANU
Professor Frank	University of Melbourne and the Royal Children's and Royal
Oberklaid	Melbourne Hospitals.
Ms Rani Param	Telethon Institute for Child Health Research
	Evaluation of EDI in aboriginal communities in WA
Ms Julie Porritt	Australian Division of General Practice
Mr Chris Shakes	Children's Services, Office of Early Childhood Services,
	SA Dept Education and Children's Services
Associate Professor	Australian Primary Health Care Research Institute, ANU
Beverly Sibthorpe	
Professor Elizabeth	Research School of Health and Social Development
Waters	Deakin University

Proposed Terms of Reference

The proposed Terms of Reference for the Working Group are as follows:

- Provide advice on key issues in the development and implementation of the study including advice on search terms, grey literature and refinement of research questions.
- 2. Review syntheses of literature relating to stage 1.
- 3. Assist with identification of key informants.
- 4. Review synthesis of Stage 2 findings, consider and critique the policy implications of the findings.
- 5. Provide comment on the draft report of the study.

Meetings

- The Reference Group will provide advice to APHCRI
- APHCRI will Chair the Reference Group and provide secretariat including organisation and notification of meetings, preparation and provision of meeting background papers, preparation and dissemination of action items/meeting outcome notes, and preparation of other documents as required.
- The first teleconference of the Reference Group will be in October 2006 to review the study proposal and provide comments on the search items and terms and thereafter teleconferences as needed to provide advice and feedback.
- No members of the Reference Group will report on or distribute interim findings from the study without prior agreement from the group.
- The Group will operate until the completion of the study which is expected to end in August 2007.

3. SURVEILLANCE AND SCREENING - SYSTEMATIC REVIEWS

Systematic Review	Summary of Key findings
Topic/Research Question	
Screening children in the first four years of life to undergo early treatment for otitis media with effusion (Butler et al 2003. <i>Cochrane Database of Systematic Reviews</i>) Screening for speech and language delay: a systematic review of the literature (Law J, Boyle J, Harris F, Harkness A, Nye C. Health Technology Assessment 1998)	There is no statistically significant evidence to support screening of children for OME in the first 4 years of life to improve language development and behaviour. Screening for OME and subsequent treatment did improve secondary outcomes (i.e. hearing and clearance of effusion). Lead-time bias was not considered in any of the studies (i.e. those who benefited from treatment may have been identified during the course of usual care in the absence of screening) Heterogeneity across studies made the studies unsuitable for meta-analysis. There is insufficient evidence to merit the introduction of universal screening. This does not imply that speech and language delay should not be identified by less formal checks. Implications for practice include paying more attention to the role of parents in identifying children with speech and language delay, and primary care workers should be involved in eliciting parental concerns and in making appropriate observations of children's communication behaviours. Because of the reported value of indirect approaches to intervention, there is a case for widening the range of professionals able to promote good interactive practice in parents of young children.
Screening for speech and language delay in preschool children: systematic evidence review for the US Preventive Services Task Force (Nelson et al., 2006. <i>Pediatrics</i>)	There were no studies available for several of the key questions including question 1 (effectiveness of screening), question 2d (optimal age and frequency of screening), question 3 (adverse effects of screening), question 4 (the role of enhanced surveillance in primary care) question 7 (effectiveness of interventions on nonspeech outcomes), question 8 (adverse effects of interventions). Risk factors were identified but their role in screening has not been evaluated. The optimal method for screening has not been established (most of the evaluations were not designed for screening and were often outside of primary care). RCTs of interventions reported improved speech and language outcomes when compared with controls. Improvements were seen in the following domains: articulation phonology, expressive language, receptive language, lexical acquisition, and syntax. However, sample sizes were small and heterogeneous, influenced by plateau effects and did not report on long-term outcomes. In addition, it is impossible to blind parents and clinicians in long-term studies and there are ethical issues associated with randomizing treatment of children when the current standards support therapy.
	Future research needs to focus on 'determining optimal approaches of identifying preschool-aged children with speech and language delay in primary care settings who would be appropriate candidates for additional evaluations and possibly speech and language interventions.' There is also a paucity of evidence relating to the long-term effects of interventions and their cost-effectiveness and future research may also need to focus on these issues.
Speech and language interventions for children with primary speech and language delay or disorder (Law et al., 2006. <i>The Cochrane Library</i>)	The data in this review supports the effectiveness of speech and language therapy for children with phonological and expressive vocabulary difficulties. Speech and language therapy for children with receptive language disorders appears to be less effective. No statistically significant difference was reported between parents and clinicians as treatment administrators. The review suggests that there is no statistically significant difference between group and individual therapy. Normal language peers are favoured as a model for language impaired children. Effect sizes need to be considered tentatively as they are based on small sample sizes. Confidence intervals were relatively wide for most studies.

