FACULTY OF PUBLIC HEALTH MEDICINE

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

The Impact of Early Childhood on Future Health

POSITION PAPER OF THE FACULTY OF PUBLIC HEALTH MEDICINE

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‘MOL AN ÓIGE AGUS TIOCFAIDH SÍ’

Praise a child and they will blossom

Marmot, in his 2010 review of health inequalities in England, identified six policy objectives to reduce health inequalities and improve health and wellbeing for all. The first of these policy objectives is to ‘Give every child the best start in life’.

This echoes the *Healthy Ireland* goals:

- Increase the proportion of people who are healthy at all stages in life
- Reduce health inequalities

This paper discusses the impact of early childhood on future adult health and highlights the imperative to address the health of children as a key part of the solution to chronic diseases.

The paper acknowledges the importance of the wider societal determinants of health on children’s lives (and encourages continued efforts to address them) but focuses on the important role that health services can play in improving the early start a child gets in life. It outlines some of the interventions that the health services can do to support these policy objectives.

The Faculty of Public Health Medicine proposes key actions to strengthen the role of the health services in the lives of children, who make up a quarter of the Irish population. This is not only the morally right thing to do. It is also cost-effective and something that the health service cannot afford not to do.

The Faculty is keen to work with policy and operational leaders to advise and explore how these can best be achieved. We know what needs to be done. We strongly believe that those of us in the health service arena must re-double our efforts and that we must act now.

Key Actions for the Health Services to Promote Child and Adult Health

1. Strengthen the leadership for children in the health arena
   - Continue to develop a leadership structure for child health and wellbeing in the Health Service Executive (HSE) at national and at Community Healthcare Organisation (CHO) level
   - Establish a Child Health Office within the HSE that will provide an integrated approach to care across the sectors of the HSE with the health needs of children at its centre.
     The office will provide leadership for child health and wellbeing in the HSE by supporting the National Lead for Child Health. It will advocate for the need to improve services for children and support the operational delivery of services by leading on developing and disseminating evidence-based policies and protocols, developing training frameworks, monitoring services, ensuring quality and developing standards.
     The office will have a strong governance structure, will support the implementation of the revised Healthy Childhood Programme and of the Healthy Childhood Action Plan and will engage with key personnel from the relevant government departments and agencies, such as the Department of Health, the Department of Children and Youth Affairs, Tusla and voluntary and non-government organisations working with children, their families and communities.

2. Develop a workforce that is trained and supported to deliver health services for all children
   - Provide a workforce which is appropriately trained for its role, with an adequate and ring-fenced capacity to meet the demands of their case load and supported by a management structure which supports their professional practice and that prioritises the health needs of children.

3. Ensure the health system identifies and responds to the needs of children and families
   - Ensure that needs assessment, at both national and local level, is embedded in the delivery of services, harnessing the individual needs assessments of front-line staff with local population profiles, service monitoring and quality data.
   - Invest in important information systems for child health services, such as the National Immunisation and Child Health Information System (NICIS).

4. Ensure the work of the health services is embedded in the wider structures working to improve the lives of children
    - The HSE should ensure that its representatives who are engaged in inter-sectoral work on behalf of children have sufficient dedicated time to do this work and are supported by the expertise provided by colleagues from clinical, public health and community development backgrounds. This includes representatives on Children and Young People Services committees (CYPSCs) and Local Community and Development Committees (LCDCs).

5. Ensure that funding is available for evidence-based interventions on behalf of children
    - Ensure sufficient, dedicated Public Health Nurse and Community Medical Doctor capacity to deliver both the universal and the progressive elements of the Healthy Childhood Programme.
    - Ensure an investment in capacity in other services, such as diagnostic and therapy services, so that the early identification of conditions through the Healthy Childhood Programme can lead to timely management and can deliver results
    - Support the development and implementation of a national parenting strategy for Ireland
    - Provide funding and support for evaluated family support programmes, such as parenting and home visiting programmes
    - Provide a firm funding provision, in a timely manner, for important interventions which have been proven, based on new and evolving evidence, to improve children's health. For example, funding for the universal provision of immunisation for pregnant women should be made available to ensure that all babies are protected regardless of their families' socio-economic circumstances.

Key Points:

- The experiences that a child has in early childhood impact on the health of that child when he or she reaches adulthood.

- Babies' brains undergo rapid development before birth and in the early years of life. Adverse experiences which occur in this critical developmental period impact negatively on the developing brain and on other sensitive organs. Such impacts may be seen in childhood but often manifest only in later adult years as chronic disease, such as cardiovascular disease, diabetes, obesity, mental health disorders. The health and wellbeing of our current child population, therefore, determines the health of our future adult population.

- There are a number of early childhood interventions aimed at child development, educational disadvantage and parenting which have been shown to be effective in improving child health and wellbeing, and thus later adult health and wellbeing.

- Investment in these programmes and services provides a greater rate of return than later interventions, with the most effective time to intervene being before birth and in early childhood.

- Interventions can help to break the cycle of disadvantage and lay the foundation for addressing health inequalities.

