australian
breastfeeding
association

The Hon. Wayne Swan MP
c/o Budget Policy Division
Department of the Treasury
Langton Crescent, PARKES ACT 2600
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Dear Sir,

SUBMISSION ON THE 2009-10 BUDGET

INVEST IN PREVENTATIVE HEALTH AND HEALTH SYSTEM COST SAVINGS:
SUPPORT MOTHERS TO BREASTFEED THEIR BABIES

The Australian Breastfeeding Association submits that a commitment to preventative health care and future budget savings begins with the adoption of a comprehensive strategy to improve breastfeeding practices in Australia. ***The Best Start: Report on the inquiry into the health benefits of Breastfeeding*** (2007, House of Representatives Standing Committee on Health and Ageing) provides bipartisan recommendations for immediate action based on the best currently available information.

In 2004, the Australian Breastfeeding Association called on the Australian Government to take a leadership role in developing a broad ranging strategic plan such as the Breastfeeding Leadership Plan.[1] We are therefore delighted that in its December 2008 Response to the *Best Start* Inquiry Report, the Australian Government stated that it 'will provide national leadership in supporting and promotion breastfeeding by inviting State and Territory Governments to collaborate on the development and implementation of a National Breastfeeding Strategy'.[2] It stated its commitment to making preventative health care and health promotion a major focus of Australia's health system', and that 'supporting activities that will promote and raise Australia's breastfeeding rates is fundamental to ensuring that children get the optimal start.' Alongside the Government's particular commitment to leading early childhood reforms, breastfeeding was acknowledged 'to ensure the best possible start to a baby's health, growth and development'.

In its 2008-2009 Budget Initiative, the incoming Rudd Government committed $2.5 million over a five year period for initiatives to promote breastfeeding. This is a welcome start on the urgent task of resourcing the implementation of an effective national breastfeeding strategy. Notably, $8 million per annum has been committed to beyondblue for initiatives related to perinatal depression. $124.4 million over 5 years was committed to rotavirus vaccination alone, when this could be dramatically and cheaply reduced by breastfeeding.

With the Australian Government now having committed to taking a leadership role in breastfeeding support and promotion, as fundamental to preventative health care, and to its early childhood policy, the Australian Breastfeeding Association emphasises the urgency of ensuring appropriate levels of budget resourcing for national strategies to promote, protect and support breastfeeding. There are now a number of clearly identified strategies for investment with a significant justification for doing so.

The current circumstances also increase the urgency of including such investment in the 2009 budget:

- Australia is currently experiencing a 'baby boom' with the number of births in 2006 being at its highest level since 1971, and the second-highest since 1911.
- The past decade has seen an explosion of evidence of the health risks of not breastfeeding for both baby and mother, and there is growing evidence about effective ways for health services and the community to reduce premature weaning .
- Without supportive health policies and employment conditions, breastfeeding rates in Australia have been declining and could generate unnecessary economic burden for the health system.
- Breastfeeding is the normal and most appropriate method for feeding infants and is closely related to immediate and long-term health outcomes (NHMRC, 2003). Exclusive breastfeeding to the age of six months is now recommended by Australian and international health authorities.
- The health advantages of breastfeeding translate to benefits for the health system – reducing the economic burden in the short and long term - and, importantly, it is the "most cost-effective primary prevention measure available and well worth the support of the entire community" (NHMRC, cited in *The Best Start* 2007:54)
- Based on Australian research, the cost attributed to the hospitalisation of prematurely weaned babies alone is around $60-120 million annually for just five common childhood illnesses.[3]
- A recent study from a developed country population found that hospitalisation rates for children under 12 months could be more than halved if all babies were fully breastfeed for 4 months or more.[4]

In due course, the *Maternity Services* and *Obesity* Reviews and Productivity Commission inquiry on *Paid Maternity, Paternity and Parental Leave* will provide additional evidence for investing in breastfeeding support.

We are pleased that the Australian Government recognises the importance of breastfeeding, and has stated its commitment to leading a national strategy to support and promote breastfeeding. *The Best Start Report* recommends 22 strategies which together represent a more ambitious, comprehensive and potentially more effective approach than any government has supported to date. In Attachment (A) we have set out our response to the Best Start recommendations. We would welcome the opportunity to be actively involved in further developing a plan of action and working in partnership with government and other sectors to implement an effective strategy to support breastfeeding in Australia.

We urge the Australian Government to follow through its stated commitments on the *Best Start* Report by committing resources in the 2009 budget. Further delay means another quarter of a million mothers and babies a year miss out on the best start they are entitled to.