Is routine growth monitoring effective? A systematic review of trials (Garner et al., 2000. Arch Dis Child)	Further research is required to determine the effectiveness of interventions beyond eight weeks. Further investigation of children with receptive language disorders is required to optimize outcomes. Further research should focus on the optimum starting point for interventions and the influence of severity. Consideration must be given to parent characteristics that lead to better outcomes for children with expressive language difficulties. Learning styles need to be given consideration in future research as well as non-linguistic factors. There is not enough reliable evidence to suggest that routine growth monitoring is beneficial to child health in either developed or developing countries. Future studies need to determine whether any benefits from routine checks can be attributed to growth monitoring or other aspects of a routine check. Future growth monitoring trials will need to: Define the intervention Randomize participants and collect sufficient data Define outcomes more carefully e.g. nutritional status, measures of medical
	referral, treatments given or conditions detected, information about maternal knowledge, feeding practices and satisfaction
	- Include representatives of parents in the planning of the study.
Child Health Screening and Surveillance: A critical review of the evidence. Centre for Community and Child Health. NHMRC (Oberklaide et al 2002)	Little evidence for the effectiveness of screening programs. Scant data on cost effectiveness. Insufficient evidence to support routine screening for speech and language delay. Optimal approaches for identifying preschool aged children in the primary care setting needed. Little evidence to support effectiveness of therapy. Insufficient evidence to support routine growth monitoring as rigorous evaluation has not been undertaken. Insufficient evidence in relation to either supporting or rejecting routine vision screening in preschool children for visual acuity and evidence for rejecting screening for risk factors for amblyopia. Universal neonatal screening for permanent hearing impairment supported by evidence. Routine screening for otitius media with effusion not supported by evidence. Iron deficiency screening does not meet criteria for routine screening. No evidence is available to support routine measurement of blood pressure. Insufficient evidence to support or reject routine screening at designated milestones for undescended testes. No evidence to support routine screening for urinalysis. Insufficient screening to support or reject screening for developmental delay.
Preschool hearing, speech, language, and vision screening Quality Health Care 1998 (Bamford et al)	Insufficient evidence to support universal routine screening for speech and language delay and little consistency in method of screening used in the US. The Review could not identify studies to answer key questions related to the • effectiveness of screening, • optimal age and frequency of screening, • adverse effects of screening, • the role of enhanced surveillance in primary care, • the effectiveness of interventions on non-speech outcomes and adverse effects of interventions. Although risk factors have been identified for speech and language delay, their role in screening has not been evaluated. Optimal approaches for identifying preschoolaged children with speech and language delay in primary care settings who would be appropriate candidates for additional evaluations and possibly speech and language interventions need to be identified. There is a paucity of evidence relating to the long-term effects of interventions and their cost-effectiveness.
Virginia Moyer "Gaps in evidence for well-child care: A	Evidence of effectiveness was sought from Systematic Reviews and clinical trials conducted between 1997-2003 for 3 recommended topics in well child care.
CVINCINC IOI WEII-CIIIU CAIC. A	Conducted between 1997 2003 for 3 recommended topics in well clinic care.

challenge to our profession" Pediatrics 2007

- Behavioural counseling
- Screening
- Prophylaxis

Injury

No clinical trials available to support choking prevention, drowning, pedestrian injuries, or lead poisoning counselling.

Modest benefits of counselling in relation to car seat use (2 studies), bicycle helmet use, safe road crossing behaviour, smoke alarm use (2 studies) and safe tap water temperature (2 studies)

Inconsistent evidence relating to seat belt use and no effect for brief counselling in relation to child proofing, poison prevention, or firearm use. No trials of counselling for the prevention of smoking, drinking and drug use were identified despite these being recommended in a number of guidelines for the provision of well child health checks. No trials of brief interventions for violence prevention have been undertaken.

Obesity

Two studies showing that tailored counselling, providing written materials focused on a single physical activity rather than multiple preventive strategies, and using other health care professionals, increased physical activity. No trials of primary care interventions to prevent obesity among children identified.

Counselling for the promotion of supine sleep position to prevent sudden infant death syndrome has not been demonstrated in clinical trials.

There is insufficient evidence to suggest that routine growth monitoring is beneficial to child health as rigorous evaluation has not been undertaken.

Iron deficiency screening does not meet criteria for routine screening. Trial results regarding impact on developmental outcomes is mixed.

No evidence is available to support routine measurement of blood pressure.

No evidence to support routine screening for urinalysis.

Screening for signs of physical and sexual abuse has not been rigorously evaluated.

Primary Care Services
Promoting Optimal Child
Development From Birth to
Age 3 Years
(Regalado M and Halfon N,
2001. Arch Pediatr Adolesc)
What is the evidence for primary
health care services promoting the
optimal development of typically
developing children aged from
birth to 3 years?

Evidence of effectiveness of primary health care anticipatory guidance services in promoting optimal development of typically developing children aged from birth to 3 years. 20 studies conducted between 1979-1999 were included in the review which focused on the efficacy or effectiveness of education, intervention and care coordination services.

This systematic review suggests that there are effective and efficient approaches to providing developmental services. These were

- 1. Education towards promoting i)parent child interactions, ii)parent's understanding of child temperament, iii)book sharing activities, iv)healthy sleeping habits
- 2. Office interventions such as counselling for the management of excessive infant crying.

The review also cited several barriers that may need to be overcome in order to implement these services:

- organizing service provision packages
- defining assessment and treatment pathways
- defining professional boundaries (knowing when to refer and who to refer to)
- training of physicians (bridging the gap between knowledge and skills in developmental and behavioural paediatrics)
- health policy implications (what services are most effective, how should they be provided and who should bear the cost).

Childhood Injury Prevention Counseling in Primary Care Setting: A Critical Review of the Literature. (Bass J, Christoffel K, Widome M, Examines 20 studies of the effectiveness of office based anticipatory guidance to reduce unintentional injury. Eighteen studies showed positive effects of injury prevention counselling and in 15 of these, physicians provided the counselling.

