

Child health matters: A life course perspective

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High-income countries have seen a steady decline in adult morbidity and mortality caused by infectious diseases and a rise in obesity and non-communicable diseases (NCDs) such as cardiovascular disease, diabetes and cancer.¹ In sub-Saharan Africa, infectious diseases still dominate, but a recent study has shown a significant increase in the overall disease burden caused by NCDs between 1990 and 2017. The authors hypothesised that within the next decade, NCDs will surpass communicable, maternal, neonatal, and nutritional diseases as the leading cause of ill-health and death in sub-Saharan Africa.² The implications of these findings are profound as the health systems in most sub-Saharan countries are buckling under the current strain of infectious diseases, and will be severely overburdened by a growing epidemic of NCDs.

Obesity and NCDs in low- or middle-income countries are typically attributed to a combination of structural determinants (such as poverty, living environments and the marketing and availability of fast food) and lifestyle patterns (including greater consumption of energy-dense but micronutrient-poor diets, less exercise and sleep, more sedentary behaviour, and the use of alcohol and tobacco).³ However, there is substantial evidence to suggest that early life nutrition and experiences play a pivotal role in the progression towards adult NCDs.

Indeed, it is the interaction between socio-environmental cues and our biology in the earlier years that shapes our health across the life course. In other words, child health and development matters – not only so they survive and thrive in the short term – but because it significantly impacts long-term health, human capital, and the health and well-being of future generations. Investing in optimal child health has the potential to prevent obesity and NCDs; optimise cognitive development, educational and economic attainment; and yield a triple dividend: benefits now, benefits for future health, and benefits for the next generation's health and development.

This chapter will address the following questions:

- Why is it important to adopt a life course approach for child health?
- What are the key features of the Life Course Health and Development Framework for child and adolescent health?
- What are the implications for child and adolescent health?

Why is it important to adopt a life course approach for child health?

Discoveries in science and medicine during the nineteenth century propelled a greater academic interest in maternal and child health – from preterm birth, low-birth weight, acute and chronic undernutrition and linear growth failure, to the HIV epidemic and childhood obesity. Towards the end of the 1980s, a new and rapidly converging set of ideas and research results, initially dubbed the “foetal origins of health and disease,” began to foreground the links between maternal nutrition during pregnancy and the development of adult disease in the offspring.

The Barker hypothesis proposed that adult NCDs, such as cardiovascular disease and type 2 diabetes, are triggered by foetal undernutrition (itself a result of poor maternal nutrition and/or illness). This leads to genetic changes that may enable the foetus to survive in the short term but increases the risk of adult disease.⁴ A substantial body of both animal and human studies have shed light on the Developmental Origins of Health and Disease (DOHaD) and illustrated how the development of physiological systems and organs during the first 1,000 days of life are influenced by the interplay of environmental and genetic elements during this critical window of development and beyond. This “biological programming” determines an individual's biological trajectory and sets the limits for their long-term health – with evidence now connecting the dots between child health and healthy aging.⁵

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Birth cohorts (such as South Africa’s Birth to Twenty Plus cohort) and other prospective longitudinal population studies have improved our understanding of patterns of health and disease cross the life course including the epidemic of childhood obesity, which has demonstrated how rapid or excessive weight gain in childhood can significantly contribute to the risk of adult NCDs.⁶ Data from the Birth to Twenty Plus cohort highlighted that, by early adulthood, over 40% of young women are either overweight or obese,⁷ and that if a girl was obese by age five years, she is 45 times more likely to be an obese adult.⁸ Furthermore, low birthweight was associated with a 10% greater risk of adult impaired fasting glucose (a precursor to diabetes), and excessive weight gain during the period age four years to the end of adolescence had a 32% greater risk of impaired fasting glucose.⁹

The pattern of obesity is not unique to South Africa and is found more and more in other low- or middle-income countries. Research from the Young Lives Peru cohort showed different rates of overweight or obesity in younger and older cohorts (born eight years apart) with rates of overweight or obesity greater in the younger cohort who have grown up in poverty and were exposed to dietary patterns that are associated with obesity (obesogenic foods).¹⁰

A life course framework also underscores intergenerational susceptibility to obesity and NCDs. A startling recent meta-analysis has demonstrated that, if a mother is obese prior to conceiving a baby, then her child has almost three times greater risk of being obese.¹¹ Consequently, there is a growing appreciation that a life course framework can assist us to not only understand the origins of NCDs but, more importantly, identify opportunities for prevention.