Yours sincerely

Querida David

National President
Australian Breastfeeding Association

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[1] Australian Breastfeeding Association. Breastfeeding Leadership Plan. 2004; www.breastfeeding.asn.au/advocacy/030804abastrategy.pdf

[2] Australian Government. Australian Government Response to: The Best Start: Report on the inquiry into the health benefits of breastfeeding. Canberra: 2007.

[3] Smith J, Thompson J, Ellwood D. Hospital system costs of artificial infant feeding. ANZ J Public Health 2002; 26(6): 542-551.

[4] Talayero JMP, Lizán-García M, et al. Full Breastfeeding and Hospitalization as a Result of Infections in the First Year of Life. Pediatrics 2006; 118:e92-e99.

Appendix A: 'Best Start' Strategies for Investment

The Australian Breastfeeding Association recommends strategies for investment with reference to 'Best Start', as outlined below against the report's recommendations.

The Federal Parliament Standing Committee on Health and Ageing released *The Best Start: Report on the inquiry into the health benefits of breastfeeding (*'Best Start'*)*. The report made 22 recommendations for the Australian Government to improve breastfeeding rates in Australia. The report and recommendations can be downloaded from the website:
http://www.aph.gov.au/house/committee/haa/breastfeeding/index.htm.

Recommendation 1

> *That the Department of Health and Ageing coordinate and oversee the implementation of a national strategy to promote and support breastfeeding in Australia, including providing leadership in the area of monitoring, surveillance and evaluation of breastfeeding data.*

An overarching multi-sectoral, multi-stakeholder strategy is essential to provide a framework for action, and a context for other recommendations to be coordinated. A co-ordinating authority for breastfeeding in Australia, such as what was agreed upon in the Innocenti Declaration, is needed to focus and drive such a strategy.

The Australian Breastfeeding Association issued a challenge to Australian governments in 2004 with the launch of its Breastfeeding Leadership Plan at Parliament House (www.breastfeeding.asn.au). Unlike in other countries, including New Zealand and the United States, Australian governments have not yet taken up the challenge of preparing, funding, and implementing a national strategy on breastfeeding.

We are heartened to see that the Australian Government response to *Best Start* in December 2008 has now accepted leadership responsibility for developing and implementing a national breastfeeding strategy.

The Australian Breastfeeding Association is a key stakeholder in the process of developing such a strategy, and looks forward to contributing its extensive expertise and experience in effective breastfeeding support.

We note also that the Australian Government is commissioning research on a national survey of breastfeeding and on barriers and enablers to breastfeeding. We look forward to consultation and the opportunity for contributing to the processes and implementation of such research.

Recommendation 2

> *The Department of Health and Ageing implement the recommendations in the 'Towards a national system for monitoring breastfeeding in Australia' document commissioned by the Commonwealth Government in 2001.*

We note that the Australian Government agrees with this recommendation and is planning to establish basic indicators and definitions in the context of developing a National Breastfeeding Strategy. Despite the recommendations of an expert inquiry in 2001, there are currently no consistent standards of data collection and definitions of breastfeeding across Australia. We are however, extremely disappointed that breastfeeding data is not included among other health statistics now collected in the ABS National Health Survey. Accurate regular, nationally consistent data collection is essential for developing effective policy and implementing and evaluating outcomes, and is long overdue.

This measure is urgent and should not await the development of the National Breastfeeding Strategy; as such data is needed to underpin development of such a strategy.

Recommendation 3

That the Department of Health and Ageing fund research into:

- *the long-term health benefits of breastfeeding for the mother and infant; and*
- *the evaluation of strategies to increase the rates of exclusive breastfeeding to six months*

Recommendation 4

That the Department of Health and Ageing fund research into best practice in programs that encourage breastfeeding, including education programs, and the coordination of these programs.

Recommendation 9

That the Department of Health and Ageing commission a study into the economic benefits of breastfeeding.

The long term health effects and the importance of breastfeeding are well known. The Australian Breastfeeding Association identifies a significant gap in the evaluation of strategies to increase rates of exclusive breastfeeding to six months of age, and insufficient focus on evaluation of breastfeeding in Australia to two years of age and beyond.

We welcome the Australian Government's statement that it prioritises research which evaluates programs to protect, encourage and support breastfeeding. This should include community run programs, which are recognized in the scientific literature as being particularly under-researched as well as most likely to be effective. The Association also welcomes opportunities and resources to evaluate its own strategies, and to partner with universities in conducting and facilitating evaluation of community based support strategies.

We look forward to the Government's statement of its priorities being reflected in public research priorities and funding allocations, including by the Australian Research Council and the National Health and Medical Research Council. This is within the scope of Commonwealth responsibilities and need not await the development of the National Breastfeeding Strategy.