Boyle M, Scheidt P, Stanswick R, Roberts K)	
Nelson, C, Wissow L, Cheng T Effectiveness of anticipatory guidance: recent developments. Review of the evidence on the effectiveness of anticipatory guidance and its impact on child and family functioning	Evidence from studies examining the effectiveness of anticipatory guidance on parent-infant interaction, sleep patterns, and injury prevention to improve functional outcomes of children and their families was examined. Preventive counseling and written information on temperament, healthy sleeping habits and effective discipline practices are well received by parents and impact positively on parenting practice. It is not known whether this impacts on child development outcomes. Injury prevention counseling in the office setting has modest positive effects in relation to care seat use, bicycle helmet use, safe road crossing, smoke alarm use, safe tap water temperature. There is inconsistent evidence relating to seat belt use. No effect for counseling in relation to child proofing, poison prevention or firearm use. Providing books to children during well child checks is associated with increased home literacy activities and improved child language development. Primary care physicians report lack of time, knowledge and skills to providing guidance

4. ANTICIPATORY GUIDANCE - PRIMARY STUDIES

Author Year Study Description Rating	Outcomes examined Results	Country
Schor (2004) Literature review (not systematic) of well child care. Examines Parent expectations, Periodicity, Barriers to uptake Medium	Agreed schedules need to be established Timing of the schedules should be adapted to coincide with periods of developmental transition Focus of visits should be on issues related to development transitions Advice, guidance, information and counselling should be reinforced by providing printed material Uptake needs to be improved (in the US) Standards needed to be developed by the profession to guide practice and allow measurement of quality of care.	USA
Barkin et al 2005 Examines the topics discussed during a well-child visit, the extent to which paediatricians and parents concur on topics discussed during a health maintenance visit, the recall of topics 1 month later and the effect of the number of topics discussed on recall. Quantitative RCT involving parents from the control group (the usual care group enhanced only by a literacy promotion handout). Participants were from families with children ages 2-11 (n=861) seen by 32 practitioners from 26 practices located in 20 states in Canada. Medium	Recall decreased with an increased number of topics discussed. Recall dwindles when ≥ 9 topics are discussed. While parents and practitioners have good agreement on the topics discussed, limiting the number of topics discussed may lead to increased parental recall.	Canada
Reach Out &Read (ROR) Reading promotion at well child checks Anticipatory guidance at health checks re: reading Books given to children at each well check		
Mendelsohn et al (2007) Determine effect of clinic based literacy intervention using ROR on language development of preschool children Case control Convenience sample 122 participants aged 2 – 5.9 yrs not at kindergarten (49 interventions, 73 controls) Low	Language development using the One-Word Expressive and Receptive Picture Vocabulary Test Intensity of exposure to ROR was associated with increased parent-child reading activities. Intervention children had higher receptive and expressive language.	USA
Sharif et al (2002) Examines exposure to ROR and vocabulary outcomes Quasi experimental design (Exposed vs non exposed) no randomisation 200 parent/child pairs (child mean age 3.8yrs)at 2 inner city clinics Medium	Main outcome measure: Expressive and Receptive One Word Picture Vocabulary Tests. Results: positive association between exposure to ROR and better receptive vocabulary. Also children in ROR scored higher on the Home Literacy Orientation scale. No differences in expressive vocabulary scores between the groups.	USA
Atkinson et al (2002) ROR – discussion of program No defined research question	Concludes that paediatric primary care is well placed to provide interventions that improve literacy in early childhood.	USA

Law	Number of sould be a sector of the sector	
Low	Nurses should promote early literacy At risk households should be targeted	
	Recommends that research needed to	
	validate tools used by ROR	
Healthy Steps	Validate tools used by NON	
Zuckerman et all 2004	Results:	USA
Study publishing finding from the evaluation of Healthy	Increased improvement in processes of	
Steps	care – more preventive & developmental	
Subjects from the 15 sites included 5565 children recruited	services	
at birth and parents	No improvement in outcomes – initiation or	
	duration of breastfeeding, development	
No and type of services received and telephone interview	knowledge, sense of competence, self	
with parents to assess satisfaction, parenting practice	reported nurturing behaviour & expectation	
(developmental stimulation, discipline, sleeping positions,	of children, reports of children's language	
depressive symptoms for mothers)	development, safety practices.	
Service utilization data and telephone interviews with	Healthy steps mothers more likely to report aggressive behaviour	
parents	aggressive benaviour	
15 national sites representing a range of practice settings		
- community based group practices, health centres,		
primary care clinics and model HMOs.		
Experimental		
RCT in 6 sites (families in same practice randomised to		
healthy steps model vs routine care)		
Quasi-experimental in 9 sites. (whole practice provides		
healthy steps compared to non health steps practice) Medium		
Kinzer et al (2004)	Provider perceptions:	USA
Evaluation of Healthy Steps re: Paediatric resident's	69% found the program facilitated	00/1
perceptions of Healthy Step	knowledge of anticipatory guidance &	
	assured patients received information	
Survey of 37 paediatric residents.	efficiently.	
78% response rate	62% perceived no interference by healthy	
Low	steps specialists.	
	68% would consider using Healthy steps	
Thompson et al (2004)	specialists in future Results: services can be successfully	USA
Evaluation of Healthy Steps – discusses the role of Healthy	delivered	USA
steps specialist in integrating developmental and	Planned model of care	
behavioural services into clinical practice and implications		
for primary care		
RCT and quasi experimental as in Zuckerman study		
Medium	Transport in the officer of the second	LICA
Minkovitz et al (2001)	Increase in use of developmental services	USA
Evaluation of Healthy Steps - examination of parental satisfaction with paediatric providers, and self reported	and home visits and discussion of infant development topics.	
use of developmental services and home visits, and self	More likely to be satisfied with paediatric	
reported parenting practice for sleeping position,	provider.	
breastfeeding, showing picture books to infants, feeding,	More likely to sleep baby in prone position	
play.	or feed them water.	
	No effect on Breastfeeding Differences	
Questionnaire & telephone interviews with mothers for	found only in quasi experimental sites for	
263 intervention (response rate 89%) and 2265 control	parenting practice related to prereading	
(87%) children between 8&18 wks.	activity, feeding cereal, following routines,	
RCT sites and quasi experimental sites (see above)	play	