What are the key features of the Life Course Health and Development Framework?

Life course approaches have their origins in the sociological literature, for example, Elder’s studies on the development of children affected by the Great Depression in America in the 1930s. The central thesis of this approach is that “the life course of individuals is embedded in and shaped by the historical times and places they experience over their lifetime”, and that “the developmental impact of a succession of life transitions or events is contingent on when they occur in a person’s life”.¹² Life span approaches are complementary, focusing on the study of individual development from conception through to old age.¹³

The Life Course Health and Development Framework (LCHDF) brings both these approaches into focus with the biopsychosocial model. The framework is particularly useful

for child and adolescent science as it recognises the complex, dynamic interaction between our biology (our genes, systems and organs) and environmental cues (our nutrition, physical and social environment) as illustrated in Figure 21. Indeed, it is this interaction that shapes our health and development trajectories – starting early, even before we are born, and extending across our life and those of our children.¹⁴

The Life Course and Health Development Model (Figure 22) draws on the World Health Organization’s (WHO) Life Course Model and the Life Course Health and Development Framework¹⁵ to illustrate the interaction between the environment and biology especially during key periods of plasticity that set up health and development trajectories.

Key concepts in the Life Course Health and Development Framework include: (i) plasticity, (ii) latent, pathway and cumulative effects, (iii) timing, and (iv) environment.

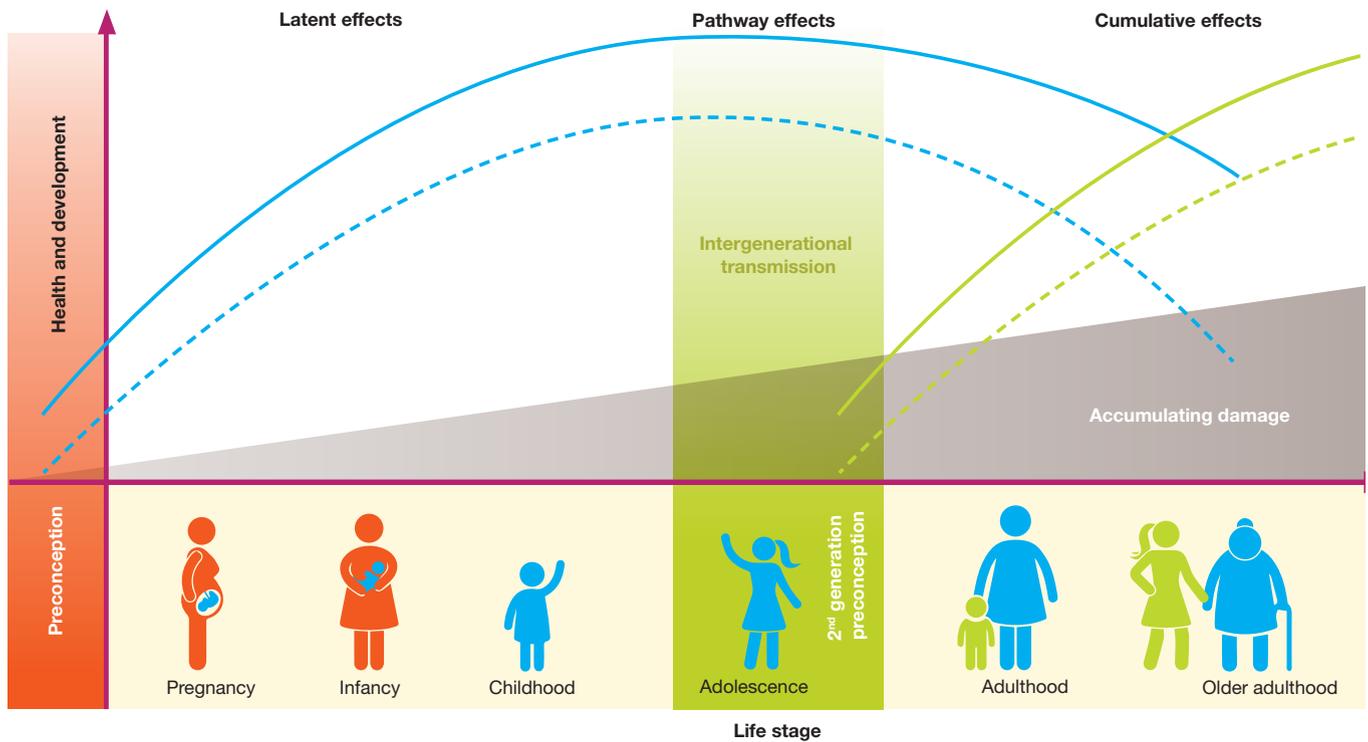
Plasticity

The genes that we inherit from our parents serve as a “blueprint” that guides our biological development. This genetic code is fixed, but how some genes are switched on and off is not. Instead the human body, brain, and behaviour