The economic aspects of breastfeeding are rarely recognised but are important to developing successful breastfeeding support strategies. The Australian Breastfeeding Association welcome a partnership with researchers funded to examine such aspects including the role of paid maternity leave and suitable employment conditions and childcare in facilitating breastfeeding.

Recommendation 5

That the Department of Health and Ageing fund the Australian Breastfeeding Association to expand its current breastfeeding helpline to become a toll-free national breastfeeding helpline.

The Association welcomes the 2008-2009 budget commitment of $250,000 per annum for a 5 year period to the Australian Breastfeeding Association to introduce a National Breastfeeding Helpline. This is an important step forward in improving access to effective, mother to mother support for breastfeeding. A commitment of ongoing support is important to ensure appropriate planning and development of future services, and needs to be factored into future Australian Government budgets.

Recommendation 6

That the Department of Health and Ageing fund a national education campaign to highlight:

- *the health benefits of breastfeeding to mothers and babies;*
- *that breastfeeding is the normal way to feed a baby;*
- *that the use of breast milk is preferable to the use of infant formula; and*
- *the supportive role that the community can play with breastfeeding.*

The health benefits and importance of breastfeeding are increasingly well recognised by Australian mothers. Education must emphasise providing health services providers, health professionals, families, employers, businesses and the general community with the knowledge, skills and attitudes to effectively support mothers to breastfeed their babies as a normal and valued part of the Australian life cycle.

We endorse the usefulness of website resources on breastfeeding and look forward to the opportunity to ensure all publicly funded websites provide evidence-based breastfeeding information, and referral to the ABA and its specialised resources and support.

Recommendation 7

> *That the Department of Health and Ageing fund an awards program which provides recognition for workplaces, public areas and shopping centres that have exemplary breastfeeding facilities.*

Recommendation 11

> *That the Department of Health and Ageing provide additional funding for the Australian Breastfeeding Association to expand the Breastfeeding-Friendly Workplace Accreditation (BFWA) Program nationally to enable the accreditation of more workplaces.*

The Australian Breastfeeding Association (ABA) currently provides such programs in the form of the *Breastfeeding Friendly Workplace Accreditation*; *Breastfeeding Welcome Here* and *Baby Care Rooms*. We are presently developing a Breastfeeding Friendly Childcare initiative. It is important to support, develop and build on such community initiatives rather than for the Government to compete with or replace such programs. ABA programs would be strengthened through greater linkages with health services, employer and business groups, and other government programs targeting families, as well as by wider promotion to the public.

The Association would welcome discussions on further development, wider promotion and implementation of these programs. This could include coordination with and recognition of ABA programs as part of National Work and Family Awards.

In 2008 a 12 month Leadership Grant of $100,000 to Breastfeeding Friendly Workplaces was issued by the Office of Women to the Australian Breastfeeding Association. This is an important first step in building capacity for delivery of this program on a larger scale.

Funding is urgently required to continue this initiative beyond June 2009, and is a priority for the 2009 budget. Further evidence on employment trends and implications for breastfeeding may be found through the Productivity Commission inquiry into *Paid Maternity, Paternity and Parental Leave (2008).*

Recommendation 8

> *That the Department of Health and Ageing fund a feasibility study for a network of milk banks in Australia including the development of a national regulatory and quality framework within which a network of milk banks in Australia could operate. The feasibility study should include funding pilot programs at the Mothers Milk Bank at the John Flynn Private Hospital, Gold Coast and the King Edward Memorial Hospital milk bank in Perth.*

The Australian Breastfeeding Association welcomes discussion and collaboration for the development of milk banking guidelines. ABA supports and encourages the establishment of human milk banks in line with the WHO/UNICEF Declaration of 1980 *'Where it is not possible for the biological mother to breastfeed, the first alternative, if available, should be the use of human milk from other sources. Human milk banks should be made available in appropriate situations.*'

Recommendation 10

> *That the Speaker of the House of Representatives and the President of the Senate take the appropriate measures to enable the formal accreditation by the Australian Breastfeeding Association of Parliament House as a Breastfeeding Friendly Workplace.*

The Australian Breastfeeding Association was delighted to accredit Parliament House as a Breastfeeding Friendly Workplace on October 17th 2008. This shows national leadership and commitment, and should be widely promoted as an example to employers, other governments and the general community.

Recommendation 12

> *That the Treasurer move to exempt lactation aids such as breast-pumps, nipple shields and supply lines from the Goods and Services Tax.*

The Australian Breastfeeding Association considers that removal of GST on these items is consistent with the GST free status of all manufactured baby foods, which are also outside the broad food and health concessions in GST laws. A specific concession could easily be created in GST law as it has been for commercial baby foods and other medical devices, and would have minimal budgetary cost.