High		
Minkovitz et al (2004) Study publishing findings from the evaluation of Healthy Steps - aim is to assess impact of the program on the quality of early childhood health care and parenting practices Prospective controlled trial(see details above) 5565 enrolled families Of those 67% responded to interview at 30-33 months (1716 controls; 2021 interventions) Assessed Quality across 4 domains Effectiveness (received 4 or more services or discussed more than 6 anticipatory guidance topics) Patient centredness- satisfaction with care Timeliness (children received timely well-child visits and vaccinations) Efficiency (families remained at the practice for more than 20 months) Assessed Parent outcomes across Response to child misbehaviour (use of severe discipline) Practices to promote child development and safety (mothers at risk for depression discussed sadness with someone at the practice) High	Results: Interventions more likely to receive 4 or more services; 6 or more anticipatory guidance topics; be more highly satisfied with care; timely well child visits and vaccinations & remaining at the practice 20 months or longer. Also had reduced odds of using severe discipline, and those at risk for depression had greater odds of talking to someone at the practice. Conclusion: universal practiced based interventions can enhance quality of care for families with young children and can improve selected parenting practices.	USA
McLearn et al 2006 Secondary analysis of Healthy Steps National Evaluation data. 24 paediatric sites – 6 RCT, 9 quasi experimental comparison designs Examines whether earlier maternal depression (2-4month olds) has a greater impact on parenting behaviours of mothers than later depression (30-33 month olds) in order to look at how to target anticipatory guidance. Self administered questionnaire, computer assisted telephone interviews with mothers Measures: Depression (depression scale) Discipline (measured using parental responses to misbehaviour scale) re use of reasoning, harsh punishment, ever slapped child on face, spanked with an object.) Safety practices (car seat use, safety latches on cabinets, temperature on water heater, interaction with child – talking, play, reading, limits TV, follows routines)	Results: concurrent maternal depressive symptoms have stronger relations than earlier depressive symptoms, with mothers not initiating recommended age-appropriate safety and child development practices and also using harsh discipline practices for toddlers. Providing periodic depressive symptom screening of mothers of young children has potential to improve clinician capacity to provide timely and tailored anticipatory guidance about parenting practices, and to make appropriate referrals.	

HOME VISITING - SYSTEMATIC REVIEWS

Systematic Review	Summary of Key findings
Topic/Research Question	
Home visiting	
Is Home Visiting an Effective Strategy? A Meta-Analytic Review of Home Visiting Programs for Families With Young Children Sweet MA and Appelbaum MI, 2004.)	The Review examined child and parent outcomes in 60 US home visiting programs established after 1965. Three of the five child outcomes had average effect sizes greater than zero. Child abuse and parent stress did not have average effect sizes significantly greater than zero. Three of the five parent outcomes had average effect sizes significantly greater than zero. The enhanced maternal life-course outcomes were not as influenced by home visitation programs. Generally, children in families participating in home visiting programs fared better than controls. However, there are limitations to this study. Researchers questioned the practical significance of statistical significance in some cases e.g. 'an average standardized effect size of 0.184 translates into a difference of only a few points on a standardized intelligence scale, which typically has a standard deviation of at least 10 points. Although greater than zero, effect sizes were relatively small.
Elkan R, Dendrick D, Hewitt M, Robinson JJA, Tolley K, Blair M, Dewey M, Williams D, Brummell K. The effectiveness of domiciliary home visiting: A systematic review of international studies and a selective review of the British literature. <i>Health Technology Assessment</i> 2000; Vol 4:No. 13	Review included 102 studies of 86 home visiting programs to examine effectiveness and cost effectiveness of domiciliary health visiting, focusing primarily on the British health visiting literature. Improvements were found in Improved parenting skills and in the quality of the home environment Improved child behaviour problems including sleep Improved intellectual developments especially among children of low birth weight or with failure to thrive A reduction in the frequency of unintentional injury and in the reduction of home hazards Improvements in the detection and management of postnatal depression Enhancement of the quality of social support to mothers Improved rates of breastfeeding. There is insufficient evidence (defined as four studies or less) to suggest that home visiting improves: Physical development (weight and height) Incidence of child illness Mothers use of informal community resources or the size of mothers' informal networks Children's diet Mothers return to education Participation in the workforce or use of public assistance Family size or number of subsequent pregnancies There is no evidence that suggests that home visiting Improves children's motor development Increases uptake of immunization Increases uptake of other preventive child health services Reduces hospital admission rates. They also concluded that because of the problem of surveillance bias, conclusion could not be drawn about the effectiveness of home visiting in reducing the incidence of child abuse and neglect.

