



*cutting through complexity*

# Evaluation of the Sustaining NSW Families Program

## FINAL Report

**NSW Kids and Families**

Health, Ageing and  
Human Services

June 2015



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# Acronyms and Abbreviations

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<b>ACRONYM</b>	<b>TERM</b>
AMS	Aboriginal Medical Service
ASQ3	Ages and Stages Questionnaire
ASQ: SE	Ages and Stages Questionnaire: Social and Emotional
CFHN	Child and Family Health Nurse
CALD	Culturally and Linguistically Diverse
EPDS	Edinburgh Postnatal Depression Scale
FPM	Family Partnership Model
GMDS	Griffiths Mental Development Scale
HREC	NSW Population & Health Services Research Ethics Committee
KTS	Keep them Safe
LHD	Local Health District
PHR	Personal Health Record
SHHV	Sustained Health Home Visiting Program
SNF	Sustaining New South Wales Families program

# Glossary of Key Terms

TERM	DEFINITION
Anticipatory Guidance	<ul style="list-style-type: none"> <li>Anticipatory guidance revolves around providing information that helps families prepare for expected physical and behavioural changes during their child's current and approaching stage of development.<sup>1</sup></li> </ul>
Aspirational approach	<ul style="list-style-type: none"> <li>The aspirational approach assists families to become future oriented. This is achieved through assisting families to identify aspirational goals for themselves and their child, prioritising these goals and developing strategies to be able to achieve these goals. The approach involves families identifying their own solutions in a supported environment which aims to enhance the development of effective family skills as well as building parenting capacities.<sup>2</sup></li> </ul>
Ages and Stages Questionnaire (ASQ3) and Ages and Stages Questionnaire: social emotional (ASQ:SE)	<ul style="list-style-type: none"> <li>The ASQ3 is a developmental screening tool which assesses development across a number of domains including communication, motor skills, problem solving, and personal social. The ASQ-SE assesses social and emotional development. For further details see Appendix B.</li> </ul>
Attachment Theory	<ul style="list-style-type: none"> <li>'Attachment theory' highlights the importance of the relationship between the primary care-giver and infant in the first three years of life in establishing enduring emotional patterns that affect emotional regulation, coping capacities, self-confidence and social interactions throughout a lifespan.<sup>3</sup></li> </ul>
Family Partnership Model	<ul style="list-style-type: none"> <li>The 'Family Partnership Model' (FPM)<sup>4</sup> is a framework that can be applied within an organisation and within clinical practice to support clinicians to work from a strengths-based perspective, in partnership with their clients. This model was developed to enable all potential helpers engaging with parents to provide a more effective service and work together to enable a more complete system of care.</li> </ul>
Griffiths Mental Development Scale (GMDS)	<ul style="list-style-type: none"> <li>The GMDS is a standardised tool used to measure growth and development. For further details see Appendix B.</li> </ul>
Home Inventory	<ul style="list-style-type: none"> <li>The Home Observation of the Measurement of Environment (HOME) Inventory measures the quality and quantity of stimulation and support available to a child in the home environment. For further details see Appendix B.</li> </ul>
Motivational Interviewing	<ul style="list-style-type: none"> <li>Motivational Interviewing (MI) involves a collaborative approach with the mother whereby they are guided to clarify aspirations and strengths, identify their motivations for change and promote autonomous decision-making. In a guided approach, MI assists the mother 'to say why and how they might change their behaviour or lifestyle by exploring and resolving ambivalence'<sup>5</sup></li> </ul>
Positive child growth	<ul style="list-style-type: none"> <li>Positive child growth refers to whether the case file reviewer found some level of evidence of positive child growth on file (does not mean that the child is meeting developmental milestones or normal development).</li> </ul>

<sup>1</sup> Kemp L, Anderson T, Travaglia J, Harris E. Sustained nurse home visiting in early childhood: exploring Australian nursing competencies. Public Health Nursing 2005;22:254-9.

<sup>2</sup> NSW Kids and Families. Draft Implementation Manual for the Sustaining NSW Families Program.

<sup>3</sup> Egeland B, Erickson MF. Attachment theory and research. Zero to Three Journal (National Centre for Infants, Toddlers and Families) 1999;2.

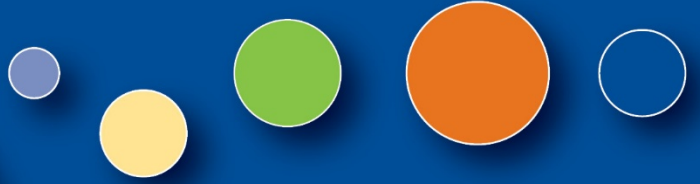
<sup>4</sup> Davis, H, Day, C, Bidmead, C 2002 Working in partnership with parents: The parent advisor model, The Psychological Corporation: London.

<sup>5</sup> Lundahl B, Burke B. The effectiveness and applicability of motivational interviewing: a practice-friendly review of four meta-analyses, Journal of Clinical Psychology: In Session, 2009; 65(11): 1232-1245.

TERM	DEFINITION
Secure Parenting Base	<ul style="list-style-type: none"> <li data-bbox="427 241 1362 309">• Infants who are able to use their mothers (parents) as a secure base have a balance in behaviour between proximity seeking and exploration.<sup>6</sup></li> </ul>
Working Alliance Inventory – Short Form, adapted (WAI-SF, adapted)	<ul style="list-style-type: none"> <li data-bbox="427 324 1331 421">• Working Alliance Inventory – Short Form, adapted (WAI-SF, adapted) tool assesses the strength of the working relationship and whether there is a common purpose. For further details see Appendix B.</li> </ul>

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<sup>6</sup> Ainsworth M., Bell SM., Stayton DJ. Individual differences in the strange situation behaviour of one-year-olds. In H.R. Schaffer (Ed.), The origins of human social relations. pp. 15-71. New York: Academic Press, 1971.



# EXECUTIVE SUMMARY





# Executive Summary

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## Context and Background

This evaluation report, commissioned by NSW Kids and Families, assesses the implementation, impacts, outcomes and costs/benefits of the Sustaining NSW Families (SNF) program.

SNF is a child and family health service that offers home visits to infants and their parents by specialist trained Child and Family Health Nurses over the first two years of the child's life and ideally before the mother gives birth. The program is designed as a prevention program to improve child outcomes for children who may be at risk of compromised development. The program is designed on the premise that pregnancy, and birth to two years of age is a critical stage in children's growth and development and without the program the development of children in the program would be sub-optimal.

The SNF program targets families who reside in areas of low socio-economic status who are moderately vulnerable and who have associated psychosocial distress. In order to be able to participate, women must have a score of 10 or more on the Edinburgh Postnatal Depression Scale (EPDS), and have other psychosocial risk factors (such as financial stress, social isolation, multiple birth, late antenatal care, or unemployment) which are identified through the universal SAFFE START assessment.<sup>7</sup> The program is aimed at medium risk families who do not have complex problems. In contrast to most home visiting programs, SNF is unique in that it employs other allied health professionals (such as speech therapists, dieticians, occupational therapist, physiotherapists, and drug and alcohol counsellors) to participate in case reviews and provide advice to the nurse.

The aims of the SNF program are to improve child outcomes, strengthen a parent's capacity to provide a safe and nurturing environment, improve parenting competence and self-efficacy, and strengthen the relationships between children, parents, carers and health care professionals.

The program commenced in 2010 and now operates in five sites in NSW:

1. South Western Sydney (SWS) - Fairfield LGA , Liverpool LGA
2. Central Coast (CC) - Wyong LGA
3. Hunter New England (HNE) - Kurri Kurri within Maitland LGA, Cessnock LGA
4. Northern NSW (NNSW) - Kyogle LGA, Lismore LGA and the Richmond Valley LGA
5. South Eastern Sydney (SES) - Arncliffe within Rockdale LGA

The two newest sites, which were implemented in 2011, were designed to focus on specific cohorts:

- The SES site is intended to engage Arabic and Mandarin speaking families who do not speak English as a first language and who require a translator. This site employs bilingual nurses and has funding for a multicultural liaison officer. This site does not require a functional level of English for program entry for Mandarin and Arabic speaking families.
- The NNSW site (Lismore) was intended to have a strong orientation to Aboriginal families and has funding for an Aboriginal Liaison worker.

NSW Kids and Families commissioned KPMG to undertake the evaluation four years after the first site began operation.

## Evaluation methodology

As a Keep Them Safe (KTS) Evaluation<sup>8</sup>, the evaluation assesses the appropriateness, effectiveness and efficiency of the program. The major evaluation questions under each of the domains are as follows:

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<sup>7</sup> Kemp L, Harris E, McMahon C, Vimpani, G et al (n.d.) NSW Families- A NSW Health Nurse led program of Sustained Health Home Visiting; DRAFT Service Delivery Model and implementation manual.

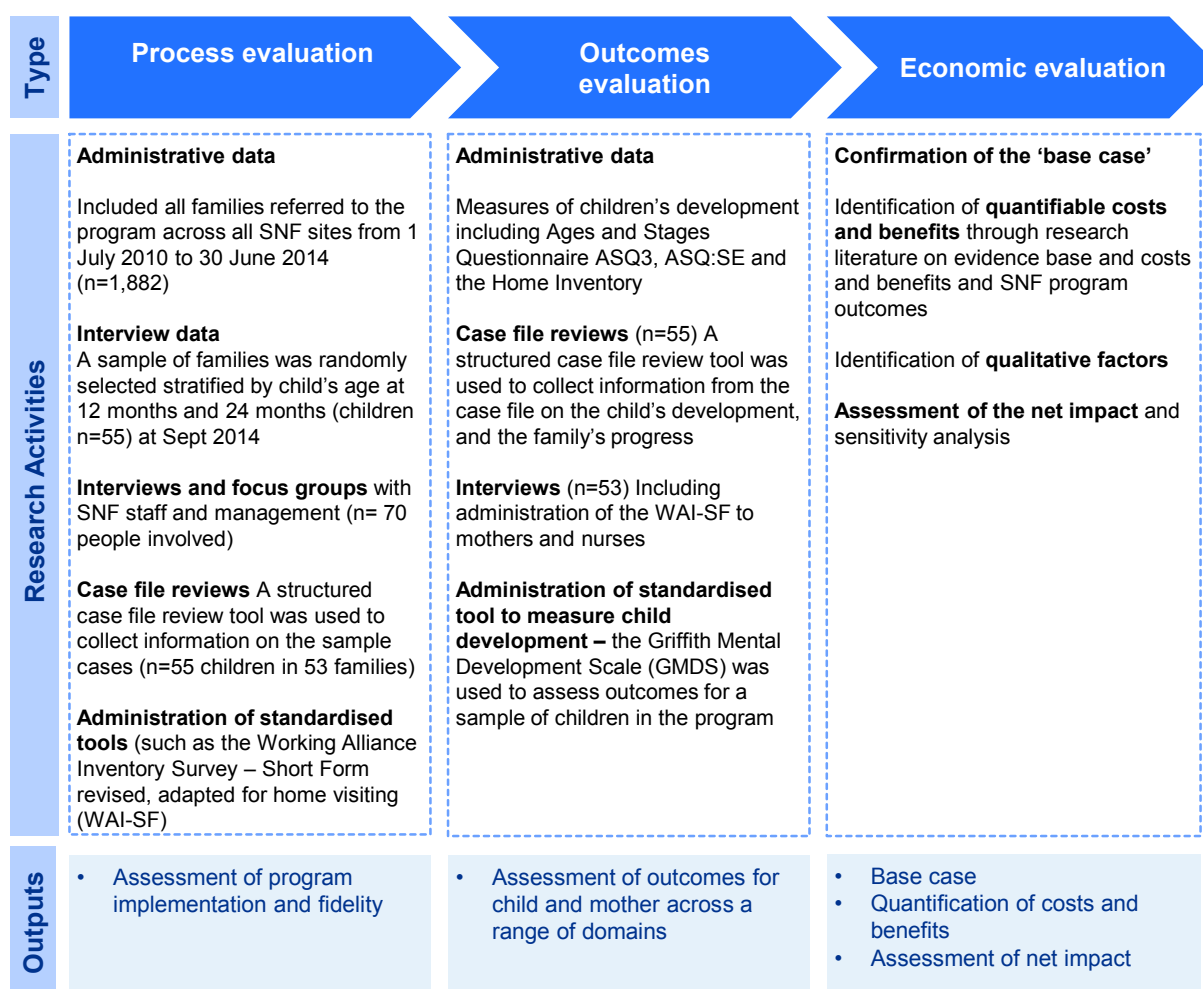
<sup>8</sup> Urbis (2011) Implementation Plan for Evaluation of Keep Them Safe, p.20.

- **Appropriateness:** To what extent is the program being implemented as intended (program fidelity)? Do the activities of the program address the priority needs and policy requirements it was designed to address?
- **Effectiveness:** Has the program achieved the desired objectives and outcomes? Has the program contributed to improving the outcomes for vulnerable children, young people and their families (i.e. health, development and wellbeing)? And who within the target client group receives most benefit from the service?
- **Efficiency:** Is the program cost effective? Has the program resulted in a more coordinated, integrated and efficient response for children, families, communities and agencies?

To address these evaluation questions, the evaluation was conducted in three parallel interlinked evaluation streams: a process evaluation, an outcomes evaluation and a cost-benefit analysis.

The key data collection techniques for these three areas are shown in Figure E:1. Administrative data collected covers the period from 1 July 2010 to 30 June 2014; primary data collection occurred in 2014.

Figure E:1: Evaluation methodology for SNF program



Source: KPMG

## Study strengths and limitations

The evaluation design triangulates data from a number of different sources (including administrative data, interview data, and focus groups), which creates a more comprehensive picture of the findings making the evaluation design well placed to examine program fidelity.

In contrast to the majority of the literature on nurse home visiting programs, the evaluation includes an objective assessment of the development of each child in the sample undertaken by an independent expert using the Griffiths Mental Development Scale (GMDS).

The main limitation in the evaluation design is lack of measurement of the counterfactual. As such, the evaluation of outcomes in the evaluation is limited as, without a comparison or control group, it is unknown what the specific children and mother's trajectories would have been in the absence of the program. However, the evaluation has made comparisons with outcomes achieved for children in the program with other population groups where data is available for example, data on children from low socio-economic areas.

## **Key findings**

As a fairly new program, it is important to establish whether SNF is being implemented as intended. An early process evaluation will give NSW Kids and Families information to be able to make any program adjustments and to further refine the evidence base.

### ***Is the program being implemented as intended (program fidelity)?***

#### ***Eligibility and Referral Processes***

The evaluation examined the way in which the eligibility criterion and referral processes for the program were operating across the five sites to determine whether optimal participation in the program was being achieved.

It found there was some variability in the way the assessment tools and referral pathways were being applied which may be contributing to less than optimal participation. While there is strong evidence to support the use of the EPDS to determine eligibility for the SNF program, its use as the primary screening tool was raised by a number of staff as potentially excluding families who they believe could benefit from the program. Failure to meet the EPDS threshold was found to be one of the main reasons that referrals to the program did not proceed. This suggests further consideration of whether modifications to the intake assessment process may be warranted including the need for a repeat EPDS assessment.

Although the number of referrals to the program has increased since the program began operating (from 419 in 2010-11 to 558 in 2013-14), all sites are below the nominated service target of 150 families (the NNSW target is now 60 families) suggesting there is spare capacity in the program. As at June 2014, SWS had the highest number of active cases at 135 and NNSW had the lowest at 42.

Once families are identified as being suitable for the SNF program, sites are meeting expected service metrics in terms of offering families a place on the program. 93 per cent of families who are deemed eligible accept the offer of joining the program. Retention rates in the program are close to expected rates with 64 per cent of families remaining in the program at the 12 month stage and around half of the families remaining in the program for the full two years. The main reason for families exiting the program is that they move out of the area.

#### ***Staffing and Service Model***

In assessing program fidelity, the evaluation examined staffing structures and caseloads including whether staff with the right skills and qualifications had been recruited and whether the multi-tier staffing model was working effectively to support children and their families.

The evaluation also considered how the service model was operating in terms of whether families were receiving the appropriate number of home visits from the SNF nurse.

The evaluation found that all sites had implemented the SNF program as intended by developing a Local Implementation Group and employing appropriately qualified and trained staff. At the time of the evaluation, not all sites had recruited to full staffing capacity which was impacting on caseloads. SES was the closest to its full staffing complement of 6 FTE with 5.7 FTE staff while NNSW was operating with less than half of its funded positions. Recruitment of suitably qualified nurses was identified as a particular challenge in the regional sites and uncertainty around future funding for the program was also seen as a contributing factor.

A key component of the service model for the SNF program is the placement of a social worker in each site whose primary role is to manage social issues impacting on the family. The evaluation found that all sites had a social worker in place and that social worker visits to the family were recorded in 89 per cent of the case

files reviewed. There were generally positive views about the role of the social worker although staff interviews revealed there were different levels of understanding about how the role should operate in practice.

The SNF program is built around the SNF nurse conducting regular home visits to support families and children. It consists of at least 25 home visits, each 1 to 2 hours duration, primarily by the same SNF nurse during the antenatal period and for the first two years of the child's life<sup>9</sup>. The target is that 100 per cent of families receive the minimum number of visits. The evaluation found that the majority of participants are receiving the minimum number of home visits including families that are referred antenatally and post-natally. For children who remain in the program for two years, 56 per cent received more than 25 visits and 10 per cent received more than 30 visits.

### ***Tailoring the Program***

Key to the success of a program like the SNF program is the capacity of the program to be tailored to local contexts and in particular to address the needs of disadvantaged high risk groups including Aboriginal and Torres Strait Islander families and families from culturally and linguistically diverse (CALD) backgrounds.

All sites have the capacity to serve the needs of these particular groups while two of the SNF sites have dedicated liaison officers in place. The NNSW site includes an Aboriginal liaison officer position and the Arncliffe site in SES includes a multicultural liaison officer as well as Arabic and Mandarin speaking nurses.

Overall the evaluation found that participation rates for Aboriginal and Torres people in the program were lower than expected and that there had been particular challenges in the NNSW site with recruiting and retaining staff and making connections with the Aboriginal local community. In contrast, participation by CALD families in the SNF program was high and there were positive views about the role of the multicultural liaison officer in the Arncliffe site in particular. However, CALD families made up the largest group exiting the program before completion (68 per cent of premature exits identified as coming from CALD backgrounds).

## **Recommendations**

The following recommendations are made to further refine the program and ensure it is operating as intended:

- Review intake and assessment processes to ensure consistency of approach across the sites and to maximise initial participation in the SNF program
- Consider complementary tools to the use of the EPDS to ensure as many women and families who could potentially benefit are able to join the program including assessing the use of the repeat EPDS score as a screening out tool
- Explore strategies to increase program retention including strategies to capture the families who move out of the relevant area and cease participation in the program
- Increase recruitment efforts across all sites to ensure the SNF program can reach its full capacity and meet caseload targets
- Consider additional support to assist regional areas reach recruitment targets including incentives and pooling of resources with other services
- Review the interactions between Tier 1 and 2 staff to ensure they are working effectively to support services to families and consider providing further guidance material in the Draft Program Manual
- Consider augmenting existing training for staff to offer practical support to implement the skills they learn, and in particular to better understand the role of fathers in the program and how to work with cultural differences
- Continue efforts to increase the number of home visits in accordance with 100 per cent target of families receiving the appropriate number of home visits

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<sup>9</sup> Kemp L, Harris E, McMahon C, Vimpani, G et al (n.d.) NSW Families- A NSW Health Nurse led program of Sustained Health Home Visiting; DRAFT Service Delivery Model and implementation manual.

- Consider additional support for sites to increase the participation of Aboriginal and Torres Strait Islander families and the adoption of strategies to build better connections with local communities and Aboriginal controlled health services
- Continue tailoring services to meet the needs of CALD families and promote greater understanding amongst staff on different cultural mores and parenting styles including providing more guidance in the Draft Program Manual
- Undertake further work on investigating the reasons CALD families are choosing to leave the program to ensure it can continue to meet their specific needs

***Has the program achieved the desired objectives and outcomes? Has the program contributed to improving the outcomes for vulnerable children, young people and their families? And who within the target client group receives most benefit from the service?***

### ***Outcomes for Children and Families***

As an early intervention program, the SNF is intended to provide long term health, psychological and social benefits to children, parents and families and the broader community. While the longer term benefits will not be able to be tested for some time, there is evidence that the SNF program is making a positive difference to the lives of children and their families in terms of their health, safety and developmental outcomes.

The evaluation showed positive outcomes for the children who continue to participate in the program across a range of dimensions. In particular, there are encouraging results around health outcomes as evidenced by high immunisation rates - 97 per cent of children were immunised compared with the general population rate of 90 per cent and 87 per cent had some form of breastfeeding either exclusively or in conjunction with formula and/or solids. The majority of children also scored well on physical, social and emotional development test results. On the independent assessment using the GMDS score, 71 per cent of infants were found to be developing within normal limits and 4 per cent were exceeding expectations.

Children in the program were found to be enjoying the benefits of a safer more nurturing environment with over 90 per cent of children scoring normal or above normal on measures regarding their ability to regulate their emotions and respond to stimuli and emotional cues at six weeks and 12 months of age. The vast majority of cases were also found to be practising safe sleeping habits and an increasing majority of children had improved scores on the HOME Inventory which measures the quality and quantity of stimulation and support available to children in the home environment. 67 per cent of children were found to be above the median HOME Inventory score at 6 to 8 weeks and by 12 months, 96 per cent of those remaining in the program were above the median and at 24 months, 95 per cent were above the median.

Improvements were generally sustained on most indicators although performance declined in communication and social and emotional development indicators over the full two years of the program (from 93 per cent being on track in terms of communication skills at 4 months compared to 84 per cent in the program at 24 months and 97 per cent tracking normally at 6 months on social and emotional development scores compared to 92 per cent at 24 months). Children from disadvantaged backgrounds often do poorly on these types of measures and further research is needed to determine the extent to which the SNF program may have ameliorated adverse outcomes in these areas in the absence of other interventions.

Parents and families were also found to be experiencing positive outcomes with significant improvements in the mental health of mothers participating in the program (with 83 per cent of mothers showing a decrease in their EPDS score after six to eight months in the program with 50 per cent showing more than a 6 point improvement). One hundred per cent of families were also showing positive health seeking behaviours after 12 months and 96 per cent were still showing positive signs after 24 months. The majority of parents also kept personal health records and after 12 months in the program, 32 per cent has participated in a smoking cessation program.

One of the most significant results related to the improvements in parenting confidence with 93 per cent of parents demonstrating an improved experience of parenting which increased to 96 per cent after two years in the program. Parental and staff interviews confirmed the overall benefits of the program with parents appreciating the support provided. Staff reported that the majority of carers were more emotionally and verbally responsive with positive gains evidenced in the HOME Inventory and NCAST scores regarding appropriate play material organisation of the home environment and a variety of daily stimulation.

### ***Characteristics of families who achieve positive outcomes***

The majority of families in the SNF program are families with young mothers (in their twenties), 40 per cent are from CALD backgrounds, 3 per cent are Aboriginal and Torres Strait Islanders and 46 per cent had high school education as their highest education attainment. In just under one third of families (28 per cent), the child did not have any siblings and around another third (35 per cent), there was only one sibling. Half the mothers had an EPDS score on entry of between 10 and 13 (ten being the cut off point for the program). Just under ten per cent had a score of 20 or above.

In order to fully benefit from the program, families are expected to participate for the first two years of the child's life. The evaluation therefore considered the factors that influence retention rates in the program. In general, the higher the mother's level of psycho social distress, the more likely they are to remain in the program. The evaluation also found that young mothers are more likely to drop out of the program, CALD mothers are more likely to exit early in the program and mothers with relatively high EPDS scores at commencement are more likely to stay in the program.

In terms of the key influences on child outcomes, measuring the association with GMDS scores, found the only family characteristic to have an association with improved child outcomes was the level of social isolation of the family i.e. if the family was not socially isolated, there was an increased likelihood of the child achieving a normal or better GMDS score.

In relation to a child's developmental progress, only one significant association was found with the results on the Ages and Stages Questionnaire (ASQ) showing that children from non-CALD families and children from families with at least one other child in the family were more likely to achieve the ASQ3 outcome around language and communication. On other ASQ sub-scores (such as gross motor or fine motor) CALD status was not associated with the result which means that CALD infants are not faring worse than their non-CALD counterparts on these scales.

### ***Impacts of Staff on Outcomes for Children and Families***

Research suggests the relationship between the nurse conducting the home visits and the families is critical to achieving successful outcomes. Developing a strong relationship between nurses and parents is a central aspect of the SNF program which is based on a Family Partnership Model (FPM). The FPM supports the nurse to work in a strengths based partnership approach with parents encouraged to set their own goals and interventions and nurses guiding parents in appropriate parent/child interactions and behaviours.

The evaluation found that both nurses and parents valued their relationships with parents tending to rate the strength of the relationship more highly than nurses. The majority of parents reported that nurses were the main factor they believed contributed to the beneficial outcomes being achieved as a result of the service.

In terms of establishing a link between nurses and the outcomes for children and families, regression analysis demonstrated an association between the SNF nurse having over five years of experience and an increased likelihood of the GMDS score being normal or above.

## **Recommendations**

In terms of opportunities to improve the effectiveness of the SNF program in achieving improved outcomes for families and children, the following recommendations are suggested:

- That the program continue to focus on moderate risk families and retention of at risk families given the positive outcomes for those participants who continue throughout the life of the program
- That further efforts are directed at sustaining improvements in child outcomes related to communication and social and emotional development
- That evidence about the SNF's impacts on outcomes should continue to be evaluated to build the evidence base and inform the ongoing implementation of the program
- That further investigation of the reasons for premature exit by young mothers and CALD families is undertaken to inform efforts to increase retention in the program

- That the program target increased efforts at responding to the special needs of children living with families considered to be socially isolated
- That the program continue to focus on recruiting experienced nurses given the link with improved outcomes for children in the program

### ***Is the program cost effective?***

Early intervention and child health programs can present particular challenges for evaluations and cost benefit types analyses. This is primarily because costs are generally borne up front while benefits accrue over a lifetime. Consequently, a relatively long time horizon is required to develop an accurate understanding of intervention, and to ensure benefits are appropriately captured.

These features are common to the SNF program as is the challenge with quantifying in monetary terms the positive benefits achieved by the program. The economic evaluation component has been developed in line with the NSW Government's Guidelines for Economic Appraisal and includes confirmation of the base case, identification and quantification of costs and potential benefits, and the conduct of sensitivity analysis to test the assumptions being made.

Program costs were derived from administrative data and the benefits that were quantified included health benefits, avoided injuries, reduced child mortality, avoided out of home care costs, and longer term benefits such as increased earning capacity, avoided crime costs and avoided special education costs.

The cost benefit analysis estimated that the SNF program has delivered a net benefit to the economy since inception of \$3.1 million (in 2013-14 prices). This is equivalent to a benefit cost ratio of approximately 1.2, which means for every dollar that has been invested in the program, it is estimated to generate \$1.20 in benefits. The net benefit per child completing at least one year of the SNF program was estimated to be \$9,769.

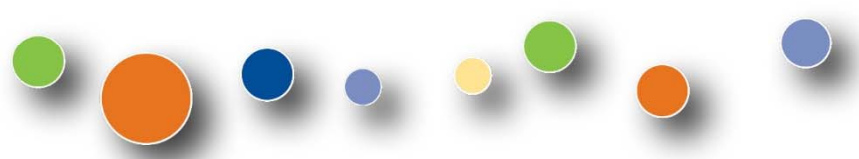
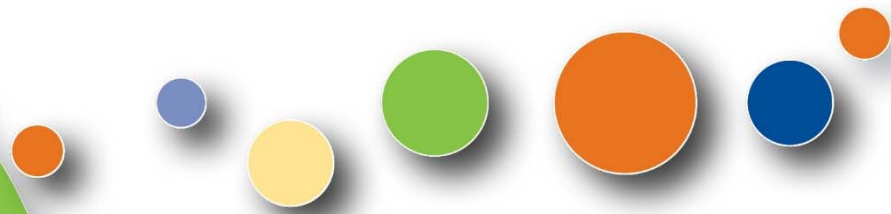
A sensitivity analysis found the impact of the program may lie between a net cost of \$4.9 million and a net benefit of \$24.5 million highlighting the sensitivity of the outcome to changes in the discount rate in particular.

While a longitudinal study of children in the program would be needed to provide definitive data on the long term benefits of the program, given the positive outcomes being achieved for children and parents and the results of the cost benefit analysis, there is a strong case for state-wide roll out of the SNF program.

## **Recommendation**

It is recommended that:

- The option of state-wide roll out of the SNF program be further explored given the benefits to children and families that have been identified
- Consideration be given to establishing the basis for a study of the longitudinal impacts of the program to determine whether this type of early intervention has long lasting impacts on the life trajectories of the children involved





# 1. Introduction

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An independent evaluation of the Sustaining NSW Families (SNF) program was commissioned by NSW Kids and Families. This report presents the results of the evaluation conducted by KPMG. The evaluation involved a process, outcomes and economic evaluation of the program and was undertaken over the period January 2014 to December 2014. The format of the evaluation aligns with the evaluation methodology of the previous *Keep Them Safe* Evaluations that have been conducted.

The SNF program is an integral part of the New South Wales Government's *Keep Them Safe: a shared approach to child wellbeing* initiative which was developed in response to the Special Commission of Inquiry into Child Protection Services in New South Wales. The Special Commission of Inquiry highlighted the need to do more to protect children at risk and in particular to increase the focus on early intervention and prevention.<sup>10</sup> To address this need, the Commission recommended that:

- The child protection system should be underpinned by a continuum of universal, secondary and tertiary services which should include home visiting by nurses, inter alia (recommendation 10.4); and
- Young, first time, isolated mothers with low educational attainment should receive secondary services, particularly sustained home visiting where the focus should be on positive maternal and child outcomes (recommendation 10.5).

Under *Keep Them Safe*, the Government committed to commencing further trials of sustained health home visiting, and based on these trials, refining the client group by 2010 to target those who would receive the most benefit from the service and develop a structured model for consideration state-wide.<sup>11</sup>

## 1.1 Context and Background

The SNF program is a coordinated and integrated child and family health service that delivers prevention and early intervention services to families who have identified risk factors that may impact on their ability to parent effectively.<sup>12</sup> The program grew out of an extensive body of literature showing that adverse events during the prenatal, postnatal periods and the early years can put children at risk of experiencing poor outcomes in their health, development, and wellbeing which endure into later life.<sup>13</sup> This coupled with international and Australian evidence that nurse led home visiting can help prevent or mitigate these impacts, helped inform the design and structure of the SNF program.

In particular, the SNF program was closely modelled on the home visiting programs identified in the literature as being able to demonstrate outcomes for participants, including the Nurse Family Partnership program in the United States and the Miller Early Childhood Sustained Home visiting (MECSH) trial in New South Wales. The MECSH trial, which targeted at risk mothers living in socio economically disadvantaged communities in South Western Sydney, was one of the first Australian-based nurse home visiting programs to be put through a randomised control trial. The trial showed promising results in terms of maternal confidence and child health and development. Further detail on the evidence base supporting the SNF program can be found in Appendix A.

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<sup>10</sup> Kemp, L, Harris, E, McMahon C, (n.d.) Sustaining NSW Families – A NSW Health Nurse led program of Sustained Health Home Visiting. Draft Service Delivery Model and Implementation Manual.

<sup>11</sup> NSW Government (2009) *Keep Them Safe: a shared approach to child wellbeing*. Page 9. On the web at: [http://www.community.nsw.gov.au/docswr/\\_assets/main/lib100040/keep\\_them\\_safe.pdf](http://www.community.nsw.gov.au/docswr/_assets/main/lib100040/keep_them_safe.pdf)

<sup>12</sup> NSW Kids and Families, Kemp, L, Harris, E, McMahon C, (n.d.) Sustaining NSW Families – A NSW Health Nurse led program of Sustained Health Home Visiting. Draft Service Delivery Model and Implementation Manual.

<sup>13</sup> Wise, S; Da Silva, L, Webster, E and Sanson, A. (2005). The efficacy of early childhood interventions: A report prepared for the Australian Department of Family and Community Services. Canberra: Australian Institute of Family Studies. Prepared by Australian Institute of Family Studies (AIFS). AIFS Report number 14. On the web at:

<http://www.aifs.gov.au/institute/pubs/resreport14/aifsreport14.pdf>; Mustard, R.J. (2010). Early Brain Development and Human Development. Published online at: <http://child-encyclopedia.com/Pages/PDF/MustardANGxp.pdf>

## 1.2 Key components of SNF

The SNF program involves sustained and structured home nurse visiting delivered by registered nurses with additional qualifications in child and family health nursing and program-specific training. The program is aimed at families experiencing social and economic disadvantage and mothers with psychosocial risk factors. It requires nurses and other health practitioners to work closely with families to deliver early intervention services which can help improve parent-child interactions and assist families to create a healthy and nurturing environment for their children.

The SNF program offers home visits by Child and Family Health nurses to eligible families during pregnancy and over the child's first two years of life. Unlike a number of other home visiting programs, SNF provides a funded multidisciplinary consultation approach rather than a solely funded nurse program. SNF uses a tiered approach to service delivery, connecting primary health care and more specialised services that families may need. Funded Allied Health (referred to as Tier 2) staff are available to provide support and consult with nursing staff (Tier 1 staff), an element which differentiates this model from other home-visitation programs.

The SNF program is underpinned by a structured developmental program called *Your Guide to Nurturing Parent-Child Relationships: Positive Parenting Activities for Home Visitor* (NPCR program)<sup>14</sup> which provides activities to strengthen parenting capacity and the parent-child relationship by developmental stage and to promote optimal development of the child. The NPCR program offers health and wellbeing education for parents using a strengths-based approach, and includes public health promotion components such as sun safety, infant nutrition, safe sleeping and parent-child attachment through play.

### 1.2.1 Aims of SNF

The SNF program has been designed to<sup>15</sup>:

- foster the development of parental self-efficacy, the early attachment relationship and awareness of the development needs of the infant in order to enhance the social and emotional development of children;
- enhance health, safety development and wellbeing of children and families through community based involvement and family support;
- actively engage those families who need additional support and may not otherwise access maternity and early childhood services;
- build on existing knowledge and experience of parents;
- establish and develop a trusting relationship between family and nurse; and
- promote optimal child health and development.

### 1.2.2 Program funding

NSW Kids and Families provides funding to Local Health Districts (LHDs) that are implementing the SNF program. The first three sites where the program was implemented were South Western Sydney (SWS) at Fairfield/Liverpool, Central Coast (CC) at Wyong and Hunter New England HNE at Kurri Kurri/Maitland/Cessnock. Two further services were added in 2011, to include Kyogle, Lismore and the Richmond Valley in Northern NSW (NNSW) and Arncliffe in South Eastern Sydney (SES).

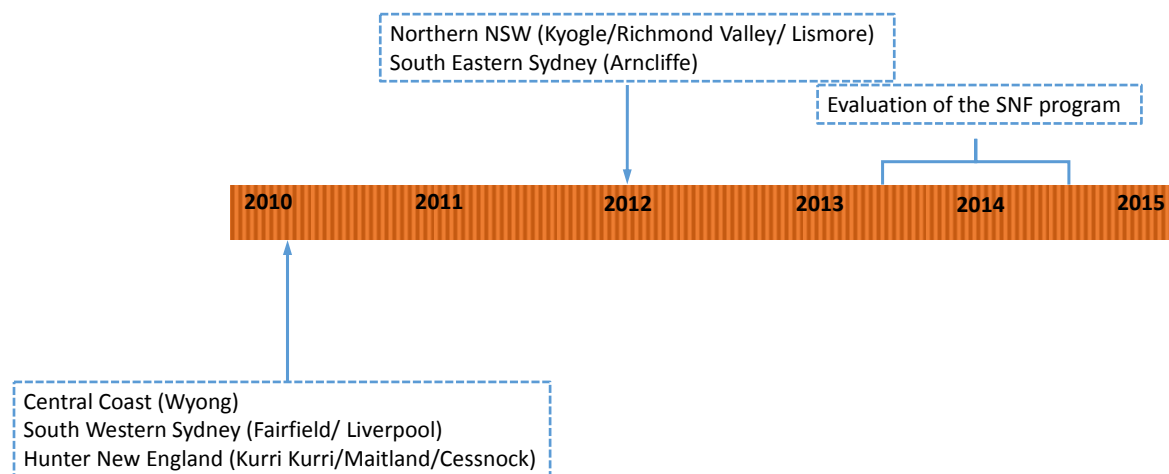
A total of \$28.576 million has been allocated to the program over the five year period 2009-10 to 2013-14. This comprises \$18.75 million in one-off funding for establishment and staff professional development and \$10 million in recurrent funding. Figure 1.1 shows the timing of client commences at each of the five sites.

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<sup>14</sup> Hall, Nadia & Kulkarni, Chaya & Seneca, Shauna, 1957-2006 (2008). *Your guide to nurturing parent-child relationships: positive parenting activities for home visitors*. Paul H. Brookes, Baltimore, Md.

<sup>15</sup> Kemp, L, Harris, E, McMahon C, (n.d.) Sustaining NSW Families – A NSW Health Nurse led program of Sustained Health Home Visiting. Draft Service Delivery Model and Implementation Manual.

Figure 1.1: SNF client commencements by site



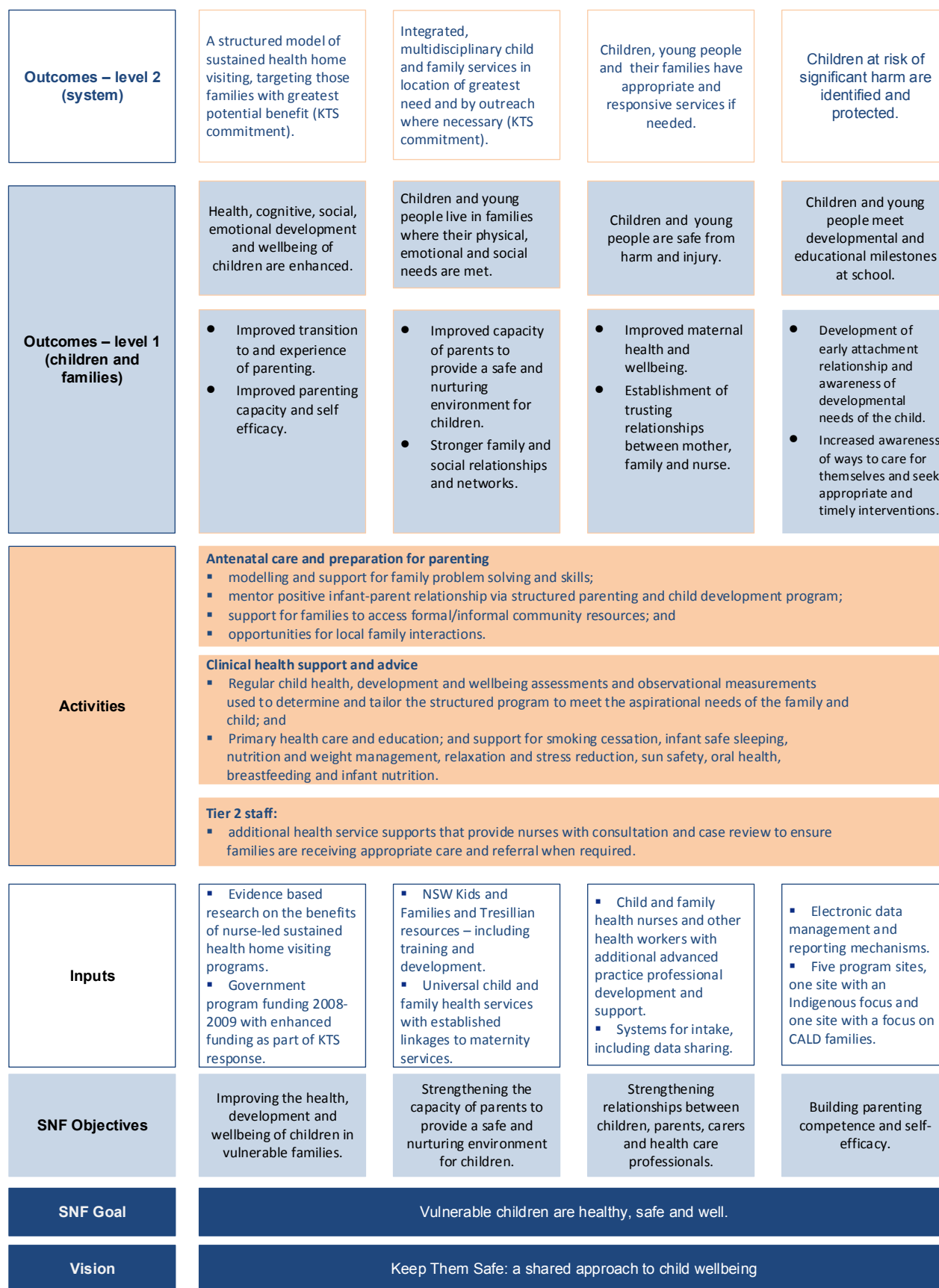
Source: KPMG 2014

The sites are funded based on location (urban and regional) and a needs analysis that was undertaken as part of the original business case. Additional funding is held within the NSW Ministry of Health project management team to provide standardised professional development and evidence based resources and to permit evaluation of the program processes and outcomes. SES and NNSW were also funded for a Cultural Liaison or Aboriginal Health Liaison worker.

### 1.2.3 Program logic

The program logic for SNF is shown in Figure 1.2 below including how inputs and activities are related to program outcomes.

Figure 1.2: SNF program logic



Source: KPMG 2014

## 1.2.4 Target cohort

The SNF program targets families who reside in areas of low socio-economic status who are moderately vulnerable and who have associated psychosocial distress (specifically the mother scoring 10 or more on the Edinburgh Depression Scale). The program generally excludes women with active drug/alcohol abuse, those experiencing domestic and family violence, women with psychotic illness and families with child protection issues.

The service is available to all eligible families at all sites. However, two sites are intended to have particular foci: the South Eastern Sydney (SES) site (Arncliffe) is intended to engage culturally and linguistically diverse (CALD) families, (specifically Arabic and Mandarin speaking families) while the NNSW site (Lismore) is intended to have a strong orientation towards working with Aboriginal families and has funding for an Aboriginal Liaison Officer.

## 1.2.5 Key features

The following table summarises the key features of the SNF program.