An alternative approach would be to remove the privileged GST status of commercial baby foods, a tax concession which undermines exclusive and continued breastfeeding. The additional revenue from removing this exemption would provide at least $20 million annually which could be used to fund breastfeeding support for disadvantaged mothers.

Recommendation 13

> *That the Attorney General investigate whether breastfeeding is given suitable consideration in the implementation of shared custody arrangements and also provide advice to the Family Law Court and Family Relationships Centres on the importance of breastfeeding.*

There is demonstrated poor understanding within the legal system of the unique needs of breastfeeding mothers and babies, and options for accommodating these needs where the parents are not living together. Separation of mothers and babies and failure to recognise the importance of breastfeeding in these circumstances is an increasing problem. There is also a lack of recognition that older babies and toddlers may be breastfeeding and that this must be considered when making decisions on cases involving mothers and their breastfed children.

The Australian Breastfeeding Association and its Lactation Resource Centre regularly receive calls for advice and counselling on this matter. We welcome the Government's action in drawing the *Best Start* report to the attention of the Family Court and its intention to write to the Family Relationship Centres about the importance of breastfeeding. The Association is a key stakeholder and would welcome consultation and the opportunity to contribute to preparation of practical information and guidelines for helping separated parents to support continued breastfeeding in such cases.

Recommendation 14

> *That the Department of Health and Ageing fund the Australian College of Midwives to run the Baby Friendly Hospital Initiative in Australia, to facilitate the accreditation of all maternity hospitals.*

The Australian Breastfeeding Association is strongly committed to the evidence based WHO UNICEF Baby Friendly Hospital Initiative, and urges immediate commitment by the Australian government to

facilitate increased BFHI uptake and accreditation. The Association works in partnership with the Australian College of Midwives and currently also provides many of the assessors. This is a crucial strategy to improve the duration as well as the initiation of breastfeeding, and requires inclusion of appropriate resourcing of BFH initiatives as a priority within the hospital and health care system.

Recommendation 15

That the Department of Health and Ageing work with the Australian Council on Healthcare Standards (and/or equivalent accreditation organisation) towards including Baby Friendly Hospital status as part of the accreditation process.

Recommendation 16

That the Commonwealth Government, when negotiating future Australian Health Care Agreements, require state and territory governments to report on the number of maternity wards in public hospitals that have been accredited under the Baby Friendly Hospital Initiative.

Any health service that is not breastfeeding friendly is providing sub-standard health care for mothers and babies. These recommendations are linked, and we see implementing BFHI Accreditation as a key performance indicator for publicly funded hospitals as a vital component of implementing Recommendation 14.

Recommendation 17

That the Minister for Health and Ageing, in consultation with state and territory health ministers, decide on a standard infant growth chart to be used in all states and territories.

We look forward to rapid and consistent implementation of revised growth charts by Australian Governments.

Of primary concern is health professionals' education, ongoing professional development and review in their interpretation and utilisation of standard infant growth charts.

We urge a systematic campaign be funded in the 2009 budget to inform health professionals of the adverse implications of the current infant weight charts for breastfeeding, and of the correct interpretation and use of the World Health Organization charts.

Recommendation 18

That the Minister for Health and Ageing provide Medicare provider/registration numbers to International Board Certified Lactation Consultants (IBCLC) as allied health professionals.

While the Australian Breastfeeding Association has a long-standing role in supporting the International Board Certified Lactation Consultants examination and professional development program, it has no position on provision of medicare provider/registration numbers.

Recommendation 19

That the Department of Health and Ageing provide leadership in the area of monitoring, surveillance and evaluation of breastfeeding rates and practices in Indigenous populations in both remote and other areas.

Recommendation 20

> *That the Commonwealth Government promote breastfeeding within Indigenous Australian communities as a major preventative health measure.*

Both recommendations 19 and 20 are fundamental to improving the short and long term health of indigenous Australians in both remote and urban areas, and significant investment is required.

Protecting existing traditions of universal and sustained breastfeeding in remote and traditional communities is of paramount importance. It is essential to ensure effective promotion and support of normal breastfeeding by health services for Indigenous Australians, including among urban populations.

Although some multi-agency projects have been initiated, for example in the West Pilbara region of Western Australia, a national strategic approach is required and the Australian Breastfeeding Association would welcome participation in development and implementation of such initiatives based on its existing experience and leadership in mother to mother breastfeeding support.

Recommendation 21

> *That Food Standards Australia New Zealand change the labelling requirements for foods for infants under Standard 2.9.2 of the Food Standards Code to align with the NHMRC Dietary Guidelines recommendation that a baby should be exclusively breastfed for the first six months.*

The 3 year delay in bringing FSANZ labelling requirements into line with WHO and NHMRC's 2005 guidelines is unacceptable. The *Best Start* inquiry was wrongly advised this would be finalised in late 2007.