- The health and wellbeing of our children is not solely determined by what happens in the healthcare arena, but the health service has a unique and valued role in the provision of services for pregnant women, babies and the families of young children. These help to build the foundation for a healthy childhood environment and supportive parenting.

- In addition to delivering health services, health professionals provide assessments of family needs and act as advocates on behalf of the child population. In order to provide such services, there needs to be a trained and supported dedicated child health workforce.

1. Introduction

THE HEALTH OF OUR CHILDREN PREDICTS THE HEALTH OF OUR FUTURE GENERATIONS.

'*The foundations for virtually every aspect of human development – physical, intellectual and emotional – are laid in early childhood. What happens during these early years (starting in the womb) has lifelong effects on many aspects of health and well-being – from obesity, heart disease and mental health to educational achievement and economic status.'* Marmot, 2010.[1]

This paper sets out to present the evidence on the importance of investment in early childhood in order to maximise the nation's human capital. This agenda speaks to society's economic interest. It also addresses the issue of inequalities in health.

There is an equally important agenda. This is the moral and ethical principle of promoting the health and well-being of children as an objective in its own right. Ireland is a signatory to the United Nations Convention on the Rights of the Child (UNCRC), the guiding principles of which include: (1) all children should be entitled to basic rights without discrimination; (2) the best interests of the child should be the primary concern of decision-making; (3) children have the right to life, survival and development and (4) the views of children must be taken into account in matters affecting them.[2]

This wider societal responsibility for the wellbeing of children is acknowledged by the Faculty. However, the focus of this paper is the impact of early childhood experiences on the health of the future adult population and the role that health services can play in improving early experiences in order to improve our population's health overall.

Therefore, this paper presents an outline of the impact of early childhood on future health and includes details of the relationship between this and health inequalities and chronic diseases. It describes what is known about normal child development and the factors known to adversely affect development with the subsequent impact on adult health. In addition, the health economic argument for early investment is presented, followed with an outline of health service interventions that are known to work. It outlines a set of five key actions which, if implemented, would provide a way forward for improving outcomes from children's health services in Ireland.

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[1] Marmot M. (2010). Fair Society, Healthy Lives. The Marmot Review. Strategic Review of Health Inequalities in England post-2010. London.

[2] The United Nations Convention on the Rights of the Child, 1989. New York. Available at: http://www.ohchr.org/EN/ProfessionalInterest/Pages/CRC.aspx

2. Health Inequalities and Chronic Disease

Health inequality is a feature of all societies, although some societies are more unequal than others. People who are poor have the worst health, while those at the highest level of society have the best health.[1]

The unequal distribution of health and of chronic disease is not inevitable and can be addressed by tackling the unequal distribution of income and education, living and working conditions and of supportive family and community networks.[1,3] Policies and interventions which impact on these health determinants have been shown to reduce the health gap.

While changes are needed across different groups and settings, early childhood is a special case. To have an impact on health inequalities and on chronic disease in later life, it is vital to address the social gradient in children's access to positive early experiences.[4,5,6] Later interventions, though important, are considerably less effective, and are more costly, where good early foundations are lacking.[7]

In his extensive report on health inequalities, Marmot argues that, on a population level, focusing solely on the most disadvantaged will not significantly impact on health inequalities.[1] Only a small proportion of the totality of adverse health problems is found in the most income-disadvantaged families so it is important to work across the social spectrum, while particularly focusing most on those with greatest need – i.e. progressive universalism.

Early childhood is a time of rapid development in the brain and in many of the body's biological systems that are critical to future health.

[3] Wilkinson R, Pickett K (2009) The Spirit Level - Why equality is better for everyone.

[4] Dyson A, Hertzman C, Roberts H, Tunstill J and Vaghri Z (2009). Childhood development, education and health inequalities. Report of task group. Submission to the Marmot Review

[5] Centre on the Developing Child at Harvard University (2010) The foundations of lifelong health are built in early childhood. Accessed at: http://developingchild.harvard.edu/resources/reports_and_working_papers/foundations-of-lifelong-health/

[6] Commission on the social determinants of health, WHO (2008). Closing the gap in a generation: Health equity through action on the social determinants of health

[7] Centre on the Developing Child (2009). The timing and quality of early childhood experiences combine to shape brain architecture. Boston: Harvard University

3. How does normal child development happen?

To explain the impact of early childhood on health and wellbeing, it is important to understand normal child development.

Health in the earliest years lays the groundwork for a lifetime of well-being. [5,8] Children are more likely to grow into healthy adults if their developing biological systems are strengthened by a supportive environment and positive early experiences, beginning with the future mother's health before she becomes pregnant. There has been extensive research, in particular over the last two decades and from sciences as diverse as development science, genetics, neuroimaging and social science, which has led us to better understand the influences on whether or not a child gets off to a promising start in life.[9,10]

We now know that, rather than a child's future development being set in stone by his or her genetic blueprint, a child's genes and environment interact, particularly during the early years, with early experiences altering the expression of their genetic legacy.[7] Recent work in the field of epigenetics has shown that experiences in utero and in early childhood can alter gene expression through their effects on molecular regulators that interact with the DNA molecule, so that a gene can be 'switched on or off'.[11] In this way, one genotype can give rise to a range of different physiological or morphological states in response to different environmental conditions.