Figure 21: Health and development: A complex interplay between biology and environment



Figure 22: Life Course and Health Development Model



are “plastic” and able to change and adapt to environmental constraints and opportunities. This is particularly true in the early years of development. This epigenetic response to cues alters the way in which our genes and traits are expressed (switched on) and lays down pathways in the body and brain that can become increasingly hardwired and difficult to change as we age. In this way, life experiences become biologically embedded and shape our future health, behaviour and temperament.

An excellent illustration of this in nature is found in the honey bee. If a bee larva is fed honey, by default its ovary genes are methylated (switched off) and a worker bee emerges that cannot reproduce. But when a bee larva is fed royal jelly its chemical composition triggers the epigenetic switches, the ovary genes are switched on, and a queen bee emerges that is able to lay eggs. The framework recognises biological plasticity as a key mechanism in health and development.

Latent, cumulative and pathway effects

Across our lives, we accumulate biological damage as we age. Exposures that occur early in life are considered latent effects as they often precede pathway and cumulative effects, and influence later developmental stages. Other effects are cumulative, for example, prolonged, severe or repeated exposures to stress result in biological damage that accumulates over time and across developmental stages

and manifests later as disease. Pathway effects describe the way in which our biology or behaviour is influenced by specific pathways, for example adolescence is seen as part of the biological pathway towards adult-attained height and reproduction. These effects are interlinked so that poor infant nutrition (a latent effect) may undermine cognitive development in childhood (a pathway effect) that impacts human capital in adulthood (a cumulative effect).