*Table 1.1: Key features of the SNF program*

FEATURE	DESCRIPTION
<b>Home visitation</b>	The program offers home visits free of charge by child and family health nurses to eligible families from pregnancy to the child's second birthday.
<b>Tiered service model</b>	SNF uses a tiered approach to service delivery, connecting primary health care and more specialised services that families may need. Funded Tier 2 staff are available to provide support and consultation with Tier 1 nursing staff, an element which differentiates this model from other home-visitation programs. The SNF program is the first home visiting program that provides a funded multidisciplinary team approach with allied health professionals to advise nursing staff, rather than a solely funded nurse program.
<b>Eligibility criteria</b>	The SNF program targets families with low socio-economic backgrounds who are vulnerable and who have associated psychosocial distress (specifically a score of 10 or more on the Edinburgh Depression Scale at two points in time). The Level 2 risk factors which support program eligibility include: <ul style="list-style-type: none"> <li>• young mother/parents (under age 20);</li> <li>• unsupported parent;</li> <li>• late antenatal care;</li> <li>• multiple, premature or complicated birth;</li> <li>• adjustment to parenting issues;</li> <li>• mild-to-moderate anxiety and/or depression;</li> <li>• history of mental health problem or disorder (e.g. eating disorder);</li> <li>• grief and loss associated with the death of a child or other significant family member;</li> <li>• unresolved relationships issues, including with own parents;</li> <li>• financial stress and/or unstable housing;</li> <li>• partner unemployed;</li> <li>• isolated (e.g. geographically, technologically, lack of support); and</li> <li>• refugee status, recent migrant, and/or poor English skills.</li> </ul>
<b>Exclusion criteria</b>	The program generally excludes, with some exceptions (agreed via the state implementation committee), women with active drug/alcohol abuse, those experiencing domestic and family violence, women with psychotic illness and families with child protection issues.
<b>Program capacity</b>	The program is currently funded in five NSW sites to deliver the program to 150 families at each site at any given point in time, except in Northern NSW where the capacity was limited to 120 families at any given point in time and has now been revised to 60 at any given point in time. The program sites are located within different LHDs including Central Coast, Hunter New England, South Western Sydney, Northern NSW and South Eastern Sydney.

FEATURE	DESCRIPTION
<b>Assessment and screening</b>	The main pathway into the SNF program is antenatal public hospital referral, determined through the universal screening and assessment process upon a pregnant woman's presentation at a NSW public hospital (where SAFE START psychosocial assessment is conducted). General Practitioners or private hospitals may also refer women to the service, and previously unseen mothers who deliver infants may be eligible but only up to four weeks after the birth. Referred mothers are then reviewed at an antenatal or postnatal multidisciplinary case discussion and, if deemed to likely be eligible, are interviewed in their home by a clinical coordinator. This interview further assesses suitability, safety of their home environment and motivation to participate in the program.
<b>Program dose (average number of visits)</b>	Once registered in the program (following multidisciplinary case review, interview by the clinical coordinator and offer and acceptance of a place on the program), the SNF program consists of 20-30 home visits, each 1-2 hours in duration, primarily by the same SNF nurse during the antenatal period and for the first two years of the child's life. However, the number of visits is based on when the family enters the program, the gestational age or age of the child on program entry and according to family needs and aspirations in partnership with the family.
<b>Types of support families can access</b>	The program is a structured child and parenting development program that offers a wide range of health and wellbeing education for parents via a strengths-based approach. This includes health promotion components such as sun safety, infant nutrition, safe sleeping and parent-child attachment through play.
<b>Culturally tailored services</b>	The NSW SNF program is unique in that it uses bilingual staff at its Arncliffe site to offer services for Arabic and Mandarin speaking families who do not have functional English. Aboriginal and CALD families can access services in all sites, although the Northern NSW site (Lismore) is intended to have a strong focus on Aboriginal families.

Source: KPMG

### 1.3 Evaluation Approach and Objectives

The evaluation of the SNF program occurred within the broader evaluation framework that was set up for Keep Them Safe (KTS), the requirements for which are set out in the "Implementation Plan for evaluation of Keep Them Safe" released in February 2011.

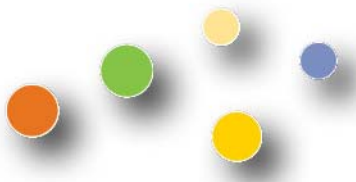
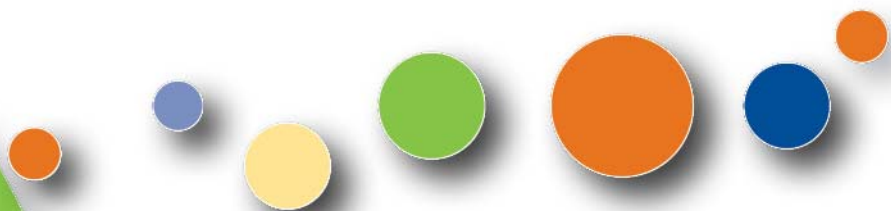
The objectives of the evaluation of the SNF are to:

- assess the extent to which the SNF program is being implemented as intended;
- determine the extent to which the objectives of the SNF program are being met;
- determine if the SNF program has contributed to improved outcomes for vulnerable children, young people and their families as intended under KTS; and
- assess the cost-effectiveness of the SNF program.

The evaluation was conducted in three parallel evaluation streams: a process evaluation, an outcomes evaluation and an economic evaluation. The method is outlined in the next chapter and further detail on the evaluation tools used can be found in Appendix B.



# 2 Evaluation methodology



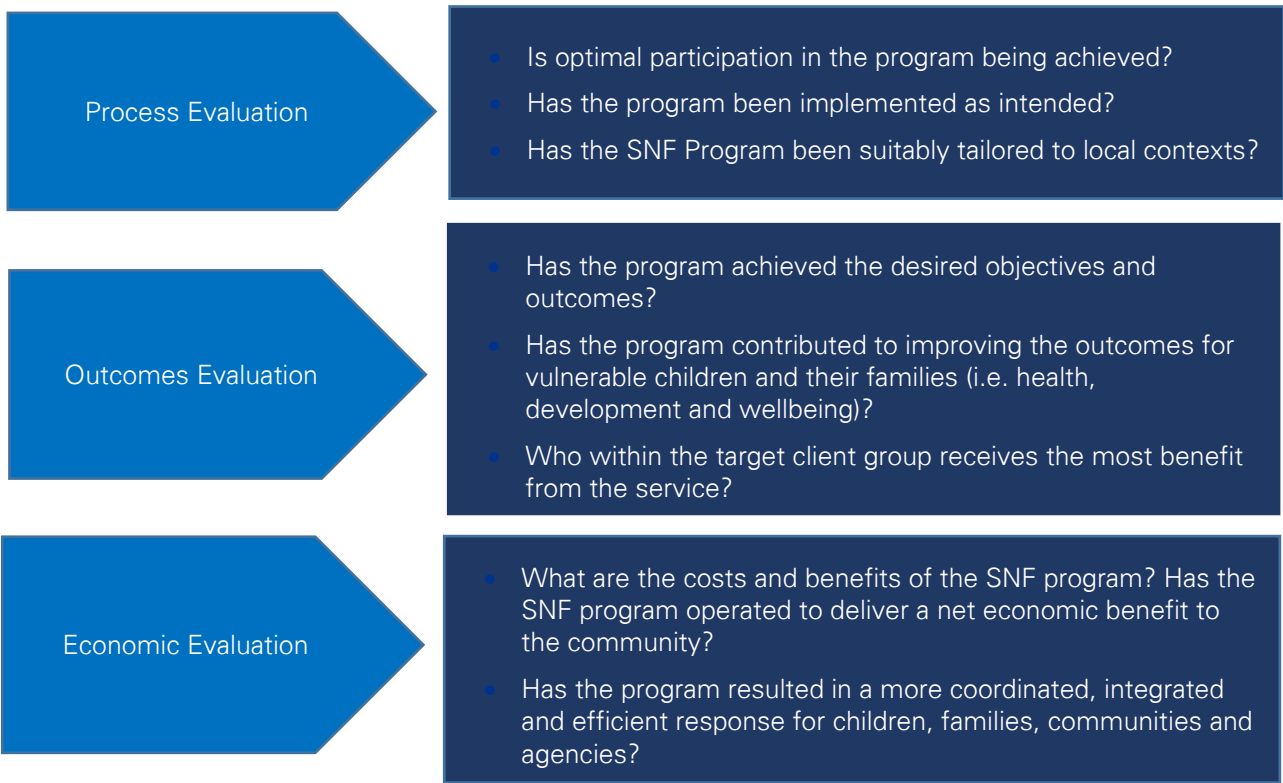
## 2. Evaluation methodology

This section of the report sets out the methodology that was used to conduct the SNF evaluation as per each of the three evaluation streams: the process evaluation, the outcomes evaluation and the economic evaluation.

### 2.1 Evaluation Framework

The overall evaluation framework and the key evaluation questions are summarised in the diagram below. The methods and data sources are outlined in more detail in subsequent sections. Each component of the evaluation is linked, and data collected as part of the process and outcomes evaluation has been fed into the economic evaluation.

Figure 2.1: Overarching SNF Program Evaluation Framework



Source: KPMG 2014

### 2.2 Process evaluation

The process evaluation primarily examines the question of whether the program is being implemented as originally intended and in accordance with established protocols. Program fidelity is critical in achieving the impacts/outcomes of a particular program. Departures and variations in implementation from the original program design can have a major bearing on the overall success of the program and are important considerations in the overall program evaluation.



The primary evaluation questions in this evaluation stream are:

- *Is optimal participation in the program being achieved?*
- *Has each SNF site established the program as intended and in accordance with program protocols? Has the multi-tier model been implemented accordingly?*
- *Has the SNF program been suitably tailored to local contexts?*

Participation in the program was analysed using information on referrals, active participants, caseload, retention and program completion rates from administrative data collected for the whole cohort of families involved in the program across all SNF sites. The evaluation has only considered cases referred to on or before June 2014. A total of 1,882 cases were referred to the SNF program during the relevant time period. A total of 1,012 cases accepted the offer of participation and 997 of those cases commenced before end of July 2014. The dataset included demographic information on families as well as their risk profile at program entry.

Background on the design and implementation of the program came from several sources including interviews with NSW Kids and Families staff, policy documents such as the Maternal Child Health Primary Health Care Policy and the SNF Draft Program Manual. Staffing data was sourced from administrative data sets collected for all five sites.

The timeline, policy context and challenges of implementation were discussed with NSW Kids and Family staff and program administrators. This was conducted via face to face interviews (n=35) and focus groups (n=10) with SNF staff and management (n= 70).

## 2.3 Outcomes evaluation

The primary questions for the outcomes evaluation, in accordance with the Keep Them Safe Evaluation requirements, revolve around the program's effectiveness, including:

- *Has the program achieved the desired objectives and outcomes?*
- *How has the program made a difference, why, and for whom?*
- *Has the program contributed to improving the outcomes for vulnerable children, young people and their families (i.e. health, development and wellbeing)?*
- *Who within the target client group receives the most benefit from the service?*

Examining the SNF program outcomes required examination of outcomes for both children and parents across several domains, including health, safety and social and emotional development. Multiple sources of information on program outcomes were obtained to undertake the outcomes evaluation. The amount of data pertaining to outcomes that is routinely collected and electronically available varies across the sites. Therefore, there is variability in the completeness of the data available. For some sites, data from casefiles had to be entered into a spreadsheet for the evaluation. Outcomes for the whole cohort of participants in the program were examined from site data. Site data available or collected included measures of children's growth and development (such as the Ages and Stages Questionnaire (ASQ3), Ages and Stages Questionnaire Social and Emotional (ASQ:SE), Nursing Child Assessment Satellite Training, (NCAST) Parent and Infant Teaching and Feeding Scales, Personal Health Record checks (PHR), and the Home Observation for Measurement of the Environment, (HOME) Inventory scores).

More in-depth information on outcomes was collected for a sample of cases (n=55). For this group, case file reviews were conducted through a structured data collection tool and the mothers of the children were interviewed. An objective measurement of the children's development was undertaken by an external assessor using the Griffiths Mental Development Scale (GMDS), a standardised developmental assessment tool. In addition, the strength of the nurse-mother relationship was assessed through completion of the Working Alliance Inventory survey – Short Form revised, adapted for home visiting (WAI-SF).

## 2.4 Economic evaluation

The economic component of the evaluation examined the overall efficiency and the costs and benefits of the SNF program. The purpose of the economic evaluation was to assess whether the SNF program costs

are outweighed by the benefits, including those that are expected to emerge throughout the delivery of the program, and those that are expected to emerge in the future as a result of the program outputs and outcomes.

The key evaluation questions answered by the economic analyses are:

- *Has the SNF program operated to deliver a net economic benefit to the community?*
- *Has the program resulted in a more coordinated, integrated and efficient response for children, families, communities and agencies?*

The methodological approach consists of five key components, including:

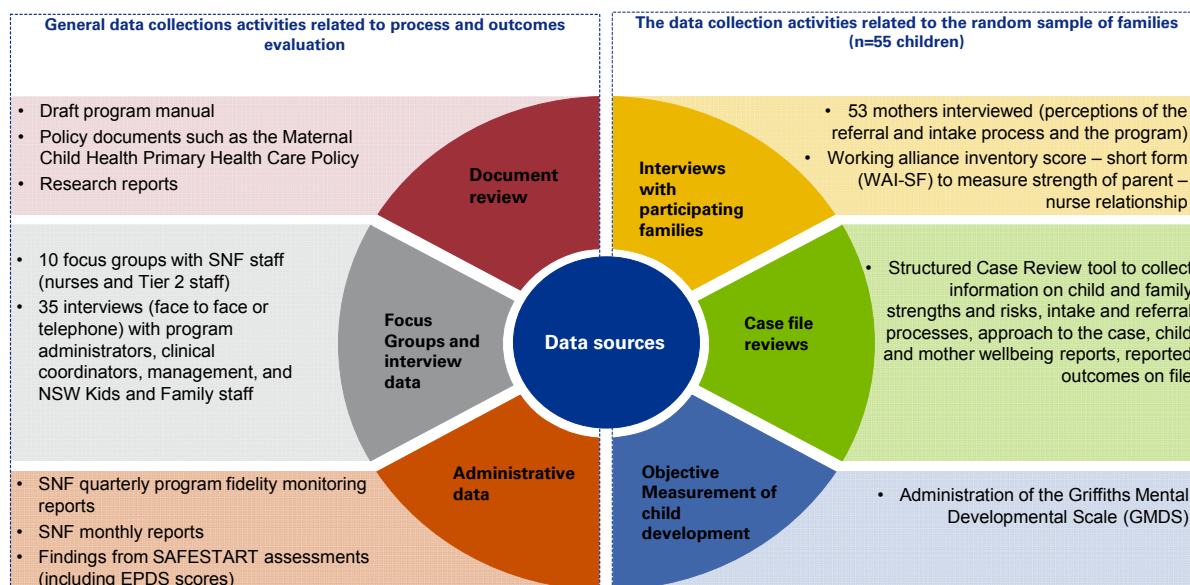
- measuring inputs, activities and outcomes from the program as informed by the SNF program logic;
- attributing short and long term outcomes to the program;
- deriving a model to estimate benefits and costs in monetary terms;
- determining the appropriate time horizon for the economic evaluation; and
- conducting sensitivity analysis to test the impact of different assumptions.

More detailed information on the methodology for the economic evaluation is provided in Appendix D.

## 2.5 Data sources

The data sources for the evaluation are outlined in Figure 2.2 which shows the data sources available for the whole cohort of families and the information available for the sample of cases.

Figure 2.2: General data sources for the study



Source: KPMG 2014

## 2.6 Sampling

There were various sampling frameworks used in the study which varied according to the purpose of the particular data in the analysis.

The sample of families for in-depth analysis was a randomly generated sample which was stratified by the child's age. The sampling framework was designed to take into account program dose: with around half of the infants being around one year of age at September 2014 (50 per cent of program dose) and the other half being close to two years of age at September 2014 (100 per cent of the program dose). This provided information on outcomes and experience within the program at two specific points in time.

In these age groups, there were 80 families in the program (50 infants aged 11-13 months and 30 infants aged 22-24 months). Out of a target of 60 families, the final sample consisted of 53 families with 55 children

(30 infants aged 11-13 months and 25 infants aged 22-24 months). Statistical analyses are only reported when significant and when there is sufficient power to conduct the analyses.

All program staff were invited to participate in focus groups, and the sampling of stakeholders was determined by their role in the program.

## **2.7 Evaluation Procedures**

The evaluation was conducted over 12 months in 2014 (January to December). The evaluation covered all five sites of the SNF program: SES, SWS, CC, HNE and NNSW.

KPMG received ethics approval from the NSW Population and Health Services Research Ethics Committee and the Aboriginal Health and Medical Research Committee. Site specific approvals were also received from each relevant LHD.

Participation in the study was voluntary and families were invited to participate in the study by their SNF nurse.

## **2.8 Study strengths and limitations**

The evaluation is a cross-sectional study design, analysing the progress of the cross-section of children in the program at different points in time, and comparing findings, when relevant, to broad population comparators when these are available. It should be noted that the norms in the standard tests that have been used under the program are well accepted internationally and have been derived from large scale international datasets. For example, the NCAST and HOME inventory are generally derived from overseas populations (in the United States and United Kingdom primarily).

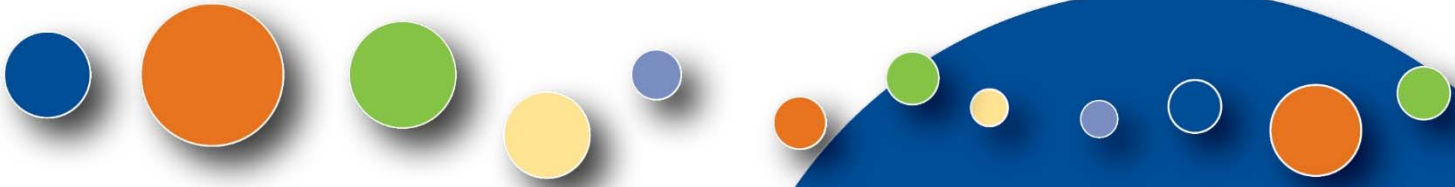
The limitations in the evaluation include limitations of the research design that was used and the quality of the data that was available for the SNF evaluation. The limitations of the research design were identified in the Evaluation Framework and are part of any cross-sectional study. The cross-sectional design is retrospective which does not examine the pathways of children over time including the outcomes that are achieved for children when they leave the program and other factors which may have contributed to improved family outcomes such as, for example, a parent gaining employment or receiving other types of support.

Although there are limitations in establishing causality and determining outcomes in a cross-sectional design, data triangulation was used to strengthen the findings. The evaluation design includes data from a number of different sources including administrative data for the entire cohort of program participants, interview data, focus groups and a more in-depth case file review of a sample of 53 families (with 55 children). In the absence of a control group to determine outcomes for families and children with and without the program, the evaluation has measured changes in key health, safety, and well-being indicators for participants in the program (at the whole cohort and sample level) and has drawn comparisons with indicators for comparable population groups when these are available.

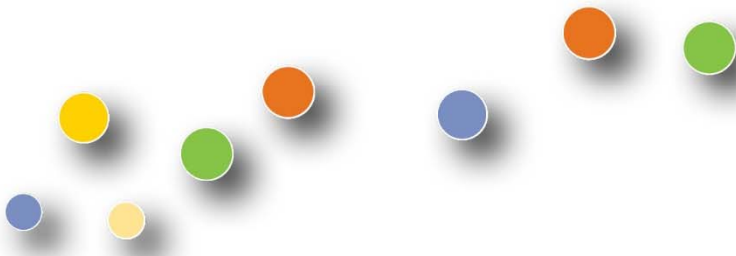
As well as examining the results of the screening and assessment tools used under the program, the evaluation also involved an independent and objective assessment of the development of each child in the sample through the use of the GMDS which is a well-accepted tool for assessing children's development.

Bringing together such a large cross section of data helps create a robust picture of the impacts of the program across a range of dimensions and provides valuable insights and information to inform the further development and refinement of the program. Limitations of the approach include variable quality and availability of data across the sites, the sample size, and the retrospective nature of the vast majority of the data (with the exception of the GMDS). A report on the missing data is provided in Appendix D. A sensitivity analysis was conducted on the available data and the results are recorded in Appendix D. Although there were variable amounts of data, the analysis showed that there were a sufficient number of cases to have confidence in using the data for all but one analysis. The evaluators are unaware of systematic bias in the available data.

A unique characteristic of the evaluation was the independent assessment of the children's growth and development. This aspect of the evaluation combined with the breadth of data sources used in the evaluation, has provided critical information for policy makers as to whether the program has been rolled out as intended and whether children's outcomes are being achieved on the program.



3 Is optimal participation in the SNF program being achieved?



## 3. Is optimal participation in the SNF program being achieved?

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This section of the report presents the results of the process evaluation in relation to the question of whether the SNF program is achieving optimal participation. It includes a discussion of the eligibility and referral pathways for the program, an examination of the data on participation rates and referrals to the program as well as the results of staff interviews and focus groups about how the program is being implemented.

Overall, the evaluation found that while participation in the program is below the target levels for each site, the number of referrals to the program has increased significantly since its inception. The last two SNF sites had only been in operation for two years at the time of data collection and it is expected that participant numbers will increase as the program becomes more embedded in the LHDs.

Staff reported variations in the application of the assessment tools and referral pathways used to identify families eligible for the program across the different sites. However, once families have been identified for participation in the program, sites are meeting expected service metrics in terms of offering the mothers a place on the program. Take-up rates for the program are high and retention rates are close to expected rates, with around half the families remaining on the program for the full term.

### 3.1 Eligibility and Referral pathways

Families who are eligible to participate in the SNF program are identified through New South Wales Health's broader Supporting Families Early policy approach which is intended to ensure that all families receive the support they need during pregnancy and early years of life to improve outcomes for children and their families.

#### 3.1.1 Client Eligibility

To be eligible for the SNF program, the family:

- must be residents in the identified suburbs with a low Social Economic Indices For Areas (SEIFA) score. Poverty and social disadvantage is a significant indicator of being vulnerable or at risk of poorer child health development and wellbeing outcomes as well as parental health and well-being outcomes;
- have an EPDS score of 10 or more which is used in this program to indicate psychosocial distress as well as one or more of the following level 2 risk factors:
  - young parent (under 20 years);
  - unsupported parent;
  - late antenatal care;
  - multiple birth, premature birth or complicated birth;
  - adjustment to parenting issues;
  - mild to moderate anxiety or depression;
  - history of mental health problems such as an eating disorder;
  - grief and loss associated with death of child or other family member;
  - unresolved relationship issues including with own parents;
  - financial stress;
  - unstable housing;
  - partner unemployed;
  - isolated e.g. geographic, no telephone etc; and
  - refugee status, recent migrant, poor English.

It should be noted that mothers who attend private obstetricians or who opt to share their care with a GP rather than attend a public hospital are also eligible to be considered for the program as are women attending Aboriginal Medical Services (separate referral arrangements apply to these women and their families).

Families with higher level risk factors, such as active drug and alcohol misuse, domestic violence, psychotic illness and child protection issues, are not eligible for the SNF program (although certain exceptions apply which enable some high risk families to participate in the program). The program is built on the understanding that families facing significant adversity do not benefit from this type of home visiting program. Other supports are available for these families, including active case management and referrals to adult mental health services and child and family teams.

### 3.1.2 Referral Pathways

There are several points in time when a SAFE START psychosocial assessment, including the Edinburgh Postnatal Depression Scale, is made including antenatally when the mother books in for the birth at a public hospital; after the birth at initial contact as part of the universal health home visit (UHHV) by the child and family health service (all families with a newborn whether born in public or private hospitals); at the six to eight week check (if not attended at UHHV); and at six to eight months as part of the schedule of visits to the early childhood health service.

The SAFE START model<sup>16</sup> includes an assessment of the family's physical, social and mental health. Under the model, there is determination of vulnerability and strengths and a team approach to case management and case planning. The SAFE START model guides the assessment and screening of psychosocial risk factors and appropriate responses. The universal psychosocial assessment includes seven identified key variables (domains of risk) and depression screening is undertaken through the Edinburgh Postnatal Depression Scale (EPDS).<sup>17</sup>

Vulnerabilities are categorised into level 1 – no specific vulnerabilities detected; level 2 – factors that may impact on the ability to parent and require a level 2 response; and level 3 – complex risk factors that usually require a level 3 response including 'mental illness, drug and alcohol misuse, domestic violence, current/history of child protection issues'.<sup>18</sup>

If women are assessed as vulnerable through the assessment process, the strengths and vulnerabilities of the family are discussed in a multi-disciplinary case discussion (MCD). The multi-disciplinary case team generally includes clinicians from maternity, early childhood health, mental health/psychiatry drug and alcohol, social work, psychology, and child protection. Others may attend if there is a need, e.g. Aboriginal health worker, cultural liaison officer

At this meeting, a decision is made regarding the level of care and the service response that is required. SNF is one of the services that can be offered in a level 2 service response (other services include referrals to social work, GP care and mental health services). Clients are then referred to the SNF clinical coordinator who conducts a follow-up visit and repeats the EPDS to further assess suitability and interest to participate in the program. A formal offer is then made to participate in the program.

The assessment and MCD pathway through which families are identified for the SNF program is shown in Figure 3.1 below.

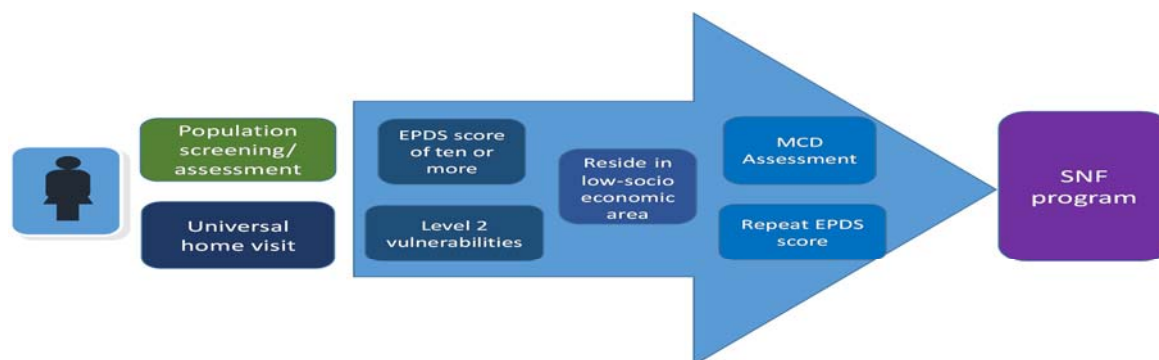
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<sup>16</sup> NSW Department of Health. NSW Health/Families NSW Supporting Families Early Package - Maternal and Child Health Primary Health Care Policy. Sydney: NSW Health, 2009. Available from: [http://www.health.nsw.gov.au/policies/pd/2010/PD2010\\_017.html](http://www.health.nsw.gov.au/policies/pd/2010/PD2010_017.html)

<sup>17</sup> NSW Ministry of Health, 2009, NSW Health/Families NSW Supporting Families Early Package – SAFE START Strategic Policy, NSW Ministry of Health p. 4.

<sup>18</sup> Ibid p. 14.

Figure 3.1: Critical pathway for SNF referral

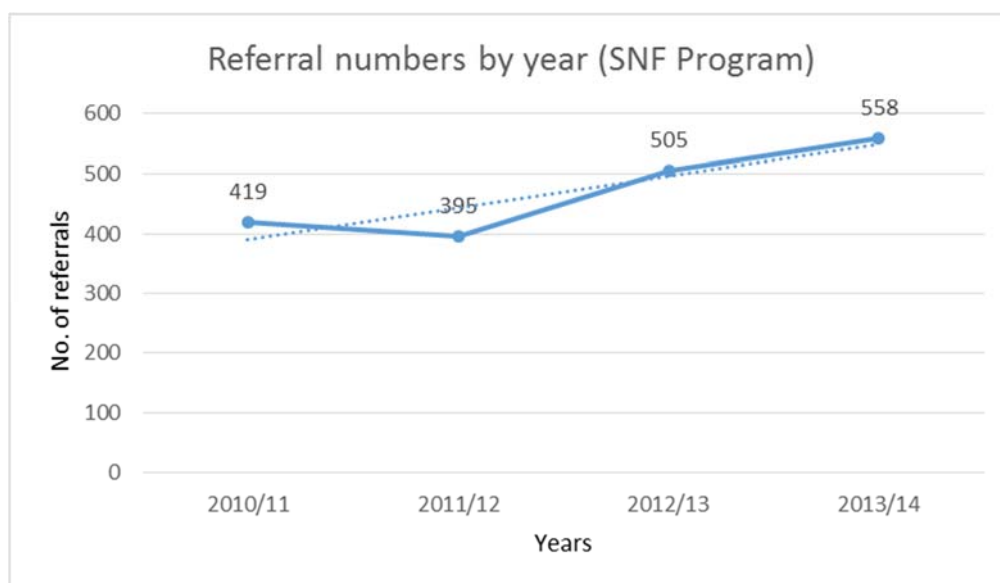


Source: KPMG 2015

### 3.1.3 Number of referrals received

The progression of the program’s startup can be seen in the increasing number of referrals to the program as shown in Figure 3.2. There has not been a smooth year on year increase in the number of referrals received, suggesting implementation issues at sites regarding the establishment and operation of the referral pathway. As shown in

Figure 3.2: Number of referrals into SNF



Source: KPMG 2014 analysis of SNF program data. Note (total n=1882). There were five referrals in the 2009/10 FY which are not shown on the figure.

As shown in the table below, there is variation in the number of referrals received at each site and in the number of referrals received at a site each year. For example, in HNE in 2011-12 there were 105 referrals while in the following year, 2012-13, there were 67 referrals received.



Table 3.1: Total number of referrals by site by financial year during the data collection period

Date referral received	CC		HNE		NNSW		SES		SWS		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
2009-10	1	0	2	1	0	0	0	0	2	0	5	0
2010-11	161	33	85	26	0	0	0	0	173	33	419	22
2011-12	115	24	105	33	8	8	48	11	119	23	395	21
2012-13	96	20	67	21	54	55	198	44	90	17	505	27
2013-14	113	23	63	20	36	37	208	46	138	26	558	30
<b>Grand Total</b>	<b>486</b>	<b>100</b>	<b>322</b>	<b>100</b>	<b>98</b>	<b>100</b>	<b>454</b>	<b>100</b>	<b>522</b>	<b>100</b>	<b>1882</b>	<b>100</b>

Notes: Analysis only includes referrals received prior to 30 June 2014; a referral received for multiple births is counted once only.

Source: KPMG 2014 analysis of SNF program data

### 3.1.4 Case flow

The program has other specific targets which have been set for several different process points in the intake and referral process. Table 3.2 provides a summary of performance against the key program fidelity indicators for the SNF program.

The methodology from the current study cannot determine whether all medium risk families are being identified. Given the variability in intake and assessment, and the use of the EPDS it is unlikely that 100 per cent of medium risk families are being identified.

Once women have been identified, the program is performing as expected in offering families a place in the program and the take up rate is also being achieved. Program retention is close to the expected rate (e.g. 49 per cent at 24 months). The key metrics are discussed in more detail below.

Table 3.2: Fidelity indicators Summary Assessment

PROGRAM TARGET <sup>19</sup>	SNF EXPERIENCE
100% families identified	Unable to determine from the study
75% take-up rate to participate in program	Yes – target exceeded (93% take-up)
65% families retained at 12 months	Close to target – 64%
>50% families retained at 24 months	Close to target – 49%

Source: KPMG 2014

## 3.2 Factors affecting SNF participation rates

There are a number of factors affecting SNF participation rates which have been examined as part of the evaluation including:

- variable initial assessment procedures;
- differing sources and timing of referrals to program;
- screening out processes; and
- capacity to maintain participation.

### 3.2.1 Assessment procedures

#### *SAFE START and the Multidisciplinary case discussion (MCD)*

As outlined above, clients are initially assessed for the SNF program through the public maternity and child and family health services which utilise the SAFE START model for dealing with psychosocial health

<sup>19</sup> Kemp L, Harris E, McMahon C, Vimpani, G et al (n.d.) NSW Families - A NSW Health Nurse led program of Sustained Health Home Visiting; DRAFT Service Delivery Model and implementation manual.

assessments and responses. As such, the efficacy of the SNF program in attracting the clients who would most benefit is largely dependent on the way in which the primary health care assessment and SAFE START practices are implemented in each of the sites.

The evaluation found there was variation in assessment and referral practices across each of the SNF sites which may be contributing to not all families who may be eligible for SNF being considered in the MCD meeting.

During focus group discussions, there was a view expressed by staff at some sites that the MCD tended to focus on addressing the needs of complex clients, rather than discussing clients who are eligible for the SNF program (i.e. those with EPDS of 10 or above and level 2 risk factors). For example, in HNE, level 3 clients are discussed in the MCD and a separate meeting is held to discuss level 2 clients for SNF.

The use of EPDS scores also varies across sites: in HNE, the MCD only considers clients who have an EPDS of 13 or above. In SWS, the minimum EPDS score brought to a SAFE START meeting must be above 10 while at other sites women with a score of 10 are considered for the program. A score of 10 or more on the EPDS is the SNF program protocol. Further investigation is needed to determine the impact of variable assessment practices on client entry levels into the program.

### 3.2.2 Use of EPDS

The evaluation has examined the application of the EPDS (rather than the validity of the tool itself) in the context of achieving optimal participation in the program. There is strong evidence to support the use of the EPDS as a tool for selecting participants who would most benefit from the SNF program mainly based on the results of the MECOSH program. Investigating outcomes of subgroups within the MECOSH trial, it was found women with an EPDS score of 10 or more showed benefits from the MECOSH program 'across a number of areas, including child development, their experience of being a mother, and small effects in a number of domains of the quality of the environment from a child development perspective; emotional and verbal responsiveness, organisation of the environment and provision of appropriate play materials'.<sup>20</sup>

However, a number of stakeholders raised concerns that the use of the EPDS as a screening tool may also be contributing to fewer women being identified as possible candidates for the program than might otherwise be considered optimal. As noted earlier, an EPDS score of 10 or more coupled with an assessment against psychosocial risk factors qualifies a family to be considered eligible for the SNF program. A significant number of families are also screened out when the second EPDS is conducted (refer section 3.2.4 on screening out processes for more detail).

During staff focus groups, the appropriateness of the EPDS for particular sub-population groups was raised. A number of stakeholders commented that in their experience the use of the EPDS tool appears to result in a disproportionate screening out of particular cohorts such as young mothers, families from CALD backgrounds, and Aboriginal families. Staff also perceive that the use of the EPDS tool screens out women who have psychosocial distress but do not have a score of 10 or more. Further detailed analysis would need to be undertaken to determine whether there is a direct causal link between staff perceptions about the impact of the EPDS on participation rates.

The MECOSH trial used the EPDS score as a marker of depression and there is some Australian evidence to suggest that certain women with distress may not be identified through the use of the EPDS alone.<sup>21</sup> For example, Matthey, Henshaw, Elliott, Barnett (2006) in their Australian study note that the EPDS has become a 'marker for postnatal maladjustment' but found that some women experience 'stress' and anxiety without depression which is not picked up by the EPDS tool. They found that an alternative scale, the Depression Anxiety Stress Scales (DASS-21,) can successfully identify women who are distressed but not identified through the EPDS.<sup>22</sup>

While there are no fail safe screening tools for the purpose of identifying at risk populations, further investigation is needed on what refinements may be needed to ensure that all families that would benefit from the program are being captured. This could include consideration of complementary tools that could be applied along with the EPDS to screen potential candidates for the program.

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<sup>20</sup> Kemp L, Harris E, McMahon C, et al 2011, Child and family outcomes of a long-term nurse home visitation programme: a randomised control trial, Arch Dis Child, vol. 96, pp. 533-540.

<sup>21</sup> Matthey S, Henshaw C, Elliott S, Barnett B: Variability in use of cut-off scores and formats on the Edinburgh Postnatal Depression Scale – implications for clinical and research practice. Arch Women's Mental Health 2006, 9 (6): 309-315.

<sup>22</sup> Ibid

### 3.2.3 Referral sources and timing

As shown in the table below, the majority of referrals are being made by midwives which is consistent with the program design and aims. However, a significant amount of referrals are also being made by child and family health nurses at some sites. For example, more than one in six referrals to SNF are being made by child health nurses at the first postnatal visit at SES, HNE and CC.

Table 3.3: Referral Sources SNF program by site

Referral Source	CC		HNE		NNSW		SES		SWS		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Aboriginal Maternal and Infant Health Service (AMIHS)	0	0	0	0	3	3	0	0	0	0	3	0
Allied Health (Social Worker, Physio, OT etc)	0	0	5	2	0	0	0	0	0	0	5	0
Child and family health nurse	111	23	63	20	0	0	148	33	0	0	322	17
Community Based Welfare service	0	0	0	0	1	1	0	0	0	0	1	0
Midwife	348	72	218	68	93	95	306	67	522	100	1487	79
New Directions	0	0	1	0	0	0	0	0	0	0	1	0
Obstetrician	1	0	0	0	0	0	0	0	0	0	1	0
Paediatrician	0	0	1	0	0	0	0	0	0	0	1	0
Other	5	1	5	2	0	0	0	0	0	0	10	1
Not available	21	4	29	9	1	1	0	0	0	0	51	3
<b>Grand Total</b>	<b>486</b>	<b>100</b>	<b>322</b>	<b>100</b>	<b>98</b>	<b>100</b>	<b>454</b>	<b>100</b>	<b>522</b>	<b>100</b>	<b>1882</b>	<b>100</b>

Source: KPMG 2014

The program design allows for both antenatal and postnatal referrals. The majority of referrals are made before the mother gives birth (76 per cent) in line with best practice. For referrals that do occur postnatally, the majority occur within four weeks after birth (82 per cent). Table 3.4 shows the timing of referrals by site. NNSW had the largest percentage of antenatal referrals while SES had the largest percentage of postnatal referrals. While there is no evidence to suggest that timing of referrals directly affects ongoing participation, there is evidence to suggest that antenatal referrals lead to better outcomes for children (especially in terms of their behaviour) although the same study found that postnatal referrals were also associated with positive outcomes for maternal depression and self-esteem.<sup>23</sup>

Table 3.4: Timing of Referrals to SNF program by site

Weeks between referral and birth	CC		HNE		NNSW		SES		SWS		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
<b>First trimester</b>	11	2	19	6	3	3	28	6	86	16	147	8
<b>Second trimester</b>	239	49	107	33	42	43	152	33	260	50	800	43
<b>Third trimester</b>	108	22	103	32	49	50	77	17	127	24	464	25
<b>At birth</b>	10	2	11	3	2	2	12	3	9	2	44	2
<b>Within 4 weeks after birth</b>	113	23	75	23	1	1	131	29	23	4	343	18
<b>More than 4 weeks after birth</b>	5	1	7	2	1	1	9	2	17	3	39	2
<b>Unknown (missing date)</b>	0	0	0	0	0	0	45	10	0	0	45	2
<b>Grand Total</b>	<b>486</b>	<b>100</b>	<b>322</b>	<b>100</b>	<b>98</b>	<b>100</b>	<b>454</b>	<b>100</b>	<b>522</b>	<b>100</b>	<b>1882</b>	<b>100</b>

Source: KPMG 2014

<sup>23</sup> McDonald, M., Moore, T.G. and Goldfeld, S. (2012). Sustained home visiting for vulnerable families and children: A literature review of effective programs. Prepared for Australian Research Alliance for Children and Youth. Parkville, Victoria: The Royal Children's Hospital Centre for Community Child Health, Murdoch Children's Research Institute.

### 3.2.4 Screening out processes

As shown in the following table, of the 1,882 families referred to the program in the study period, 870 did not proceed. The leading reason for referrals to not proceed was ineligibility to meet psychosocial distress as measured by the EPDS threshold (n=291). The next most significant reason was declined to be interviewed and cannot be contacted. Repeating the EPDS score is important in determining whether the mother's initial score may be due to particular circumstances at the time the test was administered. However, there was also a view expressed by some stakeholders that women can learn how to "pass" the test the second time around. Further investigation of the suitability of the EPDS and the reasons why women seek to respond differently on the EPDS the second time around would appear warranted including the potential to use alternative tools to complement the EPDS.

Table 3.5: Reason for referrals to not proceed

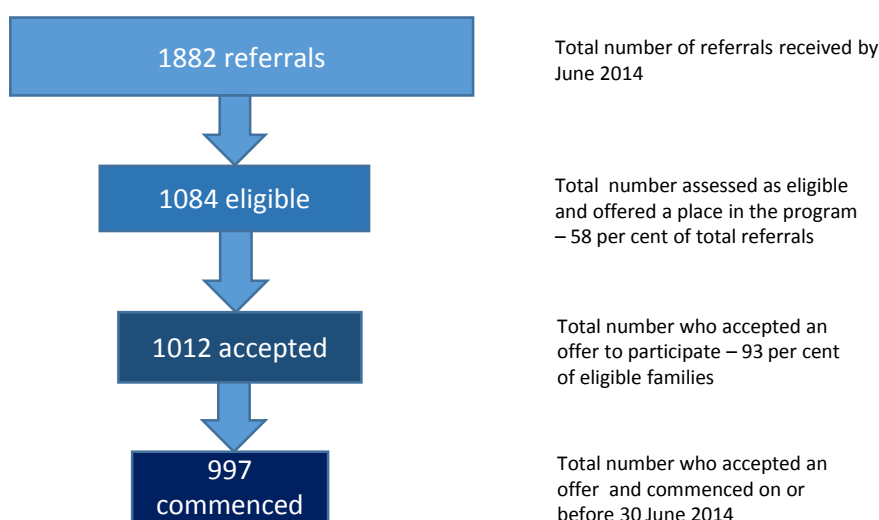
Reason	Total	
	N	%
ELIGIBLE but moving/moved out of area (declined)	17	2
ELIGIBLE but no offer made	1	0
ELIGIBLE but not interested (declined)	47	5
ELIGIBLE but other (declined)	8	1
INELIGIBLE: EPDS not met	291	33
INELIGIBLE: High complexity	73	8
INELIGIBLE: Other	21	2
INELIGIBLE: Out of area	14	2
NOT INTERVIEWED: Cannot be contacted	155	18
NOT INTERVIEWED: Declined interview	241	28
NOT INTERVIEWED: On interview waitlist	2	0
<b>Grand Total</b>	<b>870</b>	<b>100</b>

Source: KPMG 2014

### 3.2.5 Take up and Completion Rates

As shown in Figure 3.3 below, there were 1,882 referrals (before 30 June 2014). 58 per cent of the referrals were deemed eligible and offered a place in the program. 1012 families opted to take up the offer (93 per cent of all eligible families) and 997 families had commenced in the program before end of June 2014.

Figure 3.3: Referrals and Take-Up Rates as at June 2014



Source: KPMG 2014

Participants in the SNF program are expected to remain in the program for two years. Completion rates for the program as a whole are marginally below target as shown in the table below.

*Table 3.6: Completion Rates against Target – Total SNF Program Participation as at 30 June 2014*

PERIOD OF TIME RETAINED IN SNF PROGRAM	TARGET	COMPLETION RATE
At 12 months	65 per cent	64 per cent
At 24 months	50 per cent	49 per cent

Source: KPMG 2014

Further analysis of the factors associated with ongoing participation in the program can be found in Chapter 7 of this report.

### 3.2.6 Service targets for the five SNF sites

The evaluation has considered the number of families participating in the program and compared this against the number of funded places/service targets that have been set for each of the five sites.

It is understood the targets were originally derived by examining numbers of births in areas of low socio-economic status (as defined by Socio-Economic Indexes for Areas, SEIFA). Sites were originally chosen by selecting areas with band 1 or 2 SEIFA (the most disadvantaged sites) which had over 1,000 births per year. Examination of Australian Bureau of Statistics (ABS) birthrate data for 2008-2012 in relevant Local Government Areas (LGAs) shows rates in most LGAs rates are stable or increasing; the exception is a 0.1/1000 population decrease in Wyong, Cessnock and Fairfield LGAs.