Three year's delay means around three quarters of a million mothers and babies have potentially been misled by inaccurate infant food labelling regarding the recommended age to commence weaning. We call on the federal Minister for Health to immediately exercise her regulatory authority to implement the revised labelling requirements **regarding 6 months of exclusive breastfeeding.**

The delay in implementing such measures to prevent inappropriate promotion of breastmilk substitutes undermines breastfeeding and increases the fiscal cost to governments of supporting breastfeeding.

Recommendation 22

> *That the Department of Health and Ageing adopt the World Health Organisation's International Code of Marketing of Breast-milk Substitutes and subsequent World Health Assembly resolutions.*

The Australian Breastfeeding Association calls on the Australian Government to make a clear statement of support for the full and non voluntary implementation of the WHO code and subsequent WHA resolutions in Australia, including foods and drinks marketed for infants and toddlers up to age 2 years.

Based on ABS data on the size of the infant food industry, it can be estimated that tens of million dollars annually are spent in Australia by the infant food industry to promote the feeding of their products to infants under a year old, potentially undermining breastfeeding. The current voluntary industry code is inadequate and ineffective in preventing unethical marketing activities by baby food companies which has extended to selling practices in supermarkets and many pharmacies. There is a lack of transparency around how breaches of the industry code are dealt with and the lack of any real penalties allows companies to breach the code with impunity.

The delay in implementing such measures to prevent inappropriate promotion of breastmilk substitutes undermines breastfeeding and increases the fiscal cost to governments of supporting breastfeeding. An amount equal to the estimated marketing expenditure of

industry is the minimum that should be budgeted on an ongoing basis for breastfeeding protection, promotion and support.

Appendix B: The Australian Breastfeeding Association

The Australian Breastfeeding Association (formerly Nursing Mothers' Association of Australia) is a not-for-profit organisation which aims to support and encourage women to breastfeed their babies, and to raise community awareness of the importance of breastfeeding and human milk.

The Association was founded by six mothers in 1964 and has since spread to all Australian states and territories to become one of the country's largest women's non-profit organisations and Australia's leading authority on breastfeeding.

The Association has strengths that make it unique in the Australian community:

- 1125 trained volunteer breastfeeding counsellors, 476 trainees and nearly 300 community educators who provide a national network of mother-to-mother support for women who wish to breastfeed their babies
- 290 local groups in all parts of Australia. Nearly 50% of ABA's membership resides outside of metropolitan areas
- 16,766 subscribers of many diverse backgrounds
- a 24-hour, 7–days-per-week free national Breastfeeding Helpline providing peer support to breastfeeding mothers in each State/Territory. Over 260,000 calls are taken through this counselling service per year, which is operated by volunteer breastfeeding counsellors. The majority of the calls to the counselling service are not subscribers to ABA and 50 per cent of calls are received from rural and regional areas
- email counselling service for women who wish to obtain specific and personalised information online
- a website with breastfeeding and related information, and an interactive forum
- easy to read and low literacy information about a broad range of breastfeeding issues, in print, online and using emerging technologies such as podcasts
- quality training and ongoing education for volunteer counsellors and community educators ensuring consistency of breastfeeding information across Australia. The Association is an accredited Registered Training Organisation and offers two accredited Certificate IV courses in Breastfeeding Education with plans to offer diploma level courses
- the Lactation Resource Centre (LRC), providing specialist library services and ensuring counsellors and health professionals have access to up-to-date and accurate information. The LRC has one of the most comprehensive collections of breastfeeding information in the world and provides a scientific basis for ABA's breastfeeding policies to complement the practical experience of breastfeeding mothers
- highly regarded antenatal Breastfeeding Education Classes. Last year ABA offered around 170 of these classes Australia wide
- over 90,000 community education and public awareness events each year around Australia, including pre-school to high school talks; presentations to a variety of health professionals; antenatal presentations; hospital visits, community displays and the provision of mother-friendly services at community events
- a peer reviewed professional journal; *Breastfeeding Review*
- a high quality magazine, *Essence,* focusing on breastfeeding and mothering issues that is produced and distributed to all subscribers 6 times per year

- community Baby Care Room awards for facilities that meet ABA standards
- a highly successful Breastfeeding Friendly Workplace Accreditation scheme to accredit workplaces which have appropriate infrastructure and human resource policies to support breastfeeding mothers.

Almost all of the Association's activities are carried out by volunteers, assisted by a small number of paid workers.

We estimate that the Association's counselling and group services save the health system a conservative $3 million in counselling and associated costs per year; and substantially more in long-term health savings.