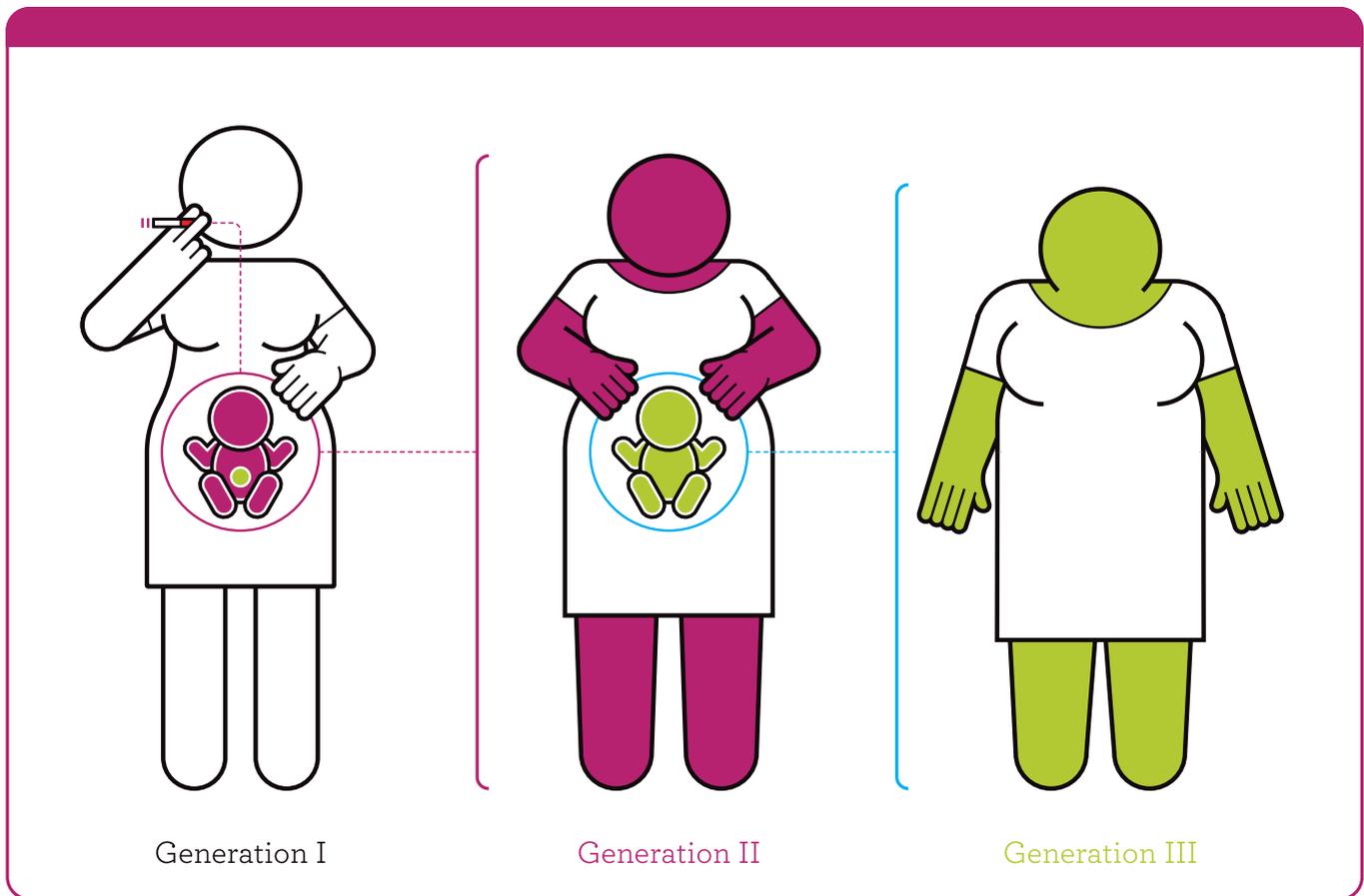
Timing

Certain stages of development – such as the first 1,000 days and adolescence – are particularly plastic and sensitive, and environmental exposures during these periods may have a stronger and potentially lifelong effect on structure and functioning. The framework highlights the intergenerational transmission of health and disease that that starts early – even preconception. For example, a mother’s tobacco use during pregnancy impacts not only the growing foetus, but also her unborn daughter’s reproductive cells that are laid down during foetal development and this has persisting health consequences across three generations, as illustrated in Figure 23.

Environment

Context is key. The environments in which infants and children live, play and learn, together with their relationships with family, teachers and peers, exert a powerful influence on

Figure 23: The intergenerational impact of smoking



Source: Shaw J (2017) Is epigenetics inherited? *Harvard Magazine*, May/June 2017. Viewed 10 October 2019: <https://harvardmagazine.com/2017/05/is-epigenetics-inherited>. Illustration by: Jude Buffum. Reproduced with permission from Jude Buffum.

their health and development. For example, the developing brain is highly sensitive and susceptible to adversity, which is linked to children's cognitive and emotional functioning and impacts outcomes such as school readiness, academic performance, and long-term mental health.¹⁶

What are the implications of the Life Course Health and Development Framework for child and adolescent health?