Early childhood is a time of rapid development in the brain and in many of the body's biological systems that are critical to future health.[5,12] The brain fine-tunes itself according to the input it receives from the environment and from different experiences.[7] The brain's ability to adapt itself is called its plasticity. The brain is most 'plastic' or flexible in early life but, as the maturing brain becomes more specialised, it is less capable, and for some developmental pathways is incapable, of reorganising and adapting to new experiences.

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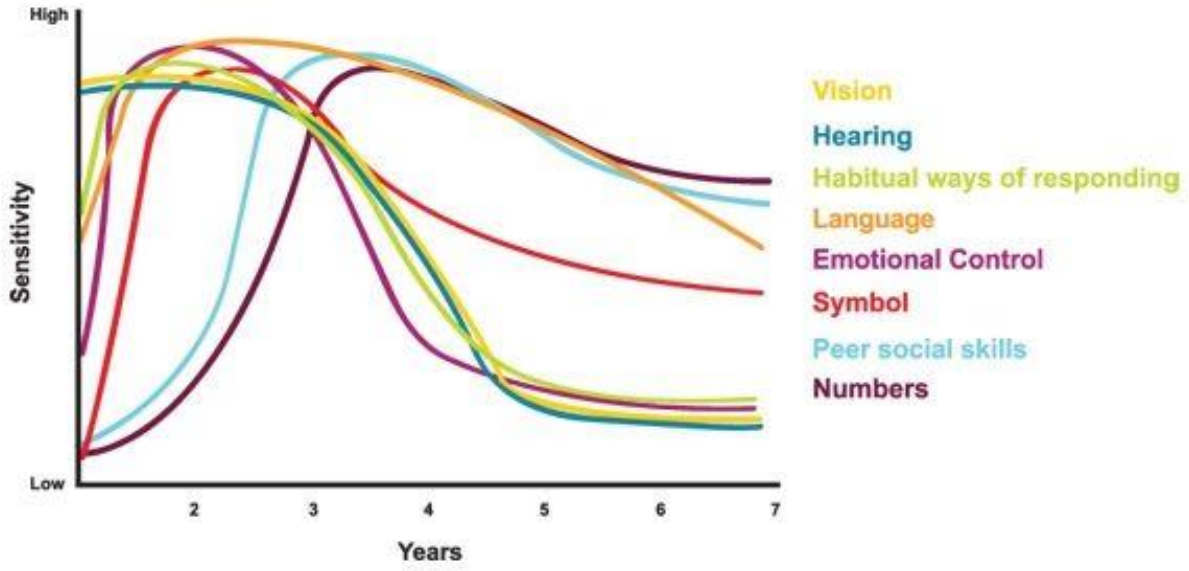
[8] Waldfogel J (2004) Social mobility, life chances and the early years, CASE Paper 88, London: London School of Economics.
[9] Shonkoff J and Phillips D (2000). From Neurons to Neighborhoods. Washington DC: National Academy Press.
[10] Shonkoff J, Boyce W and McEwen B (2009). Neuroscience, Molecular Biology, and the Childhood Roots of Health Disparities – Building a New Framework for Health Promotion and Disease Prevention. JAMA 2009;301(21):2252-2259.
[11] Institute of Medicine and National Research Council. 2015. *Transforming the Workforce for Children Birth Through Age 8: A Unifying Foundation – Chapter 3*. Washington, DC: The National Academies Press.
[12] Jenson B B, Currie C, Dyson A, Eisenstadt N, Melhuish E (2013) Early years, family and education task force report. WHO, Europe.

This happens because, at birth, the brain is only about 20% developed. During the first 2 to 3 years, it will develop synapses or connections between neurons at a rate of about 700 a second so that, by age 3 years, it will have up to twice as many synapses as it will have in adulthood.[13] Surplus connections (those which are not used and strengthened) are gradually eliminated during childhood and adolescence in a process known as pruning.[7] This allows the brain processes become more efficient and more specialised, based on the needs of the child's environment and the feedback that it has experienced. Later more-complex brain circuits are built on earlier simpler circuits.

In addition, there are a number of 'sensitive' or critical developmental periods whereby experience-based development is essential to the further development of neuronal pathways and without which later development cannot occur. For example, diminished visual signals due to a congenital cataract can cause a loss of vision in the affected eye which, if the underlying condition is not corrected at an early age, is unlikely to return. See Figure 1



Graph developed by Council for Early Child Development (ref: Nash 1997; Early Years Study 1999; Shonkoff 2000)

Figure 1: Sensitive periods in early brain development

The development of hearing and language and the development of responses to social cues and emotional control are other examples of behavioural capacities which are moulded during sensitive developmental periods. A baby's emotional well-being and

[13] Center on the Developing Child (2007). The Science of Early Childhood Development (InBrief).

social competence is developed by careful attention from a parent or care-giver, usually the mother, in a 'serve and return' relationship. This happens in the first 18-24 months of life. A sensitive caring relationship enables the child to form secure attachments, the capacity for emotional regulation and for empathy for other people. Such abilities lay the basis not only for future relationships and the ability to deal with future life events but also provide a strong foundation for emerging cognitive abilities.