Aslam H, Kemp L. Home Visiting in South Western Sydney: An integrative literature review, description and development of a generic model. <i>Centre for Health Equity Training Research and Evaluation.</i> April 2005.	Systematic review seeking to describe programs components associated with positive client outcomes. A total of 55 papers were reviewed. Also examined home visiting programs operating in Western Sydney through a series of interviews with program managers to develop a generic framework for planning and evaluating home visiting programs as part of the NSW Government Families First initiative. The authors concluded that in the Australian context, women from low SES gain most benefit from home visiting, and programs targeted to women with postnatal depression also show benefits. Where a broad range of outcomes is desired, nurses produce better results. Psychologist and counsellors are more effective in highly targeted programs for depression. Programs should begin antenatally and include child development, parenting skills, parent infant interaction and resources provision. An audit of 45 Western Sydney programs found that most programs offer a combination of home visiting, centre-based and other support activities such as parenting groups and telephone assistance. Isolation was the predominant risk factor targeted and refugee and Aboriginal families were the least targeted population groups. Factors affecting the capacity of the programs to deliver good services were identified by managers as the client group mix, the quality and retention of visitors and institutional factors as underpinning capacity. Few programs undertook systematic collection of data or measurement of outcomes and managers perceived benefits of home visiting as more anecdotal than evidence based. Standardised tools are needed for measurement of interventions and program outcomes to facilitate comparative and systematic evaluation of home visiting programs.
Black M , Kemp L. Volunteer Home Visiting: A systematic review of evaluations. Centre for Health Equity Training Research and Evaluation. April 2004.	Examined 17 evaluations of sustained volunteer home visiting interventions for families with children from antenatal to 8 years old were included. The review identifies models of volunteer home visiting and the evaluation methods used. It provides recommendations regarding methods of evaluation and data collection needed to support this.
Guterman NB Enrollment strategies in early home visitation to prevent physical child abuse and neglect and the "universal versus targeted" debate: A meta-analysis of population-based and screening-based programs. <i>Child Abuse and Neglect</i> 1999: 23, 863-890.	A meta-analysis of 19 home visiting programs aimed at reducing child abuse and neglect to examine outcomes for population based and screening based programs in relation to child maltreatment measures of parenting and protective services data. Results showed positive effects for both population and screening based programs but the population strategies showed stronger effect sizes in reducing reported abuse and improving parent behaviours. Three possible explanations were put forward for these findings. Firstly, as individual screening approaches are known to have high false positive rates and perform poorly in predicting actual abuse, programs using these may screen in families who are not likely to maltreat children and for which services are not likely to have much benefit. Alternatively, they may screen in higher proportions of families who are high risk and therefore less amendable to change or for whom home visiting strategies are not well matched to family need. The authors conclude that all programs whether population based or screening based must better tailor services to meet family needs.
Roberts I, Kramer M, Suissa S. Does home visiting prevent childhood injury? A systematic review. <i>BMJ</i> 1996;312:29-33	11 Randomised controlled trials were included in the review to investigate the effectiveness of home visiting programs in the prevention of child injury and child abuse. Four studies examined the effect of home visiting on injury in the first year of life and nine trials examined their effect on the occurrence of suspected abuse, reported abuse, or out of home placement for child abuse. Six of the eight trials that examined the effect of home visiting on the occurrence of childhood injury reported a lower incidence of injury in the group that received home visits. In the nine trials that examined the occurrence of suspected abuse, four trials demonstrated a lower frequency of occurrence in the visited group and in five trials the frequency of occurrence was higher in the visited group.
Ciliska D, Mastrilli P, Ploeg J, Hayward S, Brunton G, Underwood J. The Effectiveness of	20 studies of the effectiveness of nurses in delivering home visiting services to women in the ante and post natal period were included Findings suggested no negative effects of home visiting and positive outcomes were found in relation to

Home Visiting as a Delivery Strategy for Public Health Nursing Interventions to clients in Prenatal and Postnatal Period: A Systematic Review. 1999. Public Health Branch Ontario Ministry of Health.	children's mental health development, physical growth, reduction in mother's depression, improvement in maternal employment, education, nutrition and other health habits and government cost saving. No improvements were found in relation to low birth weight, gestational age or neonatal morbidity or mortality, however, these findings were inconclusive given the numbers were too low to demonstrate effects in such rare occurrences.
Doggett C, Burrett S, Osborne DA. Home visits during pregnancy and after birth for women with an alcohol or drug problem (Review) <i>The Cochrane Collaboration</i> . 2006.Issue 4.	6 studies of home visiting programs including 709 high risk women were included. Most studies had methodological limitations, particularly large losses to follow up. There were no significant differences in continued illicit drug use (2 studies, 248 women; relative risk (RR) 0.95, 95% confidence interval (CI) 0.75 to 1.20), continued alcohol use (RR 1.08, 95% CI 0.83 to 1.41) failure to enroll in a drug treatment program (2 studies, 211 women; RR 0.45 95% CI 0.10 to 1.94). There was no significant difference in the Bayley MDI (3 studies, 199 infants; weighted mean difference 2.89, 95% CI -1.17 to 6.95) or Psychomotor Index (WMD 3.14, 95% CI -0.03 to 6.32). Other outcomes reported by one study only included breastfeeding at six months (RR 1.00, 95% CI 0.81 to 1.23), incomplete six-month infant vaccination schedule (RR 1.07, 95% CI 0.58 to 1.96), non-accidental injury and non-voluntary foster care (RR 0.16, 95% CI 0.02 to 1.23), failure to use postpartum contraception (RR 0.41, 95% CI 0.20 to 0.82), child behavioural problems (RR 0.46, 95% CI 0.21 to 1.01), and involvement with child protective services (RR 0.38, 95% CI 0.20 to 0.74).
Kendrick et al 2000 Does home visiting improve parenting and the quality of the home environment? A systematic review and meta-analysis	Systematic review of 34 studies including RCTs and quasi experimental studies evaluating Impact of home visiting programs on parenting and home environment. 26 studies had participants at risk of adverse maternal or child health outcomes; 2 had preterm or low birth weight infants; 2 had infants with failure to thrive; 8 had participants not at risk. Outcomes measures:17 studies reported home environment measures (HOME), 27 reported measures of parenting; 10 reported both outcomes Results: 12 studies used in the meta analysis and were found to show significant results in relation to HOME scores. 21 of 27 studies of other measures of parenting showed significant findings for intervention clients.
S Shaw et al. 2006. <i>BIRTH</i> Systematic review of the literature on postpartum care: effectiveness of postpartum support to improve maternal parenting, mental health, quality of life, and physical health	Postpartum interventions to unselected low-risk women do not appear to significantly alter maternal outcomes. There appears to be some benefit in postpartum support programs for women with identified risk factors e.g. low-income primiparous women and women at high risk of postpartum depression or family dysfunction. Maternal satisfaction was high for home visitation interventions. Limitations Trials in selected populations could be made more generalisable by comparing a number of support approaches and conducting them in different locations. More definitive measures could also be applied in these studies e.g. infant interaction and child abuse and neglect. The review does not consider non-randomised clinical trials and developing countries. More research needs to be conducted before postpartum support can be universally endorsed.