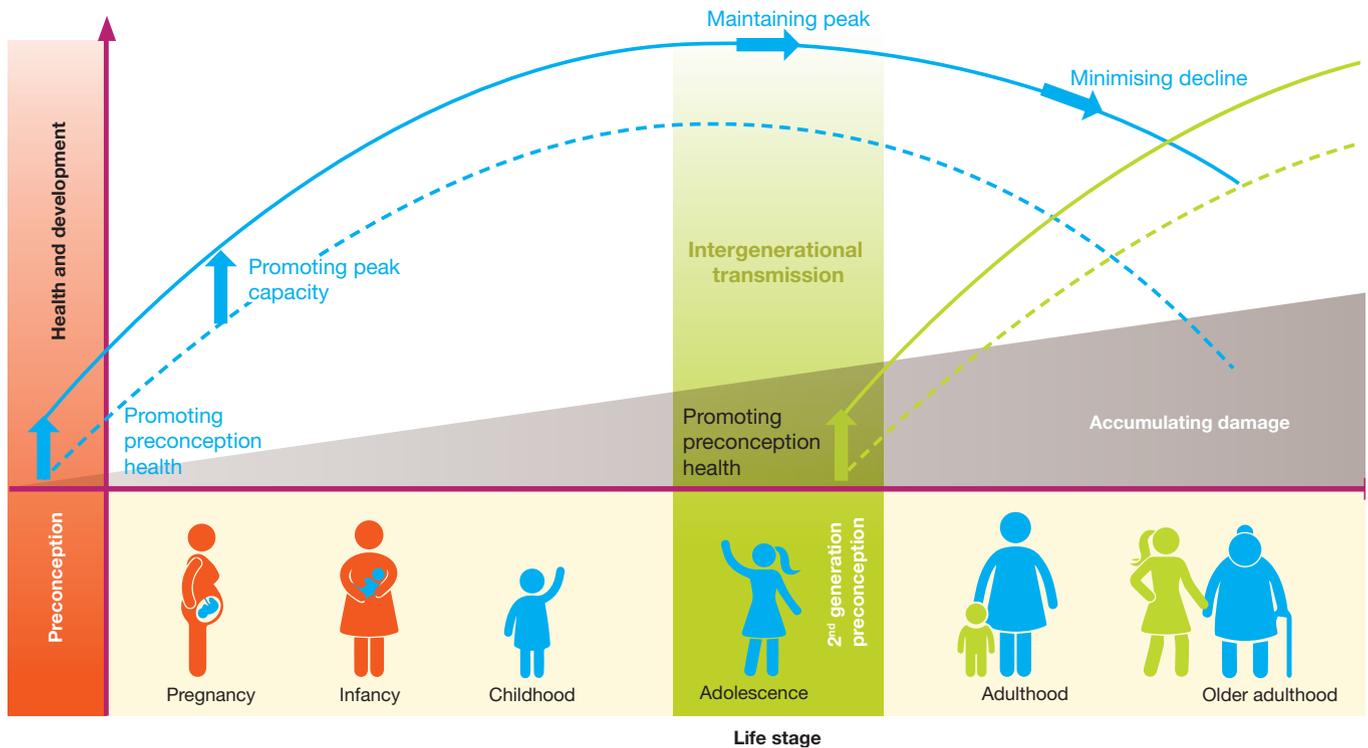
The framework provides us with a powerful lens to identify opportunities for public health interventions and policies that can optimise life course trajectories (see Figure 24). We can minimise the risk of disease (accumulative damage) and promote a healthier life course trajectory by optimising parental preconception health, promoting peak biological capacity during childhood and adolescence (for example, growth, cognitive potential and body composition), maintaining this peak capacity during mid-adulthood, and minimising the decline in older adults (for example, by maintaining healthy bone mineral density and muscle mass). This framework highlights the profound impact of

investments in children's development during the first 1,000 days of life and adolescence. Positive choices made during these sensitive periods of development can help firm up a strong foundation that will shape children's health and development trajectories across the life course, and those of their children.

Preconception: Promoting health before pregnancy

There is increasing evidence that the preconception period is an opportunity to prevent future health risk to both parents and their children.¹⁷ Optimising health (healthy weight, normal blood pressure and glucose concentrations, and adequate iron stores) and promoting healthier habits (sufficient sleep, increased physical activity and reduced sedentary behaviour) in men and women prior to conception may promote the healthy development of the foetus during pregnancy and beyond.¹⁸ The International Federation of Gynecology and Obstetrics has made strong calls for measures and interventions globally to improve nutrition education and access for women of reproductive age to assist with planning and preparation for healthy pregnancies.¹⁹

Figure 24: Intervention strategies across the life course



Pregnancy: Laying down a healthy foundation

One in three women of childbearing age in urban Soweto is obese at first presentation at the antenatal clinic, and 10% have gestational diabetesⁱ (GDM).²⁰ This type of diabetes is not universally screened for in South Africa and there is therefore concern that a significant proportion of these GDM pregnancies may go undiagnosed and untreated. The consequences of a GDM pregnancy are substantial as it accelerates progression to diabetes in women (45% of women who had a GDM pregnancy in South Africa were diabetic within five years)²¹ and children born of GDM pregnancies are likely to be more obese.²² Keeping blood sugar levels within a normal range during pregnancy can help reduce the risk of “transmitting” both obesity and diabetes to the child.

Poor maternal nutrition during pregnancy impacts on the development of the foetus, reducing the number of nephrons responsible for filtering blood in the kidneys, which then increases the offspring’s risk for hypertension and chronic kidney disease in later life.²³ Therefore, it is essential to lay down a healthy foundation during pregnancy through early and regular access to antenatal care services (including digital health services such as MomConnect²⁴) and to address signs of malnutrition, domestic violence, substance abuse and maternal depression.