4. What factors adversely impact normal child development?

During pregnancy, the impact of maternal stress, infection or poor nutrition, and of alcohol, drug and tobacco use by the mother, has a significant influence on foetal brain and other organ development

Barker has shown that when human foetuses have to adapt to a limited supply of nutrients, they permanently change their structures and metabolism.[14] Low birth weight is particularly associated with poorer long-term health and educational outcomes.[15,16] At the other end of the spectrum, maternal over-nutrition during pregnancy influences adiposity in her offspring.[17,18] This effect may be multigenerational, with research showing an association between children's weight and adiposity in their maternal grandmothers.

Toxic substances impacting the brain before birth can cause disruptions of brain development.[19] The developing brain is more vulnerable to neurotoxins not only because of its rapid rate of development but also because the protective blood-brain barrier is under-developed until after the first year of life.

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[14] Barker DJP (1998) In Utero programming of chronic disease. Clinical Science 95: 115-128.

[15] Jefferis B J M H, Power C and Hertzman C (2002) Birth weight, childhood socioeconomic environment, and cognitive development in the 1958 British birth cohort study. BMJ 325:305.

[16] Jenkins H, Meltzer P B, Jones T, Brugha P, Bebbington M, Farrell D, Crepaz-Keay and Knapp M (2008) Foresight Mental Capital and Wellbeing Project. Mental health: Future challenges. London: The Government Office for Science.

[17] Classen TJ, Thompson O (2016). Genes and the intergenerational transmission of BMI and obesity. Econ Hum Biol 23:121-133.

[18] Murrin CM, Kelly GE, Tremblay RE and Kelleher CC (2012). Body mass index and height over three generations: evidence from the Lifeways cross-generational cohort study. BMC Public Health 12(1):81.

[19] National Scientific Council on the Developing Child (2006). Early exposure to toxic substances damages brain architecture. Working paper No. 4

A number of recreational drugs, including alcohol, nicotine and cocaine, are neurotoxic to the developing foetus. Of these, alcohol produces the most devastating disruptions to early brain development, causing foetal alcohol spectrum disorder which can include reduced emotional control, hyperactivity and intellectual disability. Many of these impacts are not readily identified in the young child. Nicotine reduces oxygen delivery to the foetus and high levels of nicotine result in decreased overall foetal growth. Cocaine and other psycho-stimulant substances cause problems which again may not be evident until later in life, such as hyperactivity and a lack of mood control.

Chronic or repeated stress ('toxic stress'), whether in utero due to maternal stress in pregnancy (such as that caused by maternal depression) or due to adversities in early childhood, causes persistent elevation of cortisol levels in the child.[7,20,21] This has now been found to impact on the brain and the nervous system, disrupting brain architecture and altering regulatory mechanisms (e.g. setting the stress response system on a "short fuse"). Maltreated children tend to have smaller prefrontal cortex volumes, deficits in cognitive functions and behavioural problems, with rapidly shifting attention and impulsiveness. This stress can have a secondary impact on the endocrine and immune systems, causing the development of glucocorticoid resistance and elevated levels of inflammation.

A number of recreational drugs, including alcohol, nicotine and cocaine, are neurotoxic to the developing foetus. Of these, alcohol produces the most devastating disruptions to early brain development, causing foetal alcohol spectrum disorder which can include reduced emotional control, hyperactivity and intellectual disability.

[20] Perry BD (2002) Childhood experience and the expression of genetic potential: what childhood neglect tells us about nature and nurture. Brain and Mind 3: 79100

[21] Danese A, McEwen BS (2011). Adverse childhood experiences, allostasis, allostatic load, and age-related disease. Physiol Behav.

5. How do these factors impact on the physical and mental health of adults?

The short term impacts of such adversities can be seen in a range of behavioural, health, cognitive and learning outcomes in children

Longer term impacts are seen in adults. The origin of many adult diseases are often found among developmental and biological disruptions occurring during the early years of life, starting from the time of conception, and which cause health problems which may not emerge until well into adulthood. [5]

As discussed in section 4, maternal health during pregnancy, and before conception, may be the origin of a number of conditions, such as coronary heart disease, stroke, diabetes, obesity and hypertension, as well as neurodevelopment problems, such as impairments in focused attention, learning, memory and self-regulation. [11]

Studies on people who suffered adverse experiences and chronic stress in childhood have shown that such children are more likely to have greater susceptibility to stress-related physical illness in adult life (such as cardiovascular disease, stroke, cancer and diabetes) as well as mental health problems (such as depression, anxiety disorders and substance abuse) and impaired immune and inflammation systems.[11,22,23] They are also more likely to exhibit health-damaging behaviours, such as cigarette smoking, sedentary lifestyle, poor diet, which undermine health and well-being over the life-course. The mechanism by which this occurs is presented in Figure 2.