The Australian Breastfeeding Association's strong practical support and advocacy for mothers wanting to breastfeed their babies has been credited with increasing breastfeeding rates in Australia since the 1970s when fewer than one in ten mothers breastfed for 3 months or more. However, increased and sustained effort is required to reach international health recommendations for breastfeeding.

Appendix C: Supporting Evidence for the Importance of Breastfeeding

Breastfeeding is important for the immediate, short and long-term health of infants, children and mothers. A summary of evidence is provided on:

- Impact of Breastfeeding on Infant and Child Health
- Impact of Breastfeeding on Health of Mothers.

Impact of Breastfeeding on Infant and Child Health

Obesity

Research has consistently found that children who are not breastfed are more likely to be overweight in childhood and adolescence. The relationship appears to be dose dependent. A recent meta-analysis of research found that there was a 4% increased risk of being overweight for each month an infant was not breastfed. Thus, babies that are weaned before 9 months have a 56% increased risk of being overweight.[5]

Type 1 Diabetes

A meta analysis of high quality studies that looked at infant feeding and the development of Type 1 diabetes found that children exposed to cows' milk in the first 3 months of life or not breastfed for at least 3 months have a 63% increased risk of developing Type 1 diabetes.[6] It appears that the relationship between infant feeding and development of Type 1 diabetes is strongest where children develop the condition young, thus, children not breastfed for at least 3 months have a 280% increased risk of developing Type 1 diabetes before the age of 4 years as compared to breastfed children.[7]

Asthma

Research has generally found that premature weaning from breastfeeding results in increased risk of development of asthma in children. A meta-analysis of well-designed studies from around the world found that children weaned before 3 months of age had a 25% increased risk of developing asthma as compared to children who were breastfed beyond 3 months. In a specifically Australian context, research has found that introduction of milks other than human milk before 4 months of age resulted in a 25% increased risk of asthma, an earlier diagnosis of asthma, a 31% increase in wheeze and earlier onset of wheeze. [8]

The increased incidence of asthma in children who are not breastfed may be due to increased vulnerability in children not breastfed to respiratory infections and allergy. Children who are not breastfed are at an increased risk of suffering from multiple episodes of upper respiratory tract illness and this may make children more vulnerable to developing asthma. An Australian study found that lower respiratory illness with associated wheeze, in the first year of life, particularly where there are multiple episodes, increases the risk of asthma in children from between 300% (where no family history of allergy) and 800% (where a family history of allergy).[9] A dose dependent association between antibiotic exposure in infancy and the development of asthma has been identified and children who are not breastfed have been found to spend twice as much time on antibiotics as children who are

breastfed.[10] [11] Children who are prematurely weaned from breastfeeding are also more likely to develop allergic symptoms and this is also associated with increased asthma risk.

Allergy

Infants fed infant formula (cows' milk based or soy) have a higher incidence of allergy than babies who are breastfed.[12] [13] Eczema is a type of allergic manifestation that has been studied in relation to early nutrition. Kull et al[14] examined the development of eczema in children whose families had a history of allergy and those who did not. It was found that where there was no family history of eczema the risk of developing eczema was increased by 20% in children exclusively breastfed for less than 4 months and by 35% in children with a family history of eczema.[15] Children not exclusively breastfed for at least 4 months were also found to be 43% more likely to develop allergic rhinitis than children exclusively breastfed for 4 months or more. Finally, children who were not exclusively breastfed for 4 months or more were 43% more to suffer from multiple allergic diseases. Oddy et al[16] found that children who were not exclusively breastfed were 30% more likely to show a positive skin prick test to at least one common aeroallergen. Exclusive early breastfeeding (for around six months) is particularly important in preventing allergy.

Otitis media

Research has consistently found that babies who are not breastfed are at increased risk of suffering from otitis media, otherwise known as middle ear infection.[17] Children not breastfed have between 60 and 100% increased risk of developing otitis media[18] [19]and at about double the risk of suffering from recurrent otitis media.[20] [21] Shorter breastfeeding duration increases the likelihood of otitis media.[22]

Recurrent otitis media is associated with mild, fluctuating hearing loss.[23] Since the first few years of life are critical for language development recurrent otitis media in infancy and toddlerhood can negatively affect children's language acquisition. Hearing loss and language delay early in life have a flow on effect on academic learning in the early years of school. Children with a history of recurrent otitis media are also at an increased risk of having difficulties with learning to read in middle childhood necessitating an increase in the need for remedial education programs.[24]