Childhood: Establishing healthy trajectories

Cognitive capacity established in the early years of life forms the foundation for school readiness and academic skills, which are essential for positive educational outcomes. When a child experiences toxic stress – such as frequent and/or prolonged adversity such as physical or emotional abuse, chronic neglect, caregiver substance abuse or mental illness, exposure to violence, and/or the accumulated burdens of family economic hardship – it can derail healthy childhood health and development trajectories. Fostering a stable and secure environment is an effective way to mitigate the impact of toxic stress on children.

The Nurturing Care Framework aims to support stable and responsive home environments.²⁵ This framework, endorsed by WHO, provides clear guidance for public policies, programmes and services; and includes a focus on good health, safety and security, responsive caregiving, adequate nutrition, stimulation (including play), and early learning. The framework has a particular focus on empowering parents and caregivers to respond attentively to young children’s efforts to explore and interact with the world around them. The Nurturing Care Framework has been integrated into South Africa’s new Road to Health Book and accompanying Side-by-Side campaign (see Chapter 3). Ensuring early access to

ⁱ Gestational diabetes is characterised by elevated glucose or blood sugar levels first identified during pregnancy.

Case 1: The South African 24-hour movement guidelines for birth to five years

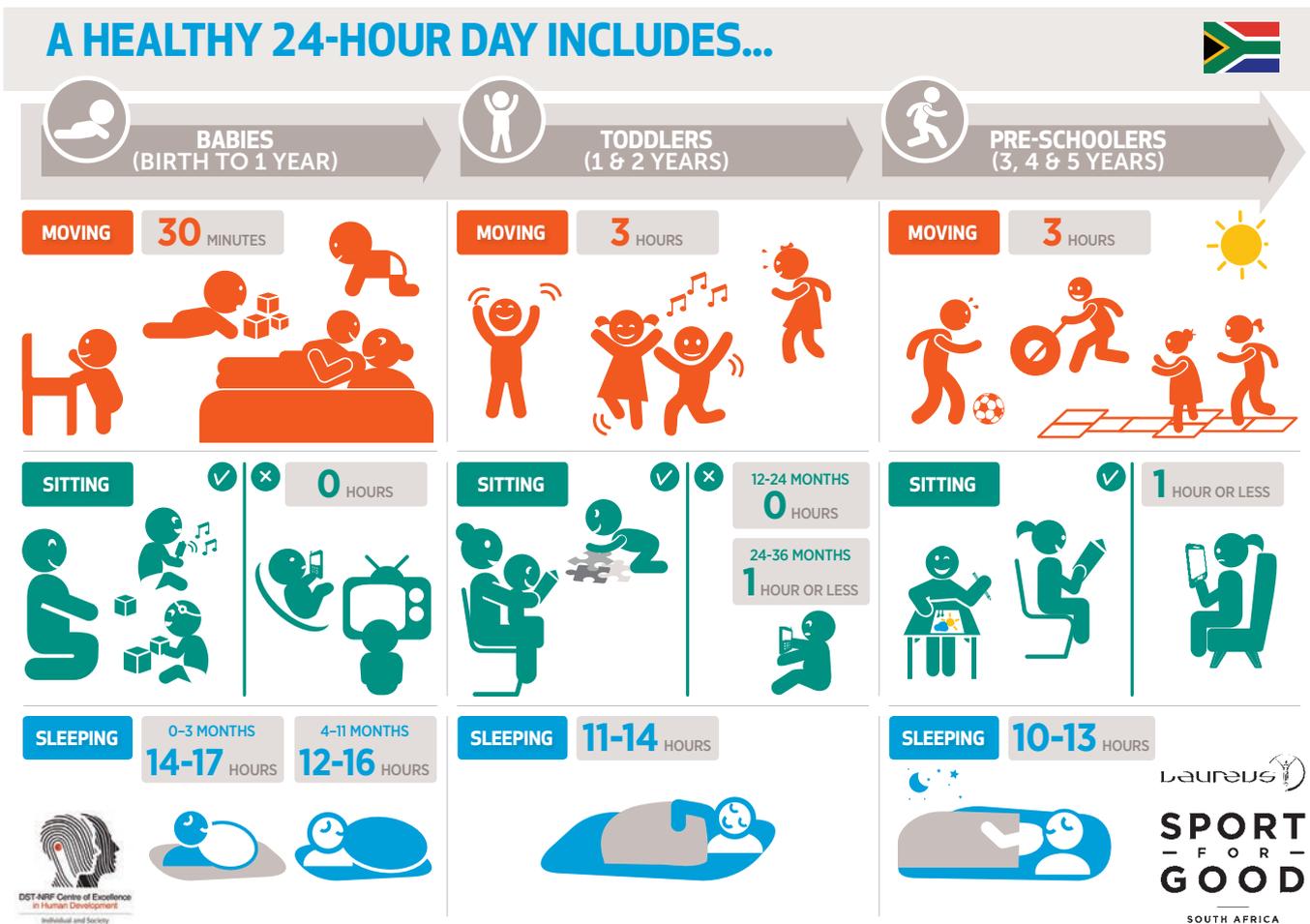
These guidelines outline how much time infants and young children should spend moving, sitting and sleeping each day and aim to help parents, caregivers and early childhood practitioners to structure a healthy 24-hour day for young children (see Figure 25).