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[22] Felitti VJ et al (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. American Journal of Preventive Medicine, 14(4); 245-58.
[23] Bellis MA, Lowey H, Leckenby N, Hughes K, Harrison D (2014). Adverse childhood experiences: retrospective study to determine their impact on adult health behaviours and health outcomes in a UK population. J Public Health 36(1):81-91.

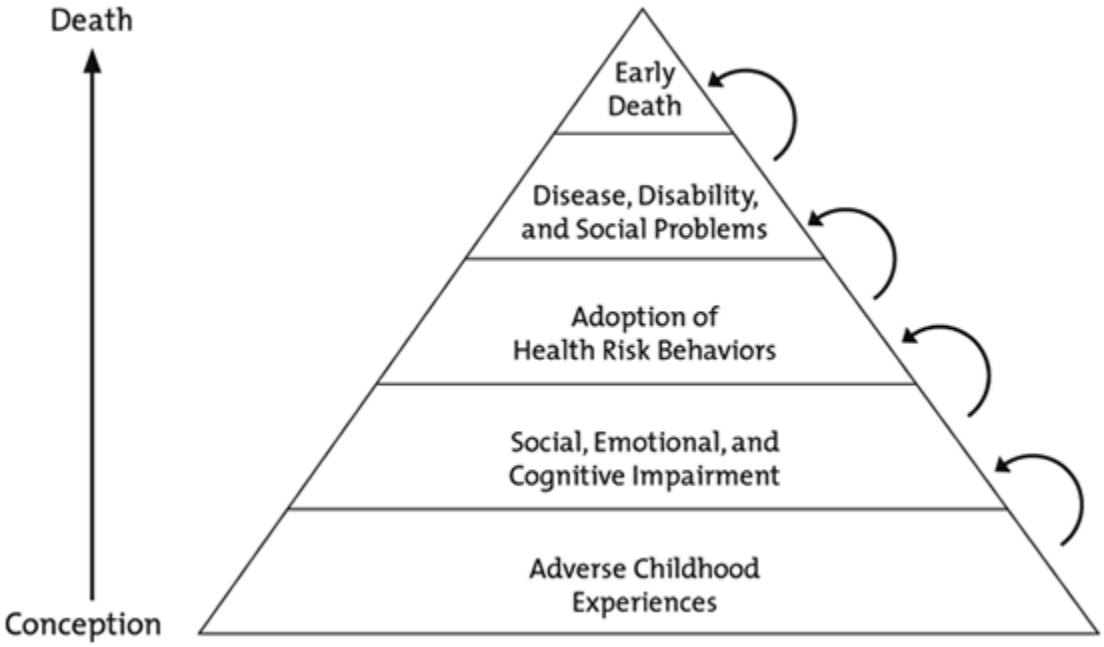


Figure 2: Mechanisms by which Adverse Childhood Experiences (ACEs) influence health

The adversities measured in these studies included: extreme poverty; emotional, physical and sexual abuse; neglect; severe maternal depression; family violence and parental separation or death.

While those who have suffered greater, and more prolonged, adversity are most impacted, this impact is spread across the population. In the original Adverse Childhood Experiences (ACE) study, which was carried out in a middle-class adult population in the US, more than half of respondents reported at least one category, and a quarter reported two or more categories, of childhood adverse exposures which, even at the lower levels of adversity, had a graded or 'dose-response' relationship to the presence of adult diseases and risk-factors for disease. [22]

Disadvantages in early childhood not only have a direct impact on health and well-being but also, because they affect children's cognitive functioning and on how prepared they are when they enter school, have an impact on their learning ability, their educational outcomes and on future earnings, all of which have an indirect influence on future health.

6. Costs to current services from chronic disease and health inequalities

The costs to the health services of managing chronic diseases are significant. The UK has estimated that eight of the top eleven causes of hospital admissions are due to chronic diseases and that the 5% of inpatients with a long-term condition account for 42% of all acute bed days.[24,25] In addition there are other societal costs, such as the loss of economic activity, cost of welfare payments and costs to the social care services

In England, the costs of health inequality, in human terms, has been estimated at between 1.3 and 2.5 million years of life lost and a further loss of 2.8 million years free of limiting illness or disability per year.[1] In economic terms (lost work productivity and taxes, excess welfare payments and additional health costs), the costs have been estimated at between £56 and £70 billion per year.

If the same studies are extrapolated directly to Ireland's population, the costs could be estimated to be at least 113,000 years of life lost, a loss of 243,600 years free of limiting illness or disability and economic costs of €6.5 - €8 billion per year.

A 2014 report in the UK estimated that perinatal mental health problems (with data mainly available only for depression, anxiety and psychosis) impose costs of around £10,000 for every single birth in the country, with costs of around £2,100 per birth falling on the public sector.[26] Nearly three-quarters (72%) of this cost relates to adverse impacts on the child. It is likely that these costs are an underestimate of the true costs of perinatal mental health problems.

In Ireland, the economic cost of health inequality could be €6.5 – €8 billion per year.