Gastroenteritis

Gastroenteritis is common disease in young children. In 1993-1996 there were approximately 20,000 hospital admissions in children under 5 years in Australia.[25] One study shows the infants exclusively breastfeeding at 3 months have 40% less risk of developing gastrointestinal infections.[26] Other research has found that babies who are not breastfed have a 200-500% risk of developing gastroenteritis caused by non-viral pathogens.[27]

Respiratory infections

Early feeding affects the incidence and severity of respiratory illness. Australian research has identified that in the first year of life babies not exclusively breastfed for 2 months or at least partially breastfed for 6 months are 1.4 times more likely to have 4 or more hospital or doctors visits because of upper respiratory tract infections. Babies not exclusively breastfed for 6 months are 2 times more likely to have two or more hospital or doctors visits and 2.6 times more likely to be hospitalised for wheezing

lower respiratory illness (bronchiolitis or asthma). Cessation of breastfeeding before 12 months is associated with a 60% increased risk of 2 or more hospital visits for wheezing lower respiratory illness.[28]

Urinary tract infection

Babies who are not breastfed are 5 times more likely to suffer from urinary tract infection in infancy than children who are breastfed.[29] They are also more likely to suffer from urinary tract infections up until at least 6 years of age.

Sudden Infant Death Syndrome (SIDS)

While it is not possible to identify which babies will fall victim to SIDS, this tragic event is not completely unpredictable. SIDS is much more prevalent in socio-economically deprived populations and these populations are those least likely to breastfeed their babies.[30] [31] Background epidemiological characteristics of SIDS victims and their families include low birth weight, short gestation, young maternal age, high parity, sole parent caregiver, parental smoking, parental alcohol consumption and bottle-feeding.

Every study investigating causes of SIDS has found that babies that are not breastfed are on average twice as likely to die and this relationship often remains after statistical adjustment. [32] [33] [34] However, since not breastfeeding is also associated with socio-economic deprivation the impact of breastfeeding on SIDS sometimes disappears in statistical adjustment for socio-economic background.

Childhood cancers

The reasons why some children develop cancer are not well understood. Nevertheless a number of factors have been implicated in increasing the risk of development of cancers in childhood including early nutrition. Research indicates that children who are not breastfed are at between a 75% to a 600% increased risk of developing any cancer.[35] [36] Research has found that artificial feeding increases the risk of developing Hodgkin's disease, non-Hodgkin's lymphoma, acute lymphoblastic leukaemia and acute myeloblastic leukaemia.[37] [38] However, there is a lot of variation in research results. Nonetheless, studies have generally found that breastfeeding duration is important. Cancer risk is greatest in babies not breastfed at all compared to those breastfed for the longest duration. Childhood cancer has been associated with immunodeficiency and infection.[39] Since human milk is protective against infection and stimulates the early, normal development of the immune system this may explain why babies who are not breastfed are at greater risk of developing cancer.[40]

Oral and Dental Health

Breastfeeding is important for the normal development of the oral cavity. In infants the palate is soft and malleable. Breasts are also soft and malleable and during breastfeeding the breast applies an even and dispersed pressure to the palate via the normal peristaltic movement of the tongue as it massages rather than sucks milks out of the breast.[41] This results in individuals who were breastfed being more likely to have a healthy, broad palate, without malocclusions or improper alignment of teeth.[42]

In contrast, bottle teats are hard and a piston-like suckling with negative pressure is used to obtain milk from a bottle. The relatively strong and concentrated pressure associated with bottle-feeding can deform the infant's palate leading to a greater risk for poor alignment of the teeth and malocclusions.[43] In addition, when the palate is narrowed and heightened by bottle-feeding it may infringe on the upper airway.[44] It has been found that a high and narrow palate is a good predictor of snoring and obstructive sleep apnoea, both of which contribute to significant health problems in adulthood.[45]

Preventable accidents, injury and child abuse

Epidemiological research in the US has looked at the impact of infant feeding on post-neonatal mortality. It has been identified that babies who are never breastfed are 27% more likely to die in their first year than babies who are ever breastfed.[46] Some of the reasons for the increased death rate in never breastfed infants are related to increased rates of illnesses in non-breastfed babies. However, an examination of cause of death found that babies who had never been breastfed were at 69% increased risk of death from accidents. The relationship between not breastfeeding and increased mortality from accidents has been found before[47] and may be related to the absence of physiological and physical factors associated with breastfeeding that help prevent accidents. Breastfeeding women are physiologically different from women who are not breastfeeding and hormones that are released in response to breastfeeding act on the central nervous system of mothers to promote maternal behaviour[48] [49] [50] and reduce their response to physical and emotional stress.[51] This enables breastfeeding women to be more responsive to their babies and to want to be closer to them.[52] [53] [54] Thus, breastfeeding encourages maternal care giving and closer maternal-child proximity and this may directly decrease the risk of accident through increased adult supervision and increased maternal-child attachment.[55] [56]

Other conditions

Some research has found an increased risk of developing ulcerative colitis, Crohn's disease and coeliac disease in individuals who were formula-fed as infants.[57]

Long term impacts of breastfeeding

The impact of breastfeeding continues beyond weaning. Children weaned earlier continue, for 2 or more years after weaning, to suffer more ill health than children who were breastfed for longer.[58] [59] This finding supports the idea that breastfeeding enhances the normal development of the immune system and conversely that premature weaning from breastfeeding retards the development of the immune system.