The service target has been 150 families at each site at any given point in time (with the exception of NNSW which had an original target of 120 at any given point in time which has now been revised to 60). Note this is a point in time assessment and does not reflect the total caseload for each of the sites. As at 30 June 2014, SWS had the highest number of active participants at 135 and NNSW the lowest at 42.

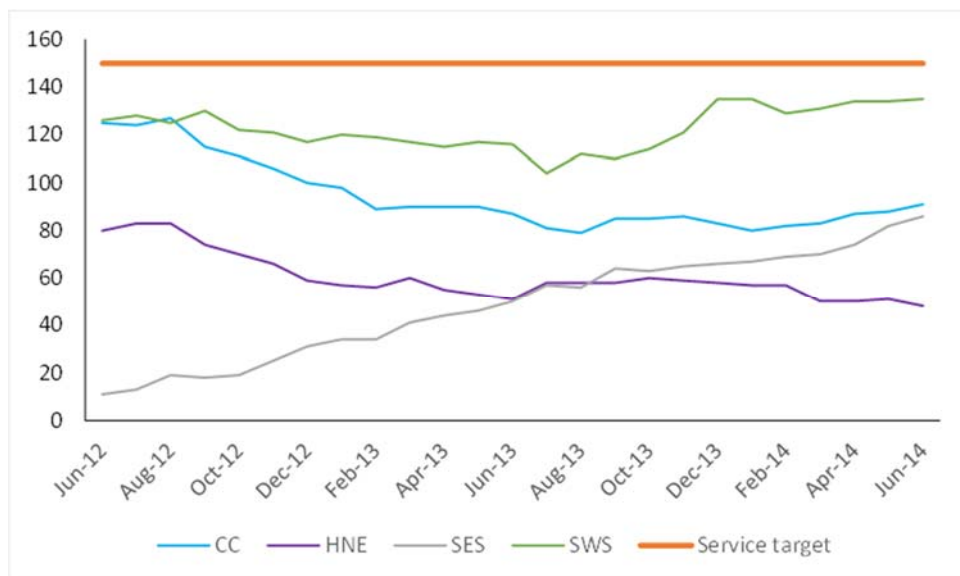
*Table 3.7: Participation at each site as at 30 June 2014*

	SERVICE TARGET	NUMBER OF ACTIVE CASES
SWS	150	135
CC	150	91
SES	150	86
HNE	150	48
NNSW	60	42

Source: KPMG

Participation over time since the SNF program was first established against the target is shown in Figure 3.4 below (excluding NNSW). It shows variable performance over time and across sites. This reflects a range of factors including variations associated with dates when funding was received, when staff were recruited and when referrals were first received. In addition, staff reported that it takes time for program intake processes to be developed, for stakeholders to become aware of the program and for referral pathways to be properly utilised across the relevant district.

Figure 3.4: Families active in the program by site for June 2012 to June 2014 (excl. NNSW)



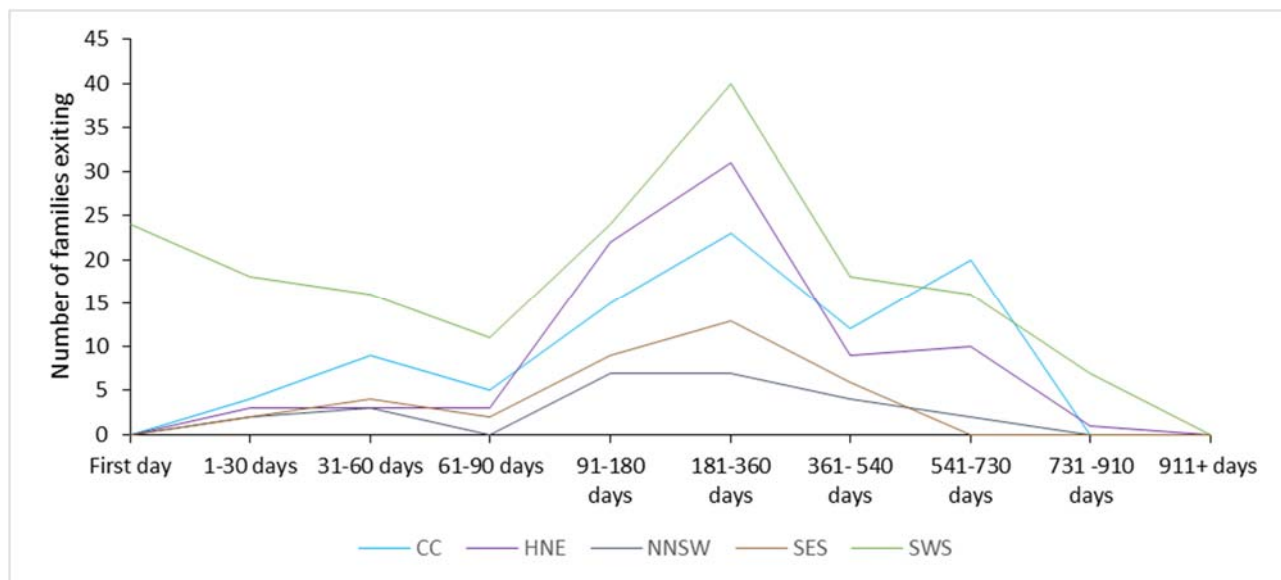
Note: This figure excludes NNSW as it has a different service target.

Source: KPMG 2014 analysis of SNF program data

### 3.3.5 Exit points from the program

An analysis of exit points from the SNF program from date of commencement was undertaken across all five sites – the results of which are shown in Figure 3.5 below. It shows that the majority of families exit around the six month to one year mark.

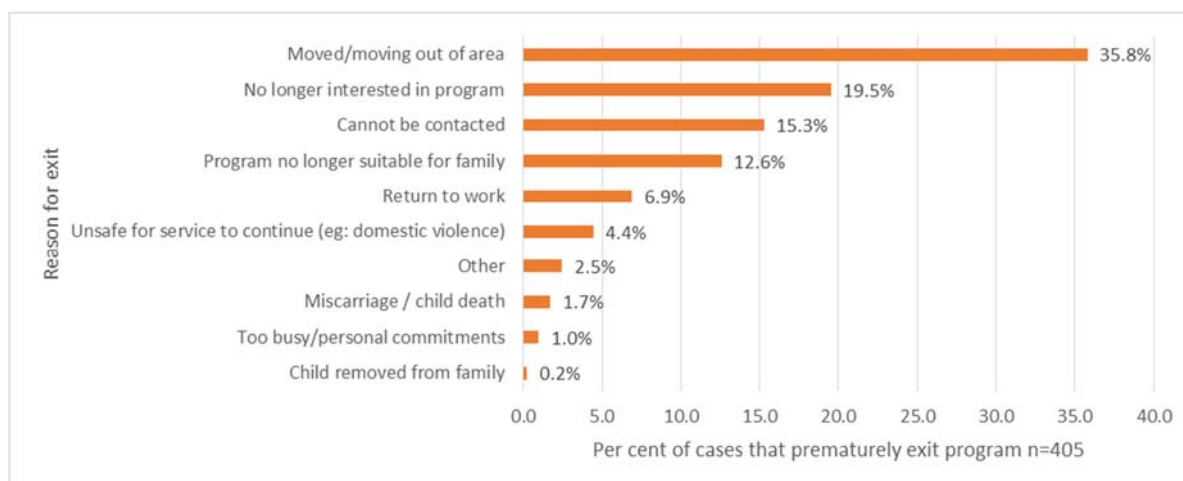
Figure 3.5: From date of commencement, points at which families exit the program



Source: KPMG 2014 analysis of SNF program data

There are various reasons why families exit the program which are outlined in Figure 3.6 below. The main reasons are families moving out of the area and no longer being interested in participating in the program. Analysis of the particular characteristics of families that affect retention are discussed in Chapter 4.

Figure 3.6: Reasons for families prematurely exiting program (all cases)



Source: KPMG 2014

### 3.3 Implications of Results

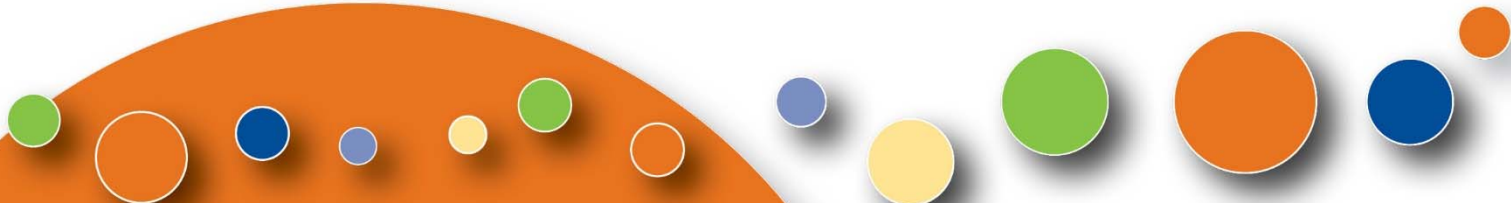
The results of this part of the evaluation show that the number of referrals to the SNF program is increasing and that participation by those who are eligible for the program is high with 93 per cent of eligible families accepting the offer of joining the program. It is not possible to objectively define an ideal measure of overall participation in the SNF program (noting the question of which particular families benefit most from participation is addressed in Section 7 of the report).

However, not all sites are meeting service delivery targets suggesting there is capacity to provide more services and issues around the eligibility criteria were raised in a number of forums as potentially excluding families who could benefit from the program. There was also variability with respect to assessment processes and the timing of referrals across sites which may be impacting on overall participation levels. Completion rates are just under established targets and the main reason families give for exiting the program is that they move out of the area.

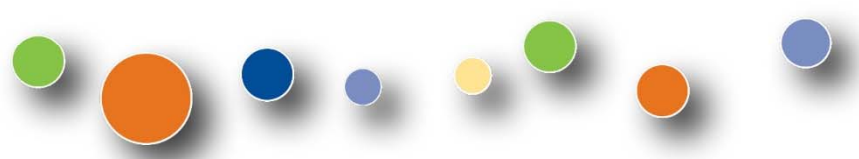
#### Recommendations

The following recommendations are made to further refine the program and to increase overall participation rates:

- Review intake and assessment processes to ensure consistency of approach across the sites and to maximise initial participation in the SNF program
- Consider complementary tools to the use of the EPDS to ensure as many women and families who could potentially benefit are able to join the program including assessing the use of the repeat EPDS score as a screening out tool
- Explore strategies to increase program retention including strategies to capture the families who move out of the relevant area and cease participation in the program



4 Has each SNF site established and delivered the program as intended/in accordance with the protocol? And has the multi-tier model been implemented accordingly?





## 4. Has each SNF site established and delivered the program as intended/in accordance with the protocol? And has the multi-tier model been implemented accordingly?

This section examines whether each SNF site has established and delivered the program as intended including whether staff with the right skills and expertise have been recruited and whether the multi-tier staffing model is working effectively to support children and their families. The evaluation has also considered whether the SNF program is being delivered in accordance with established protocols particularly regarding the number of home visits that are conducted.

The evaluation found that each site has implemented the program model as intended by developing a Local Implementation Group and employing appropriately qualified and trained staff. At the time the evaluation was conducted, not all sites had recruited to full staffing capacity which was impacting on caseloads. Some challenges with the multi-tier model were identified by staff at the early stages of implementation, including a lack of role clarity for Tier 2 allied health staff. The draft Program Manual should assist in clarifying roles and relationships between the SNF nurse and the Tier 2 allied health professional including the social worker role.

With regards to the home visiting program, the evaluation found that the majority of participants are receiving the minimum number of home visits in accordance with the program protocols. This included both those who were referred at the antenatal stage and those referred post-natally. Home visits were also being delivered in line with the agreed service model protocols.

### 4.1 Staffing structures and caseloads

Under the SNF program structure, an Executive Sponsor (Executive level 2) is identified at each site, and is responsible for championing the program within the LHD at the executive level. The Executive Sponsor belongs to the Local Implementation Group (LIG) whose function is to address issues related to program implementation within the LHD. The LIG consists of staff with appropriate delegation to ensure that system issues are identified and appropriate changes made to support the program implementation.

Another key role on the LIG is the Nurse Manager of Child & Family Health Services for Community Health in the LHD. This position, like the two previously mentioned roles, is not funded by the SNF program but is already in place within the LHD. The position acts as the direct line manager for the Clinical Coordinator and carries responsibility for ensuring program delivery.

The program structure is the same design at each site. Each site is to employ six Full Time Equivalent (FTE) Child and Family Health Nurses (SNF nurses) with one FTE Clinical Coordinator, one FTE Social Worker, 0.2 FTE Speech Pathologist, 0.2 FTE Occupational Therapist, 0.2 FTE Physiotherapist, 0.1 FTE Dietician, 0.1 FTE Drug and Alcohol Worker, 0.1 FTE Perinatal Psychiatrist and 0.5 FTE administration officer.

The overall staffing profile as at 30 June 2014 is shown in Table 4.1. It shows that the SNF program structure has been implemented with SNF nurses and Tier 2 staff at each site as originally intended.

Table 4.1: SNF staff profile 30 June 2014

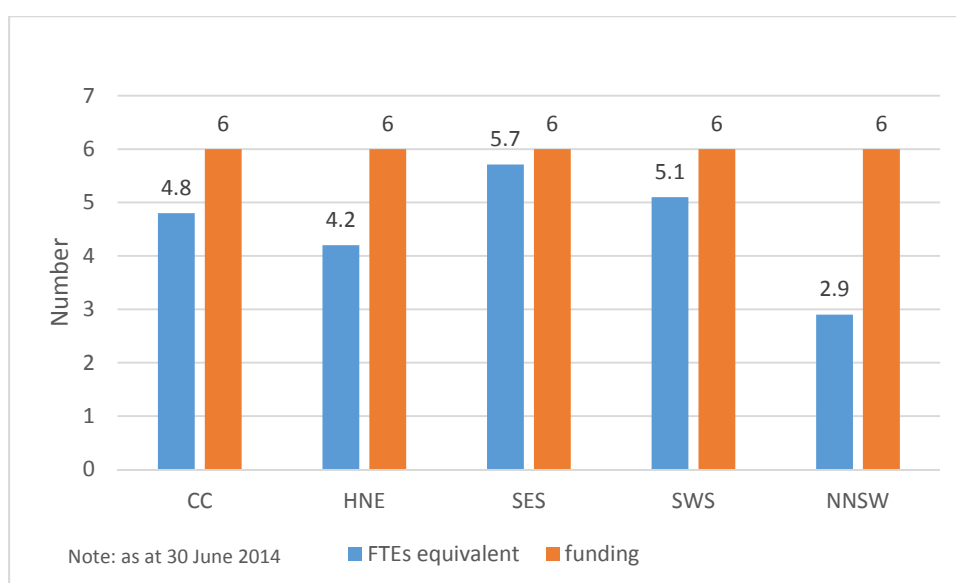
Staff role	Headcount	FTEs
Administration Officer	3	1.53
Clinical Coordinator	5	5.00
Registered Nurse	32	22.71
Perinatal Psychiatrist	4	0.35
Dietician	4	0.40
Speech Pathologist	5	1.00
Occupational Therapist	5	0.90
Physiotherapist	4	0.70
Social Worker	5	4.80
Drug and Alcohol Worker	3	0.30
Multicultural Liaison Officer	1	0.50
Aboriginal Liaison Officer	1	0.20
<b>Grand Total</b>	<b>72</b>	<b>38.39</b>

Source: KPMG 2014

### Staffing levels by site

Figure 4.1 shows nursing staff levels by site. All sites have chosen to employ both part time and full time nursing staff (with the exception of SWS which only employs part time staff). SES, SWS and CC were the closest to full employment but all sites fell below employment of six FTE equivalents. SES was the closest to six FTEs with 5.7 FTE equivalents. NNSW was operating with less than half the funded positions at 2.9 FTE equivalents (noting the NNSW target has been revised down to 2.9 from July 2014). Managers reported that uncertainty in SNF funding with the associated lack of job security has impacted on recruitment and that this has been a particular challenge in regional areas where workers may need to relocate to take a position. High staff turnover was also reported at HNE.

Figure 4.1: Number of FTE equivalent SNF nurses employed at each site (at 30 June 2014)



Source: KPMG 2014. Note – from 1 July 2014, NNSW has a revised target numbers of FTEs at 2.9.

Operating without the required number of nurses has implications for caseloads. Analysis was undertaken of nursing staff caseloads at each site as at 30 June 2014, as shown in Table 4.2. Nursing caseloads for the SNF program are based on research evidence. A full time nurse at an urban site is meant to deliver the program to 25 families, while a full time nurse at a regional site is meant to deliver the program to 20 families. Part time 0.6 FTE has a suggested caseload of 15 cases. The table shows that most sites are not meeting staff caseload targets, and SWS was the only site where all staff were fully utilised with maximum caseloads or over full capacity.

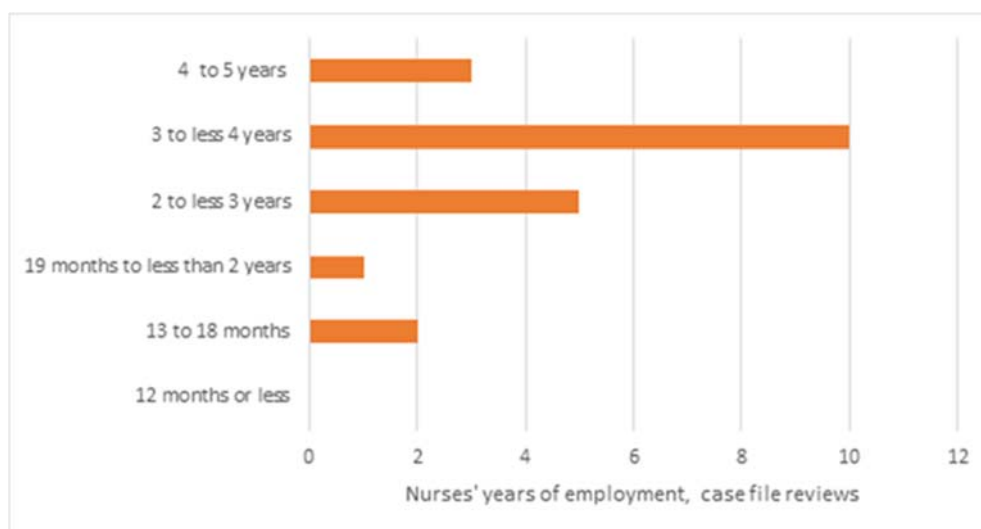
Table 4.2: Utilisation rate of staff based on target and actual caseloads by site

	Part time staff	Full Time staff	Utilisation Range
SWS	9	0	100% - 117%
SES	4	3	57% - 80%
NNSW	3	1	40% - 86%
HNE	3	2	70% - 94%
CC*	6	1	13% - 115%

Source: KPMG 2014. Caseloads have been adjusted accordingly for staff who work 0.4 to 0.8 per cent. \* at the time of the evaluation, one nurse at CC was carrying a very low caseload

The evaluation also considered the issue of staff retention and whether staff were remaining with the program for the full duration. Analysis was undertaken in the case file reviews of the number of years that the nurses had been employed. As shown in Figure 4.2, it showed that all the nurses had been employed for over 18 months with the majority of nurses (n=18/21) employed for two to five years.

Figure 4.2: Nurses by length of employment, case reviews (n=21)



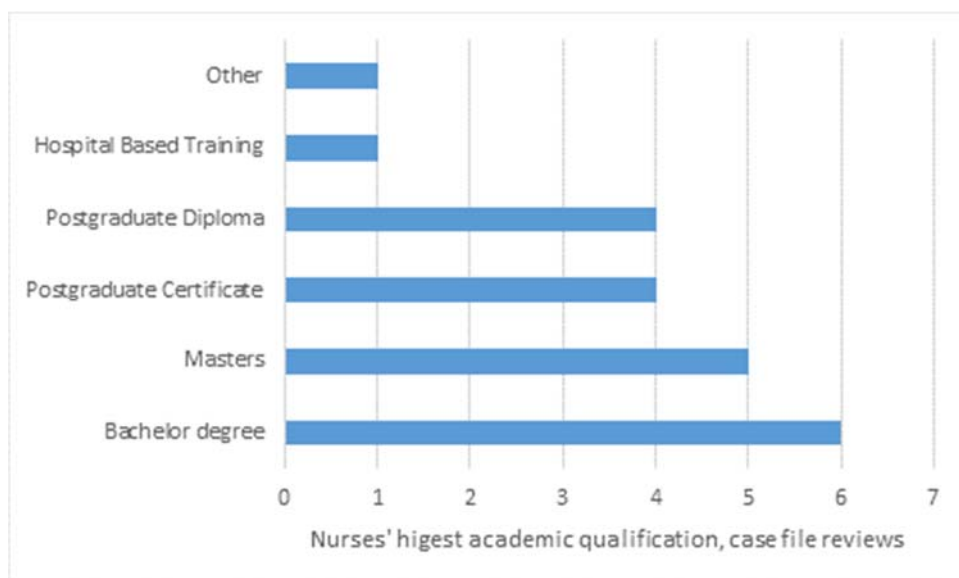
Source: KPMG 2014. Note n=1 case file review listed 'unknown' for length of employment

## 4.2 Staff qualifications

The program is designed to be delivered by registered nurses with additional qualifications in child and family health nursing and program-specific training.

Analysis of the staff qualifications of nurses involved in the case sample (Figure 4.3), revealed that staff had postgraduate certificates in child and family health (50 per cent of nurses) or postgraduate diplomas (24 per cent) and master's degrees (14 per cent). Many of the SNF nurses in the sample also had additional qualifications and/or had undertaken post-graduate study including in the areas of pediatrics, infant mental health, lactation, immunisation and community health.

Figure 4.3: Nurses Qualifications, case reviews (n=21)



Source: KPMG 2014

### 4.3 Training Requirements

One of the ways it is expected that program fidelity is achieved in the program is through standard training for every nurse in the program. Nurses in the SNF program work at the advanced nursing practice level and are required to have advanced knowledge and skills across a number of areas including: child development, the social determinants of health, fine observation, negotiating, case management and working with families.

Program specific training is provided by an external institution, Tresillian Family Care Centres. Nurses enrol in the course upon commencement with the SNF team and are expected to complete the course requirements within 12 months. Assessments pieces for the course include:

- successful completion of the eLearning modules and mastery of online assessments;
- participation in workshops – infant mental health, Keys to Caregiving, NCAST Teaching/Feeding;
- participation in regular clinical supervision and case review meetings;
- gaining reliability in NCAST Feeding and Teaching Assessment;
- longitudinal case study that follows a client from commencement in the program until the client is 9 months old; and
- a piece of reflective work examining the mother-child interaction.

As part of their orientation, staff are also expected to complete training in the administration of assessment and screening tools (including the Ages and Stages Questionnaire - nurses only), Keeping Them Safe education, and the SAFESTART psychosocial assessment and depression assessment and screening (nurses and optional for Tier 2 staff). This is intended to enable staff to understand the processes and skills needed to apply their own technical expertise while dealing with psychological and social issues that may be present when assisting families.<sup>24</sup> One-off training is also offered in areas such as cultural competency training.

Analysis of the profile of nurses involved in the case file sample gives some indication of whether nurses are completing specific SNF training. The sample includes 22 of the 32 nurses and five clinical coordinators in the program. The analysis shows that the vast majority of the nurses had completed specific training relating to SNF as well as online training.

<sup>24</sup> Kemp L, Harris E, McMahon C, Vimpani, G et al (n.d.) NSW Families- A NSW Health Nurse led program of Sustained Health Home Visiting; DRAFT Service Delivery Model and implementation manual.

- All but one of the nurses had completed the NCAST PCI feeding and the NCAST PCI teaching, the Family Partnership Model course, SAFESTART online education, LHD Child Protection and a comprehensive site orientation.
- All but two had completed training on the NSW Health Policy and draft Program Manual and the NSW Directives related to the SNF program and universal services.
- The majority of nurses (all but three) had completed the Lift the Lip program and the cultural difference program.
- The majority of nurses for the case sample (all but four) had undergone training in the ASQ and the ASQ:SE.

Nurses for the case sample also had high rates of undertaking the online training, including the overview of Maternal Early Childhood Sustained Home-visiting (MECSH) program (n=21/22), the MECSH core practice principles (n=20/22), and professional self-care (n=19/22). There were fewer nurses who undertook the online training in advanced principles, working with groups, and working in multidisciplinary teams (16/22, 16/22, and 14/22 respectively).

It is intended that the nurses are supported in their implementation of the program through ongoing training and skills development; clinical supervision, and mentoring. Each site reported that ongoing staff training is conducted although two sites reported that training was hard to access due to budgetary limitations (including travel constraints). A number of sites also held 'in-services' as a means of educating and training nursing staff on a range of topics, typically rotating the responsibility to each of the Tier 2 allied health staff. Sites varied in how frequently in-service sessions were offered and in the level of training and mentoring that was undertaken.

Overall, there was general consensus in staff focus groups that staff get the necessary amount of training to undertake their role. The infant mental health component of the Advanced Nurse Practice provided was considered by staff to be the most useful training in supporting them in their role.

Staff also saw value in receiving additional training around working with fathers as well as support to help them understand how different cultural practices can impact on parenting styles. This is important given the whole of family focus of the SNF program under the Family Partnership Model which seeks to promote positive parenting behaviours by both mothers and fathers and the focus on meeting the needs of families from CALD backgrounds.

Three sites' focus groups brought up the need for further infant and adult mental health education. At one site, it was suggested that NCAST training was useful but that further training would be beneficial in how to make the best use of the information collected and apply it in the practice setting.

## 4.4 Supervision

Clinical supervision is an essential requirement under the SNF program to support staff to implement their skills and facilitate competent practice in supporting children and families through the home visiting program. Supervision can involve individual, group or a combination of both provided by internally or externally-sourced clinicians. The LIG has responsibility to ensure that SNF staff have access to clinical supervision.

In focus groups and interviews, both Tier 1 and Tier 2 staff noted the importance of supervision in supporting the delivery of the program and their own professional development in order to:

- create a team focus – supervision 'gets the team to meld' and provides a 'safe space' for teams to work together;
- maintain a child-focus – supervision 'keeps the team on track';
- build nurses knowledge – nurses can draw on expertise of other, more senior clinicians;
- build creativity - team supervision was reported to be useful as they go through activities and different ways to use them; and

- maintain appropriate boundaries - reflective practice during clinical supervision mitigates the risk of the professional nurse-client relationships transitioning into friendships (which may occur due to the long term nature of the program).

Generally, staff considered the clinical supervision arrangements to be working well where they were in place. However, some sites reported challenges with individual supervision in particular sourcing an appropriate clinician due to the lack of sufficient numbers of skilled and qualified infant mental health clinicians (particularly in regional areas). This was a particular challenge for the HNE site.

## 4.5 Structure of Program - Role of Tier 2 child and family health staff

The SNF program requires that the SNF nurse work as part of a multi-disciplinary team and each site has employed a range of allied health professional staff (known as Tier 2 staff)<sup>25</sup>. As at June 30 2014, there were 32 allied health staff employed by the program equivalent to 9.15 FTE (including social workers). These include speech pathologists, occupational therapists, physiotherapists, social workers, dieticians, drug and alcohol workers and perinatal psychiatrists. An Aboriginal Liaison Officer position has been established at NNSW and a Multicultural Liaison Officer position has been established at SES.

Analysis of the Tier 2 staffing profile as at 30 June 2014, shown in Table 4.3 shows that all sites have employed Tier 2 staff. Central Coast has employed the full range of Tier 2 staff in the program while there are one or two Tier 2 staff vacant positions at the other four sites.

Table 4.3: Tier 2 Staff profile by site as at 30 June 2014

Role	TARGET	CC	HNE	NNSW	SES	SWS
Administration Officer	0.5	0.5	0.5	0	0.53	0
Social Worker	1	1	1	0.8	0	1
Speech Pathologist	0.2	0.2	0.2	0.2	0.2	0.2
Occupational Therapist	0.2	0.2	0.2	0.1	0.2	0.2
Physiotherapist	0.2	0.2	0	0.1	0.2	0.2
Dietician	0.1	0.1	0	0.1	0.1	0.1
Drug and Alcohol Worker	0.1	0.1	0.1	0	0.1	0
Perinatal Psychiatrist	0.1	0.05	0.1	0	0.1	0.1
Aboriginal Liaison Officer	N/A	N/A	N/A	0.2	N/A	N/A
Multicultural Liaison Officer	N/A	N/A	N/A	N/A	0.5	N/A

Source: KPMG 2014

The role of Tier 2 staff is to provide a second tier of support for the child, parent and family as well as the nurse through:

- consultation and case review;
- education for SNF nurses;
- assisting nurses to gauge children's and families' needs;
- supporting nurses to provide early therapeutic interventions when needed; and
- facilitating referrals and access to other specialized services.

The support provided by Tier 2 staff is generally in the form of support and advice to the SNF nurse, although they can work with the nurse to provide 'short term interventions' to children and families directly as well as refer them on to other specialist services<sup>26</sup>.

<sup>25</sup> Tier 2 staff were not included in the MESCH trial and are a unique feature of the SNF home visiting program design.

<sup>26</sup> Kemp L, Harris E, McMahon C, Vimpani, G et al (n.d.) NSW Families - A NSW Health Nurse led program of Sustained Health Home Visiting; DRAFT Service Delivery Model and implementation manual

Consultations revealed that understanding of the role of Tier 2 staff in the program model varies across sites. Where the model is working well, it was reported to be successfully building nurses' capacity by providing access to advice and support from staff with a broader knowledge and skills base. Some Tier 2 staff interviewed felt they could play a broader role in working directly with families rather than acting in an advisory capacity to nurses given their clinical skills. The need for guidance on how the role should operate in the SNF program was raised in a number of forums including how the contribution of Tier 2 staff is measured and considered in the program. Steps have now been taken to clarify roles and responsibilities through program directives and development of the draft Program Manual.

A key area where allied health staff play a critical role is in case reviews. Case reviews are an important part of the SNF program and can help nurses and Tier 2 staff learn from their experiences and continuously improve the service provided to clients. In particular, nurses commented that case reviews allowed them access to, and guidance from, both other clinicians and Tier 2 staff. Many Tier 2 staff commented that the case review process was the only opportunity to have a 'line of sight' over the families with whom the nurses were working. A number of Tier 2 staff reported the majority of their time was devoted to case reviews (three to four hours a week).

Most focus groups reported that case reviews 'worked well' and were a valuable process to improve client outcomes, although at one site it was reported that there was less collaboration between nurses and Tier 2 staff than would be considered ideal and that some nurses are unwilling to involve allied health staff.

## 4.6 Tier 2 Social Worker role

The social worker is a key Tier 2 role in the SNF program. The protocols require that a social worker is to be placed in each SNF site and introduced to every family as part of the team. There is one social worker FTE position funded for every 150 families (120 in rural areas). This contrasts to the other Tier 2 positions which collectively total one full time equivalent staff member.

The primary role of the social worker is to manage social issues that impact on the family including providing psychosocial support, such as counselling and helping families deal with housing and financial issues. The social worker is also responsible for working on relationship issues that occur within the family. Initially, the social worker undertakes a joint home visit with the SNF nurse so that the social worker becomes known to the family and is viewed as part of the SNF team. This is meant to 'de-stigmatise' their role and also gives the social worker knowledge of the family's social and economic circumstances<sup>27</sup>. If needed, during periods where the family's needs have escalated, there are subsequent joint home visits with SNF nurses. Families requiring intensive social work support may be referred to other Tier 2 and Tier 3 services.

The review found that all sites had a social worker in place and that, generally, there were positive views about the role of the social worker in the program. In the cases reviewed, the social worker made an initial home visit with the SNF nurse in 89 per cent of the cases (n=47/53). The number of social worker visits varied from one to 15 visits. In SES, all cases in the sample had a social work visit recorded. There were also notes in some files to indicate that there were other forms of contact from the social workers, such as telephone calls and text messages.

From discussions with SNF social workers, it was found that the role of the social worker differs from site to site, and from nurse to nurse. For example, some nurses reported seeking housing or financial support for the families themselves and choosing not to engage with the social worker. At other sites, the social worker played an important role in the team, especially in case reviews and in sharing insights and knowledge critical to understanding the family's broader social context. Some staff members considered that the role could be increased in scope to provide counselling and other more intensive support (assuming staff held the appropriate qualifications), as the position is advertised as a senior clinical position. The current understanding is that the role does not involve this type of intensive support; rather, the role is focused on supporting nurses and where necessary referring the families to other support services.

The draft Program Manual should assist in providing further guidance for SNF nursing and social work staff and help clarify roles and responsibilities.

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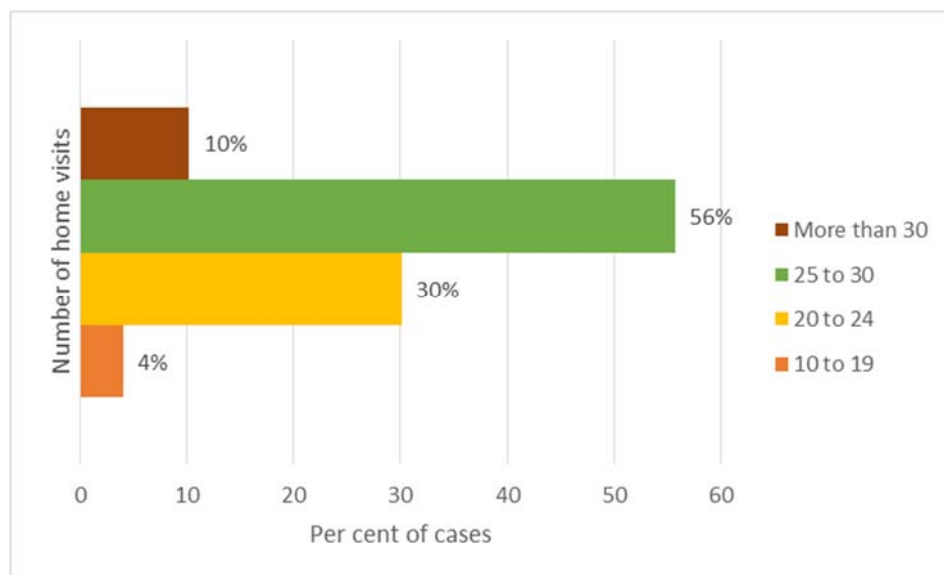
<sup>27</sup>ibid

## 4.7 Number of home visits

In examining program fidelity and determining whether the program is being implemented as intended, the evaluation considered adherence to the home visiting program requirements that have been established. The SNF program consists of at least 25 home visits, each 1-2 hours in duration, primarily by the same SNF nurse during the antenatal period and for the first two years of the child's life<sup>28</sup>. The target is that 100 per cent of families receive the recommended number of visits.

Figure 4.4 shows that the majority of mothers (66 per cent) in the program with children who have participated for 24 months received 25 or more visits. 56 per cent received between 25 and 30 visits and 10 per cent received more than 30 visits over the duration of the program.

Figure 4.4: Number of home visits undertaken for children who passed their second birthday (all participants) (n=226 cases)



Source: KPMG 2014

Table 4.4 shows the breakdown of the number of visits conducted for children in the program at two years of age by site.

Table 4.4: Children in the SNF program at two years of age by number of visits at 24 months, by site

	CC		HNE		NNSW		SES		SWS		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Number of visits by 24 months of age												
10 to 19	2	2	5	9	0	0	0	0	2	3	9	4
20 to 24	23	24	24	45	0	0	5	71	16	23	68	30
25 to 30	53	56	17	32	2	100	2	29	52	74	126	56
More than 30	16	17	7	13	0	0	0	0	0	0	23	10
<b>Grand total</b>	<b>94</b>	<b>100</b>	<b>53</b>	<b>100</b>	<b>2</b>	<b>100</b>	<b>7</b>	<b>100</b>	<b>70</b>	<b>100</b>	<b>226</b>	<b>100</b>

Source: KPMG 2014. Notes: Analysis only includes children involved in cases that commenced prior to 30 June 2014 (only cases involving children who reached the age of 730 days while in the program are included)

### 4.7.1 Home visits by Referral Points

There are additional protocols setting out the frequency of home visits for participants in the program differentiated by whether families are referred before or after the child's birth. The minimum visits in the SNF program schedule is shown in the following table.

<sup>28</sup> Ibid



Table 4.5: Suggested schedule of SNF visits

STAGE IN PROGRAM	FREQUENCY OF VISITS
Antenatal entry before 36 weeks	7 visits
Antenatal entry after 36 weeks	3 visits
Birth- 6 weeks	Weekly
7-12 weeks	Fortnightly
3-16 months	Monthly
17-18 months	Bi –monthly (with an additional visit to allow for the 18 month PHR check)
19-24 monthly	Bi monthly

Source: KPMG 2014

The exact number of visits is based on the family’s level of vulnerability, gestational age or age of the child on identification of need in partnership with the family.

As well as examining the whole cohort who were in the program at their second birthday, analysis in the evaluation has also considered the number of visits by the three entry points in time. Data tables by site are provided in Appendix C.

It was found that the highest proportion of home visits were conducted for participants referred to the program antenatally (before 36 weeks) with 71 per cent receiving more than the minimum number of visits<sup>29</sup>. Of those referred postnatally, there were 58 per cent who received 25 or more home visits.

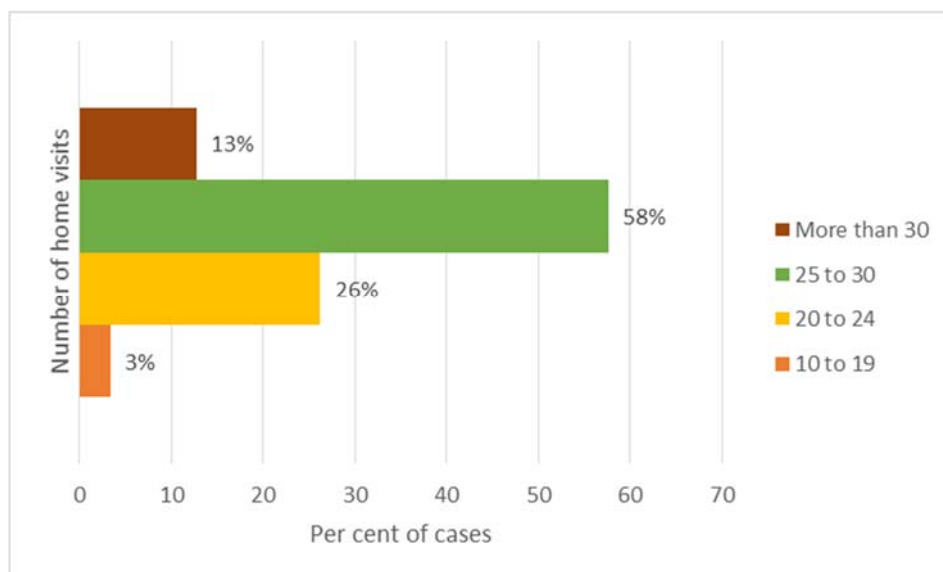
#### **Antenatal entry before 36 weeks**

For those with antenatal entry **before** 36 weeks (Figure 4.5), 71 per cent received 25 or more visits over the two years of the trial with the breakdown as follows:

- 10 to 19 visits – 3 per cent
- 20 to 24 visits – 26 per cent
- 25 to 30 visits – 58 per cent
- More than 30 visits – 13 per cent.

<sup>29</sup> Please note that due to rounding percentages for presentation, it is 70 per cent rather than 71 per cent which is suggested by simple addition of the figures following.

Figure 4.5: Number of home visits undertaken for children who passed their second birthday (antenatal entry before 36 weeks) (n=118 cases)



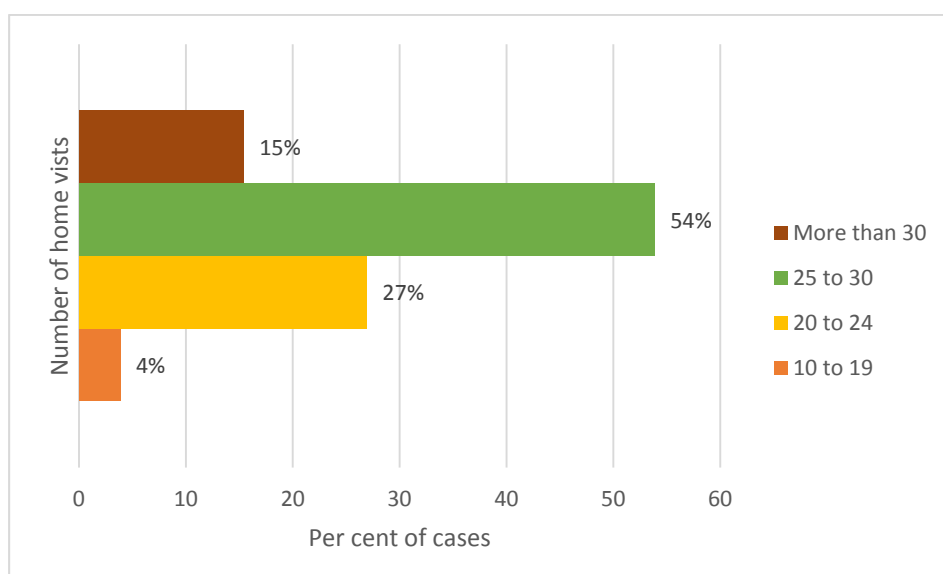
Source: KPMG 2014

### Antenatal entry *after* 36 weeks

For those with antenatal entry *after* 36 weeks (Figure 4.6), 69 per cent of families received 25 or more visits with the following breakdown:

- 10 to 19 visits – 4 per cent
- 20 to 24 visits – 27 per cent
- 25 to 30 visits – 54 per cent
- More than 30 visits – 15 per cent.

Figure 4.6: Number of home visits undertaken for children who passed their second birthday (antenatal entry after 36 weeks) (n=26 cases)



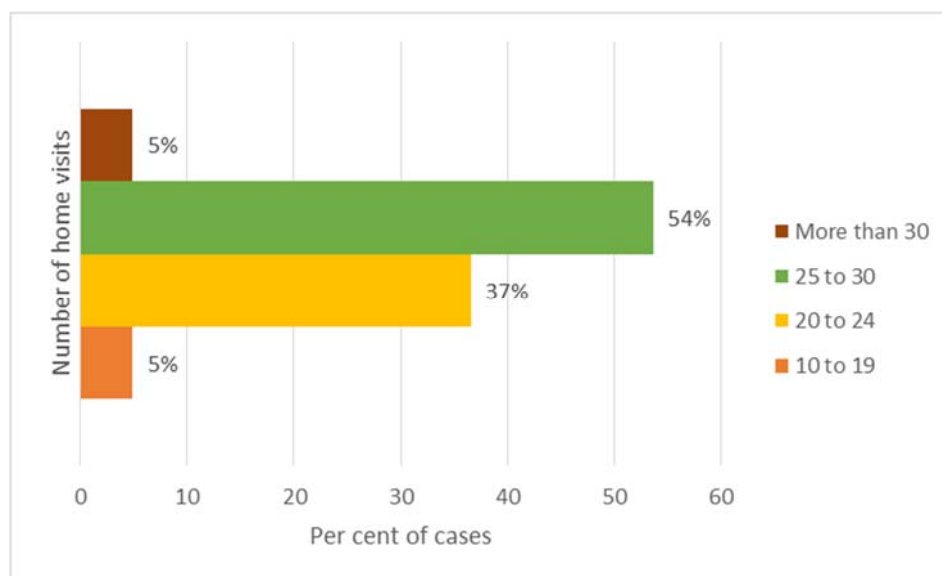
Source: KPMG 2014

## Postnatal entry

For families with postnatal entry into the program (Figure 4.7), 60 per cent of parents received 25 or more visits with the overall breakdown as follows:

- 10 to 19 visits – 5 per cent
- 20 to 24 visits – 37 per cent
- 25 to 30 visits – 54 per cent
- More than 30 visits – 5 per cent.