[24] Department of Health (2005) Supporting people with long-term conditions. An NHS and social care model to support local innovation and integration. London.
[25] Department of Health and Children (2008). Tackling Chronic Disease: A Policy Framework for the management of Chronic Disease. Dublin.
[26] Bauer A, Parsonage M, Knapp M, lemmi V, Adelaja B (2014) Costs of perinatal mental health problems. London School of Economics and Political Science, London, UK.

7. Making the economic argument for investing in early childhood

There is a long-running debate in the public arena about the need for us, as a society, to invest in our physical infrastructure, such as roads, schools, etc. What is less frequently discussed is the need for us to invest in our human infrastructure. There are a number of early childhood interventions aimed at child development, educational disadvantage and parenting which have been shown to be effective in improving child health and wellbeing, and consequently in improving adult health. It is now known that investment in such initiatives provides a greater rate of return than later interventions, with the most effective time for intervention being before birth and in early childhood.[1,5,27,28,29] See Figure 3.

Conversely, most developed countries spend proportionately more on children as they get older.[30] This is particularly the case in Ireland. See Figure 4.

[27] Heckman J and Masterov D (2007) The productivity argument for investing in young children. NBER Working Paper No. 13016.
[28] Carneiro P and Heckman J (2003) Human Capital Policy. National Bureau of Economic Research Working Paper 9495.
[29] Wave Trust (2013) The economics of early years' investment, Appendix 4 in Conception to age 2 – the age of opportunity report.
[30] OCED (2009) Doing Better for Children. Accessed at: http://www.oecd.org/els/family/doingbetterforchildren.htm

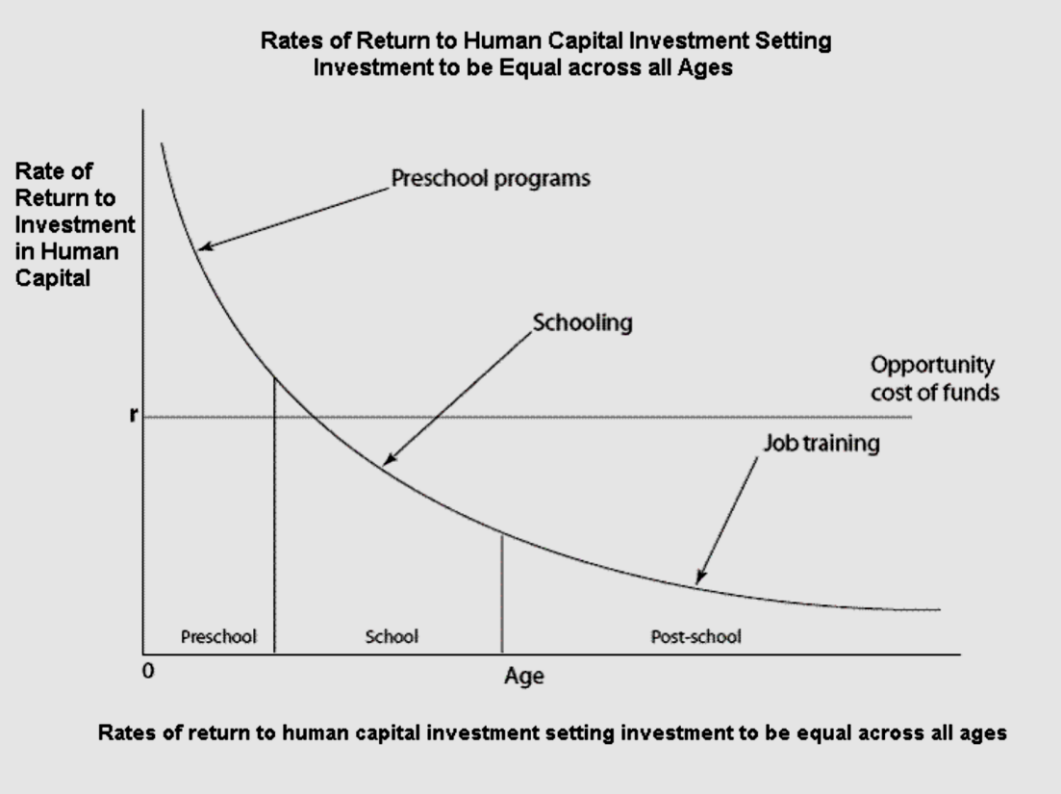
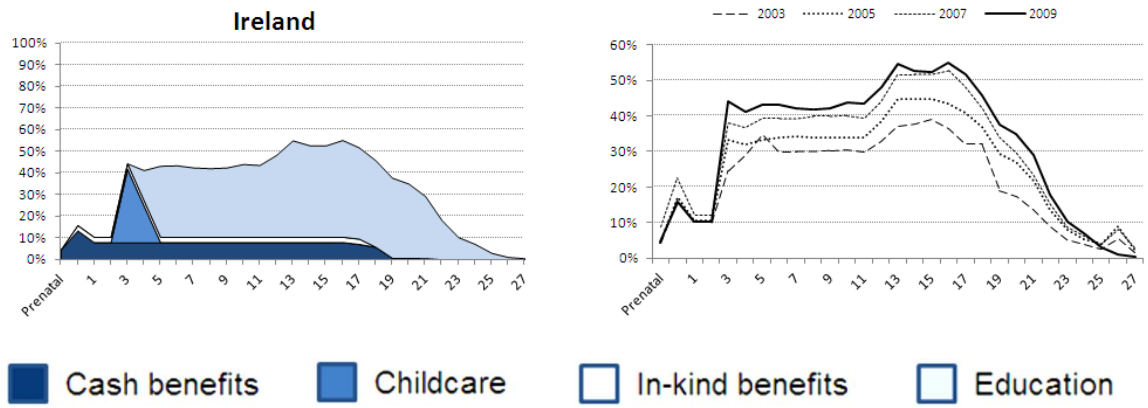