It has been found that children who were not breastfed are more likely to require antibiotic treatment at 18 and 30 months at least 3 times in the preceding 6 months as compared to babies breastfed (not exclusively) for at least 4 months.[60] Antibiotic medication is commonly used to treat respiratory illness and otitis media.

The duration of exclusive breastfeeding is significant in determining the likelihood of a childhood health. One recent study found that children who were fully breastfed (meaning breastfed without supplementation with other milks) for between 4-6 months were 4 times more likely to suffer from pneumonia and 2 times more likely to suffer from recurrent otitis media up until the age of 2 years than those breastfed for 6 months or more.[61]

There is compelling evidence to suggest that premature weaning is associated with increased risk factors for later cardiovascular disease.[62] There is evidence to show an association between adolescents who were prematurely weaned and a higher systolic blood pressure. It appears that this effect is dose related; blood pressure increased as the proportion of human milk received in the neonatal period decreased. It has been estimated that as a non-pharmacological intervention, in the adult population this has the potential to reduce hypertension by 17%, the risk of cardiovascular disease by 6% and the risk of strokes and transient ischaemic attacks by 15%. Data collected from the same sample group also showed evidence for the beneficial effect of breastmilk on later blood lipid profiles and again there is dose-dependent relationship.

The most substantial study to date on cognitive function has provided strong evidence that prolonged and exclusive breastfeeding improves children's cognitive development. The evidence from a large randomized trial of nearly 14 000 children found that those who breastfed exclusively for the first three months - with many also continuing to 12 months - scored an average of 5.9 points higher on IQ. [63] It is not known whether this improved cognitive development is due to the constituents of breast milk or related to the physical and social interactions associated with breastfeeding.

Impact of Breastfeeding on the Health of Mothers

Breastfeeding also has an impact on the health of mothers and has been found to reduce the incidence of hip fracture, breast cancer, rheumatoid arthritis, ovarian cancer and diabetes.

Hip fracture

Hip fractures are common in elderly women and have a high mortality and morbidity. However, women who breastfeed their children have a reduced risk of hip fracture. The reduction of risk is dependent on duration of breastfeeding. One study of Australian women who had breastfed each of their children for 9 months or more reduced their risk of hip fracture by 72% as compared to women who had not breastfed their children.[64] There is evidence that the risk of hip fracture continues to decrease with breastfeeding beyond 9 months per child.[65]

Breast Cancer

Breastfeeding reduces the risk of a woman developing breast cancer in a very strong dose dependent relationship. It has been estimated that each 12 months of breastfeeding reduces the risk of breast cancer development by 4.3%[66] and that the impact of breastfeeding on breast cancer reduction increases with long-term breastfeeding such that women who breastfeed each of their children for 2 years or more up to halve their risk of developing breast cancer.[67] A recent meta-analysis concluded *"the lack of or short lifetime duration of breastfeeding typical of women in developed countries makes a major contribution to the high incidence of breast cancer in these countries"* (Collaborative Group on Hormonal Factors in Breast Cancer, 2002).

Rheumatoid arthritis

Hormonal factors are involved in the development of rheumatoid arthritis and since breastfeeding can impact the hormonal milieu of women in the long term it is not surprising that lactation history can affect the likelihood of women developing rheumatoid arthritis.[68] A very large prospective study found

that women who had a lifetime breastfeeding duration of 12 months had a 20% decreased risk of developing the condition and women who had a lifetime breastfeeding duration of 2 years or more had a 50% decreased (ie halved) risk of developing rheumatoid arthritis as compared to women who had breastfed for 3 months or less.[69]

Ovarian Cancer

Breastfeeding also impacts the likelihood of women developing ovarian cancer. Research has found that breastfeeding for 2-7 months results in an average 20% reduction in incidence of ovarian cancer (studies have found up to a 50% reduction with the relationship being dose dependent).[70]

Diabetes

A recent study found that each year of breastfeeding reduces the risk of developing Type 2 diabetes by 15% in young and middle aged women even when BMI and other risk factors are controlled for.[71] It is thought that this may be because breastfeeding improves the stability of glucose levels in women.

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