Figure 4.7: Number of visits undertaken for children who passed their second birthday (postnatal entry) (n=82 cases)



Source: KPMG 2014

## 4.8 Are the visits implemented according to the service model?

As well as examining the number of home visits that are being delivered under the SNF program, the evaluation also considered whether visits are being implemented according to the service model.

Under the SNF program model, each home visit is to be structured by the nurse in consultation with the family and include agreed objectives, a schedule of activities and desired outcomes (see page 19 of draft Program Manual). In order to develop relationships, the same nurse is meant to undertake the program of home visits with the family over the course of their participation in the program. Nurses use their observation skills and knowledge of child health to guide and support families to improve their parenting skills.

Key elements of the SNF home visiting model include the provision of anticipatory guidance and promotion of parental aspirations for both the parent and the child.

Anticipatory guidance is a critical element of the SNF program and is aimed at helping parents prepare for physical and behavioural changes that occur during the child's development. Nurses are expected to provide guidance on parent/child interactions, stages of development and support for positive parenting behaviours.

Promoting parental aspiration is focussed on supporting families to be future oriented recognising that many are dealing with difficult life circumstances that can interfere with their ability to parent effectively. By encouraging parents to focus on their future goals and aspirations, the aim is to promote positive parenting in the face of adversity which has been found to be a protective factor for children experiencing socioeconomic disadvantage and other vulnerabilities.

An in-depth review of case files was undertaken to determine whether there was adherence to the service model for home visits under the SNF program (n = 53). The results are summarised in the table below.

Overall, there was evidence in the vast majority of case files of compliance with the service model according to a list of sub-criterion developed around the program model. More than 90 per cent of cases reviewed demonstrated evidence of providing anticipatory guidance, a focus on strengthening the capacity of families, and working with families to identify strengths and challenges and developing strategies to deal with these challenges. In 77 per cent of cases, there was evidence of monitoring individual activities against aspirational goals and 72 per cent of cases showed documented evidence of nurses assisting mother and child to identify aspirations.

*Table 4.6: Case File Review – Adherence to Home Visits Service Model (n=53)*

Element of practice evident in case file review	Total	
	N	%
Anticipatory guidance	52	98
Practice reflects a focus on the need to strengthen the capacity of families and carers	52	98
Identification of strengths, challenges and issues	51	96
Developmental strategies or implementation plan in place	51	96
Practice reflects the best interests of and a focus on the child	51	96
Working intensively and purposively with children and families	50	94
Language identifies inclusion of mother in analysis and planning process	47	89
Child Development Program Plan in place and evidence of progress against plan	47	89
Relationship based child focused family centred approach	46	87
Use of strengths based language in documentation	44	83
Transition Plan in place for cases with a child 18 months or older involved	20*	83
Monitoring of individual activities or outcomes at each home visit against aspirational goals	41	77
Assisting the mother to identify aspirations for the child	38	72
Aspirations for the child and mother documented	38	72
Families viewing and providing written comments on assessment report(s)	15	28

Source: KPMG \* This variable was only relevant for 24 cases.

## 4.9 Implications of Results

In terms of program fidelity, the results of the evaluation show that the SNF model is being implemented as intended. Staff with the right skills and qualifications have been recruited to the program, although a number of sites are still to reach full recruitment levels. Recruitment and turnover of staff are particular challenges for the regional sites. Case reviews showed that nursing staff are being retained in the program thus providing continuity for parents and families.

SNF staff are receiving the appropriate training and skills development to undertake their roles. The Tresillian provided course was seen as particularly beneficial by the staff who were interviewed. The role of Tier 2 staff has presented some issues for staff, particularly regarding their role as advisors to nurses rather than undertaking a direct service delivery role. These role clarity challenges are being progressively resolved at each site and further clarification has been provided by the draft Program Manual.

The home visiting program is being conducted in accordance with the draft Program Manual, and the majority of participants are receiving the appropriate number of home visits. However, there is further work to be undertaken to reach the target of 100 per cent of participants receiving the recommended number of visits.

## Recommendations:

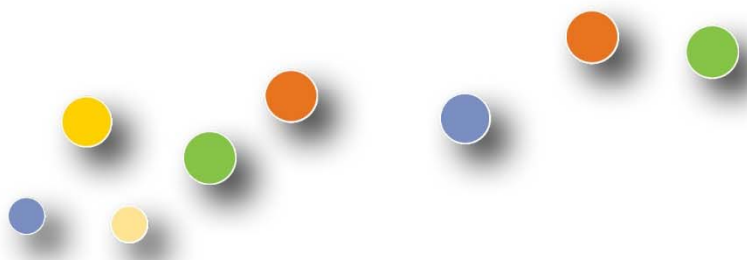
The following recommendations are made to promote improved program fidelity across the sites:

- Increase recruitment efforts across all sites to ensure the SNF program can reach its full capacity and meet caseload targets
- Consider additional support to assist regional areas reach recruitment targets including incentives and pooling of resources with other services
- Review the interactions between Tier 1 and 2 staff to ensure they are working effectively to support services to families and children and consider providing further guidance material in the Draft Program Manual.
- Consider augmenting existing training for staff to offer practical support to implement the skills they learn in particular to better understand the role of fathers in the program and how to best work with cultural differences
- Continue efforts to increase the number of home visits in accordance with 100 per cent target of families receiving the appropriate number of home visits



5

Has the SNF Program been suitably tailored to local contexts?



## 5. Has the SNF Program been suitably tailored to local contexts?

This section addresses the process evaluation question of whether the SNF program has been suitably tailored to local contexts. Key considerations in this part of the evaluation relate to the provision of culturally appropriate services for Aboriginal and Torres Strait Islander families and families from culturally and linguistically diverse (CALD) communities.

Under the SNF program, an Aboriginal Liaison Officer position was established in NNSW and a Multicultural Liaison Officer was established at SES (Arncliffe) to enhance the capacity of the program to service the needs of these particular population groups. SES also employs Arabic and Mandarin speaking nurses.

The evaluation examined participation rates by these groups in the program overall as well as how well the two positions were functioning in the SES and NNSW sites. Qualitative data was also gathered from staff, family and other stakeholder interviews and focus groups. The evaluation found that participation rates of Aboriginal and Torres Strait Islander (ATSI) population in the program are lower than expected and that there have been particular challenges in the NNSW site with establishing the program and getting the appropriate level of engagement from the community. Participation rates by CALD families is high, and there were positive views expressed by a range of stakeholders about the contribution of the Arabic and Mandarin speaking nurses and the Multicultural Liaison Officer in the SES site at Arncliffe in particular.

### 5.1 Aboriginal families in the SNF program

#### Overall Referrals and Participation

The SNF program is designed to meet the needs of all families living in the five sites who meet the selection criterion, including Aboriginal families.

In terms of overall referrals and participation by Aboriginal families, there were 52 Aboriginal families referred to the SNF program during the evaluation period, which was 2.7 per cent of total referrals received. As shown in Table 5.1, 35 of these families participated in the program (3.5 per cent of total program participants (prior to 30 June 2014) n= 35/997) and 8 Aboriginal families completed the SNF program over the four year period. As at July 2014, there were 13 families active in the program.

The majority of the referrals of Aboriginal families to the program were antenatal (60 per cent), with almost half the referrals made before 35 weeks (49 per cent). Of the 35 families, 10 of the mothers were young mothers (15-19 years of age), and 11 mothers were 20-24 years of age.

As shown in the table below, nearly half of the families who participated are located in the CC LHD. In NNSW, 10 referrals were made and 7 Aboriginal families commenced the program.

*Table 5.1: Aboriginal and Torres Strait Islander referrals received by year by site*

Year	CC		HNE		NNSW		SES		SWS		Total	
	Referal	Commence-ment	Referal	Commence-ment	Referal	Commence-ment	Referal	Commence-ment	Referal	Commence-ment	Referal	Commence-ment
2010	2	2	1	1	0	0	0	0	1	1	4	4
2011	6	4	7	4	0	0	0	0	4	2	17	10
2012	1	1	5	2	3	3	0	0	0	1	9	7
2013	4	3	2	1	6	4	1	0	1	1	14	9
2014	6	5	0	0	1	0	0	0	1	0	8	5
<b>Grand Total</b>	19	15	15	8	10	7	1	0	7	5	52	35

Source: KPMG

It is important to note that a specific Aboriginal early intervention program (the Bulundidi Gudaga program) is already operating in that SWS area. As a result, Aboriginal families are not recruited into the SNF program at that site. The Bulundidi Gudaga program is a sustained nurse home visiting program for the local Aboriginal community that has been operating in the SWS LHD since 2011.

Aboriginal participation rates in the SNF program to date are broadly consistent with their share of the relevant population group. The reported number of Aboriginal mothers giving birth in 2010 was 3.3 per cent<sup>30</sup> in NSW, although there are higher percentages in specific locations. In NNSW, 7.6 per cent of births were to Aboriginal mothers resident in the area, and the highest number of Aboriginal births were to mothers resident in HNE.

## NNSW

The NNSW SNF site was established to have a specific focus on Aboriginal families<sup>31</sup>. In addition to the six SNF nurse positions, and the part-time Tier 2 positions, NNSW was provided funding to establish a dedicated half time Aboriginal Liaison Officer role. This position was tasked with providing resources and developing cultural support for Aboriginal families in the program. Aboriginal people were also to be included on the Local Implementation Group.

At the time the evaluation was conducted, the Aboriginal Liaison Officer position was vacant following the departure of the initial incumbent. In addition, staff at NNSW reported a number of challenges with engaging with the local Aboriginal community to provide suitably tailored services for this particular population group.

The stakeholders consulted in NNSW, which included SNF nurses, Tier 2 staff management and the local Aboriginal Medical Service (AMS), reflected on various possible reasons for the lack of engagement of Aboriginal families in the region. For the NNSW site, the following factors were particularly relevant:

- **Engagement** – early engagement was seen as being critical for the Aboriginal community to have buy-in to the program but it was recognised that this takes time, resources and people with skills in culturally appropriate engagement strategies.
- **Referrals into SNF** – some stakeholders raised concerns that Aboriginal women being booked into hospitals by AMS midwives in the community miss out on being discussed at the SAFE START meetings which are intended to be the primary point of entry into the SNF program.
- **The EPDS** – concerns were raised by stakeholders about the appropriateness of the EPDS as a screening tool for the Aboriginal population, for example, health professionals at the AMS and at the public hospital noted that “Aboriginal people commonly tell health professionals what they think they want to hear.”
- **The program model** – there was a perception that some aspects of the model may not fit with Aboriginal culture, including the notion of visiting Aboriginal mothers in their own home - the need to focus on the whole family unit rather than just one child was also identified as an important factor in tailoring the program for Aboriginal families.

### Reasons for leaving the program

Examination of reasons why Aboriginal families leave the program was undertaken the results of which are shown in

Table 5.2 below. The main reasons were that the program was no longer suitable and families move out of the area (note no further information was available as to why the program was deemed no longer suitable for some families).

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<sup>30</sup> NSW Mothers and Babies 2010. <http://www.health.nsw.gov.au/hsnsw/Publications/mothers-and-babies-2010.pdf>

<sup>31</sup> Northern LHD, with a prevalence of Aboriginal persons at 4.7 per cent of the population, has a higher prevalence than the average prevalence in NSW which is 2.9 per cent.



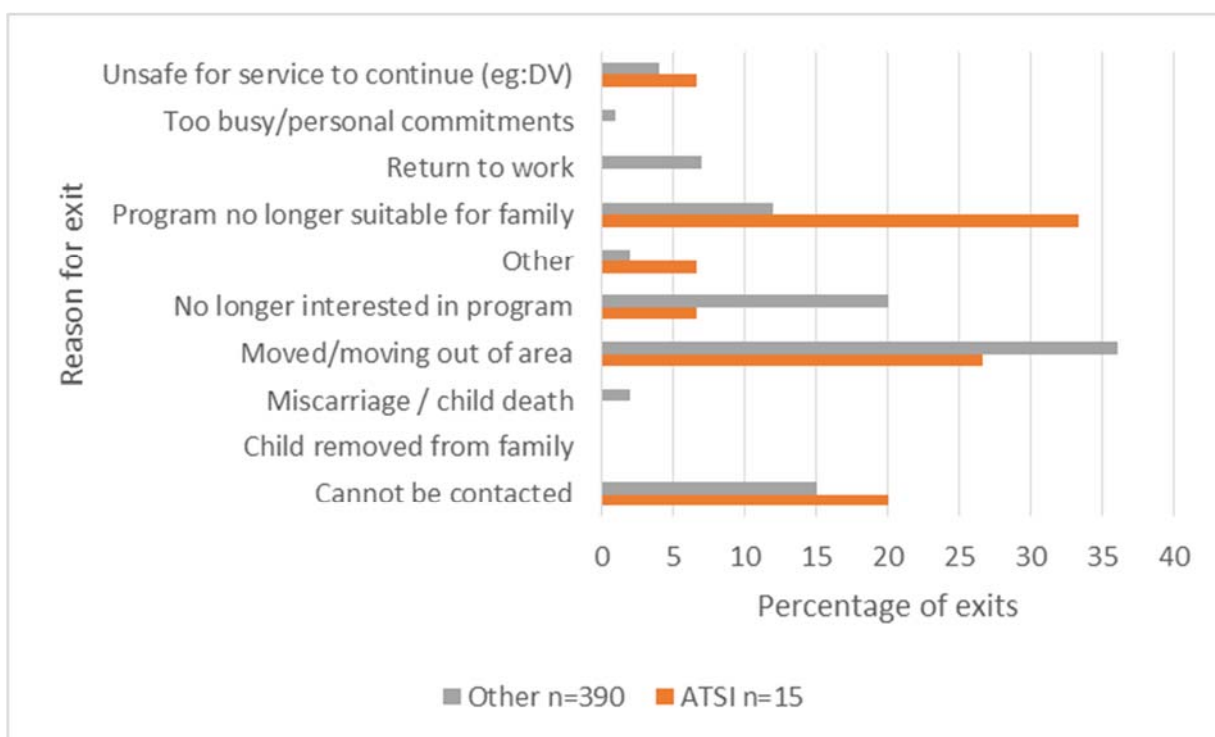
Table 5.2: Reasons for leaving the program (Aboriginal families)

REASON FOR LEAVING THE PROGRAM	NUMBER
Program no longer suitable for family	5
Moved/moving out of area	4
Cannot be contacted	3
No longer interested in program	1
Other	1
Unsafe for service to continue (e.g. domestic violence)	1
<b>Total</b>	<b>15</b>

Source: KPMG

The results of this analysis were contrasted with the results of analysis of the reasons why other families exit the program. As Figure 5.1 shows, a higher proportion of Aboriginal families leave the area and can no longer be contacted than non-Aboriginal families. As this analysis is based on a very small sample size (15 Aboriginal families), the findings should be treated with some caution. A larger sample size would be needed to draw definitive conclusions.

Figure 5.1: Reasons for exiting the program (Aboriginal and other cases)



Source: KPMG 2014

## 5.2 The service model for Aboriginal families

In considering how to better tailor the SNF program for the ATSI population, the future service model could look to the experience of a number of other home visiting programs that are currently operating which specifically target Aboriginal families.

- As noted previously, the Bulundidi Gudaga program is a Sustained Home Visiting program for Aboriginal families based on the MESCH program that operates in the South Western LHD<sup>32</sup>. Lessons learned from implementation of the Bulundidi Gudaga project may be able to be applied more broadly across the SNF program and in particular at the NNSW site.

<sup>32</sup> Bulundidi Gudaga Clinical Trial. Updated 2012. On the web at: <http://earlychildhoodconnect.edu.au/sitemap-2/15-aboriginal-child-health/bulundidi-gudaga-program>

- The Strong Women, Strong Babies, Strong Culture program from the Northern Territory – although different in its service model, this program may also offer useful insights on how to better tailor the SNF program for Aboriginal families in terms of connection to culture and the learnings from employment of senior Aboriginal women in the program<sup>33</sup>.
- The ‘pilot exploration’ of a Family Home Visiting Program for Families of Aboriginal and Torres Strait Islander Children. This program is based in South Australia and employs indigenous cultural consultants. An evaluation of the program has found that the perceptions of Aboriginal families who remain in the program have been very positive.<sup>34</sup>

### 5.3 CALD families and the SNF program

As is the case with Aboriginal families, the SNF program offers services to CALD families at all sites. Overall participation in the program by CALD families is high particularly in SES where 65 per cent of families (81 of 124) are from CALD backgrounds and in SWS where nearly 80 per cent of the families are from CALD backgrounds.

There is variation between sites in the number of CALD referrals that are received, with SES and SWS receiving the highest number of CALD referrals (as shown in Table 5.3).

*Table 5.3: SNF CALD referrals by site, by calendar year*

Date referral received	CC		HNE		NNSW		SES		SWS		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
<b>2010</b>	5	8	1	4	0	0	0	0	51	84	57	37
<b>2011</b>	15	9	2	2	0	0	0	0	140	80	157	34
<b>2012</b>	5	6	3	4	0	0	102	68	84	87	194	44
<b>2013</b>	9	9	4	4	0	0	126	63	94	71	233	42
<b>2014</b>	3	4	0	0	2	8	69	66	47	82	121	45
<b>Grand Total</b>	<b>37</b>	<b>8</b>	<b>10</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>297</b>	<b>65</b>	<b>416</b>	<b>80</b>	<b>762</b>	<b>40</b>

Source: KPMG 2014. Analysis only includes referrals received prior to 30 June 2014; a referral received for multiple births is counted once only.

The outcomes of referrals are shown in Table 5.4 which shows that for referrals received before 30 June 2014, SWS consistently had a higher per cent of exits as a proportion of commencements than SES.

*Table 5.4: SNF referral outcomes for CALD referrals on or before 30 June 2014, by site and calendar year of referral, SES and SWS*

Year	SES		SWS	
	Referrals	Commencements	Referrals	Commencements
<b>2010</b>	0	0	51	30
<b>2011</b>	0	0	140	91
<b>2012</b>	102	28	84	66
<b>2013</b>	126	33	94	76
<b>2014</b>	69	20	47	27
<b>Grand Total</b>	<b>297</b>	<b>81</b>	<b>416</b>	<b>290</b>

Source: KPMG 2014. Note that cases referred in 2013 and 2014 would have reduced ‘exposure’ which would affect the rate of exits.

The SES site is different from the other SNF sites in that a functional level of English is not required for program entry as the site is specifically designed to examine if the model is appropriate for families who are Arabic and Mandarin speaking. In addition to the six SNF nurse positions at the site, which include Arabic and Mandarin Chinese speaking nurses, and the part-time Tier 2 positions, there is funding for a full time

<sup>33</sup> D’Espaignet, Measey, Carnegie, Mackerras (2003). Monitoring the ‘strong women, strong babies, strong culture program’ the first eight years. Journal of Paediatric Child Health (2003) 39, 668-672.

<sup>34</sup> Sivak, L., Arney, F. & Lewig, K. (2008). A Pilot Exploration of a Family Home Visiting Program for Families of Aboriginal and Torres Strait Islander Children. Adelaide: Australian Centre for Child Protection.

Multicultural Liaison Officer. The program has also connected with the multicultural resource centre to service the needs of CALD families from Sudanese and Sri Lankan backgrounds.

### 5.3.1 CALD and program retention

An examination of program participants exiting the program (Table 5.5) shows that 68 per cent of those who exit the program prematurely are from a CALD background (n=161/ 236). This includes 83 per cent of those who exit prematurely from SES being from a CALD background (n= 24/29), and 68 per cent in SWS (n= 131/192). This is not an unexpected finding given that CALD families make up the majority of participants in these sites.

Table 5.5: SNF premature program exits and CALD exits by year by site

Year of exit	CC		HNE		NNSW		SES		SWS		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
2010	0	0	0	0	0	0	0	0	7	5	7	4
2011	0	0	0	0	0	0	0	0	25	19	25	16
2012	0	0	1	50	0	0	4	17	46	35	51	32
2013	2	50	1	50	0	0	15	63	38	29	56	35
2014	2	50	0	0	0	0	5	21	15	11	22	14
<b>CALD TOTAL</b>	<b>4</b>	<b>100</b>	<b>2</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>24</b>	<b>100</b>	<b>131</b>	<b>100</b>	<b>161</b>	<b>100</b>
<b>ALL</b>	<b>10</b>	<b>100</b>	<b>5</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>29</b>	<b>100</b>	<b>192</b>	<b>100</b>	<b>236</b>	<b>100</b>

Source: KPMG 2014

Further analysis of CALD retention rates during fiscal years 2009 to 2013 in the two areas with the highest number of CALD cases, SES and SWS, shows that that the proportion of CALD cases that prematurely exit as a proportion of commencements varies, and in general appears to improve over time, (although the figures for 2013-14 should be treated with caution as there is reduced 'exposure' period for cases).

Table 5.6: SNF Case outcomes for CALD cases commenced on or before 30 June 2014, by site and financial year of commencement, SES and SWS

Date referral received	SES			SWS		
	Commencem'ts.	Exits	Exits as per cent of commencements	Commencem'ts.	Exits	Exits as per cent of commencements
2009-10				1	0	0%
2010-11				91	51	56%
2011-12	9	7	78%	63	35	56%
2012-13	35	13	37%	61	31	51%
2013-14	37	4	11%	74	14	19%
<b>Grand total</b>	<b>81</b>	<b>24</b>	<b>30%</b>	<b>290</b>	<b>131</b>	<b>45%</b>

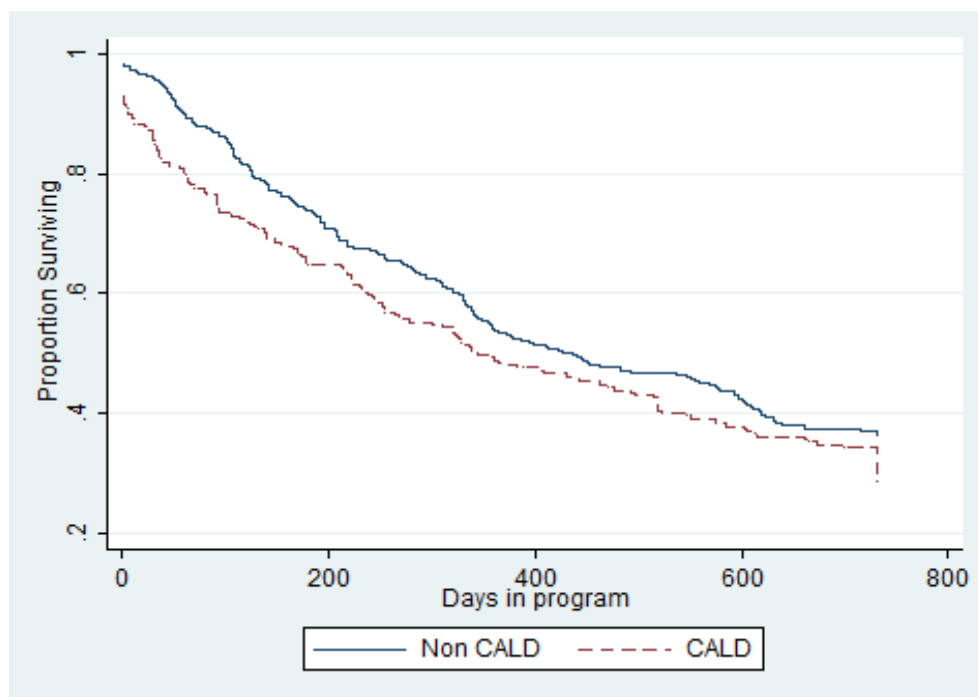
Source: KPMG 2014. Note that cases referred in 2013 and 2014 would have reduced 'exposure' which would affect the rate of exits.

The comparison of survival curves for CALD and non CALD cases suggests there may be a higher rate of premature exit for CALD cases. Figure 5.2 suggests CALD cases experience a higher dropout rate in the first month of the case.

Although detailed analysis<sup>35</sup> found this difference not to be statistically significant, it is important to consider the practical implications of CALD families having higher dropout rates in the first month.

<sup>35</sup> Cox proportional hazards modelling and Kolmogorov-Smirnov comparisons of time distributions.

Figure 5.2: Time in SNF program to exit by CALD status<sup>36</sup>



Source: KPMG 2014: Survival analysis of SNF administrative and sample data

Table 5.7 shows the reasons given for CALD families to leave the program. The findings indicate that there is a high degree of transience of these families (38 per cent of families who exited the program moved out of the area). This included 44 families at SWS and 16 families at SES. One-third of the families become disinterested in the program or the program is no longer considered to be suitable for them. Further work could be undertaken to investigate how to engage and retain CALD families in the program.

Table 5.7: Reasons for CALD families leaving the program

Reason for exit	Total premature exits	
	N	%
Cannot be contacted	29	18
Miscarriage / child death	5	3
Moved/moving out of area	61	38
No longer interested in program	33	20
Other	2	1
Program no longer suitable for family	17	11
Return to work	11	7
Too busy/personal commitments	1	1
Unsafe for service to continue (eg: domestic violence)	2	1
<b>Total premature exits</b>	<b>161</b>	<b>100</b>

Source: KPMG 2014

SWS and SES were contrasted as to reasons to leave the program to find if there were significant differences between the sites. Analyses of premature exits showed that differences between the sites in the number of premature exits are not significant. However, there are significant differences between the SWS and SES sites as to reasons for leaving the program. At SWS, there are significantly more families who cannot be contacted, move out of the area and where the program is no longer suitable compared to SES (see the tables in Appendix E). This may suggest that there is a large contingent of transient families

<sup>36</sup> This chart presents survival curves. The vertical axis represents the proportion of cases remaining in the program and the horizontal axis shows the number of days in the program.

at SWS and/or that bilingual nurses at SES may be a positive factor in contributing to families' stability and remaining in the program.

### 5.3.2 Perceptions of staff and CALD families

Overall, 80 per cent of SNF staff believed that SNF is benefiting CALD infants, carers and community members through having a home visiting nurse from a similar cultural and linguistic background available who can act as a cultural broker and who can also deliver the standardised elements of the child development program.

The qualitative data suggests that CALD families who participated in SNF are improving the connection they have with their culture in relation to child development norms. However, both staff and CALD families noted that there were a number of challenges in delivering a culturally tailored and appropriate program for these families which are summarised below.

- **Views on child rearing** - the SES Multicultural Liaison Officer noted that certain aspects or practices of raising children sit outside of the "cultural framework" of anyone outside of that particular cultural group. For example, there are a number of cultures that do not value playtime for children, and mothers who do not routinely speak to their children when they are young (although these practices are not supported by evidence and are both activities that the SNF program would encourage parents to do with their children). Dealing with extended family situations where grandparents may not agree with interventions suggested by the nurse were also raised in this context.
- **Non-culturally matched staff** – challenges in providing Arabic and Mandarin speaking staff who may not come from the same culture as the families were raised by some stakeholders. For example, an Arabic-speaking SNF nurse might not actually have any common cultural background with the family other than language, and may speak a different dialect.
- **Families from trauma backgrounds** – families from asylum refugee backgrounds with torture and trauma histories were considered by stakeholders to be particularly challenging to deal with as they often fear authority and tend to be overly acquiescent or not engaged at all.
- **The EPDS** – some staff at SES reported issues with the appropriateness of the eligibility criteria for a CALD population. They reflected that young Arabic speaking mothers are often socially isolated and would potentially benefit from the program but may not meet the EPDS requirement.
- **Draft Program Manual** – providing further guidance in the draft Program Manual for staff on how to deal with the challenges of providing services to CALD clients was raised by a number of stakeholders.
- **Exit planning** – some staff noted that successful transition and exit planning did not occur for all families. Some of the mothers interviewed preferred not to attend mothers or play groups despite the fact that many of them had few other external supports outside of immediate family.

## 5.4 Implications of Results for the SNF Program

The evaluation found that the SNF program has been designed to meet both the needs of the broader population as well as specific sub-population groups including Aboriginal and CALD families. The program has also incorporated site specific tailored approaches to dealing with the needs of these particular groups with the creation of the Aboriginal and Multicultural Liaison Officers at NNSW and SES.

Generally, participation by Aboriginal families in the SNF program is on a par with their representation in the overall population, although participation could be expected to be higher in particular sites such as NNSW and HNE. A number of challenges have been identified in particular at the NNSW site due to difficulties in recruiting and retaining an Aboriginal Liaison Officer. Experience from targeted Aboriginal home visiting programs may provide some useful learnings in better tailoring the program to meet the needs of Aboriginal families.

CALD families on the other hand have high levels of participation in the SNF program and most stakeholders were extremely positive about the program's impacts. Indeed, CALD families make up the majority of families in SWS and SES. The inclusion of Mandarin and Arabic speaking nurses at the SES site was considered to be particularly beneficial in developing culturally appropriate and responsive services. The

Multicultural Liaison Officer was also viewed to be operating effectively in promoting engagement with multicultural families.

## Recommendations

The following recommendations are made to better tailor the program to local contexts:

- Consider additional support for sites to increase the participation of Aboriginal and Torres Strait Islander families and the adoption of strategies to build better connections with local communities and Aboriginal controlled health services
- Continue tailoring services to meet the needs of CALD families and promote greater understanding amongst staff on different cultural mores and parenting styles including considering providing more guidance in the Draft Program Manual
- Undertake further work on investigating the reasons CALD families are choosing to leave the program to ensure it can continue to meet their specific needs



6 To what extent do participant children, parents and families have improved outcomes in terms of health, safety and social and emotional development?

## 6. To what extent do participant children, parents and families have improved outcomes in terms of health, safety and social and emotional development?

### 6.1 Overall Findings

One of the main aims of the SNF program is to better support parents and families who are at risk of poorer maternal and child health and development outcomes, in particular families living in areas of socio-economic disadvantage.

As an early intervention program, the SNF program is intended to provide long term health, psychological and social benefits to children, parents and families and the broader community. While the longer term benefits will not be able to be tested for some time, there is evidence that the SNF program is making a positive difference to the lives of children and their families in terms of their health, safety and developmental outcomes.

The evaluation showed positive outcomes for the children who continue to participate in the program across a range of dimensions. In particular, there are encouraging results around health outcomes as evidenced by high immunisation rates and breastfeeding levels. The majority of children involved in the program scored well on social and emotional development test results. There was a consistency in findings across the developmental tools, which indicates a utility of the tools. Parents were also found to be experiencing positive outcomes with significant improvements in the EPDS scores of mothers who participate in the program and the overall confidence of parents in their parenting abilities.

Improvements were sustained in most areas over the full two years of the program, although performance declined on the development of children's communication skills and social and emotional development at the two year mark. Factors potentially contributing to the decline are explored in the evaluation results.

### 6.2 The approach and methodology

The approach to the evaluation of outcomes under the SNF program was developed in line with the stated goals of the program which are to:

- Improve transition to parenting by providing support to the mother's and family's psychosocial and environmental issues as well as supporting the health and development of the family
- Improve maternal health and wellbeing by helping mothers care for themselves or seek appropriate and timely interventions
- Improve child health and development and well-being by helping parents to interact with their children in developmentally supportive ways and to provide a rich and stimulating environment necessary for the child's physical, social and cognitive and emotional development
- Improve family and social relationships and networks by helping parents to foster relationships within the family and with other families and services<sup>37</sup>.

The methodology has also been designed to align with the program design which commences interventions in the antenatal period and continues into the second year of the child's life.

### 6.3 Detailed Methodology

The evaluation uses data from a variety of sources including administrative data, case file data, and interview data (as shown in Figure 6.1 below).

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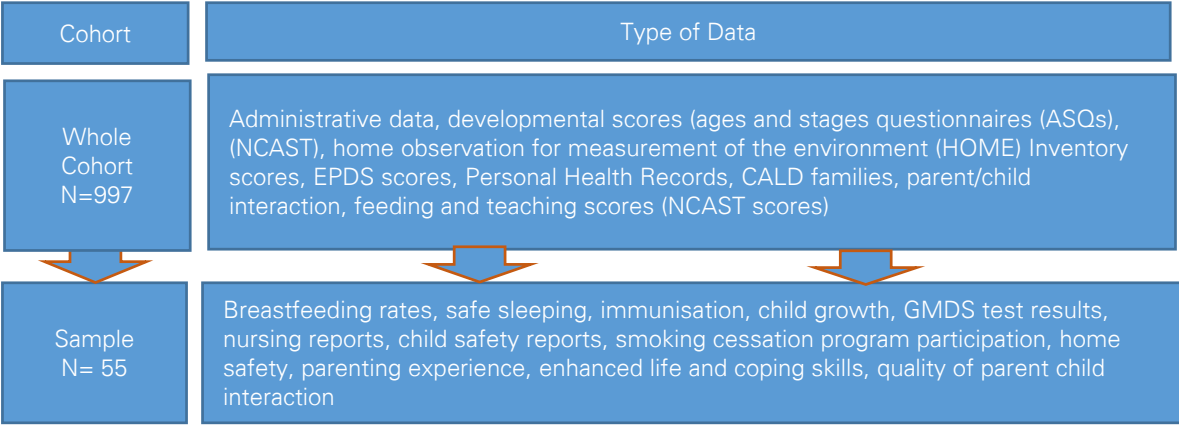
<sup>37</sup> Kemp L, Harris E, McMahon C, *Sustaining NSW Families – A NSW Health Nurse led program of Sustained Health Home Visiting – Service Delivery Model & Implementation Plan*



Information on the entire cohort of children and families enrolled in the program consisted of information that is routinely collected in the SNF program. This includes information on the child’s health, growth and development, the relationship between the mother and the child, and the home environment. This information comes from antenatal data, personal health records, the EPDS scores for mothers at intake and standardised screening tools administered in the program (HOME inventory results, NCAST, ASQ3 scores). This covers around 1,000 children involved in the program.

A sample of cases was then selected for more in-depth review (55 children residing in 53 families). This sample was stratified so that changes over time in outcomes under the program could be examined at the 12 month point and at the 24 month point.

Figure 6.1: Data Collection



Source: KPMG

Qualitative data on outcomes was also obtained from interviews with parents and nurses (a total of 53 parents and 35 face to face interviews were undertaken as part of the outcomes assessment process).

Statistical analysis, including logistic regression analysis, was undertaken on the quantitative data to determine changes over time. These results were then triangulated with the results of the qualitative analysis of the case reviews and interviews.

Where information is available on similar outcomes for children and families in the general population and/or by particular cohorts, this has been used for comparative purposes (in the absence of baseline or control group data).

Outcome Indicators

In keeping with the objectives of the SNF program, a range of key indicators were selected to assess outcomes across the key domains of health (including mental health), safety, and social and emotional development. A summary of the key indicators of child outcomes used in the study is shown in Table 6.1 and indicators for parent outcomes are shown in Table 6.2.

Table 6.1: Key Indicators of child outcomes used in the study

Domain	Indicator	Data source	Comparator
<b>HEALTH</b>			
	Immunisation	Sample – case file review	NSW population data
	Breastfeeding	Sample – case file review	NSW population data
	Ages & Stages Questionnaires (3 <sup>rd</sup> edition)@: fine motor	Whole cohort	Population norms
	Ages & Stages Questionnaires (3 <sup>rd</sup> edition)@: gross motor	Whole cohort	Population norms
<b>SAFETY</b>			
	Evidence of safe sleeping	Sample – case file review	NSW population data
	Reports of Significant Harm (ROSH) reports	Sample – case file review	NSW population data

Domain	Indicator	Data source	Comparator
<b>SOCIAL AND EMOTIONAL DEVELOPMENT</b>			
	GMDS (Griffiths Mental Development Scale) – scales measured: locomotor, personal-social, hearing and speech, eye-hand coordination and play performance	Sample – independent assessment of child	Population norms
	<i>Ages &amp; Stages Questionnaires (3<sup>rd</sup> edition)@: Social Emotional (ASQ:SE)</i>	Whole cohort	Population norms
	Ages & Stages Questionnaires (3 <sup>rd</sup> edition)@: Problem solving	Whole cohort	Population norms
	Ages & Stages Questionnaires (3 <sup>rd</sup> edition)@: Communication	Whole cohort	Population norms
	NCAST PCI feeding	Whole cohort	Population norms

Table 6.2: Key Indicators of parent outcomes used in the study

Domain	Indicator	Data source	Comparator
<b>HEALTH</b>			
	EPDS scores	Whole cohort	Population norms
	Changes in health seeking behaviour that maintain health	Sample – case file review	
	Referral to Tier 2-4 provider	Sample – case file review	
	Smoking cessation program	Sample – case file review	NSW population data (smoking rates)
	Personal Health Record (up to date)	Whole cohort	
	NCAST PCI feeding	Whole cohort	Population norms
	NCAST PCI teaching	Whole cohort	Population norms
<b>SOCIAL AND EMOTIONAL</b>			
	Parenting confidence	Qualitative interviews and case file reviews	
	Home Observation for Measurement of the Environment (HOME) Inventory - TOTAL SCORE	Whole cohort	Population norms
	(HOME) Inventory Responsivity: the extent of responsiveness of the parent to the child	Whole cohort	Population norms
	(HOME) Inventory Acceptance: parental acceptance of suboptimal behaviour and avoidance of restriction and punishment	Whole cohort	Population norms
	(HOME) Inventory Organization: including regularity and predictability of the environment	Whole cohort	Population norms
	(HOME) Inventory Learning Materials: provision of appropriate play and learning materials	Whole cohort	Population norms
	(HOME) Inventory Involvement: extent of parental involvement	Whole cohort	Population norms
	(HOME) Inventory Variety in daily stimulation	Whole cohort	Population norms
	NCAST- PCI – Teaching	Whole cohort	Population norms

Source: KPMG

### Data and Methodological Limitations

The limitations of the data and the research design are outlined in Chapter 2 which explains the research methods.

## 6.4 Outcomes for Children

The evaluation found there were positive outcomes for children across most of the indicators related to children’s health and safety and growth and development. This was found to be the case, even when there was a small number of children within the cohort who had already been recognised and were known to have a global developmental delay. Staff within NSW Kids and Families note that the program is not intended or designed to ‘fix’ developmental delays, but is designed to recognise and appropriately refer, support and monitor these children. On two particular indicators, communication and social/emotional development, the evaluation found there were challenges in sustaining improvements at 12 months and 24 months into the program.

## 6.4.1 Health Indicators

In terms of health outcomes, the evaluation found that children involved in the program:

- Had higher than average immunisation rates (97 per cent compared with the general population at 90 per cent (2014)<sup>38</sup> and 91.2 per cent for children in the most disadvantaged areas of NSW)<sup>39</sup> after 12 months.
- Had exclusive breastfeeding rates of 21 per cent (n=11) with 87 per cent (n=47) having some form of breastfeeding (i.e. exclusively or with formula and/or solids) – while exclusive breastfeeding rates are not as high as the general population (29 per cent breastfeeding exclusively until six months of age)<sup>40</sup>, this is a positive result given the characteristics of the cohort and the results of the MECOSH program which showed that the average period of breastfeeding for mothers from similar backgrounds was around eight weeks<sup>41</sup>.
- Regarding the growth and development of children in the program, the vast majority of children in the program were tracking developmentally across a number of domains (as measured by the Ages & Stages Questionnaires®). For example, 86 per cent of 4 month olds, 96 per cent 12 month olds and 95 per cent of 24 month olds were above the cut-off or norm for fine motor skills.
- There were small percentages of children who were picked up as not on track in fine motor skills and gross motor skills at various points in time. However, the trend was in a positive direction, a greater percentage of children were below the medium at 4 months (15 per cent) than at 12 or 24 months (4 or 5 per cent as shown in Table 6.3).

Table 6.3: Results for the entire cohort and Ages & Stages Questionnaires®: Fine and gross motor skills

Domain	Number and per cent of children in relation to cut off at specified ages								
	4 months			12 months			24 months		
	% Below or close to cut off	% above cut off	n	% below or close to cut off	% above cut off	n	% below or close to cut off	% above cut off	n
<b>Fine motor skills,</b> Ages & Stages Questionnaires (3 <sup>rd</sup> edition)®: fine motor	15%	86%	389	4%	96%	335	5%	95%	179
<b>Gross motor skills,</b> Ages & Stages Questionnaires(3 <sup>rd</sup> edition)®: gross motor	11%	89%	398	12%	88%	335	4%	96%	179

Source: KPMG

## 6.4.2 Developmental Indicators

A number of different indicators (including those routinely collected in the program as well as independently assessed) revealed mixed findings for children who remain in the program. There were positive findings for development of problem solving but less positive results for the development of both communication skills and social and emotional development.

The cut-off scores have been developed for the ASQ-3™ based on calculating two standard deviations from the mean. The mean is the average score which indicates average performance<sup>42</sup>. The ASQ-3™ is structured so that it is recommended that scores between one and two deviations from the mean (the average)

<sup>38</sup> NSW Ministry of Health (2014) The Health of Children and Young People in NSW Report of the Chief Health Officer 2014 <http://www.health.nsw.gov.au/epidemiology/Documents/2014-CHO-Report.pdf>

<sup>39</sup> NSW Government 2010 NSW Child Health Survey

<sup>40</sup> NSW Ministry of Health (2014) The Health of Children and Young People in NSW Report of the Chief Health Officer 2014 <http://www.health.nsw.gov.au/epidemiology/Documents/2014-CHO-Report.pdf>

<sup>41</sup> Kemp, L, Harris E, McMahon C, et al 2011, Child and family outcomes of a long term nurse home visitation programme: a randomised control trial, Arch Dis Child, vol. 96

<sup>42</sup> Squires, J; Twombly, E; Bricker, D, Porter, LW. ASQ-3™ User's Guide. 3<sup>rd</sup> edition. Baltimore: Paul H Brookes Publishing Co, Inc. page 74

indicates 'monitoring' of the child's development, while scores below two deviations from the mean indicate referral for further assessment.<sup>43</sup>

As shown in Table 6.4 below, the Ages & Stages Questionnaires revealed a positive result for children's problem solving development, with 92 per cent or more of children above the cut off at 4, 12 and 24 months of age. Less positive results are shown for social and emotional development scores (as measured by the ASQ:SE) and children's communication. The ASQ:SE score is of significance given that mothers in the program suffer from anxiety and/or depression and the child's emotional development is contingent on bonding and attachment to the mother. The vast majority of children (over 90 per cent) were assessed to be on track in their social and emotional development. It appears that there is a challenge to maintain this level over time as the analysis revealed a decreasing percentage of children who were considered to be on track as assessed by the parent at twelve and 24 months (97 per cent, 94 per cent and 92 per cent).

The vast majority of children (over 80 per cent) were also assessed to be on track in their development of communication. However, as measured on the ASQ3:Communication, there is a higher percentage (16 per cent) of children who were not tracking developmentally in the 24 month age group. The analysis on communication following, reveals some of the factors operating at this important developmental milestone.