Figure 3: Rates of Return to Human Capital Investment

From: Carneiro and Heckman – Human Capital Policy



From: OECD: Doing Better for Children (2009)

Figure 4: Average and Yearly Proportion of Expenditure on Children and Young People by Year of Life and Benefit type, 2003-2009, Ireland.

The largest cost benefit ratios were found in programmes with longer-term follow-up because they allowed measurement of outcomes at older ages.[29] As most programmes measure outcomes in the shorter-term, the cost-benefit for most programmes is, therefore, likely to be conservative. Even from such conservative analyses, the rates of return on investment significantly exceed both their costs and stock market returns. An example is the Perry Preschool Program which has a rate of return on investment of 15% to 17% and a cost-benefit ratio of over eight to one.[31]

There is some evidence that spending on support services more consistently reduces income poverty in young families compared to cash benefits.[32] It seems that countries, such as Sweden and Norway, which adopt whole country approaches to investment in early years' services provision, have achieved better health and financial returns for the whole population across the lifespan.[29]

8. What health services interventions have been proven to impact on health and wellbeing in early childhood?

There are many policies and interventions outside the health arena which influence the world of young children, and their parents, families and communities. In particular, deep and persistent poverty, and policies which give rise to poverty, can have a hugely detrimental impact on children's health and wellbeing.

In this paper, however, the focus is particularly on interventions which can be delivered, developed or co-ordinated by the health service. Some of these interventions involve working with other statutory and voluntary agencies.

[31] Heckman J (2006). Skill formation and the economics of investing in disadvantaged children. Science; 312:1900-1902

[32] Richardson D. (2014) Social spending across the child's life cycle: International variation and its consequences. Presentation to conference: The long shadow of childhood adversity. ESRI, Dublin

There is a growing body of research, both nationally and internationally, on the effectiveness of a number of such interventions. [30,33,34,35,36,37,38,39]

Table 1 provides a synopsis of the type of early childhood interventions which have been shown to be effective. Other sources or reviews should be sought to identify the details of specific programmes or the effectiveness of programmes when implemented in different settings.

It seems that countries, such as Sweden and Norway, which adopt whole country approaches to investment in early years' services provision, have achieved better health and financial returns for the whole population across the lifespan.

[33] Karoly L, Kilburn M and Cannon J (2005) Early childhood interventions – Proven Results, Future Promise. Rand Corporation

[34] Devaney C, Canavan J, Landy F and Gillen A. (2013) What works in Family Support? Dublin: Child and Family Support Agency

[35] Rochford S, Doherty N, Owens S (2014) Prevention and Early Intervention in Children and Young People's Services: Ten years of Learning. Dublin: Centre for Effective Services.

[36] Siegenthaler E, Munder T, Egger M (2012) Effect of preventive interventions in mentally ill parents on the mental health of the offspring: systematic review and meta-analysis. J Am Acad Child Adolesc Psychiatry. 51(1):8-17.

[37] Aos S, Lieb R, Mayfield J, Miller M and Pennucci A (2004) Benefits and costs of prevention and early intervention programs for youth. Olympia: Washington State Institute for Public Policy.

[38] Allens Consulting Group (2008) The (draft) national framework for universal child and family health services. Australia

[39] Public Health England (2015). Rapid Review to Update Evidence for the Healthy Child Programme 0-5. Accessed at: https://www.gov.uk/government/publications/healthy-child-programme-rapid-review-to-update-evidence

Table 1: Types early childhood intervention programmes proven to be effective

Antenatal	**Home-visiting programmes, particularly for disadvantaged families** **Promotion of smoking cessation** **Improvement of maternal nutrition** **Promotion of breastfeeding** **Identification and support of mothers with mental health issues** **Maternal immunisation** **Promotion of parenting skills**
Post-natal and Early years	**Home-visiting programmes, particularly for disadvantaged families** **For services which include universal home-visiting programmes, needs assessment to identify those requiring more intensive interventions.** **Promotion of parenting skills** **Continuing the promotion of smoking cessation** **Identification and support of mothers and other primary care-givers with mental health issues** **Promotion of breastfeeding and infant nutrition, parent-child relationships, positive parenting, regular sleep patterns, injury prevention, oral health, SIDS, early literacy and reading** **Immunisation**
Pre-school	**Parent education programmes** **Quality early education interventions**