4. STRATEGIES FOR EARLY IDENTIFICATION AND REFERRAL

Silverstein et al (2004) Effectiveness of primary care physician referral to Headstart for at risk children from 4 clinics, using computerized referral system. RCT: 246 Head Start eligible children aged 0-4 yrs High Bogin (2006)	Attendance at Headstart 41%intervention children successfully connected with Headstart vs 22% of controls 31%intervention children actively attending Headstart vs 11% of controls	USA
Headstart for at risk children from 4 clinics, using computerized referral system. RCT: 246 Head Start eligible children aged 0-4 yrs High Bogin (2006)	connected with Headstart vs 22% of controls 31%intervention children actively attending	
computerized referral system. RCT: 246 Head Start eligible children aged 0-4 yrs High Bogin (2006)	controls 31%intervention children actively attending	
RCT: 246 Head Start eligible children aged 0-4 yrs High Bogin (2006)	31%intervention children actively attending	
RCT: 246 Head Start eligible children aged 0-4 yrs High Bogin (2006)		
High Bogin (2006)		
High Bogin (2006)		
Bogin (2006)		
	Description of purpose and reach – 7000	USA
Help me grow. Statewide early identification and referral	families between April 2002 and 2005	
for children at risk of developmental or behavioural	based on unpublished report entitled Help	
problems –contact through information telephone line	me grow: Connecting families to resources.	
Geographic model	University of Hartford, CT centre for social	
 Provides support for telephone counsellors 	research	
Facilitates networking	research	
 Tracintates networking Trains providers on child development 		
 Helps families overcome barriers that impede access to services 		
Commentary – descriptive paper drawing on reach data		
from an evaluation		
LOW	Catisfa tion with annual Park	1117
Appleton et al (1997)	Satisfaction with care coordination among	UK
Parents perceptions of care coordination in a specific	parents of the cohort	
model of care coordination for children with disabilities	Reasonably satisfied	
that used a professional coordinator (8 clinical medical		
officers, 2 social workers, 2 community nurses)		
Qualitative study		
20 out of 21 children 2.5-3.5 yrs with complex or severe		
mpairments participated (21 is the complete cohort of		
children of that age from geographic area known to		
require educational statementing)		
LOW		
	Examination of database re:	USA
Children's support services project (CSS)"	Early identification	
Description of an area based approach to identify	Continuity of programming	
preschool children with problems for referral to Child	Enhancing capacity of local program to	
development, mental health and family support service.	provide mental health services/supports.	
• • • • • • • • • • • • • • • • • • • •	, , , ,	
	Results suggest enhanced coordination,	
	,	
•	13 1 111	
monitor children through early school		
monitor children through early school Examination of the database of the early childhood dept of		
Examination of the database of the early childhood dept of		
Examination of the database of the early childhood dept of Lowell public schools to examine all referrals to CSS, all		
Examination of the database of the early childhood dept of Lowell public schools to examine all referrals to CSS, all interventions and services provided and current		
Examination of the database of the early childhood dept of Lowell public schools to examine all referrals to CSS, all nterventions and services provided and current placements for all children who have received CSS services		
Examination of the database of the early childhood dept of Lowell public schools to examine all referrals to CSS, all interventions and services provided and current placements for all children who have received CSS services Low	Some output data from Medicaid database	USΔ
Examination of the database of the early childhood dept of Lowell public schools to examine all referrals to CSS, all nterventions and services provided and current placements for all children who have received CSS services Low Burton (2007)	Some output data from Medicaid database After 4 yrs of the program, increase in % of	USA
Examination of the database of the early childhood dept of Lowell public schools to examine all referrals to CSS, all interventions and services provided and current placements for all children who have received CSS services Low Burton (2007) 'Partnerships for Children" program —	After 4 yrs of the program, increase in % of	USA
Examination of the database of the early childhood dept of Lowell public schools to examine all referrals to CSS, all interventions and services provided and current placements for all children who have received CSS services Low Burton (2007) 'Partnerships for Children" program — Using health care professionals for coordination to improve	After 4 yrs of the program, increase in % of children receiving well child visits (from	USA
Examination of the database of the early childhood dept of Lowell public schools to examine all referrals to CSS, all interventions and services provided and current placements for all children who have received CSS services Low Burton (2007) 'Partnerships for Children" program — Using health care professionals for coordination to improve access to care for "medically disenfranchised" children.	After 4 yrs of the program, increase in % of	USA
Examination of the database of the early childhood dept of Lowell public schools to examine all referrals to CSS, all interventions and services provided and current placements for all children who have received CSS services Low Burton (2007) 'Partnerships for Children" program — Using health care professionals for coordination to improve	After 4 yrs of the program, increase in % of children receiving well child visits (from	USA
preschool children with problems for referral to Child development, mental health and family support service. The program centralizes the intake process within the early childhood department of the local public school system. Aims to transition children into kindergarten,		USA

review number of well visits for children in the program Children birth – 3yrs (How many children in sample is unclear) Low		
Puura et al 2002 'The European early promotion project: a new primary health care service to promote children's mental health. This study aims to determine if the EEP promotional and preventative system is capable of being successfully implemented in a number of countries within existing PHC structures. This is a research study focused on an intervention. It employs a mixed method and is quasi-experimental in design. A group of 10 to 16 primary health care practitioners from specific localities in each country were trained and supervised to carry out the EEP project. In each country, 100 families were placed in the intervention group – 50 with no need and 50 in need. 100 families were placed in the comparison group (no intervention) – 50 with no need and 50 in need. Medium	Preliminary findings: Training of primary health care professionals is acceptable and meaningful. Increased accuracy of identifying family psychosocial need. This should allow children to be identified before a disorder becomes evident, facilitate parental-professional contact with primary care and specialist services and improve outcomes.	Europe

5. STRATEGIES

UK

Sure Start (UK)

Communities that Care – introduced in the UK in 1998 with 3 demonstration projects. Now over 30 programs in England, Scotland, Wales, more planned in Northern Island.