Table 6.4: Results for the cohort and Ages & Stages Questionnaires®

Domain	Number and per cent of children in relation to cut off at specified ages								
	4 months			12 months			24 months		
	% Below or close to cut off	% above cut off	n	% below or close to cut off	% above cut off	n	% below or close to cut off	% above cut off	n
<b>Problem solving skills</b> , the Ages & Stages Questionnaires®: problem solving	8%	92%	390	6%	94%	319	5%	95%	168
<b>Communication skills</b> , the Ages & Stages Questionnaires®: Communication	7%	93%	388	4%	96%	335	16%	84%	179
	6 months			12 months			24 months		
	% At cut off or above*	% Below cut off (not of concern)	n	% At cut off or above*	% Below cut off (not of concern)	n	% At cut off or above*	% Below cut off (not of concern)	n
<b>Social and emotional development</b> , the Ages & Stages Questionnaires®: Social Emotional	3%	97%	280	6%	94%	248	8%	92%	140

Source: KPMG

\*Note – the ASQ: SE is designed to be scored differently than the ASQ: Communication and ASQ: problem solving. As shown in the table above, for the ASQ:SE scores below the cut off are of concern. To assist the reader - the table highlights in green scores that are **not** of concern.

### Factors associated with development of language and communication skills

Statistical analysis (using logistic regression) was undertaken on ASQ3 scores at four and 24 months to understand the factors related to positive development of communication skills. For children who commenced at or above the cut-off on the communication scale, success was defined as maintaining or improving the four month old score at 24 months. There were 70 children who remained in the program and had scores at both points in time.

The results are shown in Table 6.5 below. The results show that non-CALD families, and children in families with at least one other child were more likely to achieve the ASQ3 outcome for communication (i.e. maintain or improve their four month old score at 24 months).

These were the only two significant factors that were identified. The wide confidence interval, indicates that the very high odds ratios should not be taken at face value. However, the lower end of each confidence

<sup>43</sup> Ibid.

interval is materially greater than one. On this basis, it is reasonable to conclude that each of the variables concerned increases the odds of the relevant outcome.

*Table 6.5: Results of logistic regression modelling of ASQ3 outcome for communication*

Variable	Odds ratio	95% confidence interval	
<b>Non CALD status</b>	13.778	2.481	121.39
<b>At least one other child in the family</b>	11.106	1.992	98.34

Source: KPMG logistic regression analysis of SNF administrative and sample data (Note n=70)

In addition to the ASQ3 results, the development of children in the sample was independently assessed using the GMDS tool. The GMDS is a standardised developmental assessment that is widely used in Australia by paediatricians. The GMDS provides a general quotient (GQ) of overall development. The developmental domains tested are locomotor (gross motor), personal social (self-care and social interaction), hearing and language, eye-hand coordination (fine motor) and performance (cognition, symbolic play and puzzles).

The results showed that:

- 71 per cent of infants in the sample (39 out of the 55 cases) were found to be developing “within normal limits” and 4 per cent were exceeding expectations; and
- 9 per cent of the sample (five out of the 55 cases sampled) performed at a below average level and 13 per cent (7 children) were identified as having a global development delay (compared to an estimated 47.4 per cent of children expected to have a developmental delay based on findings of the MECOSH trial with children of a similar socio-economic status).

Note that one out of seven children with a global development delay was close to exiting the program at their second birthday and had not previously been identified as having a delay. One child scored significantly below in one developmental domain resulting in a score that was globally developmentally delayed. This same infant also had associated behavioural challenges impacting on their development which had not previously been identified which will require a specialist referral. With the possibility that one of the children could be displaying behaviours on the autistic spectrum, it is evident that there are not always precursors or markers at an earlier age that can be seen or show up on standardised tests.

Apart from these two infants, all other children who had a developmental delay had been previously identified through the ASQ3 and Ages and Stages Questionnaire: Social Emotional. For these children, there was evidence on the case files that referrals had been made to Tier 2 or 3 providers and/or the SNF Tier 2 staff had been consulted. In these situations, a development plan had been put in place.

### 6.4.3 Emotional Responsivity indicators

From analysis of the administrative data and the sample, there are indications that the vast majority of infants involved in the SNF program are learning the ability to regulate their emotions, and respond to stimuli and emotional cues, through creation of stimulating learning environments, age appropriate toys and play, and greater interaction with their carers.

These benefits are reflected in the improvements in the relevant sub-scales in NCAST scores over time. The NCAST measures parent child interaction through two scales: a feeding scale (observed during a breastfeeding, bottle or table food eating episode for babies from birth to one year) and a teaching scale (observed when caregiver providing instructions on an age appropriate activity).

The scales provide data on both the parent and child’s interaction and responsiveness. As shown in Table 6.6, analysis of NCAST data for the infants in the sample showed there are a small percentage of children who score below normal at six weeks and 12 months. Over 90 per cent of children are able to regulate their emotions, respond to stimuli and emotional cues at six weeks and 12 months of age.

Table 6.6: NCAST-PCI – feeding scores at 0-6 weeks and 12 months of age

NCAST- PCI – Feeding				
	0-6 weeks score		12 months score	
	N= Valid %		N= Valid %	
	N	%	N	%
<b>Below normal</b>	46	9	14	6
<b>Normal</b>	305	61	131	58
<b>Above normal</b>	152	30	81	36
<b>Total</b>	503	100	226	100

Source: KPMG. No score recorded n=514 at 0-6 weeks and n=791 at 12 months. Note due to rounding error per cent total may exceed 100.

#### 6.4.4 Parent-child interactions (NCAST teaching scale)

The NCAST teaching scale results can be used to assess the quality of parent child teaching interaction. The results can be used to identify strengths and weaknesses in the parent-child interaction and build the parent or caregiver’s skills.

As Table 6.7 shows, for those cases where data is collected, the majority of cases surveyed had NCAST teaching scores that were normal or above normal.

Table 6.7: NCAST- PCI – Distributions and comparisons - teaching scores at 6-8 weeks and 12 months

NCAST- PCI – teaching				
	6-8 weeks score		12 months score	
	N= Valid %		N= Valid %	
	N	%	N	%
<b>Below normal</b>	27	8	10	4
<b>Normal</b>	221	62	159	57
<b>Above normal</b>	110	31	110	39
<b>Total</b>	358	100	279	100

Source: KPMG: No score recorded n = 659 at 0-6 weeks and n=738 at 12 months. Note due to rounding error per cent total may exceed 100.

#### 6.4.5 Safety Indicators

A number of safety indicators were examined as part of the evaluation of the SNF. Key findings include:

- 90 per cent of cases (n= 26/29 sample) at 12 months were found to be practising safe sleeping practices and encouraging good sleeping environments; which is higher than the general NSW population average 87.7 per cent<sup>44</sup>, and higher than the most disadvantaged quintile of the SEIFA index, the 5<sup>th</sup> quintile, whose rate is 82.1 per cent<sup>45</sup>.
- 17 per cent of children (n=9/54) had a Risk of Significant Harm (ROSH) report and 13 per cent had contact with a child well-being unit. This is higher than the general population rate of contact with the child welfare system which is 44.1/1000 from 2013-2014<sup>46</sup> but is comparable for disadvantaged populations. As previously noted, it is of significance that these children were identified within the SNF program, and supported by the program so that they could remain in their home.

This finding may not be surprising given the increased scrutiny which the families are subject to by virtue of their participation in the program and given their general risk factors. However, further investigation would

<sup>44</sup> 2010 NSW Child Health Survey

<sup>45</sup> 2010 NSW Child Health Survey

<sup>46</sup> Department of Family and Community Services NSW, 'Annual Report', 2014, p.24.

[http://www.facs.nsw.gov.au/\\_data/assets/file/0008/303002/FACS-AR-13\\_14\\_Vol-1-Performance.pdf](http://www.facs.nsw.gov.au/_data/assets/file/0008/303002/FACS-AR-13_14_Vol-1-Performance.pdf)

be required to determine what proportion of ROSH reports resulted in substantiations of child abuse to get a better understanding of outcomes for children on this indicator.

## 6.5 Outcomes for Parents and Families

The SNF is based on the recognition that interventions aimed at achieving better outcomes for children need to also address the health of parents (especially mothers) and the broader family environment. Much of the interventions are therefore structured around providing support to parents and linking them with social and other supports, including access to allied health, psycho-social services and drug and alcohol services when needed.

The evaluation found that parents and families participating in the program were also experiencing positive outcomes, particularly around improvements in the mental health of mothers involved in the program and the overall confidence of parents in their parenting abilities.

### 6.5.1 Health indicators

#### *Mental Health*

The mental health of mothers involved in the program was assessed using the Edinburgh Postnatal Depression Scale (EPDS) which is a set of 10 screening questions that can indicate symptoms of depression and anxiety in women during pregnancy and in the year following the birth of a child. The results under the program were particularly encouraging for this particular indicator.

To be eligible for the SNF program, women had to have a score of 10 or more on the EPDS at two points in time. A range of other mental health related risk factors were also taken into account in determining eligibility including mild to moderate anxiety or depression, history of mental health problems (including eating disorders) and unresolved relationships issues.

The results showed that after 6-8 months in the program, 83 per cent of mothers who were still in the program at 12 months had shown a decrease in their EPDS scores (with 50 per cent showing a decrease of over six points or more).

For mothers still in the program at 24 months, 80 per cent had a decrease in their EPDS score at 6-8 months (with 45 per cent having a decrease in their score by over six points or more). For the remaining 20 per cent where there was not a decrease in their scores, further investigation is required to ascertain the factors impacting on their EPDS scores.

#### *Health seeking behaviour*

Health seeking behaviour describes the propensity of individuals to seek assistance from health services. It is known that health literacy, the knowledge and skills required to understand and use information relating to health issues<sup>47</sup>, and health seeking behaviour varies amongst population groups<sup>48</sup>, and it would be expected that families in the SNF program would have lower than average rates of health seeking behaviour. Again, the results are very positive – for the sample, 100 per cent of parents were showing positive health seeking behaviours after 12 months and 96 per cent were still showing these signs after 24 months in the program.

#### *Making referrals*

A key aspect of the design of the SNF program is the capacity to refer parents and children to secondary support services including health services. The study examined the referrals made and accepted for the sample of cases under review. As shown in Table 6.8, referrals were made to a wide range of other providers, including to Tier 2-4 providers. The most frequent referrals were to a community play group or a general practitioner.

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<sup>47</sup> Australian Institute of health and Welfare 2012. Australia's health 2012. Australia's health series no. 13. Cat. No. AUS 156. Canberra: AIHW. On the web at: <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737422169>

<sup>48</sup> *ibid*

Table 6.8: Cases with accepted referral to other providers by provider type, case reviews

Provider type	Total	
	N referrals	%
<b>Clinical</b>		
General practitioner	19	36
Maternal and child and health services	7	13
Other (e.g. Paediatrician)	9	17
<b>Mental Health Specialist</b>		
Psychologist	8	15
Psychiatrist (via GP referral)	2	4
Counsellor	9	17
<b>Other Tier 2 Providers</b>		
Drug and alcohol services	1	2
Housing support services	6	11
Legal services	2	4
Family care centres (e.g. Tresillian or Karitane)	12	23
Family or domestic violence services	3	6
Other (please specify)	17	32
<b>Community Networks and Services</b>		
Community–Mothers group	16	30
Community–Play group	24	45
Community–Library (including toy library)	9	17
Community–Other	10	19
Education, training or employment services	1	2
<b>Total cases n = 53</b>	<i>N=155 referrals</i>	<i>100</i>
(Note a case can have more than one referral made)		

Source: KPMG Notes: A case involving multiple births is counted once only.

### Smoking cessation program

Parents participating in the program were encouraged to participate in smoking cessation programs.

For the sample, after 12 months in the program, 32 per cent of parents (nine parents) had participated in a smoking cessation program and at 24 months, there were only 13 per cent (three parents). Data on whether parents were able to successfully quit smoking was not available.

Also of interest is the number of non-smokers in the sample: at 12 months, 57 per cent of parents in the sample and at 24 months, 75 per cent of parents were classified as “not applicable” for participating in a smoking cessation program, presumably on the basis that they were not current smokers. The latest available data for smoking rates in comparable populations showed that for the most socio-economically disadvantaged adults in 2012, 24 per cent of males were smokers and 16.5 per cent of females were smokers<sup>49</sup>. As there is an age, gender, and ethnicity dimension to smoking rates<sup>50</sup>, further information is needed to compare these rates to the general population.

These findings flag an opportunity to undertake further work with parents who smoke, and to collect data on both parents regarding smoking and the outcome of quit smoking programs in the future.

### Personal Health Record

Parents were encouraged to participate in the required schedule of child health checks which are recorded in their personal health record (‘blue book’) as part of their participation in the program. The personal health records contained details about health visits, immunisations, medication records etc. The data show that 87 per cent of cases had up to date personal health records while participating in the program at 12 months

<sup>49</sup> Current smoking in adults by Socio Economic Status NSW Population Health Survey (SAPHaR), Centre for Epidemiology and Evidence, NSW Ministry for Health

<sup>50</sup> Current smoking in adults by Socio Economic Status NSW Population Health Survey (SAPHaR), Centre for Epidemiology and Evidence, NSW Ministry for Health



(n=458). The data at 24 months shows 44 per cent (n=192/440) recorded as being fully immunised. Because of the data cut off at 24months, this flags an area for further investigation as part of ongoing implementation of the program.

**6.5.2 Social and emotional indicators**

A range of indicators were examined as part of the evaluation to test the social and emotional well-being of parents involved in the program (noting that this mostly involved mothers rather than fathers). These showed positive results particularly in improving parenting capacities and the confidence of parents in interacting with their children. The majority of these findings were drawn from in-depth reviews of case files and interviews with parents and nurses in the sample group.

*Parenting capacities*

Most significant, and a very positive result, was the level of confidence that parents had in their parenting with 93 per cent of parents demonstrating an improved experience of parenting (this increased to 96 per cent after 24 months in the program).

Other key indicators of parenting capacities that were examined in the sample show that:

- 82 per cent of parents demonstrated improved use of age appropriate discipline after 12 months (which fell by only three percentage points after 24 months in the trial)
- 96 per cent of parents showed improvement in parent-child interactions which also only fell by four percentage points to 92 per cent after 24 months
- 93 per cent of parents were using age appropriate toys and learning which fell to 88 per cent after 24 months
- Use of language and books actually increased from 75 to 96 per cent.

*Stimulation in the home*

These findings were supported by quantitative data results from the HOME Inventory (from the entire cohort). The HOME Inventory is designed to measure the quality and quantity of stimulation and support available to a child in the home environment. The scoring on the HOME inventory total score and all the subscales showed a positive result as an increasingly greater proportion of children scored above the median at 12 and 24 months compared to when the child was 6-8 weeks old (see Table 6.9). Note the 'median' is the score which has the same number of scores below it as above it (it is not the average which is the 'mean').

On the HOME inventory total score for example, 67 per cent of the children were above the median at 6-8 weeks and by 12 and 24 months, of those left in the program 96 per cent and 95 per cent respectively had a total score above the median. More detailed analysis was made of whether children who started below the median, improved, and whether children who started above the median maintained their score. For children who started below the median at 6-8 weeks, at 12 months 90 per cent of them had improved scores and at 24 months 100 per cent had improved scores for those who started above median a small number of children's scores declined, i.e. three cases at 12 months and three cases at 24 months.

*Table 6.9: HOME Inventory scores above the median by age of the child*

SCALE	Per cent of children above the median at specified ages					
	6-8 weeks	N =	12 months	N =	24 months	N =
Responsivity	56	430	84	215	88	103
Acceptance	54	430	67	215	72	104
Organisation	33	430	65	215	75	104
Learning materials	32	430	84	214	94	104
Involvement	57	430	84	215	90	104
Variety	41	429	76	215	86	104
<b>Total score</b>	<b>67</b>	<b>434</b>	<b>96</b>	<b>229</b>	<b>95</b>	<b>109</b>

Source: KPMG

### Staff and Parent Perceptions

These findings were supported by the qualitative data on perceptions by parents and staff about the benefits of the program. All staff and families interviewed reported there were benefits from the program in its focus on both direct, content specific skills such as meal preparation and language acquisition activities, as well as indirect skills such as exploring relationships and values, and understanding infant temperament.

The following are examples of positive outcomes that mothers experienced through the program:

- A mother reported that the SNF program helped her stay more mindful and be aware of the things that she needs to do with her child, e.g. taking time while breastfeeding and connecting with her child and trying to focus solely on him. It was reported that she now has 'an extra bond' with her youngest child.
- The mother felt that she did not have strong feelings for the child at the start and did not feel any sense of connection to the child. The behaviours which were prescribed by the SNF nurse such as 'eye contact' and 'touching the baby' helped build that connection and bond. The mother attributes the bond between the mother and the child to the program.

All staff interviewed reported that the majority of carers were more emotionally and verbally responsive with positive gains evidenced in the HOME Inventory and NCAST scores in the provision of appropriate play materials, organisation of the physical and temporal environments, and provision of opportunities for variety in daily stimulation.

#### **Examples of Parent Feedback on the Program**

*'I have a lot more confidence'. The SNF nurse provided her with a broad spectrum of choices and information regarding various services in the area. This includes the really practical and concrete suggestions.*

*'The regularity of the visits from (my nurse) to check my child's development has helped me to cope with depression as it has allowed me to get answers to the questions and concerns I have.'*

*'Has been practical ... I now have an idea of what is normal (regarding child development).'*

*'Getting feedback about parenting to check my child's development has helped me.'*

*'It opened up a new relationship for us. He (partner) said he can now talk easier to me.'*

*'She has learnt that there are cultural differences in the way (her own culture) and Australians raise their children. Her nurse has taught her that it is OK to challenge cultural norms to do what is best for the baby.'*

## 6.6 Implications of Results

The evaluation findings suggest that for those participants who continue with the program, the SNF has showed positive results for children and their families. This was supported by the perceptions about the program from the families and staff who were interviewed.

As noted earlier, the evaluation does not consider the outcomes for families who did not continue with the program. For those moderate risk families who remain in the program, it appears to have been particularly successful in improving both child and parent health and well-being along a range of health and psycho social dimensions. These positive outcomes are evident after 12 months and 24 months for children and families, although for the ASQ:SE where there is an increasing percentage of children who are not on track at 12 and 24 months, and for ASQ3: Communication, there is a significant percentage of children with communication skills who are not on track at two years of age.

Some of the challenges for the program highlighted by the evaluation include:

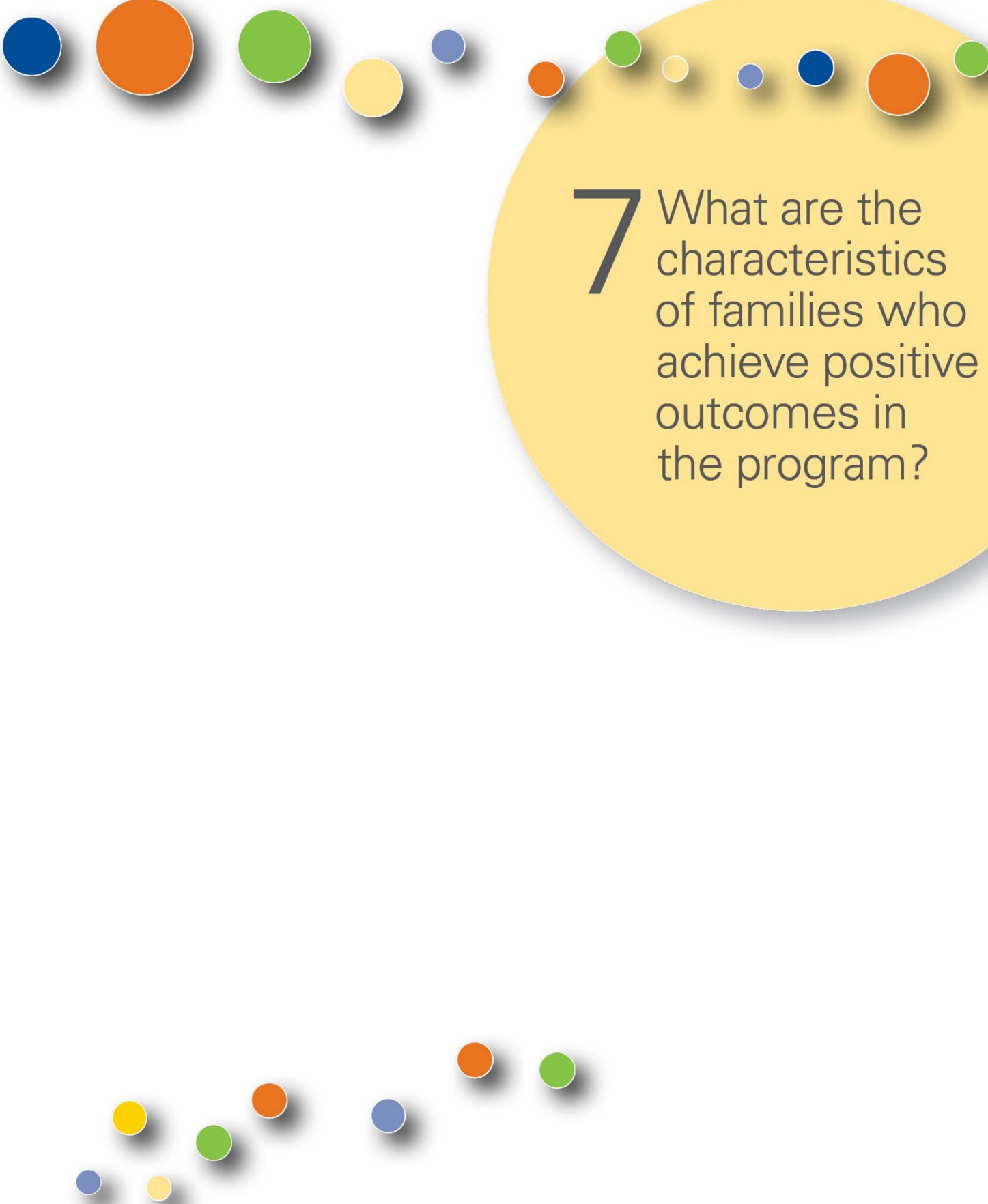
- Maintaining the development of communication skills and social and emotional development, with the percentage of children reporting positive outcomes in these domains falling over the duration of the family's time in the program

- Completing and sustaining uniform data collection across all the developmental tools at each site including the NCAST tool and maintaining the completion of Personal Health records during the last year of the program
- Considering the impacts for different families including those with multiple risk factors and what particular services work best for the highest risk families
- Understanding the link between these early positive signs for children and their families and the ultimate outcomes for children from the program.

### **Recommendations:**

In terms of opportunities to improve the effectiveness of the SNF program in achieving improved outcomes for families and children, the following recommendations are suggested:

- That the program continue to focus on moderate risk families and retention of at risk families given the positive outcomes for those participants who continue throughout the life of the program
- That further efforts are directed at sustaining improvements in child outcomes related to communication and social and emotional development
- That evidence about the SNF's impacts on outcomes should continue to be evaluated to build the evidence base and inform the ongoing implementation of the program



7 What are the characteristics of families who achieve positive outcomes in the program?

# 7. What are the characteristics of families who achieve positive outcomes in the program?

This section addresses the issue of the characteristics of families who achieve positive outcomes in the SNF program. Firstly, information is provided on the demographic and risk profile of all families participating in the SNF program. A detailed examination of the profile of all families who participate in the program found that almost half the mothers are in their twenties, 46 per cent had high school education as their highest education attainment and 40 per cent of families come from CALD backgrounds.

Second, an analysis is undertaken of the relevant characteristics of families in the program who are retained in the program. In general, factors that are associated with an *increase* in the mother’s psychosocial stress *increase* the likelihood that they will remain on the program. This could be considered a positive finding in that the factors that are associated with increased need and therefore greater potential to benefit are resulting in mothers remaining on the program.

Third, analysis was made of factors impacting on a range of child outcomes including overall ASQ:3, ASQ:SE, HOME Inventory scores and the GMDS. In terms of the key influences on child outcomes, measuring the association with GMDS scores, found the only family characteristic to have an association with improved child outcomes was the level of social isolation of the family i.e. if the family was not socially isolated, there was an increased likelihood of the child achieving a normal or better GMDS score.

In relation to scores on the Ages and Stages Questionnaire, only one significant association was found with the results showing that children from non-CALD families and children from families with at least one other child in the family were more likely to achieve the ASQ3 outcome around language and communication. On other ASQ sub-scores (such as gross motor or fine motor) CALD status was not associated with the result which means that CALD infants are not faring worse than their non-CALD counterparts on these scales. Analysis of NCAST scores was also undertaken and this showed that improvements in the NCAST teaching outcome are about twice as likely for families without a history of mental illness.

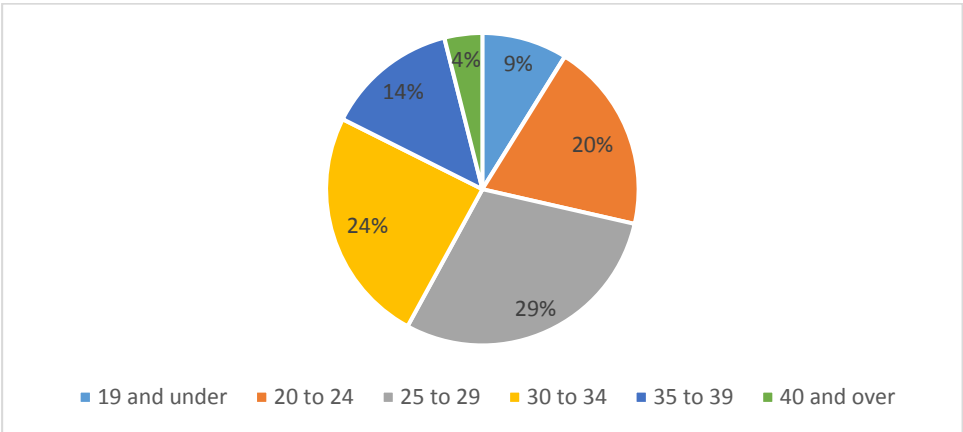
## 7.1 Profile of SNF participants

### 7.1.1 Family profiles

The following figures highlight demographic information relating to families who commenced on the SNF program. The data includes all families at all sites, including families who prematurely exit the program.

The data shows that almost half the mothers participating in the program are in their 20s and a small proportion (9 per cent) are 15-19 years of age (Figure 7.1).

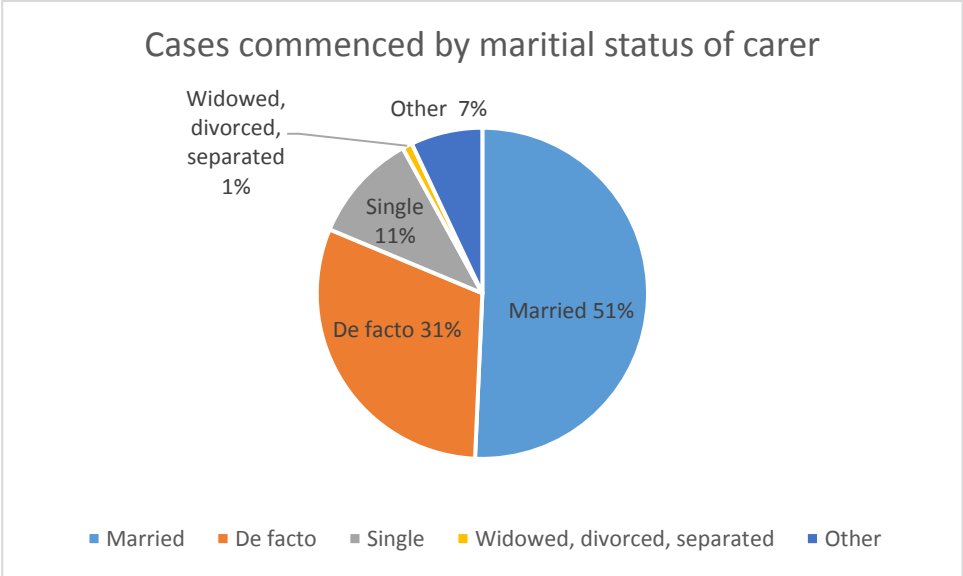
Figure 7.1: Mother's age at program entry (N=997)



Source: KPMG 2014 analysis of SNF administrative data.

Marital status of the cases that commenced the SNF program is shown in Figure 7.2. The figure shows that half (51 per cent) of mothers were married, another 29 per cent were in a de facto relationship and 11 per cent were single.

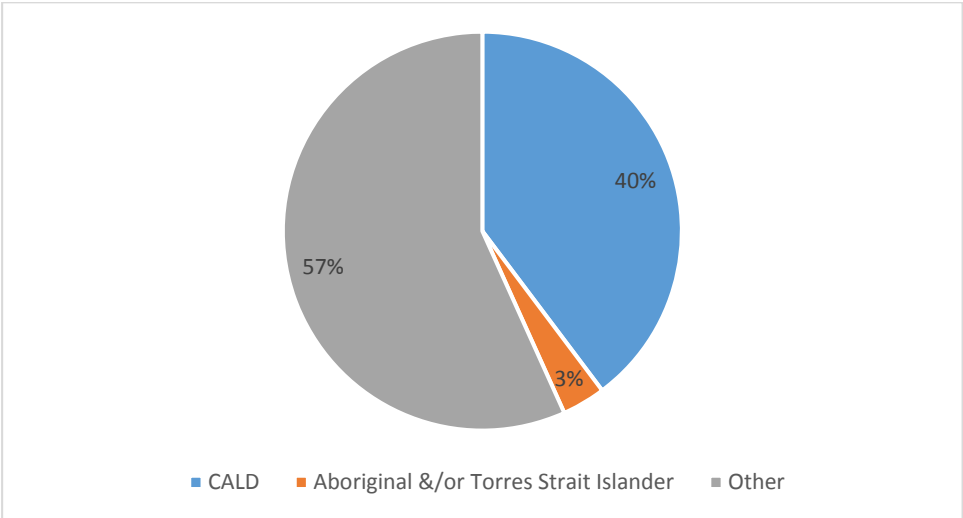
Figure 7.2: Marital status of families that commence the SNF program (N=997)



Source: KPMG 2014 analysis of SNF administrative data (Missing and unknown = 81)

Figure 7.3 shows that a high proportion of families in the program are from CALD backgrounds (40 per cent) and 3 per cent of families on the program identified as being Aboriginal or Torres Strait Islander.

Figure 7.3: Ethnicity of mothers in SNF program (N=997)



Source: KPMG 2014 Analysis of SNF administrative data

The mothers' country of birth is shown in the table below for cases commencing in the program.

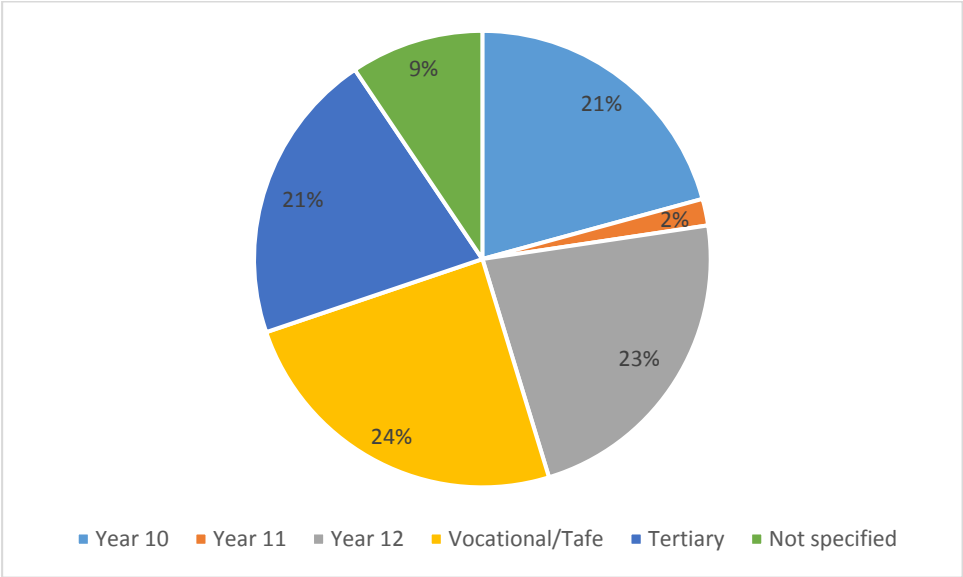
Table 7.1: Cases commenced by mother's country of birth

Mother's country of birth	Total	
	N	%
Australia	592	66
Iraq	39	5
New Zealand	29	3
Vietnam	24	3
Lebanon	21	2
India	19	2
United Kingdom & Ireland	18	2
China	14	2
Western Samoa	10	1
Other	128	14
Valid Total	894*	100

Source: KPMG 2014 (Note 103 = missing) Analysis of SNF administrative data

The level of mothers' educational attainment was examined in the sample (as shown in the following figure). This figure shows that 46 per cent of mothers in the sample have high school education as their highest education attainment.

Figure 7.4: Sample Data - Highest level of educational attainment for mothers entering SNF program (N=53)

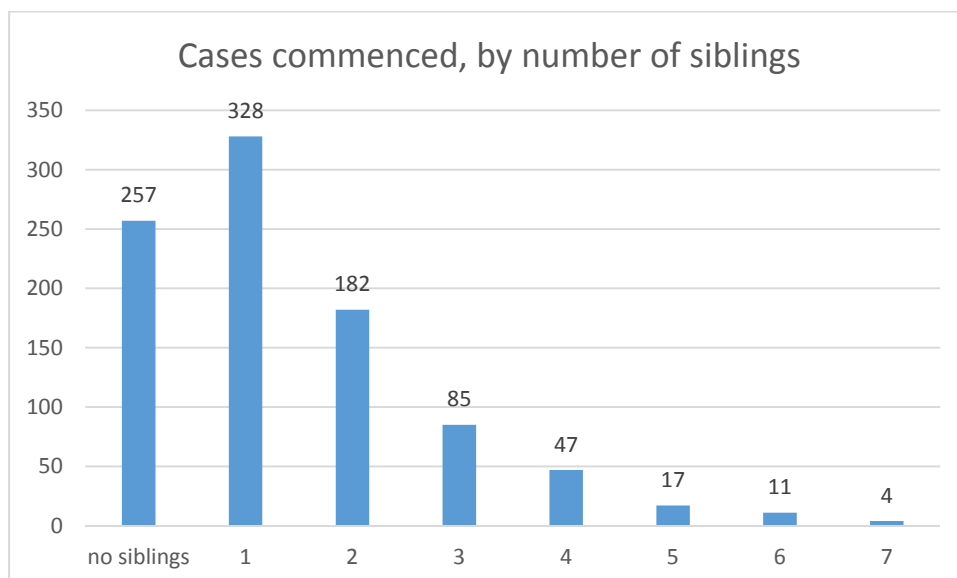


Source: KPMG 2014 analysis of SNF Case File data

### 7.1.2 Child Profiles

For around one third of families (28 per cent) in the program, the subject child did not have any siblings; for slightly more than a third (35 per cent), there was one sibling. There were 8 per cent of families which had four or more siblings (as shown in the figure following).

Figure 7.5: Number of siblings of children who commence the program (N=997)



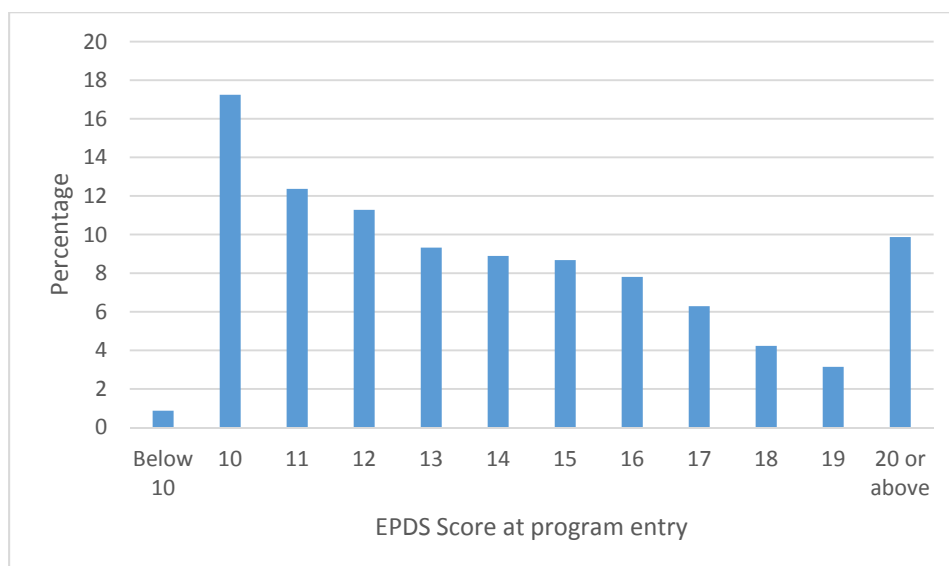
Source: KPMG 2014 Analysis of SNF administrative data. Missing n=66.

### Psychosocial characteristics of SNF families

In order to be eligible for the SNF program, families must reside in areas where there is a low SEIFA score (band one or two). Eligibility criteria for the SNF program also includes an EPDS score that is 10 or higher, and a psychosocial assessment that demonstrates one or more vulnerability factors as described in the NSW Health Maternal and Child Health Primary Health Care Policy.<sup>51</sup>

The following figure shows EPDS scores at the point of the mother's presentation to the SNF program.

Figure 7.6: Distribution of EPDS scores at program entry (N=997)



Notes: This analysis provides the frequency of scores for the Edinburgh Depression Scale at program entry - analysis only includes cases that commenced prior to 30 June 2014; Missing = 75 cases; referral received for multiple births is counted once only.

Source: KPMG 2014 analysis of SNF administrative data

<sup>51</sup> NSW Department of Health. NSW Health/Families NSW Supporting Families Early Package - Maternal and Child Health Primary Health Care Policy. Sydney: NSW Health, 2009. Available from: [http://www.health.nsw.gov.au/policies/pd/2010/PD2010\\_017.html](http://www.health.nsw.gov.au/policies/pd/2010/PD2010_017.html)



Three SNF sites showed a comparably large percentage of families scoring high (14+) on the EPDS:

- HNE with 61 per cent of families scoring 14 or more on the EPDS scale;<sup>52</sup>
- NNSW, with 66 per cent of families at 14 and above; and
- SES, which showed 59 per cent of families scoring 14 or higher.

The following table displays the Level 2 vulnerabilities that were identified in screening at intake into the program.

There are a range of moderate vulnerabilities that are recognised at intake (as shown in the table below). The analysis show that the majority of families in the program have moderate anxiety or depression (86 per cent) and adjustment to parenting issues (72 per cent).

An area for further development within the program may be the interpretation of the vulnerabilities. SNF staff reported that there is some variation in interpretation and coding of vulnerabilities across staff. For example in reference to financial vulnerability, some staff only coded it as a presenting vulnerability if the family reported experiencing financial stress whereas other nurses selected this factor if the family reported accessing Centrelink benefits.

*Table 7.2: Level 2 vulnerabilities at program entry (N = 994)*

LEVEL 2 VULNERABILITY	PERCENTAGE OF FAMILIES
Mild to moderate anxiety or depression	86%
Adjustment to parenting issues	72%
Financial stress or unstable housing	45%
History of mental health problem or disorder	41%
Unresolved relationship issues, including with own parents	39%
Isolated	26%
Other	22%
Unsupported parent	19%
Grief and loss associated with the death of a child or other significant family member	15%
Multiple, premature or complicated birth	15%
Young mother or parents (under age 20)	10%
Partner unemployed	10%
Refugee status, recent migrant or poor English skills	8%
Late antenatal care	1%

Notes: Analysis only includes cases commenced on or before 30 June 2014; a case involving multiple births is counted once only. Columns may not add to totals as a case can experience more than one risk factor. Unknown = 1.

Source: KPMG 2014 analysis of SNF administrative data

### 7.1.3 Families with complex needs

One of the recurrent themes in interviews and focus groups with staff and key stakeholders was the situation of complex families. As noted, the SNF model is designed to target moderate risk families based on the effectiveness of the program with this cohort. Landy and Menna (2006)<sup>53</sup> argue that the level of risk and effectiveness of prevention generally functions as an 'inverted U-shaped association'. This essentially means that those families who are on either side of the risk spectrum (i.e. high and low tend to benefit the least from a program as opposed to those who are at 'moderate risk' who typically show the best outcomes).

The reality of implementing the program for moderate risk families has created moral and professional dilemmas for those in the SNF program in the absence of a similar home visiting program for high risk

<sup>52</sup> Notably HNE has a higher threshold for program entry, which is a score of 13 on the EPDS as compared to a score of 10 at three SNF sites and over 10 at one site.

<sup>53</sup> McDonald, M., Moore, T.G. and Goldfeld, S. (2012). Sustained home visiting for vulnerable families and children: A literature review of effective programs. Prepared for Australian Research Alliance for Children and Youth. Parkville, Victoria: The Royal Children's Hospital Centre for Community Child Health, Murdoch Children's Research Institute.

families. This was particularly an issue in regional areas, where there may be an absence of support services for high risk families. This has occurred despite the fact that SNF policy states that Level 3 families can have a case management approach.

The evaluation found that around a third of the families in the sample escalated in terms of risk and sites varied in their responses to escalation of risk. The program allows for holding families until de-escalation of risk occurs, or transitioning families off the program with appropriate supports put in place. One site mentioned that they usually 'held' a family until the family could be supported to de-escalate to level 2, or until additional services were put in place.

Transitioning families off the program, or holding them in the program until they de-escalated is within the program parameters. At some sites families whose risk profile has been elevated had been retained in the program. At these sites it is viewed unethical to discontinue services to a vulnerable family in need particularly when there were not alternative supports available. One SNF site reported that when families had experienced escalation to level 3 and they attempted to discontinue their involvement with the service, they had found that there was a lack of services targeting high risk, complex cases in the area. At this site, over time, they had transitioned two families off the program.

According to SNF Policy, it is appropriate to retain families who escalate until they either de-escalate or until alternate services are in place. However, where there is active domestic and family violence, the safety of the SNF nurse and the family must be assessed. Given the findings of the evaluation, there is an issue of lack of alternate services in place for high risk families.

## 7.2 Outcomes for families in the program

The analysis examined what family characteristics were associated with positive outcomes on the program. The outcomes examined included:

- Retention in the program;
- Child’s GMDS score (for sample);
- Child’s ASQ scores;
- HOME inventory scores; and
- Change in mother’s EPDS scores.

For each of the analyses following, characteristics outlined in Table 7.3 which cover the strength of the nurse-parent relationship), family vulnerabilities (e.g. unemployment) and the mother’s characteristics (ethnicity, age, EPDS score) were examined to see if they were associated with the outcomes specified above. As outlined in detail in the following section, the vast majority of the characteristics examined were found to not have any significant influence positive outcomes in the program. The significant findings are reported below.