These guidelines do not focus on just one specific behaviour or age group, but rather provide a coherent set of recommendations that apply to various key stages of the life course. The recommendations are consistent with the WHO 24-hour Movement Guidelines and are based on the best available local and international evidence, expert consensus, stakeholder consultation and consideration of

what is regarded to be important, applicable, feasible and equitable across all South African contexts.²⁶

These guidelines have been developed in response to research that has shown how these movement behaviours are linked to healthy growth and physical development, as well as cognitive, social and emotional development in children from birth to five years. Children who are supported to meet these movement guidelines are likely to grow up healthier, fitter and stronger. They may also have better motor skill abilities, be more prepared for school, manage their feelings better, and enjoy life more.

Figure 25: South African 24-hour movement guidelines: Infancy and early childhood



social support, such as the Child Support Grant, and timeous receipt and effective use of the Road to Health Book can help ensure the healthy growth and development of young children. During this stage of the life course, healthy habits also begin to form. This includes dietary preferences, as well

as movement behaviours including physical activity, sedentary (sitting) behaviour, screen time and sleep. A healthy balance of these activities is needed to promote the physical health, well-being and cognitive development of young children (see Case 1). The earlier healthy routines are established the

better, since these behaviours track through to adolescence and adulthood. When children achieve the optimal balance of these behaviours, there is a greater chance that they grow up fitter, healthier, stronger and better prepared for school.

Adolescence: Promoting peak capacity

Adolescence is a critical developmental phase for achieving human potential as this is when the physical, psychological, behavioural, social and economic foundations of adulthood are consolidated. Brain development and new cognitive abilities, such as complex abstract thinking, lead to shifts in adolescents' identity and relationships with their families, peers and communities. Adolescence also entrenches health behaviours (both positive and negative) that can affect health and well-being in later life.²⁷ The Harvard Growth Study of 1922 – 1935 was a landmark study that demonstrated persisting consequences of adolescent health.²⁸ In particular, adolescent malnutrition (being either overweight or obese) had long-lasting effects and was associated with an increased risk of mortality among men, and greater risk of cardiovascular disease in both men and women.

The adolescent health profile in sub-Saharan Africa is dismal – infectious diseases, such as HIV and tuberculosis, and pregnancy complications are prominent causes of morbidity and mortality; the risks for NCDs are rising rapidly; and mental, neurological, and substance use disorders peak during this period.²⁹ Adolescents in South Africa are the only population group who have not seen a decline in new infections of HIV. Rates of conduct disorders (11.9%) – characterised by aggressive, destructive or deceitful behaviour – are almost double than those in the United Kingdom and violent and antisocial behaviour is common (20%) in the adolescent years. One in seven new HIV infections occur during adolescence; up to half of sexual assaults are committed against girls younger than age 16; and perpetrating, or being a victim of violence, peaks at ages 14 – 19 years. More than 50% of adult psychiatric disorders have their onset in adolescence and up to a third of suicide attempts involve adolescents.³⁰

Longitudinal data from the Birth to Twenty Plus cohort showed a rising prevalence of obesity, particularly in girls. By the end of adolescence, 10% of females and 4% of males are obese, and the prevalence in females then nearly doubles in early adulthood. South Africa has the most obese adolescent

population in sub-Saharan Africa, exceeding the obesity prevalence in Europe, and approaching levels described in the United States. With no clear prevention, management and treatment plan in the public health sector, adolescent and childhood obesity is often neglected.