When cost effectiveness studies have been carried out, most such interventions have been found to be cost effective. In general, greater returns have been found for those interventions targeted at families which experience greater adversity.[1] Investment in early childhood services can break the inter-generational cycle of disadvantage.[29]

There is some evidence that programmes which provide elements of both universal and targeted interventions can have greater returns on investment than more targeted programmes but more and larger-scaled research is needed to further explore this finding.[40]

In general, the features of programmes which have been proven to be effective include those where:[5,30]

- There are smaller staff-to-child ratios
- Care-givers are better trained
- Programmes are appropriately intensive
- Programmes are sufficiently true to their evidence-base
- Support is provided during times of transition – e.g. first-time parents' transition to pre-school or primary-school.

As discussed earlier, at an individual level a secure attachment to a primary caregiver can assist a child's adaptive coping mechanisms against adversity. When, however, parenting is deficient, the presence of 'one good adult', who is a consistent positive role model or mentor, has been shown to promote resilience in children and to act as a buffer against the development of mental health difficulties.[41] However, much of the evidence on this topic relates to older children.

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[40] Washington State Institute for Public Policy (WSIPP) (2012). Return on Investment Evidence-Based Options to Improve Statewide Outcomes: April 2012 Update
[41] Morgan M, Rochford S and Sheehan A (2016) Adversity in Childhood – Outcomes, risk and resilience. Centre for Effective Services, Dublin

9. What are our health services doing now which impact on early childhood and where are the gaps?

The health and well-being of our children is not solely determined by what happens in the healthcare arena, but the health service has a unique and valued role in the provision of services for pregnant women, babies and the families of young children.

Antenatal health services are provided for all pregnant women by the maternity services and by their GPs. Where necessary, such services are linked to additional services required by some women, such as medical and mental health services.

However, the available time and expertise to properly screen and support vulnerable women has decreased as the numbers attending antenatal services have increased without a commensurate increase in staff resources. In some instances the links between the different healthcare service providers, including with post-natal service providers, and with non-healthcare service providers (such as social work, addiction or family support services), are less than optimal. Some services are not resourced or are poorly resourced, such as maternal immunisation services and perinatal mental health services, and indeed service providers can be unaware of the need to provide, or to refer to, such services.

Currently the care of mothers and babies in the post-natal period is mainly provided by the public health nursing service and by GPs. Community medical doctors provide a specialised development assessment service. Other more specialised services are also provided by paediatricians, allied health professionals (such as physiotherapists, speech and language and occupational health therapists) and psychologists. There is currently a review of the child health screening and surveillance service. This review will be recommending an updated programme, which will be called the Healthy Childhood Programme.

Healthcare professionals, most usually public health nurses and those involved in community development, social inclusion and disability services, are active in some communities, particularly in areas of disadvantage. In addition to delivering health services, such health professionals provide assessments of family needs and act as advocates on behalf of the child population. Where resourced, they have developed, supported or delivered family support services, such as parenting programmes, parent and toddler groups and home visiting services, where a local need has been identified.

However, the capacity to deliver on even the core child health screening and surveillance programme has been limited in recent years. The public health nursing service is squeezed between the demands of providing care in the community for an ageing population and

their responsibilities for child health. When resources are stretched, as has recently been the case, it is the preventive child health service which is compromised.

A number of specialised community nursing and community development posts have been eliminated, such as public health nurses for travellers and staff supporting family support services, with consequences, such as lower immunisation rates and a discontinuation of family support programmes, for those who are most vulnerable.

Within the child health services, care pathways are not always well defined and treatment capacity for the onward investigation and treatment of problems identified by screening and surveillance can be limited or patchy. Such problems are not limited to clinical issues but also include social and emotional problems identified within the child and family context. There is a particular deficit in infant and child mental health services. Capacity issues relate not only to medical, paramedical and mental health services but also to family and other support services, whether these are provided by the health services or by other service providers.

Training for staff providing such services, in particular those with most contact with young children (such as midwives and other antenatal service providers, public health nurses and community medical doctors, GPs and practice nurses), is patchy and an update of the training is long overdue.

'Healthy Childhood' is one of the six National Priority Programmes of the 'Healthy Ireland in the Health Services National Implementation Plan 2015-2017' and the corresponding Healthy Childhood Action Plan outlines the actions proposed to promote and improve child health and wellbeing. However, progress in the implementation of these actions has been slow. The publication of the National Maternity Strategy 2016-2026 is a welcome development but implementation has yet to commence.

10. Conclusion

This paper brings together the most recent research on the impact of early childhood on future health. It presents evidence on the role that the health sector might have in providing cost-effective programmes and services for children and their families.

The Faculty outlines five key actions that it feels would strengthen the role of the health services in the lives of children. It advocates for additional and ring-fenced resources to support child health and wellbeing and calls for continued health service involvement in efforts across sectors to provide a multi-agency, coordinated response to support children and their families and communities.

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