On Track - Children's Fund

Health Action Zones

Children's Centres

National Service Frameworks for Children, Young People and Maternal Services

Australia

Families First Initiative – NSW universal home visiting

Schools as Community - NSW

Good Beginnings

Best Start - Vic

HIPPY - 4 in Australia (Vic, NSW)

The Gatehouse Project

Communities that Care – 3 sites in Aust - Bunbury WA, Mornington Peninsula, Ballarat Vic-

Pathways to Prevention – crime prevention Inala, Brisbane

Platforms – Frank oberklaid's group service model

FACS – Stronger Families and Communities Strategy 2004-2009

Communities for Children

Canada

National Early Childhood Agreement and Province based strategies

USA

Community Access to Child Health (CATCH) – USA Communities that Care – over 500 programs HIPPY Healthy Steps for Young Children Jump Start (New York) Bright Futures Help me Grow First 5 California

Netherlands

Communities that Care –Ministry of Justice funding for 6 demonstration projects

REFERENCES

Anderson A, Shinn C, Fullilove M, Scrimshaw S, Fiedling J, Normand J, Carande-Kulis G.(2003) The Effectiveness of Early Childhood Development Programs: A Systematic Review. *American Journal of Preventive Medicine* 24 (3S),32-46.

Armstrong KL, Fraser JA, Dadds MR & Morris J (1999) A randomised, controlled trial of nurse home visiting to vulnerable families with newborns. *Journal of Paediatric Child Health* 35, 237-244.

Al-Yaman F, Bryant M, Sargent H. Australia' children: their health and well being 2002. Canberra: Australian Institute of Health and Welfare, 2002.

Boocock SS (1995) Early childhood programs in other nations – goals and outcomes. *Future Child* 1995; 5:94-114.

Bor W, Najman J, Andersen M, Morrison J & Williams G, (1993) Socioeconomic Disadvantage and Child Morbidity: An Australian Longitudinal Study. *Social Science and Medicine*. Vol. 36, No. 8 pp.1053-1061.

Black M Society of paediatric psychology presidential address: opportunities for health promotion in primary care *Journal of Pediatric Psychology*. 2002;27:7: 637-46

Bronfenbrenner U. Ecological systems theory. *Annals of Child Development*. 1989;6:187-249.

Chamberlain RW, Szumowski ED, Zastowny TR. An evaluation of efforts to educate mothers about child development in pediatric office practices. American Journal of Public Health 1979;69:875-886.

Currie J. *Early Childhood Intervention Programs: What Do We Know.* Joint Centre for Poverty Research, Northwestern University and University of Chicago. April 2000.

Dinkovich E, Ozuah P. Well-Child Care: Effectiveness of Current Recommendations. Clinical *Pediatrics*, May 2002;41,4.

Dworkin PH. 2003 C. Anderson Aldrich Award Lecture: Enhancing Developmental Services in Child Health Supervision-An Idea Whose Time Has Truly Arrived. *Pediatrics* 2004:114(3)827.

Goldfeld S, Oberklaid F. Maintaining an agenda for children: the role of data in linking policy, politics and outcomes. *MJA* 2005; 183 (4):209-211.

Halfron N, Inkelas M, Hochstein M. The Health Development Organization: An organizational approach to organizing Child Health Development. *Milbank Quarterly*. Vol 78.No.3, 2000.

Keating DP, Hertzman C. Developmental Health and the Wealth of Nations: Social, Biological and Educational Dynamics. New York. Guildford Press,1999.

Last J. A Dictionary of Epidemiology. OUP 1988.

McCain M & Mustard JF. *Early years study: Reversing the real brain drain*. 1999. Online (www.childsec.gov.on.ca)

McCallum Z, Wake M, Waters E, et al. A primary care intervention for childhood overweight/obesity (LEAP): methodology of a randomized controlled trial. *Pediatr Acad Soc Abstr.* 2003;1406

Patton G, Bowes G, Sawyer M, Homel R, Stanley F. Towards a national agenda for youth? *Medical Journal of Australia* 2005; 183 (8): 394-395.

Sackett D, Straus S, Richardson W, Rosenberg W, Haynes R. Evidence-base Medecine. How to Practice and Teach EBM. Churchill Livingstone 2000.

Schuster Ma, Duan K, Regaldo M, Klein DJ. Anticipatory Guidance: what information do parents receive? What information do they want? *Arch Pediatr Adolesc Med* 2000;154:1191-1198.

Shonkoff JP & Phillips DA. 2000 (Eds) *From neurons to neighborhoods: The science of Early Childhood Development.* Washington DC: National Academy Press.

Zwi KJ & Henry RL Children in Australian Society *Medical Journal of Australia* 2005; 183: (3) 154-160

Vimpani G, Patton G, Hayes A The relevance of child and adolescent development for outcomes in education, health and life success, in Sanson, A Children's health and development: New research directions for Australia, *Australian Institute of Family Studies, Research Report no.8 2002.*

STUDIES INCLUDED IN THE REVIEW

Atkinson P.M, Parks D.K, Cooley, S.M, Sarkis, S.L Reach Out and Read: A pediatric clinic-based approach to early literacy promotion. *Journal of pediatric Care*. 2002;16(1) 10-15.

Aslam H, Kemp L. Home Visiting in South Western Sydney: An integrative literature review, description and development of a generic model. Centre for Health Equity Training Research and Evaluation. April 2005.

Bamford et al Preschool hearing, speech, language, and vision screening *Quality Health Care* 1998

Barkin, S. L. Scheindlin, B. Brown, C.Ip, E.Finch, S.Wasserman, R. C. Anticipatory guidance topics: are more better? *Ambulatory Pediatrics* 2005;5(6):372

Bass J, Christoffel K, Widome M, Boyle M, Scheidt P, Stanswick R, Roberts K Childhood Injury Prevention Counseling in Primary Care Setting: A Critical Review of the Literature

Black M , Kemp L. Volunteer Home Visiting: A systematic review of evaluations. Centre for Health Equity Training Research and Evaluation. April 2004.