*Table 7.3: Factors investigated to determine association with child outcomes, maternal outcomes, and retention in program*

NURSE FACTORS	PSYCHOSOCIAL FACTORS	DEMOGRAPHIC FACTORS	PROGRAM FACTORS
Nurse has a higher child and family qualification (i.e. post graduate diploma, post graduate certificate, Masters or PhD) Nurse has higher child and family experience Nurse has at least 5 years CHFN experience	Higher risk (2 or more vulnerabilities) Number of vulnerabilities Adjustment to parenting issues Financial stress or unstable housing Grief and loss associated with the death of a child or other significant family Isolated Late antenatal care Partner unemployed History of mental health problem or disorder	CALD status Young mother or parents (under age 20) Married or de facto relationship Number of children in the family Mother's educational level for reviewed cases	Antenatal entry/ Postnatal entry Number of visits for reviewed cases WAI Family score WAI Nurse score

NURSE FACTORS	PSYCHOSOCIAL FACTORS	DEMOGRAPHIC FACTORS	PROGRAM FACTORS
	Mild to moderate anxiety or depression Multiple, premature or complicated birth Refugee status, recent migrant or poor English skills Unresolved relationship issues, including with own parents Unsupported parent EPDS score at commencement EPDS score at 6-8 months Other vulnerabilities identified at intake		

Source: KPMG 2014

### 7.2.1 Family retention on the program

A series of analyses were undertaken to investigate the characteristics associated with retention on the program at different stages of the program based around the age of the child.

The factors in Table 7.3 were examined to determine if any factors influenced retention in the program at different ages of the child. Multiple logistic analyses were undertaken to explore these associations.

The results which are outlined in Table 7.4 show that:

- At birth, retention was associated with at referral two or more vulnerabilities present and parents aged 20 or older, while those with mild to moderate anxiety or depression at referral, and those with the vulnerability '*issue adjusting to parenting*' were less likely to remain in the program until the birth of the child
- At one month, retention was associated with two or more vulnerabilities present at referral and that the case commenced post-natally; those more likely to drop out of the program had the vulnerability '*issue adjusting to parenting*'
- At six months of age, retention was associated with a history of mental health problems or disorders and a multiple, premature or complicated birth
- At 12 months of age, retention was associated with the parents being 20 years old or older, at referral and the parents being married or in a de facto relationship
- At 24 months of age, retention was associated with the presence of mild to moderate anxiety or depression at referral as well as recognised vulnerabilities that the program targets (rather than 'other vulnerabilities')

In general, factors that are associated with an *increase* in the mother's psychosocial stress *increase* the likelihood that they will remain on the program. This could be considered a positive finding in that the factors that are associated with increased need and therefore greater potential to benefit are resulting in mothers remaining on the program.

Table 7.4: Logistic regression modelling of retention in the program

AGE OF CHILD	FACTORS ASSOCIATED WITH INCREASED LIKELIHOOD OF REMAINING IN THE PROGRAM	RESULTS FROM LOGISTIC REGRESSION MODELLING OF RETENTION IN THE PROGRAM AT VARIOUS AGES			
At birth of child	✓ high risk referral	Variable	Odds ratio	95% confidence interval	
	✓ absence of adjustment to parenting vulnerability at referral	High risk referral	5.62	2.56	12.32
	✓ absence of mild anxiety or depression at referral	Absence of adjustment to parenting vulnerability at referral	2.57	1.34	4.95
	✓ the mother or parents are not young (under age 20)	Absence of anxiety or depression	3.16	1.56	6.37
		Parents both 20 or older	2.79	1.41	5.55
One month of age	✓ the referral is high risk (two or more vulnerabilities present at referral)	Variable	Odds ratio	95% confidence interval	
	✓ the case commenced postnatally	High risk referral	15.91	8.51	29.73
	✓ there is no vulnerability of issue adjusting to parenting at referral	Postnatal commencement	6.40	2.28	17.96
		Absence of adjustment to parenting vulnerability	5.37	2.43	11.86
Six months of age	✓ history of mental health problem or disorder	Variable	Odds ratio	95% confidence interval	
	✓ multiple, premature or complicated birth	Mental health history	1.65	1.20	2.27
		Multiple, premature or complicated birth	2.34	1.45	3.88
12 months	✓ the parents are aged 20 or older at referral	Variable	Odds ratio	95% confidence interval	
	✓ the parents are married or in a de facto relationship	Parents both 20 or older	2.20	1.33	3.63
		Married or de facto	1.83	1.16	2.91
24 months	✓ presence of mild to moderate anxiety or depression at referral	Variable	Odds ratio	95% confidence interval	
	✓ there is no vulnerability of 'Other' identified at referral	Mild to moderate anxiety or depression	3.33	1.93	5.72

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No vulnerability of 'Other' at commencement	2.47	1.55	3.95
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Source: KPMG 2014

Note – In addition to specifying Level 2 factors at intake into SNF, families are assessed as to whether they have 'other vulnerabilities'. The analysis shows that when families have vulnerabilities recognised at commencement which do not include 'other' vulnerabilities they are more likely to remain in the program at 24 months; they are also more likely to remain if mothers have mild to moderate anxiety or depression.

## 7.2.2 Nurse perceptions on families who do well

During consultations, SNF nurses reported their observations about which families they found tended to have more success on the program. Characteristics enabling program success were seen to be collaboration, aspiration and motivation, including a supportive family and social network as well as stability in housing and finances. Particular enabling factors for families that were identified by nursing staff include:

- stable mental health, with no overarching mental health issues, as this was considered an enabler for a more dedicated focus to the SNF program;
- engagement with, and desire to stay in, the program despite changing circumstances in their lives;
- capacity and intellect to comprehend the information and reflect upon their situation in light of the guidance provided by the nurse, and higher education achievement; and
- mothers maintain independence in their relationship with the program nurse and are able to remain engaged in the program when there is a change in staff members.

Characteristics exhibited by families that were considered to be barriers to the achievement of positive outcomes were:

- mothers who did not engage with the program or became disengaged during the course of the program;
- families who were not receptive to the activities and information provided and were otherwise difficult to work with;
- families whose circumstances frequently changed, including moving house (particularly when this relocation was out of the SNF service area); and
- families with health and/or mental health issues that arose during the program.

As the logistic regression analyses shows, a mother's mental health is a key factor in retention on the program; mothers with mild to moderate anxiety or depression are more likely to remain on the program at 12 months.

## 7.2.3 Child outcomes (as measured by GMDS)

In addition to examining family retention in the program, factors affecting child development outcomes (as measured through GMDS and ASQ scores) were also examined as part of the evaluation.

Within the case review sample, analysis was undertaken as to whether an accepted referral or the number of referrals to a Tier 2-4 provider had a relationship to a child's GMDS score.

The factors in Table 7.3 were examined to determine their association with child outcomes as measured through the GMDS results. A regression analysis was used to investigate associations between GMDS scores and program, family and psychosocial factors. The vast majority of factors showed no association with the child's GMDS result.

As shown in Table 7.5, there was only one factor related to the family's characteristics which was shown to demonstrate a level of association i.e. social isolation. If the family was not socially isolated (as measured in SAFESTART assessment, the likelihood of achieving a normal or better GMDS score is increased. (The impact of the nurse's experience is discussed in Chapter 8).

Table 7.5: Results logistic regression modelling of GMDS Total Score outcome

FACTORS ASSOCIATED WITH INCREASED LIKELIHOOD OF GMDS TOTAL SCORE BEING NORMAL OR BETTER	RESULTS FROM LOGISTIC REGRESSION MODELLING OF GMDS TOTAL SCORE		
✓ the family is not socially isolated (as measured in SAFESTART assessment)	Variable	Odds ratio	95% confidence interval
	Not isolated	6.72	1.43 31.64
✓ Nurse has at least 5 years CFHN experience	Variable	Odds ratio	95% confidence interval
	Nurse's experience	6.90	1.36 34.51

Source: KPMG 2014

### 7.2.4 Child outcomes (as measured by ASQ scores)

Child outcomes on the ASQ3 were also investigated. Success was defined as the ASQ3 classification not falling between four months and 24 months for cases where the four month score was at or above cut-off and where ASQ3 scores increased. This was contrasted with cases where the ASQ3 score fell between four months and 24 months for cases where the four month score was at or above cut-off and ASQ3 scores were unchanged in other cases. There were 68 cases with data available at both points in time.

No significant factors were found to be associated with children's scores on ASQ3: gross motor, ASQ3: fine motor; ASQ3: problem solving, ASQ3: personal social and ASQ: SE. However, significant relationships were found in the analysis of ASQ language and communication scores.

#### *Factors associated with development of language and communication skills*

Factors related to positive development of communication skills as measured by ASQ were assessed. For children who commenced at or above the cut-off on the communication scale, success was defined as maintaining or improving the four month old score at 24 months. There were 68 children who remained in the program and had scores at both points in time.

The results are shown in below indicating that non-CALD families, and children in families with at least one other child, were more likely to achieve the ASQ3 outcome for communication (i.e. maintain or improve their four month old score at 24 months).

The wide confidence interval, indicates that the very high odds ratios should not be taken at face value. However, the lower end of each confidence interval is materially greater than one. On this basis, it is reasonable to conclude that each of the variables concerned increases the odds of the relevant outcome.

Table 7.6: Results of logistic regression modelling of ASQ3 outcome for communication

VARIABLE	ODDS RATIO	95% CONFIDENCE INTERVAL	
Non CALD status	13.47	2.05	88.47
At least one other child in the family	10.86	1.65	71.65

Source: KPMG logistic regression analysis of SNF administrative and sample data (Note n=68)

### 7.2.5 HOME inventory scores

Factors affecting the HOME inventory were also investigated. Success on the the Home inventory was defined as the Home Inventory classification did not fall between 6-8 weeks and 24 months for cases where the 6-8 week score was at or above cut-off and Home Inventory scores increased for other cases; this contrasted with the cases where the score fell between 6-8 weeks and 24 months for cases where the 6-8 week score was at or above cut-off and Home Inventory score was unchanged in other cases. There were 48 cases where there was a score at 6-8 weeks and 24 months.

No significant relationships were found with any of the HOME subscales or the HOME total score.

## 7.2.6 Mother's EPDS scores

Analysis was undertaken as to which factors were associated with mothers who had decreased EPDS scores at two points in time (intake and at second administration of the instrument).

The key factors that were identified as showing some potential relationship with the mother's EPDS score included "Partner unemployed", and "Young mother or parents (under 20 years of age)". Both factors tended to reduce the likelihood of there having been an improvement in the EPDS score. However, each of these was only marginally influential, with the relevant logistic regression models approaching statistical significance. Based on the results obtained, any relationship between either of these vulnerabilities and EPDS improvement are not practically significant.

## 7.2.7 Child/maternal outcomes (NCAST teaching and feeding scores)

Research in the United States has found that the total feeding score has been shown to be lower for mothers who are teenagers as well as mothers: '*birthing in a delivery room versus a birth centre, past death of a child, low maternal self-concept, difficult or prolonged labour, social or emotional problems prenatally, feeding problems postpartum and father absent from the delivery room*<sup>54</sup>'. There are also significantly higher NCAST-PCI feeding scores for married, older and educated mothers.<sup>55</sup>

For the SNF evaluation, logistic regression analysis was undertaken to determine if there were factors that had a significant influence on the outcome or NCAST-PCI feeding scores. The use of the NCAST-PCI scores as an outcome intervention has not been widely used.<sup>56</sup> The factors in Table 7.3 were examined for their influence on improvement of NCAST-PCI feeding scores.

Researchers in the US have suggested using different cut-off scores for different ethnic groups. For example, American Indian mothers have been found to score highly on the scale<sup>57</sup> and some other ethnic groups score consistently lower. Baseline population statistics and the different cultural groups within this context for the Australian context are not available and are an area for further research. As such, scores at this stage can be used as an initial screen where scores below the cutoff can be used to indicate a 'worrisome' result which can lead to further in-depth assessment by the clinician.

Analysis for NCAST scores for the entire cohort was limited to the amount of data available for every variable to be studied. No significant relationships were found in this analysis. It is suggested that further research with a larger dataset is undertaken on NCAST feeding outcomes and possible relevant factors such as those that have been found in the US studies (age, education, difficult birth, pre-natal social or emotional problems, and marital status).

Regarding the NCAST-PCI teaching, the factors in Table 7.3 were also examined for their influence on NCAST-PCI teaching scores. Again, the analysis for NCAST scores was limited by the amount of data available. A borderline result was found for a possible relationship between NCAST Teaching outcome and the vulnerability of "History of mental health problem or disorder".

Table 7.7: NCAST-PCI Teaching Chi Square

NCAST PCI TEACHING INCREASED BETWEEN 6 WEEKS AND 12 MONTHS	NO HISTORY OF MENTAL HEALTH PROBLEM OR DISORDER	YES HISTORY OF MENTAL HEALTH PROBLEM OR DISORDER	TOTAL
No	45	49	94
Yes	22	8	30
Total	67	57	124

Chi-squared = 5.94, 1 degree of freedom, p=0.015

The table shows that a positive outcome, i.e. an increase in NCAST Teaching outcome (from 6 weeks and 12 months) is about twice as likely for people **without** a history of a mental health problem or disorder than for those **with** such a history. As the NCAST-PCI scores have been shown to be correlated with children's

<sup>54</sup> NCAST database A quick summary of what the feeding scale measures; MCN Am J Matern Child Nurs. 2003 Jul-Aug;28(4):246-51. Mother-infant interaction in low-income families. Schiffman RF1, Omar MA, McKelvey LM.

<sup>55</sup> Ibid

<sup>56</sup> Ibid

<sup>57</sup> Seidman, R.V. Haase, J., Primeaux, M., & Burrs, P. (1992) Using NCAST instruments with urban American Indians. Western Journal of Nursing Research, 14, 308-321. Reported in NCAST database.



development outcomes such as language development and IQ at 5 years of age<sup>58</sup>, it is an important assessment tool for the SNF program.

### 7.3 Implications of Results

The results of the evaluation have shown there are relatively few factors that are relevant when it comes to the specific characteristics of families who achieve positive outcomes in the SNF program.

In terms of retention in the program, the mother's age, whether the family was from a CALD background and the mother's EPDS score were influencing factors with younger mothers more likely to drop out of the program, CALD mothers more likely to exit early in the program and mothers with relatively high EPDS scores at commencement more likely to stay in the program.

On contributions to positive outcomes as measured on a range of indicators, the evaluation found that there were two key factors that had a significant influence on the child's GMDS score: namely the family's level of social isolation and the experience of the nurse. A child's language and communication skills as measured by improvement in the ASQ3 scores over time were found to be associated with families not being from CALD families and families with more than one child. On other outcome measures such as EPDS and Home Inventory scores, the evaluation found no significant relationships with specific family characteristics.

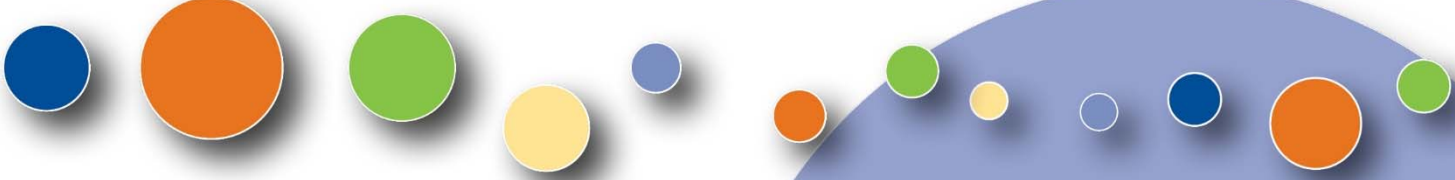
In terms of implications for the SNF program, the findings give an indication of where the SNF program may be better able to target efforts to improve overall program retention particularly in looking at CALD families and young mothers in the early stages of the program. Overall, it suggests the program should continue to focus on the current population group and that no significant changes to the eligibility criterion would be required.

#### Recommendations

- That further investigation of the reasons for premature exit by young mothers and CALD families is undertaken to inform efforts to increase retention in the program
- That the program target increased efforts at responding to the special needs of children living with families considered to be socially isolated

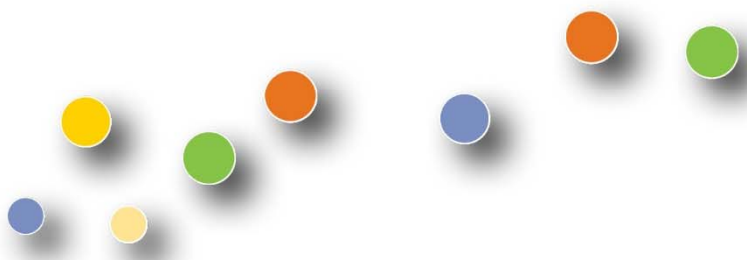
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<sup>58</sup> NCAST database A quick summary of what the feeding scale measures



8

What is the impact of SNF staff on achieving positive outcomes for children and families?



## 8. What is the impact of SNF staff on achieving positive outcomes for children and families?

This section examines the impact of SNF staff on achieving positive outcomes for children and families. The evaluation has focussed primarily on the impact of nursing staff given that they are the front line service providers.

Firstly, the relationship between nurses and parents was assessed and secondly, the impact of the length of experience of nursing staff on children's developmental scores was analysed.

It was found that both mothers and nurses value their relationship and families tended to rate the strength of the relationship higher than the nurses. Parents reported that nurses were the main factor that they believed contributed to the beneficial outcomes experienced as a result of the service.

The evaluation also found a positive relationship between the experience of the nurse and the developmental scores of children. When a more experienced nurse was in place, a child was six times as likely to have a higher developmental outcome score.

### 8.1 Measuring the nurse mother relationship

The SNF program is built around using registered nurses, who are supported by Tier 2 staff including social workers, etc, to deliver the home visiting program. Delivery of home visiting programs by registered nurses has generally been found to be more effective than programs delivered by paraprofessionals or other types of providers.<sup>59</sup>

Research also suggests that the relationship between the home visitor and the parent is just as important as the qualifications of the service providers. A key factor emerging from the literature in this regard is the "social distance" of the home visitor from the families, i.e. whether the visitor and the family share similar social and cultural values especially in regards to language.<sup>60</sup> As outlined in Chapter 5, the SNF program has employed Arabic speaking and Mandarin speaking nurses at SES to cater specifically for the needs of CALD families in that site.

Developing a strong relationship between the parents and the nurse is a central aspect of the SNF program's design as the program is based on a Family Partnership Model (FPM). This approach includes the development of a 'parent-professional relationship and parent-child relationship so that parents and families are supported to build on their strengths to rectify any health, lifestyle or parenting issues'.<sup>61</sup> Within the model, the nurse is to develop and work within a strengths based partnership approach with families. The model supports collaborative identification, clarification, and management of issues, with parents as the lead drivers of identified goals and intervention. The partnership based approach is intended to provide the opportunity for the nurses to role model the relationship that the parent can have with their child. For example, the nurse would reinforce the mother's strengths and be encouraged to use the same approach in how they communicate with their child.

For the purposes of this evaluation, the role and impact of the nurse and parent relationship was examined through:

- Working Alliance Inventory (Short Revised WSI-SR adapted for home visiting) surveys administered to parents (primarily mothers) and their nurses;
- Interviews with families; and
- GMDS scores.

<sup>59</sup> McDonald, M., Moore, T.G., and Goldfeld, S. (2012). Sustained home visiting for vulnerable families and children: A literature review of effective programs. Prepared for Australian Research Alliance for Children and Youth. Parkville, Victoria: The Royal Children's Hospital Centre for Community Child Health, Murdoch Children's Research Institute.

<sup>60</sup> Ibid

<sup>61</sup> Kemp, L, Harris, E, McMahon C, (n.d.)

This WAI- SR tool contains 12 questions that were extracted from the long form WAI, asking questions that are measured on a 7 point Likert scale with responses ranging from 1 (never) to 7 (always). The inventory consists of four scales; an overall 'alliance' scale measuring the strength of the overall relationship, and three secondary scales measuring agreement on goals, agreement on tasks, and the bond between respondents.

Scoring for the overall scale measuring the strength of the relationship between parents and nurses, that is, the outcomes of the survey as a whole, ranges from a low score of 1 to a top score of 84. Relationship strength is codified as follows:

- 1 to 12: non-existent relationship;
- 13 to 24: very poor relationship;
- 25 to 36: poor relationship;
- 37 to 48: some relationship;
- 49 to 60: good relationship;
- 61 to 72: very good relationship; and
- 73 to 84: excellent relationship.

## 8.2 Strength of the nurse mother relationship

The WAI-SR survey responses were highly positive and show that both parents and nurses value the relational aspect of their work together. In the main, parents and nurses have a common understanding of the work they do together in the program and the tasks to be undertaken.

The WAI-SR outcomes of parent and nurse surveys across each of the five sites is provided in the following table.

*Table 8.1: WAI-SR measure of overall strength of relationship between mothers and nurses*

	HNE	NNSW	CC	SWS	SES
Overall parent score	75	68	76	68	68
Overall nurse score	64	61	71	64	62

*Source: KPMG analysis of WAI-SRs administered to SNF nurses and families included in the sample*

Reported scores across sites reflect the average scores for those sites. At minimum, 'very good' relationships are reported by both parents and nurses across the SNF program. Nurses consistently rated the strength of their relationship lower than parents although the highest results from both groups were recorded at the CC site. The difference in scores between parents and nurses may be due to the positional difference that nurses have in the relationship. Nurses however were not asked to provide insight into why these scoring differences may have occurred, and as such, definitive findings cannot be made as to why nurses rate their relationships lower than parents.

The development of a relationship between the parent and the nurse was found to be highly reliant on the individuals involved. Families who had more than one nurse had different experiences with each nurse. The most common theme in understanding the different levels of engagement with nurses was that a significant amount of value was placed on the individual personality and compatibility of the nurse with the family.

## Interviews

Parents that were interviewed as part of the evaluation reported on the centrality of the nurse in their experience of the program. The majority of parents reported that nurses were the main factor that they believed contributed to the beneficial outcomes experienced as a result of the service.

Key enablers that were identified as important in building a strong relationship included:

- the effort placed by both parties on building the relationship between the nurse and the family;

- maintaining consistency in the home visiting nurse and the duration of the engagement period with the families;
- employment of a non-judgmental and strengths-based approach to providing the service;
- a focus on discussion rather than direction; and
- recognition of the proven value of the program (i.e. the relationship is strengthened once outcomes for the child are evident).

### 8.3 Nurses experience

Analysis was undertaken on the association of the nurse’s years of experience and the child’s development outcomes as assessed by GMDS score. Logistic regression demonstrated an association between the SNF nurse having over five years of experience and an increased likelihood of the GMDS score, and thus the child development outcomes, being “normal” or “above average.” When a more experienced nurse was in place, a child was six times as likely to developmental outcome score that was normal or above normal. The results of the regression analysis are shown in Table 7.5.<sup>62</sup> (The impact of isolation on outcomes is discussed in Chapter 7).

Table 8.2 - Results logistic regression modelling of GMDS Total Score outcome

FACTORS ASSOCIATED WITH INCREASED LIKELIHOOD OF GMDS TOTAL SCORE BEING NORMAL OR BETTER	RESULTS FROM LOGISTIC REGRESSION MODELLING OF GMDS TOTAL SCORE			
✓ Nurse has at least 5 years CFHN experience	Variable	Odds ratio	95% confidence interval	
	Nurse’s experience	6.90	1.36	34.51
✓ the family is not socially isolated (as measured in SAFESTART assessment)	Variable	Odds ratio	95% confidence interval	
	Not isolated	6.72	1.43	31.64

Source KPMG 2014

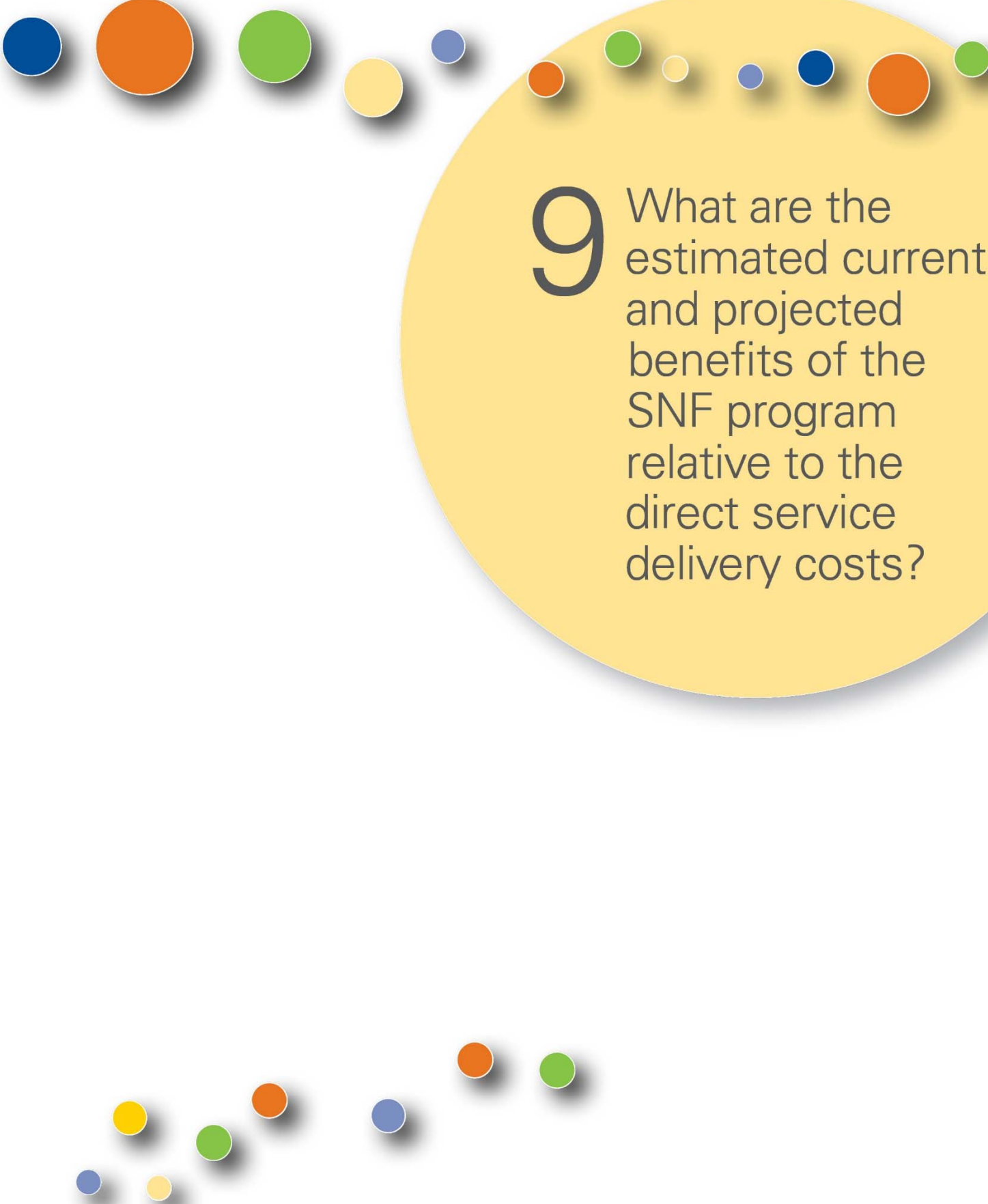
### 8.4 Implications of Results

The results of the evaluation suggest that strong parent nurse relationships have been developed as part of the SNF program and that this is viewed very positively by parents in particular. The analysis also suggests it is likely that more experienced nurses are having greater success in assisting mothers to achieve improved developmental outcomes in the children. The only caveat on this finding is that the study did not examine the distribution of cases to nurses, or caseloads, or whether children who have poorer development outcomes are being assigned to less experienced nurses. This may be worthy of further investigation as experience with the program grows.

#### Recommendation

It is recommended that the program continue to focus on recruiting experienced nurses given the link with improved outcomes for children in the program

<sup>62</sup> Note: the only caveat is that the study did not examine the distribution of cases to nurses and whether children who have poorer development outcomes are being assigned to less experienced nurses.



9 What are the estimated current and projected benefits of the SNF program relative to the direct service delivery costs?

## 10 What are the estimated current and projected benefits of the SNF program relative to the direct service delivery costs?

The cost benefit analysis revealed that the SNF program has delivered a net benefit to the economy since inception of \$3.1 million (in 2013-14 prices). This is equivalent to a benefit cost ratio of approximately 1.2, which means for every dollar that has been invested in the program, it is estimated to generate \$1.20 in benefits. The net benefit per child completing at least one year of the SNF program was estimated to be \$9,769.

A sensitivity analysis found the impact of the program may lie between a net benefit of \$24.5 million and a net cost of \$4.9 million. This suggests it is problematic to categorically state the program has delivered net benefits. Further analysis should be undertaken once the program has been implemented over a greater period of time.

### 9.1 Methodology overview

The methodology used to undertake the economic evaluation was developed to ensure consistency with the *NSW Government Guidelines for Economic Appraisal*.<sup>63</sup> Steps undertaken within the evaluation included:

- defining the purpose of the economic evaluation;
- confirmation of the 'base case';
- identification of benefits and costs, including:
  - measuring inputs, activities and outcomes from the program as informed by the SNF program logic;
  - attributing outcomes of the program to potential economic benefits;
  - identification of qualitative factors;
  - estimating program costs and costs associated with referrals to other services made by nurses within the program; and
  - deriving model assumptions to estimate benefits and costs;
- constructing an evaluation criteria to determine whether the program has generated net economic benefits or costs; and
- constructing a sensitivity analysis to test the impact of alternative key assumptions on modelling results.

Detail for each step undertaken in the economic evaluation is presented in Appendix D.

### 9.2 Program outcomes

Several program outcomes were evaluated within the program. These were identified based on the program logic and were used to inform the potential benefits from the SNF program. They include:

- improved breastfeeding duration;
- improved parenting capacity and experience;
- stronger relationships between mother and child;
- improved community engagement;
- improved home environment;

<sup>63</sup> NSW Treasury 2007, *NSW Government Guidelines for Economic Appraisal*, Office of Financial Management, pp 07-5, Sydney.

- improved immunisation rates; and
- achieving developmental milestones for the child.

Outcomes were measured using data collected from the case file notes, interviews and the GMDS. For nearly all outcomes, questions asked within the interviews provided an indication on whether there had been an improvement. These are presented in Table 9.1.

*Table 9.1: Estimated outcomes from the program*

OUTCOME	NO	YES	UNKNOWN	TOTAL	PROPORTION IMPROVED
	No.	No.	No.	No.	%
Improved parenting capacity and experience	1	53	1	55	98.1
Improved relationship between mother and child	2	52	1	55	96.3
Improved community engagement	11	43	1	55	79.6
Improved home environment	2	52	1	55	96.3
Improved breastfeeding - Exclusive to six months <sup>1</sup>	43	11	1	55	20.4

Note: 1. Improved breastfeeding was based off the assumption that no mothers would have exclusively breastfed their child if they had not received the program.

Source: KPMG 2014

Overall, the program has been successful in improving outcomes. For example, around 98 per cent of participants interviewed suggested the program had improved their parenting capacity and experience.

Three outcomes required additional data to measure the baseline. These include whether the program had led to improved breastfeeding duration, whether developmental milestones were achieved for the child, and whether the program had led to an increased rate of immunisation.

It was assumed that all mothers in the program would not have exclusively breastfed their child for six months if they did not receive the program. This was based off data in the MECSH program showing the average period of breastfeeding for the control group was around eight weeks.<sup>64</sup> Consequently, outcomes from the program were assessed as the proportion of mothers that exclusively breastfed for six months.

Data from the MECSH program were also required to establish a baseline and estimate whether developmental milestones had been achieved for the child. In this case, it was assumed that 47.4 per cent of children would have experienced a developmental delay if they had not gone through the program.<sup>65</sup>

In contrast, data from the GMDS scores suggest only 16.7 per cent of children have either a developmental delay or were below average development when assessed. This suggests the program has been successful in reducing the number of children that would have been delayed in their development by approximately 65 per cent. This equates to 98 children avoiding a developmental delay due to the SNF program.

The baseline for immunisation was drawn from the Australian Childhood Immunisation Register (ACIR), which suggests around 92 per cent of all children in NSW aged between 24-27 months were fully immunised at the end of 2013.<sup>66</sup> Data from the case file notes suggests around 96 per cent of all children assessed were fully immunised compared to the NSW immunisation schedule, suggesting the program has led to approximately 14 additional children becoming fully immunised.

<sup>64</sup> Kemp L, Harris E, McMahon C, et al 2011, Child and family outcomes of a long-term nurse home visitation programme: a randomised control trial, Arch Dis Child, vol. 96, pp. 533-540.

<sup>65</sup> Ibid.

<sup>66</sup> Australian Childhood Immunisation Register (ACIR), <http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/acir-curr-data.htm>, accessed 1 December 2014.



### 9.3 Program benefits

Outcomes found within the case file notes, evaluation interviews and the GMDS were mapped to potential benefits found within the literature and quantified within the economic evaluation. These included:

- improved health outcomes from exclusive breastfeeding for 6 months;
- avoided injuries from improved home environment and increased awareness of ways to care for the child;
- avoided child mortality from improved home environment;
- avoided foster care costs resulting from an improved home environment and improved parenting capacity;
- avoided health care costs from avoided child abuse due to improved parenting capacity and home environment;
- increased lifetime earnings capacity (i.e. improved productivity) from avoided development delay, including:
  - increased lifetime employment opportunities (i.e. a greater probability of being employed throughout life); and
  - increased wage rates when employed;
- avoided cost of crime from providing a more nurturing environment and reducing child abuse and neglect;
- avoided lifetime costs from improved immunisation; and
- avoided cost of special education from avoided development delay.

A detailed description of benefits estimated within the economic evaluation is presented in Appendix D.

There were also several benefits from the program that may eventuate but could not be estimated due to data limitations. These include avoided health care costs from reduced smoking, increased mental health outcomes from increased community participation, and reduced adverse health risk factors from an improved home environment. These have also been described in detailed within Appendix D.

### 9.4 Program costs

Total program costs consisted of costs associated with delivering the program, and costs associated with referrals to other services made by nurses within the program.

Program costs were sourced from individual LHDs. These included:

- salaries and wages, such as allied health, social work, nursing and administration;
- goods and services, such as operating expenses, motor vehicles; and
- other costs, such as repairs, maintenance, rents and rates.

Other costs that are associated with delivering outcomes were also included to the greatest extent possible. These included the cost of health care system resources used by mothers and children that are directly related to referrals made by nurses within the program (i.e. through the nurse providing clinical support and advice to improve access to health and human services).

A detailed description of costs estimated within the economic evaluation is presented in Appendix D.

### 9.5 Net results

Outcomes from the program were based on case file notes and interviews of the 55 participants included as part of this program evaluation (see section 9.2 of this chapter). These were extrapolated to the greater program population, which implicitly assumes the sample characteristics are representative of the broader population.

Costs were included for all participants regardless of how long they remained in the program. Adjustments were made for costs associated with participants still in the program that are yet to exit.

Benefits were only attributed to participants that had left the program. It was assumed that average benefits found within the sample accrue to children that exit the program after one year or more, regardless of whether they completed two years of the program. This was based on the evidence from the case file notes, interviews and GMDS that benefits are experienced by participants despite completing less than two years of the program.

### **9.5.1 Estimated benefits**

Results of the economic evaluation suggest the SNF program leads to substantial benefits through improved outcomes for the child (Table 9.2).<sup>67</sup> In total, the program is estimated to generate approximately \$15.9 million in benefits (in 2013-14 prices). This includes:

- \$428,000 of avoided health care costs from exclusive breastfeeding for six months;
- \$96,000 of avoided costs of injuries resulting from an improved home environment;
- \$19,000 of avoided productivity loss associated with reduced child mortality resulting from an improved home environment;
- \$1.3 million of avoided foster care costs resulting from an improved home environment;
- \$106,000 of avoided lifetime healthcare costs from avoided child abuse due to improved parenting capacity and experience;
- \$13.0 million of increased earnings capacity through avoided child development delay;
- \$107,000 of avoided crime costs from improved relationships and parenting;
- \$37,000 of avoided lifetime costs from increased immunisation rates; and
- \$870,000 of avoided lifetime costs from special education through avoided child development delay.

The largest benefit generated from the program is increased earnings capacity through improved child development, which accounts for approximately 82 per cent of all benefits.

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<sup>67</sup> Benefits are attributed to children once they have left the program, conditional on them having completed at least one year. Hence, benefits do not start until 2011-12.

Table 9.2: Total benefits of the SNF program as at end of June 2014 (in 2013-14 prices)

LHD	2008-09 <sup>1</sup>	2009-10 <sup>1</sup>	2010-11	2011-12	2012-13	2013-14	TOTAL
	\$	\$	\$	\$	\$	\$	\$
Improved health outcomes from exclusive breastfeeding for 6 months	0	0	0	26,750	224,703	176,552	428,006
Avoided injuries from improved home environment	0	0	0	6,596	51,781	38,023	96,400
Avoided child mortality from improved home environment	0	0	0	1,257	9,965	7,391	18,612
Avoided out of home care costs from improved home environment	0	0	0	86,752	681,043	500,098	1,267,893
Avoided health care costs from avoided child abuse due to improved parenting capacity and home environment	0	0	0	7,245	56,875	41,764	105,884
Increased earnings capacity from avoided development delay	0	0	0	871,134	6,941,388	5,173,605	12,986,126
Avoided crime costs from improved relationship and parenting	0	0	0	7,292	57,242	42,033	106,567
Avoided lifetime costs from improved immunisation	0	0	0	2,309	19,394	15,238	36,941
Avoided cost of special education from avoided development delay	0	0	0	59,540	467,419	343,232	870,191
<b>Total benefits</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,068,874</b>	<b>8,509,810</b>	<b>6,337,937</b>	<b>15,916,620</b>

Note: 1. Benefits do not start until 2010-11 as this is the first year where a child exits the program having completed more than one year.

Source: KPMG 2014

Table 9.3: Total costs of the program as at end of June 2014 (in 2013-14 prices)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	TOTAL
	\$	\$	\$	\$	\$	\$	\$
Program costs <sup>1</sup>	161,856	256,074	1,779,564	3,811,794	4,034,245	2,051,429	12,094,963
Other services costs <sup>2</sup>	0	0	0	47,592	373,620	274,354	695,565
<b>Total costs</b>	<b>161,856</b>	<b>256,074</b>	<b>1,779,564</b>	<b>3,859,386</b>	<b>4,407,865</b>	<b>2,325,783</b>	<b>12,790,528</b>

Note: 1. All costs for 2009-10 and 2010-11, and costs for SWS in 2011-12, were estimated by calculating the average cost per participant in the first year of cost data and applying it to the number of participants in those years with missing cost data. 2. As the case file notes only recorded whether a referral to another service was filled and not how many times a person received services after the initial referral, it was assumed that each referral led to one visit only.

Source: KPMG 2014

Table 9.4: Net impact as at end of June 2014 (in 2013-14 prices)

	2008-09 <sup>1</sup>	2009-10 <sup>1</sup>	2010-11	2011-12	2012-13	2013-14	TOTAL
	\$	\$	\$	\$	\$	\$	\$
<b>NPV</b>	<b>-161,856</b>	<b>-256,074</b>	<b>-1,779,564</b>	<b>-2,790,512</b>	<b>4,101,945</b>	<b>4,012,154</b>	<b>3,126,092</b>
Benefit / cost ratio	0.0	0.0	0.0	0.3	1.9	2.7	1.2

Source: KPMG 2014

## 9.5.2 Estimated costs

Total costs of the program include program costs associated with delivering the program, and costs associated with referrals to other services made by nurses within the program (see Table 9.3). These were estimated to be \$12.8 million (in 2013-14 prices) since program inception, and adjusting for children entering the program in 2013-14.<sup>68</sup> The cost of delivering the program accounts for approximately 94 per cent of total costs.

## 9.5.3 Net results

It was estimated the SNF program has delivered a net benefit to the economy since inception of \$3.1 million (in 2013-14 prices). This is equivalent to a benefit cost ratio of approximately 1.2, which means for every dollar that has been invested in the program, it is estimated to generate \$1.20 in benefits (see Table 9.4). The net benefit per child completing at least one year of the SNF program was estimated to be \$9,769.

These results should be treated as preliminary given the program has not been running for a considerable length of time. There is evidence to suggest the program is starting to generate a greater return on investment, with the benefit to cost ratio increasing from 0.2 in 2011-12 to 2.7 in 2013-14.

## 9.5.4 Sensitivity analysis

Variables within the sensitivity analysis were selected on the basis of their uncertainty (either due to absence of data or lack of reliable data), and their potential to affect the reliability of results (see Appendix B for details on variables tested within the sensitivity analysis).

Two methods were used to undertake the sensitivity analysis, including a one way sensitivity analysis and probabilistic sensitivity analysis using Monte Carlo simulation.

## 9.5.5 One way sensitivity analysis

Results from the one way sensitivity analysis suggests the estimated Net Present Value (NPV) is highly sensitive to the discount rate (see Table 9.4). For example, assuming a four per cent discount rate, the program is estimated to generate a net benefit of \$24.5 million, while a 10 per cent discount rate results in a \$4.9 million net cost.

Another assumption that significantly impacts the NPV is the proportion of children experiencing a significant development delay without the program. If the proportion was 57 per cent (based on the findings from the MECOSH trial which drew from a similar socioeconomic environment) then the program is estimated to generate a net benefit of around \$7.6 million. Conversely, if the proportion were 37 per cent, the program is estimated to generate a net cost of \$1.4 million.

*Table 9.5: NPV under alternative assumptions*

VARIABLE	MINIMUM (\$M)	MOST LIKELY (\$M)	MAXIMUM (\$M)
Discount rate	-4.9	3.1	24.5
Proportion of children experiencing a development delay without the program	-1.4	3.1	7.6
Improvement in annual wage from improved development	1.3	3.1	4.7
Avoided lifetime health costs from improved breastfeeding per child	3.0	3.1	3.2
Proportion of children that would have received non-voluntary foster care	2.8	3.1	3.4
Average funding for special education of children with development delays	2.8	3.1	3.4

Source: KPMG 2014

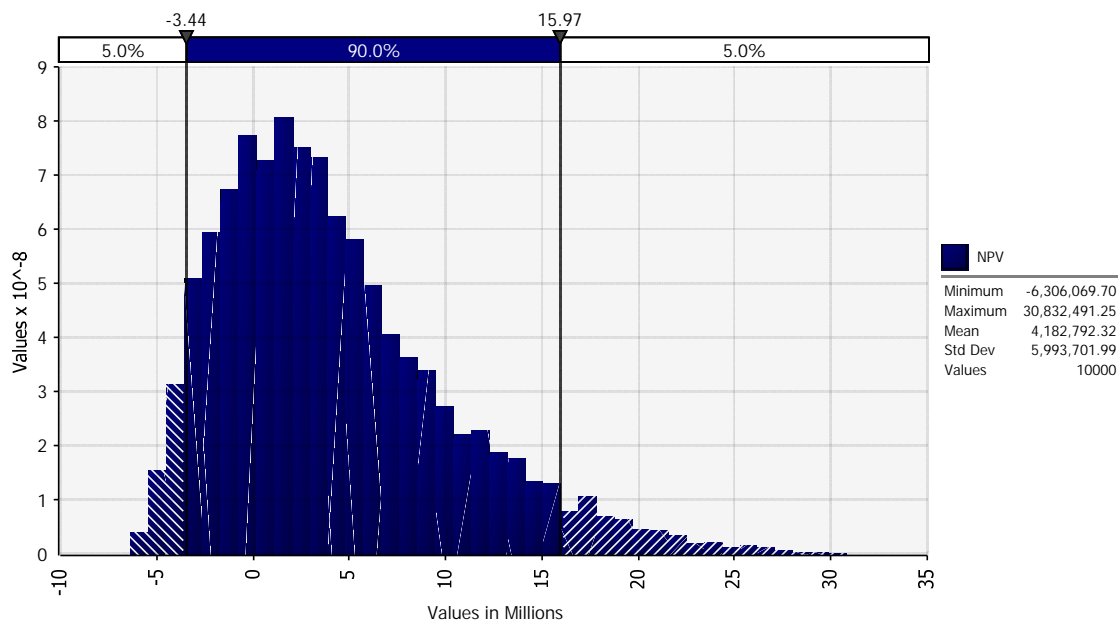
<sup>68</sup> The cost of children entering the program in 2013-14 was removed as the benefits are not expected to occur until the following years when they exit the program.

## 9.5.6 Probabilistic sensitivity analysis

The probabilistic sensitivity analysis suggest the confidence around results is fairly wide, given the uncertainty surrounding assumptions used in the analysis (see Figure 9.1).

The best case scenario is that the program has generated net benefits of \$30.1 million, suggesting a benefit cost ratio of 2.3, while the worst case scenario is that the program has generated net costs of \$6.3 million. However, both these results are not likely to occur given they are at the extremes of the distribution.

Figure 9.1: Distribution of the NPV under Monte Carlo simulation

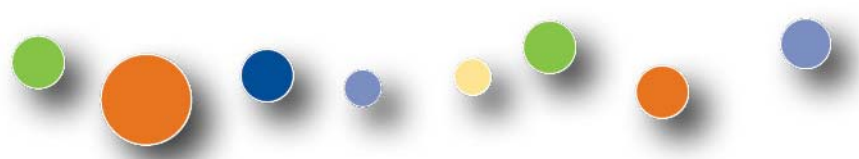
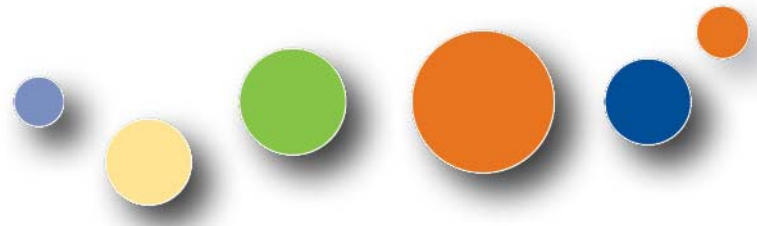


Source: KPMG 2014

### Recommendation

It is recommended that:

- the option of state-wide roll out of the SNF program be further explored given the benefits to children and families that have been identified
- consideration be given to establishing the basis for a study of the longitudinal impacts of the program to determine whether this type of early intervention has long lasting impacts on the life trajectories of the children involved



## 10 Performance framework

Data across a number of performance measures is being collected under the SNF program which has enabled progress against measures and in some cases targets to be assessed. These measures are useful for early program implementation to measure case flow and service targets. As the program matures it is suggested that program outcomes for those who remain on the program should also be monitored. In particular, further study is needed to follow up the outcomes of those who prematurely exit the program and to assess their experience of the program. A service delivery framework has been proposed that builds on the current indicators in the program.

### 10.1 Performance measurement framework

The following performance framework (Table 6) has been designed to assist in the reorientation of the program from an activity focused, to an outcomes focused program as it matures and develops over time. It includes outcomes from the SNF program logic (level 1 outcomes focusing on children and families), as well as outcomes identified through the evaluation.

*Table 6 Performance measurement framework*

OUTCOME	PROGRAM INPUT	PROGRAM OUTPUT	SERVICE MEASURES
<b>Exclusive breastfeeding at 6 months of age</b>	<ul style="list-style-type: none"> <li>Advice on breastfeeding</li> <li>Preparation for baby</li> <li>Infant nutrition</li> </ul>	<ul style="list-style-type: none"> <li>Mothers understand importance of breastfeeding</li> </ul>	<ul style="list-style-type: none"> <li>Proportion of mothers who exclusively breastfeed until 6 months of age</li> <li>Proportion of mothers who breast feed and bottle feed until 6 months of age</li> </ul>
<b>Maternal self-report of improved confidence in parenting</b>	<ul style="list-style-type: none"> <li>Regular home visits utilising strengths based approach</li> <li>Parental support and guidance</li> </ul>	<ul style="list-style-type: none"> <li>Improved parenting confidence</li> </ul>	<ul style="list-style-type: none"> <li>Proportion of mothers who report improved confidence in parenting at 6 months, one year and 2 years after birth of child</li> </ul>
<b>Physical growth</b>	<ul style="list-style-type: none"> <li>Advice on feeding</li> <li>Monitoring weight, height, head circumference</li> </ul>	<ul style="list-style-type: none"> <li>Children grow within normal limits</li> </ul>	<ul style="list-style-type: none"> <li>Number of children following normal physical growth trajectories</li> </ul>
<b>Developmental progress and delays are identified, understood by families</b>	<ul style="list-style-type: none"> <li>ASQ assessments</li> <li>Number of appropriate referrals made to allied professionals</li> </ul>	<ul style="list-style-type: none"> <li>All developmental delays are identified early, referrals made,</li> </ul>	<ul style="list-style-type: none"> <li>Number of children with delays identified in ASQ</li> </ul>



OUTCOME	PROGRAM INPUT	PROGRAM OUTPUT	SERVICE MEASURES
<b>and appropriate referrals made</b>	<ul style="list-style-type: none"> <li>• Case file reviews</li> <li>• Tier 2 consultations</li> </ul>	<ul style="list-style-type: none"> <li>remediation plans prepared and therapeutic interventions applied</li> <li>• Parents understand the developmental strengths and delays of their child</li> </ul>	<ul style="list-style-type: none"> <li>• Number of children with improvements in developmental scores (ASQ) over time</li> <li>• Proportion of families referred to relevant support services</li> </ul>
<b>Children receive all required vaccinations</b>	<ul style="list-style-type: none"> <li>• NSW Childhood Vaccination Schedule</li> <li>• Information provided to parents</li> <li>• Blue Book for medical records and developmental progress provided to parents</li> <li>• Administration of vaccinations to children</li> </ul>	<ul style="list-style-type: none"> <li>• Parents understand the importance of vaccination including when and what vaccinations are required</li> <li>• Children are fully immunised</li> <li>• Record of immunisations kept by families</li> </ul>	<ul style="list-style-type: none"> <li>• Proportion of children who are fully immunised according to 'Blue Book' schedule</li> </ul>
<b>Health, cognitive, social, emotional development and wellbeing of children are enhanced</b>	<ul style="list-style-type: none"> <li>• Engagement with family and identification of issues that affect the child – ecological approach to engagement</li> <li>• Information provided</li> <li>• Nurse role modelling</li> <li>• Developmental and parental assessments undertaken</li> <li>• Number of appropriate referrals made for identified developmental issues</li> </ul>	<ul style="list-style-type: none"> <li>• Improved transition to and experience of parenting</li> <li>• Children developing within expected developmental parameters</li> <li>• Parents understand the developmental strengths and delays of child</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Proportion of children with ASQ scores within normal limits for developmental determinants</li> </ul>
<b>Children and young people live in families where their physical, emotional and social needs are met</b>	<ul style="list-style-type: none"> <li>• Family engagement and identification of issues that affect the child – ecological approach to engagement</li> <li>• Referrals made to relevant support services</li> </ul>	<ul style="list-style-type: none"> <li>• Improved capacity of parents to provide a safe and nurturing environment for children</li> <li>• Stronger family and social relationships and networks.</li> </ul>	<ul style="list-style-type: none"> <li>• Identification of psychosocial risk factors at intake, 6, 12 and 24 months while in program</li> <li>• Number of referrals made to appropriate services</li> </ul>
<b>Children and young people are safe from harm and injury</b>	<ul style="list-style-type: none"> <li>• Referrals made to Community Services</li> <li>• Information provided to families</li> <li>• Nurse role modelling</li> <li>• Delivery of structured Nurturing Parent-Child Relationship</li> </ul>	<ul style="list-style-type: none"> <li>• Improved maternal health and wellbeing</li> <li>• Establishment of trusting relationship between mother, family and nurse</li> </ul>	<ul style="list-style-type: none"> <li>• Number of Risk of Significant Harm (ROSH) reports, number of children who enter out of home care</li> </ul>

OUTCOME	PROGRAM INPUT	PROGRAM OUTPUT	SERVICE MEASURES
<b>Children and young people meet developmental and educational milestones at school</b>	<ul style="list-style-type: none"> <li>Family engagement and identification of issues that affect the child – ecological approach to engagement</li> <li>Nurse role modelling of attachment</li> <li>Identification of developmental strengths and delays</li> </ul>	<ul style="list-style-type: none"> <li>Improved family stability and environment</li> <li>Development of early attachment relationship and awareness of developmental needs of the child</li> <li>Increased awareness of ways to care for themselves and seek appropriate and timely interventions</li> </ul>	<ul style="list-style-type: none"> <li>Number of injury presentations to Emergency Departments for children in the program</li> <li>HOME inventory scores</li> </ul> <p>Proportion of children who meet the baseline developmental scores present in the general population at completion of the program*</p> <p>*Please note that the measures used here are within the scope of the program; further measures could monitor SNF children for school readiness (at 4 or 5 years); as well as milestones at school.</p>

Source: KPMG 2014

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# Appendix A: The evidence base

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## A.1. Evidence overview

A 2014 research review was conducted for the US Department of Health and Human Services (DHHS) to identify early childhood home visiting models which have an evidence base. Legislation has established a Maternal, Infant, and Early Childhood Home Visiting Program that provides \$1.5 billion to states to establish home visiting models for at-risk pregnant women and children from birth to five years, 75 per cent of which must be used for home visiting programs with evidence of effectiveness based on rigorous evaluation research.<sup>69</sup> The DHHS review found 17 models that met the criteria for an evidence-based service delivery model.<sup>70</sup>

Of these 17 models, research studies with medium and high ratings of evidence showed that:

- Most models have favourable impacts on primary outcomes measures, and most have multiple favourable impacts although the number of favourable effects ranges considerably;
- Impacts were found to be sustained more than one year after the program finishes;
- Effects occurred across the study sample (rather than being confined to a subpopulation). This finding held even when the study samples were racially, ethnically and socioeconomically diverse; and
- Replication of exact effects is not common; favourable impacts were demonstrated in the same domain in two or more samples in around one-third of the studies.<sup>71</sup>

The US Department of Health and Human Services assesses outcomes of home visiting programs across eight domains. The primary outcome domains are: child health, maternal health, child development and school readiness, reductions in child maltreatment, reductions in juvenile delinquency, family violence and crime, positive parenting practices, family economic self-sufficiency, and evidence of linkages and referrals.

The DHHS research review undertook an analysis of effectiveness of the home visiting model by the outcome domain. It was found that all but one model demonstrates favourable impacts on the primary measure of child development and school readiness and the majority have favourable effects on positive parenting practices. None of the models had an impact on reductions in juvenile delinquency, family violence, or crime as a primary outcome measure.

The following tables highlight the key findings from this review of the program models and the impact on primary outcome area.

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<sup>69</sup> Avellar, S., Paulsell, D., Sama-Miller, E., Del Grosso, P., Akers, L., and Kleinman, R. (2014). Home Visiting Evidence of Effectiveness Review: Executive Summary. Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. Washington, DC, available at [http://homvee.acf.hhs.gov/HomVEE\\_Executive\\_Summary\\_2014-59.pdf](http://homvee.acf.hhs.gov/HomVEE_Executive_Summary_2014-59.pdf)

<sup>70</sup> Study rating criteria for RCTs, Matched comparison group studies, and quasi-experimental design studies can be found at [http://homvee.acf.hhs.gov/HomVEE\\_Executive\\_Summary\\_2014-59.pdf](http://homvee.acf.hhs.gov/HomVEE_Executive_Summary_2014-59.pdf), pp. 6.

<sup>71</sup> Avellar, S., Paulsell, D., Sama-Miller, E., Del Grosso, P., Akers, L., and Kleinman, R. (2014). Home Visiting Evidence of Effectiveness Review: Executive Summary. Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. Washington, DC, available at [http://homvee.acf.hhs.gov/HomVEE\\_Executive\\_Summary\\_2014-59.pdf](http://homvee.acf.hhs.gov/HomVEE_Executive_Summary_2014-59.pdf)

Table A:1: Number and proportion of home visiting models with evidence of effectiveness, by outcome domain<sup>72</sup>

PRIMARY OUTCOME AREA	NUMBER OF MODELS THAT DEMONSTRATE OUTCOMES (N=17 MODELS)	NUMBER OF MODELS THAT DEMONSTRATE NO EFFECTS	NUMBER OF MODELS WITH OUTCOME NOT MEASURED
1 Child health	6	3	8
2 Maternal health	4	6	7
3 Child development and school readiness	10	1	6
4 Reductions in child maltreatment	6	1	10
5 Reductions in juvenile delinquency, family violence and crime	0	3	14
6 Positive parenting practices	10	4	3
7 Family economic self-sufficiency	2	0	15
8 Evidence of linkages and referrals	2	0	15

Source: DHHS (US) 2014

The review also assessed the models against certain criteria examining implementation and the structure of the program as shown in Table. The findings reveal a great deal of congruence across the different home nurse visiting models for program structure, governance and training requirements.

Table A:2: Proportion of home visiting models with evidence of effectiveness that demonstrate program implementation attribute<sup>73,74</sup>

ATTRIBUTE OF MODEL	PROPORTION OF 'EFFECTIVE' MODELS THAT DEMONSTRATE ATTRIBUTE
Fidelity standards for local implementing agencies	65%
Minimum education requirements for home visiting staff	76%
System for monitoring fidelity	82%
Specified content and activities for home visits	88%
Associated with national organisation or institution of higher education	94%
Minimum requirements for frequency of visits	94%
Supervision requirements for home visitors	94%
In existence for at least 3 years	100%
Pre-service training for home visitors	100%

Source: DHHS (US) 2014

In the Australian context, evaluations (including randomised control trials RCTs) have assessed the effectiveness of home visiting programs. In contrast to international counterparts, examples of home visiting programs in Australia are set against a context of universal state-based maternal and child health services.

Examples of Australian evaluations include:

- **Home visiting intervention in Queensland** for vulnerable families with newborns – this RCT involved 181 women with newborns, recruited from a hospital in Queensland. The findings indicate that the ability to identify depression levels, stress levels and coping skills of all new parents would offer a possibility for preventing some cases of child abuse and neglect in the community.<sup>75</sup>

<sup>72</sup> Ibid

<sup>73</sup> Avellar, S., Paulsell, D., Sama-Miller, E., Del Grosso, P., Akers, L., and Kleinman, R. (2014). Home Visiting Evidence of Effectiveness Review: Executive Summary. Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. Washington, DC, available at [http://homvee.acf.hhs.gov/HomVEE\\_Executive\\_Summary\\_2014-59.pdf](http://homvee.acf.hhs.gov/HomVEE_Executive_Summary_2014-59.pdf)

<sup>74</sup> Home visiting models funded under the Act are required to comply with implementation guidelines. The implementation guidelines govern all of the attributes in Table 2 except 'Minimum requirements for frequency of visits' and 'Specified content and activities for home visits.'

<sup>75</sup> Fraser, J. A., Armstrong, K. L., Morris, J. P., & Dadds, M. R. (2000). Home visiting intervention for vulnerable families with newborns: follow-up results of a randomized controlled trial. *Child Abuse and Neglect*, 24(11), 1399-1429.

- South Australian Government has adapted a home nurse visiting model. The program includes 34 visits until the child becomes two years of age. There has been exploration of the **Family Home Visiting Program for Families of Aboriginal and Torres Strait Islander Children**. Research through interviews with Aboriginal families examined their perception of the program. Almost all families were extremely positive about the program which was seen as 'convenient, responsive, positive approach to child health' delivered 'in an empowering and respectful way'. Although outcomes were not assessed, families perceived benefits to include practical assistance and information and increased social involvement. Families of Aboriginal children who remained in the program highly valued its staff, content, and mode of delivery. This also highlighted the value that families placed upon being provided a service in cross-cultural partnership, and found value in the availability of culturally informed contact to maintain their connection with the local Aboriginal community through their association with the Indigenous Cultural Consultants.<sup>76</sup>
- **Miller Early Childhood Sustained Home-visiting Program** - a RCT conducted in the Miller/Green Valley area of south western Sydney. It was found that there was no significant difference in parent-child interaction between the intervention and comparison groups, nor were there significant overall group differences in child mental, psychomotor or behavioural development.<sup>77</sup> However, the MECSH intervention achieved significant improvements in maternal confidence, knowledge and experience; positive child health and development; and created a positive environment for child development.<sup>10</sup> Specifically, the outcomes achieved by the MECSH project included:
  - improved transition to parenting;
  - improved experience of being a mother from women with an Edinburgh depression score (EPDS) of 10 or more;
  - improved quality of the home environment from a child development perspective for mothers with an antenatal EPDS of 10 or more; and
  - improved cognitive development of children of mothers with and antenatal EPDS score of 10 or more.

The research concluded that an identified supporting level of service provision is essential for effectiveness. These services need to be available for the nurse home visitor to refer to and draw upon, depending on the needs of the family. The findings from the MESCH evaluation were used in the design of the SNF program.

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<sup>76</sup> Sivak, L., Arney, F. & Lewig, K. (2008). A Pilot Exploration of a Family Home Visiting Program for Families of Aboriginal and Torres Strait Islander Children. Adelaide: Australian Centre for Child Protection. On the web at: <http://w3.unisa.edu.au/childprotection/documents/fhv.pdf>

<sup>77</sup> Kemp et al 2011, Child and Family Outcomes of a long-term nurse home visiting programme: a randomised control trial, Archives of Disease in Childhood, Jun 2011, vol. 6, pp 533-40.

# Appendix B: Standardised tests used in the evaluation

A number of standardised tests were used in the evaluation.

## **B.1. Ages and Stages Questionnaire (ASQ3) and Ages and Stages Questionnaire: social emotional (ASQ:SE)**

The ASQ3 screens development across the following domains:

- communication;
- gross motor;
- fine motor;
- problem solving; and
- personal social.

The ASQ:SE screens across the following domains:

- self-regulation;
- compliance;
- communication;
- adaptive behaviours;
- autonomy;
- affect; and
- interaction with people.

In the case of the ASQ3 and the ASQ:SE, parents or other caregivers answer a series of simple questions regarding their child's abilities (Does your child climb on an object such as a chair to reach something he wants? When your child wants something, does she tell you by pointing to it?). Children whose development appears to fall significantly below that of their peers are flagged for further attention.

The ASQ3 and ASQ:SE have high validity and reliability (ASQ3's validity is .82 to .88, test-retest reliability is .91, and inter-rater reliability is .92; and the ASQ:SE's reliability is 94 per cent; validity is between 75% and 89%) as developmental screening tools that have been established through extensive research to determine the psychometric properties of the screener. The screening tools consider strengths and challenges, and can be used to educate parents about developmental milestones, and incorporates parents' expert knowledge about their child(ren). Studies demonstrate that when professionals use reliable and valid screening instruments, they are able to identify 70-80 per cent of children with developmental delays. Because developmental and social-emotional delays can be subtle and can occur in children who appear to be developing typically screening young children is an effective way for professionals to identify and implement early intervention strategies.

## **B.2. HOME Inventory**

The HOME Inventory attempts direct, relatively standardised measurement of environmental and interaction factors believed to be associated with an environment conducive to adequate child welfare and as a valid measure of child development. Furthermore, it is designed to measure the quality and quantity of stimulation and support available to a child in the home environment. The focus is on the child in the environment and the child as a recipient of inputs from objects, events and transactions occurring in connection with the family surroundings. The HOME Inventory is composed of 45 items that are clustered into the following 6 subscales:

- 1) parental responsiveness;

- 2) acceptance of the child;
- 3) organisation of the environment;
- 4) learning materials;
- 5) parental involvement; and
- 6) variety in experience.

The scores can be used as a measure of the stimulation potential of a child's early developmental environment, and has been developed as a substitute for reliance on social class or socio economic status as indices of the adequacy of a child's home environment. It is administered by a third person who can directly observe the interaction and transactions occurring in the home environment between a child and their carer, thus whilst the child is awake.

### **B.3. NCAST PCI Teaching and Feeding Scales**

The NCAST Parent Child Interaction (PCI) Feeding and Teaching Scales (NCAST) measures parent child interaction.

The Feeding Scale is used with infants from birth to 1 year of age. Feeding scores from interactions with children 12 months of age show a significant correlation with subsequent measures of children's cognitive abilities. The Feeding Scale is organised into six subscales representing 76 items. Four subscales describe the parent's responsibility to the interaction: Sensitivity to Cues, Response to Distress, Social-Emotional Growth Fostering and Cognitive Growth Fostering. Two subscales describe the child's responsibilities: Clarity of Cues and Responsiveness to Caregiver. The Feeding Scale takes the same amount of time as a feeding to administer. It is also designed to measure caregiver-child interaction during either a breast, bottle or table food feeding/eating episode.

The Teaching Scale is appropriate for children from birth to 36 months and can be used as early as one day of age. Teaching scores from interactions with children as young as 3 months of age show a significant correlation with subsequent measures of children's cognitive abilities. The scale is widely used in both clinical practice and research with families and young children.

The Teaching Scales consists of 73 items organised into six subscales. Four subscales describe the parent's responsibility to the interaction: Sensitivity to Cues, Response to Distress, Social-Emotional Growth Fostering and Cognitive Growth Fostering, and two for the child: Clarity of Cues and Responsiveness to Caregiver. The Teaching Scale is scored following the observation of a session where the caregiver is asked to teach the child a defined age-appropriate activity.

With annual reliability competence required of professionals administering the tool, it measures a well-developed set of observable behaviours and contingency of their responses to one another that describe caregiver/parent child interaction in either a teaching or feeding situation, for the purpose of assessing a dyad's strengths and areas needing improvement.

### **B.4. Griffiths Mental Development Scale**

The Griffiths Mental Developmental Scale (GMDS) is a standardised assessment tool designed to measure infant and child development. The tool has been validated with the general population as well as subpopulations (such as Aboriginal infants).

The assessment is made up of 2 scales, each scale is then further divided into 6 subscales. Scale 1 assesses the developmental trajectory of 0-2 year-old children and Scale 2 assesses the development of 2-8 year-old children. The scales are used extensively by psychologists and paediatricians to assess and monitor the development of young children. The subscales measure different aspects of the child's development including locomotor /gross motor skills, personal-social proficiency, language (receptive and expressive), eye and hand co-ordination (fine motor skills), performance (visuo-spatial skills), and practical reasoning (problem solving).

The general quotient (GQ) reflects a child's overall level of developmental functioning. These statistics are standardised against Australian population norms, showing how each child's development ranks compared to a large sample of the Australian population of 12 and 24month old children. The GMDS gives a clear indication



of whether or not a child's developmental progress is within normal limits (WNL) or delayed globally or in one or more of the subscales.

In conducting the outcome evaluation of the SNF program, child mental, psychomotor and behavioural development was measured using the GMDS at 12 and 24 months of age. For this reason, Scale 1 of the GMDS was applied to the 11-13 month old cohort and Scale 2 of the GMDS was applied to the 22-24 month old cohort. As this is a standardised assessment tool, results will be compared with an age- and demographically-matched reference sample.

Notably, the GMDS can be applied on children from 0-8 years which would allow for future evaluation of this SNF cohort to measure long term outcomes.

## **B.5. Working Alliance Inventory – Short Form (WAI-SF)**

The Working Alliance Inventory – Short Form, adapted (WAI-SF, adapted) survey was employed to evaluate the strength of the therapeutic relationship between the primary carer and the nurse with the view to understanding what has supported the development and strengthening of the relationship over time, and how this has contributed to improving broad outcomes and the strength of the relationship between the mother and child.

The WAI-SF tool has a strong focus on the common purpose of the relationships and also touches on parity (respect) and multiplexity (mutual understanding). It includes 12 items that are rated on a 7-point scale.

# Appendix C: Economic evaluation

## C.1. Purpose

The purpose of the economic evaluation was to assess whether cost of the program (including costs directly related to the program and additional costs from referrals to other services made by nurses within the program) are outweighed by the benefits. This is from the perspective of the broader economy, which means benefits and costs to individuals, all governments and the greater community were included in the analysis.

To ensure consistency with the broader program evaluation, only those objectives of the SNF program were evaluated within the economic evaluation.

## C.2. Methodology

The methodology was developed to ensure consistency with the *NSW Government Guidelines for Economic Appraisal*.<sup>78</sup> It consisted of seven key components, including:

- confirmation of the 'base case';
- identification of benefits and costs, including:
- measuring inputs, activities and outcomes from the program as informed by the SNF program logic;
- attributing outcomes of the program to potential economic benefits;
- identification of qualitative factors;
- estimating program costs and costs associated with referrals to other services made by nurses within the program; and
- deriving model assumptions to estimate benefits and costs.
- constructing an evaluation criteria to determine whether the program has generated net economic benefits or costs; and
- constructing a sensitivity analysis to test the impact of alternative key assumptions on modelling results.

Each of these methodology components are described in detail below.

## C.3. Confirming the 'base case'

To the greatest extent possible, costs and benefits of the SNF program were compared to current policy arrangements. In this case, New South Wales has a Universal Health Home Visiting (UHHV) policy, whereby every family in NSW is offered a home visit by a child and family health nurse within two weeks of the baby's birth.

However, there is no literature on outcomes for children that use services delivered under UHHV. Therefore a base case from the UHHV was not available.

Instead, the base case was established separately for each benefit by relying on data and literature relating to NSW children,<sup>79</sup> but also more broadly to include Australian data, and international literature.<sup>80</sup> Data extracted from the literature were adjusted to the greatest extent possible to better represent a base case that may exist in NSW.

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<sup>78</sup> NSW Treasury 2007, *NSW Government Guidelines for Economic Appraisal*, Office of Financial Management, pp 07-5, Sydney.

<sup>79</sup> For example, the base case for the proportion of mothers that are expected to breastfeed exclusively was derived from the control group used in the MECSE trial.

<sup>80</sup> For example, the base case for the proportion of children expected to commit a crime was derived from the control groups used in the Perry Preschool Project, Chicago Child-Parent Centre Program, and the Nurse Family Partnership trials.

## **C.4. Identification of benefits and costs**

### **C.4.1 Inputs, activities and outcomes**

Inputs, activities and outcomes from the program were informed by the SNF program logic. In summary, this includes:

- outlining initial program objectives, such as improving the health, development and wellbeing of children in vulnerable families;
- measuring inputs into the program, including government funding, and additional health and human services used to achieve desired outcomes;
- evaluating activities, such as antenatal care, preparation for parenting, clinical health and support advice and tier 2 staff, and establishing a link between program inputs and program outcomes; and
- measuring program outcomes, including those to children, and those at the broader system level.

### **C.4.2 Inputs**

Inputs into the economic evaluation model relate to direct program costs sourced from individual Local Health Districts (LHDs). This includes:

- salaries and wages, such as allied health, social work, nursing and administration;
- goods and services, such as operating expenses, motor vehicles; and
- other costs, such as repairs, maintenance, rents and rates.

Other costs that are associated with delivering outputs and outcomes were also included to the greatest extent possible. These include the cost of health care system resources used by mothers and their child that are directly related to recommendations made by nurses within the program (i.e. through the nurse providing clinical support and advice to improve access to health and human services). Examples include:

- physiotherapy, speech therapy, social work and paediatrician services for the child;
- mental health, legal and housing services for the mother; and
- education and supervision services.

The cost of these services were calculated by measuring the volume of services used throughout the program (as highlighted within the case file notes) and attaching a unit cost to each service, based on unit cost measures.

### **C.4.3 Activities**

Activities from the program as highlighted in the program logic were assessed to provide context around the conversion of inputs into outcomes. However, they were not directly included in the model because the activities are implicitly captured by the costs and outcomes from the program.

### **C.4.4 Outcomes**

Outcomes identified in the program logic informed the monetisation of program benefits. There are several outcomes that were tested within the economic evaluation. These include:

- improved breastfeeding duration;
- improved parenting capacity and experience;
- stronger relationships between mother and child;
- improved community engagement;
- improved home environment;

- improved immunisation rates; and
- achieved developmental milestones for the child.

Outcomes were estimated based on case file notes, interviews and the Griffiths Mental Development Scale (GMDS).

#### **C.4.5 Attributing program outcomes to economic benefits**

A theoretical and empirical basis for the economics of early intervention programs has emerged in academic and applied literature. It suggests the long term benefits of investing in early years is large, with the greatest return on investment occurring in programs that target children aged 0-3 years.

The economics of child well-being is underlined by the economic theory of human capital, where an investment in a child's health and capability improves economic outcomes. Theory also considers timing of investment, highlighting that early intervention provides the opportunity to lay a foundation in the early health and development of a child, and place them on the pathway to positive outcomes in adulthood.

While the SNF program is expected to produce long term benefits to children participating in the program, identifying those benefits and their magnitude has necessarily relied on international literature and the implicit assumption that similar improvements in child development, wellbeing and health outcomes occur.

The challenge when considering the potential long term benefits is to understand outcomes identified with other early interventions that will apply to SNF participants, and the magnitude of the impact. The most rigorous way to apply the impact of other interventions, has been to focus on those that have provide a similar intervention.

An extensive review of literature was therefore undertaken to identify early intervention programs, and determine the appropriateness of using the results from their evaluations. Based on the literature review and outcomes found within the case file notes, evaluation interviews and the GMDS, benefits quantified within the economic evaluation include:

- improved health outcomes from exclusive breastfeeding for 6 months;
- avoided injuries from improved home environment and increased awareness of ways to care for the child;
- avoided child mortality from improved home environment;
- avoided foster care costs resulting from an improved home environment and improved parenting capacity;
- avoided health care costs from avoided child abuse due to improved parenting capacity and home environment;
- increased lifetime earnings capacity (i.e. improved productivity) from avoiding a developmental delay, including:
  - increased lifetime employment opportunities (i.e. a greater probability of being employed throughout life); and
  - increased wage rates when employed.
- avoided cost of crime from providing a more nurturing environment and reducing child abuse and neglect;
- avoided lifetime costs from improved immunisation; and
- avoided cost of special education from improved development.

There were also several benefits from the program that may eventuate but could not be estimated due to data limitations. These include avoided health care costs from reduced smoking, increased mental health outcomes from increased community participation, and reduced adverse health risk factors from an improved home environment.

There is an inherent limitation associated with attributing benefits to the SNF program from other early intervention child development programs. For example, there are differences in:

- the structure, administration, duration and intensity of programs;

- characteristics of the broader environment in which each program operates (e.g., differences in health and human services for people not participating in programs);
- characteristics of program participants;
- data measurement and data collection methodologies;
- evaluation methodologies; and
- program and evaluation lengths.

Given these uncertainties, benefits attributed to the SNF program must be treated with caution. While care has been taken to draw benefits from literature that could produce similar results to the SNF program, there is no certainty that these benefits will eventuate from the SNF program. To reduce some of the uncertainty, a select set of variables drawn from the literature were tested within a sensitivity analysis.

#### **C.4.6 Improved health outcomes from breastfeeding**

A large body of literature suggests improved breastfeeding in the first six months of a child's life can lead to significant health improvements, both immediately and over the life of an individual.

Studies have found breastfeeding can reduce the likelihood of experiencing several illnesses and developing health risk factors including necrotizing enterocolitis (NEC), otitis media (OM), gastroenteritis, hospitalisation for lower respiratory tract infections (LRTIs) during infancy, atopic dermatitis (AD), sudden infant death syndrome (SIDS), childhood leukaemia, childhood asthma, Type 1 diabetes (T1D) mellitus and obesity.<sup>81</sup>

Evidence from case notes and interviews suggests the SNF program has led to better breastfeeding. It was assumed immediate and long term benefits to the child from improved breastfeeding would only occur if there was exclusive breastfeeding for six months.

The proportion of mothers that would have exclusively breastfed for six months without the program was assumed to be zero. This was based on results within the MECOSH trial, which showed the average length of breastfeeding for the control group was approximately eight weeks.<sup>82</sup> It was therefore considered unlikely that anyone in the control group would have exclusively breastfed for six months.

The benefit from improved breastfeeding was calculated by multiplying the proportion of participants in the SNF program that exclusively breastfeed for six months or more by the average lifetime benefit from breastfeeding associated with improved health outcomes. This lifetime benefit was sourced from a study conducted in the United States on the burden of suboptimal breastfeeding, which quantifies the costs savings of breastfeeding based on risk ratios associated with related illnesses.<sup>83</sup> Costs avoided relate to:

- Otitis media;
- Gastroenteritis;
- Necrotising enterocolitis;
- Lower respiratory tract infections;
- Atopic dermatitis;
- Sudden infant death syndrome (SIDS);
- Childhood asthma;
- Childhood leukemia;

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<sup>81</sup> Bartick M, Reinhold A, 2010 "The burden of suboptimal breastfeeding in the United States: A pediatric cost analysis", *Pediatrics*, Vol. 125, pp. 1048-1056

<sup>82</sup> Kemp L, Harris E, McMahon C 2011, "Child and family outcomes of a long-term nurse home visitation programme: a randomised control trial", *Arch Dis Child*, vol. 96, pp. 533-540

<sup>83</sup> Bartick M, Reinhold A, 2010 "The burden of suboptimal breastfeeding in the United States: A pediatric cost analysis", *Pediatrics*, Vol. 125, pp. 1048-1056

- Type 1 diabetes; and
- Lifetime obesity

Both direct savings to the government and indirect savings were included in the benefits.<sup>84</sup>

### C.4.7 Avoided injuries

Several studies have found that an improved home environment associated with a heightened awareness of appropriate methods to care for children can reduce hospitalised injury rates and associated costs.

The NFP Elmira trial conducted in the United States examined the potential reduction in emergency department (ED) visits attributable to a nurse home visit program from a home nurse intervention program.<sup>85</sup> Within the trial ED visits between the participating group and the control group reduced by approximately one third.<sup>86</sup> The Elmira Trial highlighted that both higher and lower risk families exhibited a decline in the number of ED visits during 25 to 50 months.<sup>87</sup>

It is plausible to suggest an improved home environment found within the SNF program could also lead to avoided injuries. Benefits of improved home environment through reduced injury rates were therefore calculated based on proportion of participants that noted an improvement in the home environment resulting from the SNF program. This was applied to the proportion of participants that have exited the program but had spent at least one year in the program.

It was assumed that 1.8 per cent of children aged 0-4 years that had not gone through the program would experience an injury leading to hospitalisation each year. This was derived from a study undertaken by the Australian Institute of Health and Welfare (AIHW) on hospitalised injury in children and young people.<sup>88</sup>

The potential reduction in injury rates from the SNF program were assumed to be 35 per cent based on results from the Elmira trial. An average avoided cost of injury equal to \$3,067 was sourced from a study undertaken by Monash University.<sup>89</sup> It was multiplied by the baseline injury rate, the number of children that have exited the program (having spent at least one year in the program), and the proportion of participants that experienced an improved home environment. The resulting benefit was applied over four years, assuming savings from avoided injuries last over the first four years of the child's life.

### C.4.8 Avoided child mortality

Improved home environments and better relationships between mother and child have been found to reduce preventable child mortality though reduced sudden infant death syndrome (SIDS) and unintentional injuries.

For example, a study of the Nurse Family Partnership (NFP) trial in Memphis, Tennessee concluded that nine deaths in the control group were due to preventable causes whereas no deaths due to preventable causes were found in the intervention group.<sup>90</sup> This result was consistent with earlier program effects on children's duration of hospitalisation for injuries.

Using results found within the NFP program, the benefits of avoided child mortality attributable to the SNF program were based on the assumption that it has led to the complete avoidance of preventable child deaths.

The number of deaths expected for children not within the program were estimated at 6.17 deaths per 100,000, based on the current rate of child mortality for those aged 0-4 years. This was sourced from the General Rate of Mortality Incidence (GRIM) books developed by the Australian Institute of Health and Welfare.

The benefit of avoided child mortality was estimated as the avoided loss in lifetime productivity. This was represented by the expected lifetime earnings of the child, calculated by multiplying the average wage rate

<sup>84</sup> The average lifetime cost saving was converted into an Australian dollar equivalent by using a purchasing power parity index sourced from the Organization for Economic Cooperation and Development (OECD).

<sup>85</sup> Olds et al 1999, "Prenatal and infancy home visitation by nurses: Recent findings", *The Future of Children*, vol. 9, no. 1, pp. 44-65

<sup>86</sup> *ibid*

<sup>87</sup> Karoly L, Greenwood, P, Everingham, S, Hoube, J, Kilburn, M, Rydell, C, Sanders, M, Chiesa, *Investing in our children: What we know and don't know about the costs and benefits of early childhood interventions*, Rand Corporation

<sup>88</sup> Australian Institute of Health and Welfare 2012, *Hospitalised injury in children and young people 2011-2012*, Australian Government

<sup>89</sup> Watson, W & Ozanne-Smith, J, 1997, *The Cost of Injury to Victoria*, Monash University

<sup>90</sup> Olds, D, Kitzman, H, Knudson, MS, Smith, J, Cole, R 2014, "Effect of home visiting by nurses on maternal and child mortality", *JAMA Paediatrics*, p. E4.

by the likelihood of employment at different ages, and the proportion of participants experiencing an improved home environment.

#### **C.4.9 Avoided out of home care (OOHC)**

There is one Australian study that has found increased nurse visits to young mothers can lead to a reduction in non-voluntary foster care of the child within the early years of the child's life.<sup>91</sup>

Using a randomised control trial involving 124 teenage mothers younger than 18 years old, the intervention group received six home visits over six months, with each lasting between one to four hours. The study found that of 65 mothers assigned a home visit, one child was placed into non-voluntary foster care, representing around 2 per cent. In comparison, six children out of 71 in the control group were placed into non-voluntary foster care, representing around eight per cent.

It is reasonable to suggest the SNF may deliver similar results. Data collected for this evaluation suggests regular visits by the nurse within the program have led to an improved home environment and improved parenting capacity and experience. Only one child out of all children that have exited the SNF program did so through being involuntarily removed.

The number of children that would have entered non-voluntary foster care without the program was calculated by multiplying the number of children that have left the program (and completed at least one year) by the proportion of children that entered non-voluntary foster care in the control group within the literature, and the proportion of families who experienced an improved parenting capacity and experience.

Comparing this to the number of children that did enter non-voluntary foster care, it was estimated that 24 children have avoided non-voluntary foster care due to the SNF program since inception. To estimate the total benefit, the number of children was multiplied by the cost of foster care per year, which totalled \$49,826 and comprised \$47,097 of government cost,<sup>92</sup> and \$2,729 paid by the foster parent.<sup>93,94</sup>

#### **C.4.10 Avoided healthcare costs from reduced child abuse**

Several studies have shown child abuse can have long term impacts on health, wellbeing, and economic outcomes. For example, the Adverse Childhood Experiences (ACE) study conducted in the United States found persons that had experienced four or more types of abuse (categorised into psychological, physical and sexual) had a 12 fold increased health risk for alcoholism, drug abuse, depression and suicide attempt, and a greater chance of smoking, poor self-rated health, contracting a sexually transmitted disease, and severe obesity.<sup>95</sup>

There is also evidence in Australia that child abuse leads to reduced health and wellbeing, thereby manifesting into increased healthcare costs.<sup>96</sup> For example, a study using the National Survey of Mental Health and Wellbeing (NSMHW) found that a child experiencing physical abuse can increase their likelihood of long term physical and mental health conditions by 1.4 times and 1.5 times respectively, leading to increased health care costs around 1.8 times higher that persist into adulthood.

Given the SNF program has led to an improved home environment, improved relationship between the mother and child, and improved parenting capacity, it is reasonable to suggest that it has also reduced the likelihood of child abuse.

In order to estimate the benefit from avoided child abuse, it was assumed that of the 24 children estimated to have avoided non-voluntary foster care, these children would have been removed due to an unacceptable

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<sup>91</sup> Quinlivan JA, Box H, Evans SF, 2003, *Postnatal home visits in teenage mothers: a randomised control trial*, The Lancet, Vol. 361, pp.893-900

<sup>92</sup> Productivity Commission 2014, Report on Government Services, [www.pc.gov.au/gsp/rogs](http://www.pc.gov.au/gsp/rogs), Table 15A.3, accessed 17 November 2014

<sup>93</sup> NATSEM 2012, Cost of kids. The cost of raising children in Australia, [http://www.natsem.canberra.edu.au/storage/AMP\\_NATSEM\\_33.pdf](http://www.natsem.canberra.edu.au/storage/AMP_NATSEM_33.pdf), accessed 27 November 2014

<sup>94</sup> SPRC 2002, The cost of caring: A study of appropriate foster care payment for stable and adequate out of home care in Australia, [http://www.fostercare.org.au/docs/CC\\_April%2002.pdf](http://www.fostercare.org.au/docs/CC_April%2002.pdf), accessed 27 November 2014

<sup>95</sup> Felitti, VJ, Anda, RF, Nordenberg, D, et al 1998, *Relationship of childhood abuse and household dysfunction to many leading causes of death in adults. The Adverse Childhood Experiences (ACE) study*, American Journal of Preventative Medicine, Vol. 14, No. 4, pp. 245-258

<sup>96</sup> Reeve, R, Van Gool, K 2013, *Modelling the relationship between child abuse and long term health care costs and wellbeing. Results from an Australian community based survey*, Economic Record, Vol. 89, No. 286, pp. 300-318.

risk of the child experiencing some form of abuse. The benefit was therefore estimated as the avoided additional lifetime cost of healthcare associated with child abuse. This was assumed to be \$3,966 in net present terms for each child.<sup>97</sup>

#### **C.4.11 Increased lifetime earnings capacity**

Improvements in earnings capacity were based on the principal that avoided development delay allows children to undertake early learning. Early learning facilitates the mastery of a range of cognitive, social and emotional competencies, which makes learning at later stages more efficient and therefore more likely to continue. This is expected to result in improved human capital, thereby allowing for greater productivity throughout life.<sup>98</sup>

Benefits from increased earning capacity were therefore based on those children who would have otherwise experienced a developmental delay if they did not participate in the SNF program. Based on results found within the Perry Preschool program, it was assumed children that avoided a development delay will:

- experience a 59 per cent improvement in their annual income to ensure they receive an average wage throughout their life; and
- experience a 12 per cent improvement in the likelihood of being employed throughout their life to ensure an average likelihood of being employed.<sup>99</sup>

The below average wage was calculated by discounting the average wage of males and females in full and part time employment sourced from the Australian Bureau of Statistics (ABS), by the expected impact from the program.<sup>100</sup> The below average employment rate was calculated by discounting the average employment rate sourced from the ABS, by the expected impact from the program.<sup>101</sup>

Benefits from increased earnings capacity were estimated by modelling the difference in expected lifetime income if the child had a developmental delay compared to the expected lifetime income for all Australians. This was applied to the estimated number of children that have avoided a developmental delay due to the program. Given the long time frame of income over a lifetime, benefits were discounted back to 2013-14 prices.