Butler et al *Screening children in the first four years of life to undergo early treatment for otitis media with effusion*. Cochrane Database of Systematic Reviews 2003.

Ciliska D, Mastrilli P, Ploeg J, Hayward S, Brunton G, Underwood J. *The Effectiveness of Home Visiting as a Delivery Strategy for Public Health Nursing Interventions to clients in Prenatal and Postnatal Period: A Systematic Review.* 1999. Public Health Branch Ontario Ministry of Health.

Doggett C, Burrett S, Osborne DA. Home visits during pregnancy and after birth for women with an alcohol or drug problem (Review) The Cochrane Collaboration. 2006. Issue 4.

Elkan R, Dendrick D, Hewitt M, Robinson JJA, Tolley K, Blair M, Dewey M, Williams D, Brummell K. The effectiveness of domiciliary home visiting: A systematic review of international studies and a selective review of the British literature. Health Technology Assessment 2000; Vol 4:No. 13

Garner Is routine growth monitoring effective? A systematic review of trials. *Arch Dis Child* 2000:82(3)197.

Guterman NB Enrollment strategies in early home visitation to prevent physical child abuse and neglect and the "universal versus targeted" debate: A meta-analysis of population-based and screening-based programs. Child Abuse and Neglect 1999: 23, 863-890.

Hearn L, Miller M, Campbell-Pope, Waters S. *Preventing Overweight and Obesity in Young Children: Synthesising the evidence for management and policy making.*Australian Primary Health Care Research Institute & Edith Cowan University September 2006.

Jackson Cl, Nicholson C, Doust J, O'Donnell J, Cheung L. *Integration, Coordination and Multidisciplinary Care in Australia: Growth via optimal governance arrangements*. Australian Primary Health Care Research Institute & the University of Queensland. September 2006.

Kendrick et al 2000 Does home visiting improve parenting and the quality of the home environment? A systematic review and meta-analysis

Kinzer S. L. Dungy, C. I. Link, E. A Healthy Steps: resident's perceptions. *Clinical Pediatrics* 2003; 48(8):743.

Law J, Boyle J, Harris F, Harkness A, Nye C. *Screening for speech and language delay:* a systematic review of the literature Health Technology Assessment 1998.

Law et al. Speech and language interventions for children with primary speech and language delay or disorder The Cochrane Library 2006.

Levitt et al Systematic review of the literature on postpartum care: methodology and literature search results 2004. BIRTH

Moyer V, Butler M. Gaps in evidence for well-child care: A challenge to our profession *Pediatrics* 2007;114;1511-1521

McLearn K, T.Minkovitz C. S, Strobino D. M, Marks E, Hou, W. The timing of maternal depressive symptoms and mothers' parenting practices with young children: Implications for pediatric practice. *Pediatrics* 2006;118(1) E174-E182

Mendelsohn A. L, Mogilner L. N, Dreyer B. P, Forman J. A, Weinstein S. C, Broderick M, Cheng K. J, Magloire T, Moore T, Napier, C The impact of a clinic-based literacy intervention on language development in inner-city preschool children. *Pediatrics* 2001:107(1):130-134.

Minkovitz C, Strobino D, Hughart N, Scharfstein D, Guyer B, and the Healthy Steps Evaluation Team. Early Effects of the Healthy Steps for Young Children Program. *Archives of Pediatrics and Adolescent Medicine* 2001;155:470-479.

Nelson et al., Screening for speech and language delay in preschool children: systematic evidence review for the US Preventive Services Task Force 2006.

Nelson C, Wissow L, Cheng T Effectiveness of anticipatory guidance: recent developments. Current Opinion in Pediatrics 2003;15:630-635.

Oberklaid et al *Child Health Screening and Surveillance: A critical review of the evidence. Centre for Community and Child Health.* NHMRC 2002.

Powell Davies G, Harris M, Perkins D, Roland M, Williams A, Larsen K, McDonald J. *Coordination of Care within Primary Health Care and other Sectors.* Australian Primary Health Care Research Institute & the University of NSW. September 2006.

Regalado M and Halfon N, 2001 Primary Care Services Promoting Optimal Child Development From Birth to Age 3 Years. *Arch Pediatr Adolesc*Roberts I, Kramer M, Suissa S. Does home visiting prevent childhood injury? A systematic review. BMJ 1996;312:29-33

Roberts I, Kramer M, Suissa S. Does home visiting prevent childhood injury? A systematic review of randomised controlled trials. *BMJ* 1996; 312:29-33.

Schor E. Rethinking Well-Child Care *Pediatrics* 2004;114;210-216.

Thompson RS, Lawrence D M, Huebner CE, Johnston BD. Expanding developmental and behavioral services for newborns in primary care: implications of the findings. *Am J Prev Med* 2004;26,4: 367-71.

Sharif I, Reiber S, Ozuah PO, Exposure to Read Out and Read and vocabulary outcomes in inner-city preschoolers. *Journal of the National Medical Association* 2002;94:171-177.

Shaw et al. Systematic review of the literature on postpartum care: effectiveness of postpartum support to improve maternal parenting, mental health, quality of life, and physical health. BIRTH 2006

Sweet MA and Appelbaum MI, Is Home Visiting an Effective Strategy? A Meta-Analytic Review of Home Visiting Programs for Families With Young Children. *Child Development* 2004;75(5) 1435-1456.

Zuckerman B, Parker S, Kaplan-Sanoff M, Augustyn M, Barth, M. C. Healthy Steps: a case study of innovation in pediatric practice. *Pediatrics* 2000; 114(3):820-826.