#### **C.4.12 Avoided cost of crime**

Several longitudinal studies have found a significant relationship between improved parenting and reduced crime, including lower rates of arrests and serious crimes. These include the Perry Preschool project, Chicago Child-Parent Centre Program and the Nurse Family Partnership (NFP) trials.<sup>102,103</sup>

It was assumed that the SNF program would also lead to avoided crime costs of the child in their juvenile and adult years, through an improved home environment and an improved relationship between the mother and child.

Assumptions on crime rates were calculated by averaging baseline crime rates and intervention crime rates found within the abovementioned trials. As such, benefits from avoided crime costs were estimated by assuming the baseline crime rate for children will be 47 percent, and the crime rates for children that complete at least one year of the program will be 27 per cent. This suggests the SNF program results in a reduction of around 44 per cent over the lifetime of the child.

The reduction in crime associated with the program was estimated by multiplying the reduction in crime rates by the proportion of participants experiencing an improved home environment and the number of children

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<sup>97</sup> Access Economics 2008, *The cost of child abuse in Australia*, [www.childhood.org.au/~media/Files/Research/Research%20Cost%20of%20Child%20Abuse%20in%20Australia%202009.ashx](http://www.childhood.org.au/~media/Files/Research/Research%20Cost%20of%20Child%20Abuse%20in%20Australia%202009.ashx) Report into the cost of child abuse and neglect in Australia, accessed 27 November 2014

<sup>98</sup> Heckman J 2006, "Skill formation and the economics of investing in disadvantaged children", *Science*, vol. 312, 30 June.

<sup>99</sup> Lynch R 2004, "Exceptional returns Economic, Fiscal and Social Benefits of Investment in Early Childhood Development", *Economic Policy Institute*, p. 25.

<sup>100</sup> Australian Bureau of Statistics May 2014, Average Weekly Earnings Australia Catalogue 6302.0.

<sup>101</sup> Australian Bureau of Statistics Aug 2013, Labour Force, Australia, Detailed, Quarterly 6291.0.55.003.

<sup>102</sup> Lynch R 2004, "Exceptional returns Economic, Fiscal and Social Benefits of Investment in Early Childhood Development", *Economic Policy Institute*, p. 25.

<sup>103</sup> Olds, D, Henderson, Charles, Cole, R, Eckenrode, J, Kitzman, Luckey, D, Pettitt, L, Sidora, K, Morris, P, Powers, J 1998, "Long term Effects of Nurse Home Visitation on Children's Criminal and Antisocial Behaviour", *JAMA*, vol. 280 no. 14, pp. 1238 – 1244.



exiting the program that had been in the program for more than one year. These were adjusted for recidivism by assuming around 60 per cent of people undertaking a crime will commit another crime within 15 years, based on the recidivism rate found within the NSW Bureau of Crime Statistics and Research (BOSCAR).<sup>104</sup> The average cost of a crime was estimated to be \$3,744 (excluding murder), and was applied to the estimated number of crimes avoided due to the program.<sup>105</sup>

### C.4.13 Increased immunisation

Vaccines are extremely effective in reducing the incidence of infectious diseases, thereby virtually eliminating the associated disability, morbidity and mortality. Several international studies have also found vaccinations lead to cost effective outcomes over the life of an individual, due to the relatively cheap price of the vaccination and the avoided cost of the disease.<sup>106</sup>

The base case and data collected from the case file notes suggest the SNF program has led to an additional 14 children becoming fully immunised who would not have been immunised if they didn't participate in the program.. This was based on an immunisation rate of 96 per cent for the families interviewed as part of the program, compared to a 92 per cent immunisation rate for all NSW children aged between 24-27 months.<sup>107</sup> It was assumed these children would not have received any vaccines if they had not participated in the program.<sup>108</sup>

The lifetime benefit per child from full immunisation was derived from an economic evaluation undertaken in the United States on the national child immunisation schedule in 2001.<sup>109</sup> This includes avoided costs associated with:

- direct health care costs, including hospitalisation and outpatient visits; and
- indirect costs, including lost productivity from permanent disability and premature mortality, and informal care costs.

While the national US schedule includes most vaccines currently used within the NSW Health immunisation schedule, the exception is rotavirus. Consequently the benefit of increased immunisation rates from the US study may be underestimated when applied to the SNF program.

The cost associated with vaccination was estimated as the cost of vaccines over the 18 month schedule, and the cost of administering the vaccinations. These were derived from a vaccination price list used to charge people within Australia that do not hold a Medicare card.<sup>110</sup>

The total benefit of increased immunisation was estimated by multiplying the net benefit of immunisation by the estimated number of children that have become fully immunised due to the program.

### C.4.14 Avoided special education

There are several special education programs in NSW schools. These include early intervention programs, additional teacher and school learning support officer positions (supported by the NSW Centre for Effective Reading), and itinerant and specialist teaching positions.<sup>111</sup>

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<sup>104</sup> NSW Bureau of Crime Statistics and Research 2012, *Re-offending in NSW*, Crime and Justice Statistics, <http://www.bocsar.nsw.gov.au/agdbasev7wr/bocsar/documents/pdf/bb56.pdf>, accessed 15 November 2014.

<sup>105</sup> Rollings, K. 2008, Counting the Costs of Crime in Australia: A 2005 Update. AIC Research and Public Policy Series, 91.

<sup>106</sup> Zhou, F, Santoli, J, Messonnier, ML, et al 2005, Economic evaluation of the 7-vaccine routine childhood immunisation schedule in the United States, 2001, *Archives of Pediatric Adolescence Medicine*, Vol. 159, pp. 1136-1144

<sup>107</sup> Australian Childhood Immunisation Register (ACIR),

<http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/acir-curr-data.htm>, accessed 1 December 2014

<sup>108</sup> Case file notes do not indicate whether those children had received some vaccinations (i.e., they could be missing just one immunisation event within the schedule). In this case the benefits from the SNF program will be overestimated.

<sup>109</sup> Ibid.

<sup>110</sup> Vaccine Price List, <http://www.charlessturt.sa.gov.au/VaccinePriceList>, accessed 1 December 2014

<sup>111</sup> NSW Department of Education and Communities 2012, Equity and special education programs in schools: 2011 to 2012, <https://www.det.nsw.edu.au/media/downloads/about-us/statistics-and-research/key-statistics-and-reports/equity-sp-eduprog.pdf>, accessed 3 December 2014.

If a child attends a regular class but experiences difficulties in basic areas of learning and behaviours, they are supported by the Learning and Support Services within their school. This may include a Learning and Support Teacher.<sup>112</sup>

There are also programs to support socioeconomically disadvantaged students in general, including the Low SES School Communities National Partnership, and the Priority Schools Program (PSP).<sup>113</sup>

Data from the case file notes suggests the SNF program has led to 98 children avoiding a developmental delay. While the primary benefit from this outcome is increased earnings capacity, there is an additional benefit from the avoided costs for special education.

While total funding for special education programs is available, it covers special education for children with an intellectual disability and children requiring additional learning and support needs (e.g., autism and physical disabilities such as vision impairment). The average cost per child to receive additional learning support while attending a regular class (as may be the case for children with an early development delay but without a disability), is not readily available.

It was therefore assumed that the cost of the PSP per child per year is representative of the cost associated with additional learning support while attending a regular class.<sup>114</sup> This was estimated to be \$2,329, as outlined in Table C - 1.

The total cost of avoided special education was estimated by multiplying the estimated cost per child per year by the number of children estimated to avoid a developmental delay through the SNF program, and the expected number of years in school. It was assumed children with a developmental delay would leave school in year 10.

While avoiding a developmental delay may lead to reduced special education costs, there may be additional education costs from the child continuing education beyond year 10. It was therefore assumed that children avoiding a developmental delay from the SNF program would attend school for one additional year on average,<sup>115</sup> thereby incurring an additional cost of \$17,597 per child.<sup>116</sup> This was subtracted from the estimated benefit from avoided special education.

*Table C - 1: Estimated cost for special education while attending a regular class*

	AMOUNT	SOURCE
Priority schools program (Direct grants)	\$44.2 million	NSW Department of Education and Communities 2012, Equity and special education programs in schools: 2011 to 2012, <a href="https://www.det.nsw.edu.au/media/downloads/about-us/statistics-and-research/key-statistics-and-reports/equity-sp-eduprog.pdf">https://www.det.nsw.edu.au/media/downloads/about-us/statistics-and-research/key-statistics-and-reports/equity-sp-eduprog.pdf</a> , accessed 3 December 2014.
Priority schools program (teaching positions)	280	
Average wage per position	\$75,000	NSW Department of Education and Communities, 2014, Employment conditions and benefits, <a href="http://www.teach.nsw.edu.au/grp/orientation/cb-salary_growth.htm">http://www.teach.nsw.edu.au/grp/orientation/cb-salary_growth.htm</a> , accessed 3 December 2014
Total funding	\$65.2 million	KPMG calculation
No of children in PSP schools	140,000	NSW Department of Education and Communities 2012, Equity and special education programs in schools: 2011 to 2012, <a href="https://www.det.nsw.edu.au/media/downloads/about-us/statistics-and-research/key-statistics-and-reports/equity-sp-eduprog.pdf">https://www.det.nsw.edu.au/media/downloads/about-us/statistics-and-research/key-statistics-and-reports/equity-sp-eduprog.pdf</a> , accessed 3 December 2014.

<sup>112</sup> NSW Public Schools 2014, Learning and Support, <http://www.schools.nsw.edu.au/studentsupport/programs/lrnqdifficulty.php>, accessed 3 December 2014.

<sup>113</sup> NSW Department of Education and Communities 2012, Equity and special education programs in schools: 2011 to 2012, <https://www.det.nsw.edu.au/media/downloads/about-us/statistics-and-research/key-statistics-and-reports/equity-sp-eduprog.pdf>, accessed 3 December 2014.

<sup>114</sup> The PSP aims to improve literacy and numeracy among socioeconomically disadvantaged schools within NSW.

<sup>115</sup> It was assumed half would leave in year 10 and half would leave in year 12. Although some children may participate in higher education (e.g., university) the cost of higher education was not included in the analysis.

<sup>116</sup> Department of Education and Communities, 2014, Cost of education per child in NSW public schools, <https://www.det.nsw.edu.au/media/downloads/about-us/statistics-and-research/key-statistics-and-reports/financial-information/education-cost.pdf>, accessed 3 December 2014.

	AMOUNT	SOURCE
Proportion of children with development below the national standard	20%	Auditor-General NSW 2008, Improving literacy and numeracy in NSW public schools, <a href="http://www.audit.nsw.gov.au/ArticleDocuments/140/183_Improving_Literacy_Numeracy.pdf.aspx?Embed=Y">http://www.audit.nsw.gov.au/ArticleDocuments/140/183_Improving_Literacy_Numeracy.pdf.aspx?Embed=Y</a>
Number of children for funding	28,000	KPMG calculation
Average cost per child per year (2012 prices)	\$2,329	KPMG calculation

Source: KPMG. 2014

## C.4.15 Qualitative factors

### *Smoking cessation*

Data from the case file notes suggest the program has led to some family members attending a smoking cessation program. Of the 19 case file notes that indicated there was at least one smoker in the home, 13 families indicated that one member had attended a smoking cessation program.

The health impacts of smoking and passive smoking are well known. This includes damaged to the respiratory system, the circulatory system, the immune system, and the musculoskeletal system. The effects of smoking on unborn babies can include increased risk of miscarriage, and low birth weight leading to increased risk of heart disease, stroke, high blood pressure, being overweight and diabetes in adulthood.

Smoking also imposes large costs on society. For example, the economic cost of smoking was estimated at \$31.5 billion in 2004-05.<sup>117</sup> Any reduction in smoking from the program is expected to generate economic benefits in terms of avoided health care costs, productivity loss, psychological costs of premature death, and the loss of enjoyment of life.

While there is evidence to suggest smoking cessation programs succeed for 21 per cent of participants,<sup>118</sup> the case file notes did not indicate whether the household has become smoke free due to the program. This is because the case file notes do not distinguish whether the mother, father or both attended the program.

Including the benefits of smoke cessation may overstate benefits from the SNF program if the home does not become smoke free. For example, if the mother attended, the father may still smoke in the house. Consequently these benefits have not been included in the analysis.

## C.4.16 Increased community participation

Studies show that greater participation in the community through nurse referrals towards community activities such as playgroup, occasional child care or preschool can improve social networks and improve emotional wellbeing for the mother. For example, results from the Benevolent Society's Volunteer Home Visiting Program show that parents' participation in recreational activities, playgroup and activities at school with other parents significantly increased during the intervention period.<sup>119</sup> Anecdotal evidence highlighted that parents accessing these services felt greater parenting empowerment and support to be able to look after their children.

While links to improved wellbeing as a result of greater community participation have been observed, studies that quantify the magnitude of impact are limited, and there are no studies that have investigated the impact of improved community engagement through a similar intervention as the SNF. Consequently, benefits likely to be experienced by SNF participants from improved community engagement could not be quantified.

<sup>117</sup> Collins, D and Lapsley, H 2008, *The costs of tobacco, alcohol and illicit drug abuse to Australian society in 2004/5*. P3-2625. Canberra: Department of Health and Ageing,

[http://www.health.gov.au/internet/drugstrategy/publishing.nsf/Content/34F55AF632F67B70CA2573F60005D42B/\\$File/mono64.pdf](http://www.health.gov.au/internet/drugstrategy/publishing.nsf/Content/34F55AF632F67B70CA2573F60005D42B/$File/mono64.pdf), accessed 3 December 2014

<sup>118</sup> Cancer Council Victoria 2012, *Tobacco in Australia: Facts and Issues*. Fourth Edition. Melbourne, [http://www.tobaccoinaustralia.org.au/downloads/chapters/Ch7\\_Cessation.pdf](http://www.tobaccoinaustralia.org.au/downloads/chapters/Ch7_Cessation.pdf), accessed 3 December 2014

<sup>119</sup> Government of Western Australia 2012, *Parenting WA Home Visiting Literature Review*, Perth

### C.4.17 Avoided healthcare costs from an improved home environment

Literature also recognises the long term health benefits from an improved home environment. For example, one study shows a clear link between Adverse Childhood Experiences (ACE), health risk behaviour and disease in adults.<sup>120</sup> In particular, results show a relationship between exposure to household dysfunction or abuse during childhood and ischemic heart disease, cancer, chronic lung disease, skeletal fractures and liver disease.<sup>121</sup> Other studies demonstrate the importance of childhood care and brain development.<sup>122,123</sup>

Although the relationship between ACE and long term health outcomes is recognised, links between early childhood development programs like SNF and long term health outcomes have not been studied in detail. Averse risk factors to health, like illicit drug use or binge drinking have been measured longitudinally, however quantifying the impact of these behaviours on long term health impacts has not been undertaken.<sup>124</sup>

### C.4.18 Program costs

There were two types of costs identified with the program. These included program costs associated with delivering the program, and costs associated with referrals to other services made by nurses within the program.

Program costs were sourced from individual local health districts (LHDs). These included:

- salaries and wages, such as allied health, social work, nursing and administration;
- goods and services, such as operating expenses, motor vehicles; and
- other costs, such as repairs, maintenance, rents and rates.

Costs associated with coordinating and reviewing the program were also collected from the central agency.

There were some limitations with program costs. All LHDs could not provide cost data from 2009-10 to 2010-11 due to changes in accounts when Area Health Services were transitioned to LHDs. In addition, South West Sydney did not provide cost data for 2011-12. Instead, these costs were estimated by calculating the average cost per participant in the first year of cost data and applying it to the number of participants in those years with missing cost data.

In addition, costs collected from LHDs were based on funding received from the central agency, and not the true cost of the program. For some LHDs where funding was exhausted, it was suggested that other revenue was allocated to running the program. This additional cost data was not available, so program costs may be underestimated.

Further adjustments were made to program cost data. In particular, costs for 2013-14 were revised down by removing the estimated cost of new participants. This is because the benefits of these participants are not expected to occur until the next year. A summary of actual and estimated program costs is presented in

Table C - 2.

*Table C - 2: Actual and estimated program costs<sup>1</sup>*

LHD	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
	\$	\$	\$	\$	\$	\$
South East Sydney	0	0	0	959,681	1,006,508	277,135

<sup>120</sup> Feletti, V, Anda R.F., Nordenberg, D, Williamson, D.F., Spitz, A., Edwards, V., Koss, M. and Marks, J 1998, Relationship of Childhood Abuse and Household Dysfunction to many of the Leading Causes of Death in Adults: The adverse Childhood Experiences Study, *The American Journal of Preventative Medicine*, vol. 14, no. 4, pp. 245-258

<sup>121</sup> *ibid*

<sup>122</sup> Allen, G & Smith I 2008, *Early Intervention: Good Parents, Great Kids, Better Citizens*, The Centre for Social Justice and the Smith Institute, p.59

<sup>123</sup> Armstrong KL, Fraser JA, Dadds MR, Morris J 2000, Promoting secure attachment, maternal mood and child health in a vulnerable population: A randomised controlled trial, *Journal of Paediatric Child Health*, vol. 36, pp. 555-562

<sup>124</sup> Eckenrode J 2010, "Long term effects of prenatal and infancy nurse home visitation on the life course of youths", *Arch Pediatr Med*, vol. 164, no. 1, pp. 9-15

LHD	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Northern NSW	0	0	0	253,746	512,452	266,400
Hunter New England	0	0	501,079	835,132	925,349	108,359
Central Coast	0	0	365,775	521,335	505,464	497,425
South West Sydney	0	4,297	378,156	541,451	498,479	222,329
Central program	115,401	191,061	207,643	218,024	322,071	679,781
<b>Total costs</b>	115,401	195,358	1,452,654	3,329,369	3,770,322	2,051,429

Note: 1. All costs for 2009-10 and 2010-11, and costs for SWS in 2011-12, were estimated by calculating the average cost per participant in the first year of cost data and applying it to the number of participants in those years with missing cost data.

Source: KPMG. 2014

Other costs that are associated with delivering outcomes were also included to the greatest extent possible. These included the cost of health care system resources used by mothers and children that are directly related to referrals made by nurses within the program (i.e. through the nurse providing clinical support and advice to improve access to health and human services). The proportion of referrals to other services filled by those families interviewed is presented in Table C - 3 and the associated costs is presented in Table C - 4.

The cost of referrals to other services was estimated by multiplying the number of referrals by the estimated unit cost (see Table C - 5). As the case file notes only recorded whether a referral was filled and not the duration or intensity of the service, it was assumed that each referral led to one visit only. This will underestimate the cost of referrals to other services where more than one visit was undertaken (e.g. visits to a psychologist if a mental health problem is identified).

Furthermore, there was no data on the proportion of participants that use referred services and were in the program for less than one year. The sample only included those people who had spent close to, or more than, one year in the program. It was therefore assumed that people who dropped out of the program before completing one year did not use a referred service. Once again, this may underestimate the cost of referrals to other services associated with the program.

Taking into consideration program costs and referral costs that are attributable to generating program benefits, the total cost of the program since its inception is estimated to be \$11.6 million.

Table C - 3: Proportion of interview participants that used each service based on a referral

	NO	YES	TOTAL	PROPORTION THAT USED SERVICE
	No.	No.	No.	%
General practitioner	35	20	55	36
Maternal and child health services	48	7	55	13
Paediatrician	46	9	55	16
Psychologist	47	8	55	15
Psychiatrist	53	2	55	4
Counsellor	45	10	55	18
Drug and alcohol service	54	1	55	2
Housing support services	49	6	55	11
Legal services	53	2	55	4
Family care centres	43	12	55	22
Family or domestic violence centres	52	3	55	5
Education, training and employment centres	54	1	55	2

Source: KPMG 2014 Case file notes.

Table C - 4: Estimated costs of other services used by participants<sup>1</sup>

LHD	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
	\$	\$	\$	\$	\$	\$
South East Sydney	0	0	0	0	0	22,863
Northern NSW	0	0	0	0	0	10,392
Hunter New England	0	0	0	8,314	74,824	70,667
Central Coast	0	0	0	14,549	160,040	76,902
South West Sydney	0	0	0	18,706	114,314	93,530
<b>Total costs</b>	0	0	0	41,569	349,177	274,354

Note: 1. As the case file notes only recorded whether a referral was filled and not how many times a person received services after the initial referral, it was assumed that each referral led to one visit only.

Source: KPMG. 2014

Table C - 5: Unit costs of referrals

REFERRAL	UNIT	COST	SOURCE
General practitioner	\$ per visit	37	Department of Health, Medicare Benefits Schedule Online, MBS item 23
Maternal and child health services	\$ per visit	297	Based on consultant psychiatrist and occupational therapist visiting for 1 hour at NSW award wage rates
Paediatrician	\$ per visit	264	Department of Health, Medicare Benefits Schedule Online, MBS item 135
Psychologist	\$ per visit	100	Department of Health, Medicare Benefits Schedule Online, MBS item 80000
Psychiatrist	\$ per visit	260	Department of Health, Medicare Benefits Schedule Online, MBS item 296
Counsellor	\$ per visit	115	Vision Psychology Brisbane, <a href="http://www.visionpsychology.com/cost-and-rebates">www.visionpsychology.com/cost-and-rebates</a> , accessed 13 November 2014
Drug and alcohol service	\$ per visit	115	Vision Psychology Brisbane, <a href="http://www.visionpsychology.com/cost-and-rebates">www.visionpsychology.com/cost-and-rebates</a> , accessed 13 November 2014
Housing support services	\$ per client	3,752	Department of Families, Community Services, and Indigenous Affairs 2007, Household Organisational Management Expenses (HOME) Advice Program Evaluation Report 2007, Commonwealth of Australia, Canberra
Legal services	\$ per visit	150	Legal Aid NSW 2014, Family matters - practitioner fees, <a href="http://www.legalaid.nsw.gov.au/for-lawyers/fee-scales/state-matters/family-matters-practitioner-fees">www.legalaid.nsw.gov.au/for-lawyers/fee-scales/state-matters/family-matters-practitioner-fees</a> , accessed 14 November 2014
Family care centres	\$ per visit	2,616	Based on residential stay for four days. Assumed to be half the fee for MBS item 12210 due to reduced clinical intervention, plus \$300 per night for accommodation and meals.
Family or domestic violence centres	\$ per visit	150	Legal Aid NSW 2014, Family matters - practitioner fees, <a href="http://www.legalaid.nsw.gov.au/for-lawyers/fee-scales/state-matters/family-matters-practitioner-fees">www.legalaid.nsw.gov.au/for-lawyers/fee-scales/state-matters/family-matters-practitioner-fees</a> , accessed 14 November 2014
Education, training and employment centres	\$ per client	440	Centrelink 2011, Centrelink annual report 2010-11, Commonwealth of Australia, Canberra

Note: 1. Minimum and maximum chosen based on NSW Government Guidelines for Economic Appraisal 2. Minimum and maximum chosen based on 20 per cent of either side of the most likely estimate.

Source: KPMG. 2014

## C.4.19 Model assumptions

### *Time horizon*

Early intervention and child health programs can present a particular challenge for evaluations. Costs are generally borne up front while benefits accrue over a lifetime. Consequently a relatively long time horizon is required to develop an accurate understanding of intervention, and to ensure benefits are appropriately captured.

Similarly, within the SNF program all costs occur up front. There are short term benefits associated within the program, but long term benefits to the child were also captured to provide a complete picture of the economic impact associated with the SNF program.

The economic evaluation model therefore took a lifecycle approach by extending the benefits of the program across the working life of a child. The aim is to capture the longer term benefits of the SNF program, such as improved health, income, and avoided cost of crime.

Consequently, the forecast period was 65 years for each child, which is expected to capture the entire working life of the child. These benefits were discounted back to the present value at 7 per cent to ensure costs and benefits are compared in 2013-14 prices.<sup>125</sup>

## C.4.20 Other assumptions

Several assumptions were used in the model (see Table C - 6). Some of the assumptions are general in nature, and were required to ensure all estimates taken from the literature were in 2013-14 prices (e.g., the average CPI, discount rate and purchasing power parity). Other assumptions were derived directly from the literature and were used to estimate potential benefits from the program.

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<sup>125</sup> This discount rate is consistent with recommendations outlined in the 'NSW Government Guidelines for Economic Appraisal'.

Table C - 6: Assumptions used in the model

ASSUMPTION	UNIT	AMOUNT	SOURCE	NOTES
<b>General assumptions</b>				
Average CPI	%	2.5	Reserve Bank of Australia	Used to bring cost estimates from the literature to 2014 prices.
Annual real wage increase	%	1.5	Eslake S 2011, Productivity: The lost decade, Reserve Bank of Australia, <a href="http://www.rba.gov.au/publications/conf/2011/pdf/eslake.pdf">http://www.rba.gov.au/publications/conf/2011/pdf/eslake.pdf</a> , accessed 1 August 2014	Used to increase the value of real income over the lifetime of each child.
Discount rate	%	7	NSW Government Guidelines to Economic Appraisal	Used to discount future benefits to 2014 prices.
Purchasing Power Parity	Index	1.42	Organization for Economic Cooperation and Development (OECD) statistics, <a href="http://www.stats.oecd.org/Index.aspx?DataSetCode=SNA_Table4#">www.stats.oecd.org/Index.aspx?DataSetCode=SNA_Table4#</a> , accessed 16 November 2014.	Used to convert costs contained within US literature into an Australian equivalent.
<b>Assumptions used to estimate benefits</b>				
Average lifetime benefit of exclusive breastfeeding for 6 months	\$	6,566	Bartick M, Reinhold A, 2010 The burden of suboptimal breastfeeding in the United States: A pediatric cost analysis, Pediatrics, Vol. 125, pp. 1048-1056	Used to estimate the benefits of improved breastfeeding.
Reduction in preventable death	%	100	Olds DL, Kitzman H, Knudston MD, et al 2014, Effect of home visiting by nurses on maternal and child mortality. Results of a 2 decade follow-up of a randomised clinical trial, JAMA Pediatrics, E1-E7	Used to estimate the benefits of avoided injury and death associated with an improved home environment.
Death rate for injury and poisoning (0-4 year olds)	Deaths per 100,000	6.17	AIHW General Record of Incidence of Mortality (GRIM) books, <a href="http://www.aihw.gov.au/deaths/aihw-deaths-data/#grim">http://www.aihw.gov.au/deaths/aihw-deaths-data/#grim</a> , accessed 16 November 2014	Used to estimate the benefits of avoided death associated with an improved home environment.
Number of years avoiding injury and poisoning	Years	4	KPMG assumption	Used to estimate the benefits of avoided injury and poisoning.
Proportion of children that would have had a developmental delay	%	47.4	Kemp L, Harris E, McMahon C, et al 2011, Child and family outcomes of a long-term nurse home visitation programme: a randomised control trial, Arch Dis Child, vol. 96, pp. 533-540	Used to estimate the proportion of children in the program that have avoided a developmental delay.
Improvement in annual wage from improved development	%	59	Lynch RG 2004, Exceptional returns. Economic, Fiscal and Social Benefits of Investment in Early Childhood Development, Economic Policy Institute, Washington	Used to estimate the benefit from improved earnings capacity from avoided developmental delay.



ASSUMPTION	UNIT	AMOUNT	SOURCE	NOTES
Recidivism rate	%	60	NSW Bureau of Crime Statistics and Research 2012, Re-offending in NSW, Crime and Justice Statistics, <a href="http://www.bocsar.nsw.gov.au/agdbasev7wr/bocsar/documents/pdf/bb56.pdf">http://www.bocsar.nsw.gov.au/agdbasev7wr/bocsar/documents/pdf/bb56.pdf</a> , accessed 15 November 2014	Used to estimate the number of crimes avoided from an improved home environment and improved relationship between the mother and child.
Average benefit of avoided crime	\$	3,744	Rollings, K. (2008). Counting the Costs of Crime in Australia: A 2005 Update. AIC Research and Public Policy Series, 91.	Based off average costs across various crimes. Used to estimate the benefit of reduced crime from an improved relationship and parenting.
Proportion of children that would have received non-voluntary foster care	%	8	Quinlivan, J, Box, H, Evans, SF 2003, Postnatal home visits in teenage mothers: a randomised control trial, The Lancet, Vol. 361, pp. 893-900	Based on 6 children out of 71 going into non voluntary foster care.
Average cost of foster care placement	\$ per year	47,097	Productivity Commission 2014, Report on Government Services, <a href="http://www.pc.gov.au/gsp/rogs">www.pc.gov.au/gsp/rogs</a> , Table 15A.3, accessed 17 November 2014	Adjusted to 2013-14 prices.
Average cost of care for children (0-4 years)	\$ per week	128	NATSEM 2012, Cost of kids. The cost of raising children in Australia, <a href="http://www.natsem.canberra.edu.au/storage/AMP_NATSEM_33.pdf">http://www.natsem.canberra.edu.au/storage/AMP_NATSEM_33.pdf</a> , accessed 27 November 2014	Adjusted to 2013-14 prices.
Additional cost of caring for foster children	%	41	SPRC 2002, The cost of caring: A study of appropriate foster care payment for stable and adequate out of home care in Australia, <a href="http://www.fostercare.org.au/docs/CC_April%2002.pdf">http://www.fostercare.org.au/docs/CC_April%2002.pdf</a> , accessed 27 November 2014	Averaged of 21% (for one year old) and 61% (for three year old). Relates to clothing and gifts for the child.
Years avoided foster care per child	Years	1	KPMG assumption	
Avoided lifetime healthcare cost from avoided childhood abuse	\$	3,966	Access Economics 2008, The cost of child abuse in Australia, <a href="http://www.childhood.org.au/~media/Files/Research/Research%20Cost%20of%20Child%20Abuse%20in%20Australia%202009.ashx">www.childhood.org.au/~media/Files/Research/Research%20Cost%20of%20Child%20Abuse%20in%20Australia%202009.ashx</a> Report into the cost of child abuse and neglect in Australia, accessed 27 November 2014	Adjusted to 2013-14 prices. Calculated by dividing \$702 million by 177,000 children.
Immunisation rate without SNF program	%	92	Australian Childhood Immunisation Register (ACIR), <a href="http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/acir-curr-data.htm">http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/acir-curr-data.htm</a> , accessed 1 December 2014	Based on fully immunised rates for all NSW children aged between 24-27 months.
Avoided lifetime cost of immunisation	\$	3,292	Zhou, F, Santoli, J, Messonnier, ML, et al 2005, Economic evaluation of the 7-vaccine routine childhood immunisation schedule in the United States, 2001, Archives of Pediatric Adolescence Medicine, Vol. 159, pp. 1136-1144	Adjusted to Australian dollars and 2013-14 prices
Cost of vaccinations	\$	605	Vaccine Price List, <a href="http://www.charlessturt.sa.gov.au/VaccinePriceList">http://www.charlessturt.sa.gov.au/VaccinePriceList</a> , accessed 1 December 2014	Based on charges for full immunisation up to 18 months for children without a Medicare Card

ASSUMPTION	UNIT	AMOUNT	SOURCE	NOTES
Average funding for special education of children with development delays	\$ per year	2,666	KPMG calculation	Based on estimated funding for direct grants and teaching positions associated with the Priority Schools Program
Average number of years in school if a child has a development delay	Years	10	KPMG assumption	
Average number of years in school if a child avoids a development delay	Years	11	KPMG assumption	It was assumed that half would leave at year 10 and half would leave in year 12
Cost per child for one year of high school	\$ per year	17,597	Department of Education and Communities, 2014, Cost of education per child in NSW public schools, <a href="https://www.det.nsw.edu.au/media/downloads/about-us/statistics-and-research/key-statistics-and-reports/financial-information/education-cost.pdf">https://www.det.nsw.edu.au/media/downloads/about-us/statistics-and-research/key-statistics-and-reports/financial-information/education-cost.pdf</a> , accessed 3 December 2014	Adjusted to 2013-14 prices

Source KPMG 2014

## C.5. An evaluation criteria

The economic evaluation identified significant costs and benefits associated with the program since its inception. It relied on the assumption that benefits will accrue to children who exit the program after one year, regardless of them completing the full two years of the program.

Benefits and costs were estimated over the lifetime of the child. Consequently, the assessment period was 65 years for each child, which is expected to capture the entire working life of the child. These benefits were discounted back to the present value at 7 per cent to ensure costs and benefits are compared in 2013-14 prices.

The net impact was assessed using a range of criteria, including the net present value (NPV) and the benefit cost ratio. This is given by the following equation.

$$\sum_{t=0}^n \frac{Benefits_t - Costs_t}{(1+r)^t}$$

$Benefits_t$  = Benefits to government and the program participant in period  $t$ .

$Costs_t$  = Costs to government and the program participant in period  $t$ .

$r$  = Discount rate equal to 7 per cent

$n$  = Forecast period equal to 65 years

Results were calculated in 2013-14 prices, and presented at several levels to provide greater insight into the impact of the SNF program. This includes

- NPV and benefit / cost ratio of the program; and
- NPV per child completing the program.

A NPV of above zero implies the program is generating a positive return and therefore producing net economic benefits.

## C.6. Sensitivity analysis

As data quality is limited, there may be errors through the data collection processes, measurement errors and errors in interpretation. This generates uncertainty in the model inputs. Furthermore, the modelling required require some key assumptions for model inputs and behavioural response to the program.

It is important to understand the impact of uncertainty on model outcomes because this will directly translate into uncertainty regarding whether the SNF program has led to net benefits or costs. In effect model uncertainty characterises the magnitude of the decision uncertainty.

The modelling has therefore included a sensitivity analysis component. Variables were selected on the basis of their uncertainty (either due to absence of data or lack of reliable data), and their potential to impact results (see Table C - 7). Two methods were used to undertake the sensitivity analysis, namely one way sensitivity analysis and probabilistic sensitivity analysis using Monte Carlo simulation.

Table C - 7: Sensitivity analysis parameters

VARIABLE	MINIMUM	MOST LIKELY	MAXIMUM	DISTRIBUTION
Discount rate <sup>1</sup>	4%	7%	10%	Uniform
Proportion of children experiencing a development delay without the program <sup>2</sup>	37%	47%	57%	Triangular distribution
Improvement in annual wage from improved development <sup>2</sup>	47%	59%	71%	Triangular distribution
Avoided lifetime health costs from improved breastfeeding per child <sup>2</sup>	\$5,253	\$6,566	\$7,879	Triangular distribution
Proportion of children that would have received non-voluntary foster care <sup>2</sup>	6.4%	8.0%	9.6%	Triangular distribution
Average funding for special education of children with development delays <sup>2</sup>	\$2,132	\$2,666	\$3,200	Triangular distribution

Note: 1. Minimum and maximum chosen based on NSW Government Guidelines for Economic Appraisal 2. Minimum and maximum chosen based on 20 per cent of either side of the most likely estimate.

Source: KPMG. 2014

### C.6.1 One way sensitivity analysis

One way sensitivity analysis consists of changing a set of variables independently (i.e., while holding all other variables constant). The variables were tested on an assumed minimum and maximum, and the impact on the NPV was recorded.

Undertaking a one way sensitivity analysis allows each variable to be tested on its own, thereby providing some insight on the sensitivity of results from uncertainty on the chosen variable.

### C.6.2 Probabilistic sensitivity analysis

Probabilistic sensitivity analysis consisted of changing more than one variable at the same time to determine the combined impact on the NPV. It involved sampling variable values from an assumed distribution attached to the variables in the model, thereby allowing joint uncertainty across all variables to be assessed at the same time.

Probabilistic sensitivity analysis was undertaken using Monte Carlo simulation. This involved selecting a set of variables to test, assuming a minimum, maximum and distribution for those variables, and randomly drawing variables from those distributions and recalculating results. The distributions represent uncertainty around the most likely value, and the type of distribution was dependent on the nature of the variable.

# Appendix D: Missing data analysis

## D.1. Analysis of SNF missing data fields

In this appendix, missing data refer to SNF children for whom the relevant data were expected but were not available in the evaluation database. Such data may be missing because the site was unable to report them to the evaluation or because the data were not available at the site level. The following assessment is based on review of the data received and conversations with the sites regarding missing data.

### *What data is missing in the SNF evaluation?*

For every data field in the study we have adequate information for evaluation purposes

There are two fields in original data request which are exceptions - two tests are not routinely undertaken by all sites, NCAST-PCI feeding at 4 months and NCAST Teaching Scale @ 6-8 months; hence missing n=788 and n=662

Excluding the two tests above, there are 34 fields which cover ASQ, NCAST, HOME inventory and PHR. For each of these fields where the data was populated by each site there is some missing data in the spreadsheet. Each field is missing between n =72 and n=388 data points

### *Is the missing data material to the analysis?*

Whether the amount of missing data is material or significant can be assessed according to:

- whether the missing data is systematically biased
- whether there are enough cases for statistical power for a particular analysis.

Examining the data across the SNF evaluation, we have not identified a source of any systematic bias in the information that is missing. If there is reason to suspect such bias, further analysis could be conducted.

Each statistical test that has been undertaken has been assessed according to whether there is enough power to run the particular analysis. Only results of those analyses where available data were deemed sufficient have been reported.

### *Missing data and analysis*

Chapter 6 and 7 of the SNF report examine the following questions:

*'To what extent do participant children, parents and families have improved outcomes in terms of health, safety and social and emotional development?'* and

*'What are the characteristics of families who achieve positive outcomes in the program?'*

In order to answer these two questions analyses have been undertaken using ASQ, NCAST and the HOME inventory. Table D - 1 reports a traffic light assessment of confidence in the data based on a sensitivity analysis using the number of cases available. The assessment shows that all but one field has a green assessment, concluding that the data can be reported with confidence. With the item where there is concern (PCI Teaching 0-6 weeks vs 22 months, which is rated amber), any findings have been qualified and reported with the appropriate caveats.

Table D - 1 – SNF Analyses and number of cases: ASQ, NCAST and HOME Inventory<sup>(a)</sup>

Child outcomes	Sample N= <sup>(b)</sup>	Missing data or availability of data <sup>(c),(d)</sup>	Valid N= <sup>(e)</sup>	Valid Percent	Relative Standard Error
ASQ 4 mths old	792	Missing N= 191 / Unavailable N= 228	373	47.1%	9.0%
ASQ 12 mths old	531	Missing N= 139 / Unavailable N= 73	319	60.1%	8.5%
ASQ 24 mths old	250	Missing N= 76 / Unavailable N= 6	168	67.2%	10.6%
Success 4 mth ASQ vs 24 month ASQ	250	Missing N= 87 / Unavailable N= 95	68	27.2%	24.8%
NCAST-PCI feeding 0-6 weeks	908	Missing N= 210 / Unavailable N= 219	479	52.8%	7.5%
NCAST PCI Feeding 9-12 months	561	Missing N= 182 / Unavailable N= 166	213	38.0%	12.9%
NCAST-PCI teaching 0-6 weeks	894	Missing N= 241 / Unavailable N= 305	348	38.9%	10.0%
NCAST-PCI teaching 22 month score	226	Missing N= 76 / Unavailable N= 11	139	61.5%	12.6%
Success NCAST-PCI teaching 0-6 weeks vs 22 months	226	Missing N= 82 / Unavailable N= 85	59	26.1%	26.9%
HOME Inventory @ 6 months	906	Missing N= 388 / Unavailable N= 237	281	31.0%	11.8%
HOME Inventory @ 12 months	528	Missing N= 179 / Unavailable N= 133	216	40.9%	12.5%
HOME Inventory @ 24 months	195	Missing N= 77 / Unavailable N= 14	104	53.3%	16.0%
Success HOME Inventory 6 months vs 12 months	528	Missing N= 191 / Unavailable N= 207	130	24.6%	18.2%
Success HOME Inventory 6 months vs 24 months	195	Missing N= 83 / Unavailable N= 40	72	36.9%	22.5%

(a) Statistics relate to cases commenced on or before 30 June 2014.

(b) 'Sample N=' refers to number of cases eligible for the relevant assessment. i.e., in the program long enough to have required that assessment.

(c) 'Missing N =' refers to number of eligible cases for which site did not provide any data.

(d) 'Unavailable N =' refers to number of eligible cases for which site reported data as unavailable.

(e) 'Valid N=' refers to number of cases eligible for the relevant assessment and for which usable data were provided by the site.

Legend:  This sample should produce acceptable results

 Results from this sample should be used with caution

 Results from this sample should not be used

Table D - 2 SNF Analyses and number of cases – ASQ: SE and PHR Check<sup>(a)</sup>

Child outcomes	Sample N= <sup>(b)</sup>	Missing data or availability of data <sup>(c),(d)</sup>	Valid N= <sup>(e)</sup>	Valid Percent	Relative Standard Error
ASQ:SE 6 months	715	Missing N= 187 / Unavailable N= 178	350	49.0%	9.1%
ASQ:SE 12 months	543	Missing N= 161 / Unavailable N= 109	273	50.3%	10.2%
ASQ:SE 18 months	402	Missing N= 149 / Unavailable N= 63	190	47.3%	12.6%
ASQ:SE 24 months	239	Missing N= 84 / Unavailable N= 16	139	58.2%	13.1%
PHR Check 1-4 weeks	944	Missing N= 118 / Unavailable N= 51	775	82.1%	3.6%
PHR Check 6-8 weeks	916	Missing N= 147 / Unavailable N= 64	705	77.0%	4.3%
PHR Check 6 months	713	Missing N= 138 / Unavailable N= 55	520	72.9%	5.4%
PHR Check 18 months	396	Missing N= 117 / Unavailable N= 38	241	60.9%	9.7%

(a) Statistics relate to cases commenced on or before 30 June 2014.




(b) 'Sample N=' refers to number of cases eligible for the relevant assessment. i.e., in the program long enough to have required that assessment.

(c) 'Missing N =' refers to number of eligible cases for which site did not provide any data.

(d) 'Unavailable N =' refers to number of eligible cases for which site reported data as unavailable.

(e) 'Valid N=' refers to number of cases eligible for the relevant assessment and for which usable data were provided by the site.

Legend:

	This sample should produce acceptable results
	Results from this sample should be used with caution
	Results from this sample should not be used

## Appendix E: Further analysis of SES and SWS: reasons to exit the program

*Table E - 1- Reason to leave the program, cannot be contacted*

	SWS	SES	
	N	N	Total
<b>Cannot be contacted</b>	33	0	33
<b>All other cases</b>	141	36	177
<b>Total premature exit</b>	174	36	210

Source: KPMG 2014

$$p = 0.004 \chi^2 = 8.1$$

Notes: Analysis only includes cases that commenced prior to 30 June 2014; a referral received for multiple births is counted once only

*Table E - 2- Reason to leave the program, moved out of the area*

	SWS	SES	
	N	N	Total
<b>Moved/moving out of area</b>	64	24	88
<b>All other reasons</b>	110	12	122
<b>Total premature exit</b>	174	36	210

Source: KPMG 2014

$$p = 0.0009 \chi^2 = 10.9$$

Notes: Analysis only includes cases that commenced prior to 30 June 2014; a referral received for multiple births is counted once only

*Table E - 3- Reason to leave the program, program no longer suitable*

	SWS	SES	
	N	N	Total
<b>Program no longer suitable for family</b>	27	1	28
<b>All other cases</b>	147	35	182
<b>Total premature exit</b>	174	36	210

Source: KPMG 2014

$$p = 0.04 \chi^2 = 4.1$$

Notes: Analysis only includes cases that commenced prior to 30 June 2014; a referral received for multiple births is counted once only



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