Initiatives such as the WHO Global Accelerated Action for the Health of Adolescents (AA-HA!)³¹ aim to place adolescent health at the forefront of health-care policy in order to: (i) effectively deal with the health needs of young people; (ii) boost the impact of early interventions in childhood; and (iii) optimise adolescents' health trajectories and those of their future offspring.

Catalano and colleagues argue that there needs to be greater investment in prevention strategies in order to reduce the burden of adolescent mortality and morbidity.³² AA-HA identifies 75 evidence-based health interventions designed to promote positive development and address unintentional injury, violence, sexual and reproductive health, communicable and NCDs, mental health, substance use and self-harm.

There is no one-size-fits-all prevention package to optimise adolescent well-being, and most governments face significant resource constraints. Therefore, governments should: (i) commit to prioritising adolescent health; (ii) conduct a needs assessment and landscape analysis; (iii) engage with multiple stakeholders, including adolescents, to set priorities; and (iv) implement pragmatic, evidence-based solutions.

Conclusion

The Life Course Health and Development Framework and DOHaD science have illustrated how the health of the elderly is connected to the health of the young. Perhaps the most important insight arising out of the life course approach is the need to treat health and development as a long-term investment. Instead of simply treating the consequences of biological damage that has accumulated in old age, it makes economic sense to promote health from the beginning of life in order to improve health and development and reduce the cost of treating NCDs. Greater commitment to and investment in child and adolescent health are urgently needed.

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The first 1,000 days: Ensuring mothers and young children thrive

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As child mortality declines, child health policymakers and practitioners have the opportunity and obligation to focus not only on child survival, but on ensuring that all children also thrive and reach their full developmental potential. The first 1,000 days of life – from conception until a child’s second birthday – is increasingly recognised as a unique period of opportunity when the foundations for optimum health and development across the lifespan are established. The benefits of interventions during this critical period of development are therefore amplified with the highest long-term return on investment¹ (see Box 5).

The chapter focuses on the following issues:

- What are South Africa’s global and national commitments regarding the first 1,000 days?
- What are the key interventions that need to be delivered?
- Is South Africa making progress in delivering key interventions, and in improving outcomes for young children?

- What must the health sector do differently to help young children thrive?

What are South Africa’s global and national commitments?

The Sustainable Development Goals provide the basis for achieving equity, prosperity and sustainable growth, and the SDGs and targets outline the environment and services which young children require to ensure that they reach their full potential, and that “no child is left behind”.² Many of the SDG targets will not be achieved without investment and improvements in early childhood development, whilst the Global Strategy for Women’s, Adolescent’s and Children’s Health uses the “Survive, Thrive and Transform” concept as a key strategy for achieving the SDG targets that support children’s health and optimal development.³

In South Africa, the National Integrated Early Childhood Development (ECD) Policy, adopted by Cabinet in 2015, lays

Box 5: Why focus on the first 1,000 days?

The increased focus on the first 1,000 days is based on improved understanding in a number of fields including neuroscience, infant mental health, epidemiology, economics and violence prevention.

The relationship and causal links between adversity during early childhood and lifelong health, emotional and social well-being and educational outcomes are better understood. Nutrition during the first 1,000 days affects not only a child’s growth, cognition and subsequent school attainment,⁴ but also impacts on lifelong risk of developing chronic disease. Extreme poverty increases children’s likelihood of exposure to multiple adversities, including family stress, child abuse and neglect, food insecurity, and exposure to violence. Early intervention has the potential to decrease inequality and interrupt intergenerational cycles of poverty, although this will only be realised if interventions are specifically targeted at the most vulnerable children.⁵

The importance of relationships and warm interactions between caregivers and young children has also been recognised. These interactions create an emotional bond which helps young children to understand and explore the world around them and to learn about people, relationships and language. Neuroscientific evidence shows how responsive care during early childhood lowers the detrimental effects of low socio-economic status on brain development and helps children cope with the effects of adversity and toxic stress.⁶

These advances in basic and intervention science indicate that early childhood is a period of special sensitivity to experiences that promote development, and that critical time windows exist when the benefits of ECD interventions are amplified. Interventions in early childhood are therefore most cost effective and have the highest long-term return on investment.⁷

^a National Department of Health and School of Health Systems and Public Health, University of Pretoria

out a similar multi-sectoral approach to promoting the health, nutrition, development and well-being of mothers and young children.⁸ The policy, recognises of the health sector's role in reaching pregnant mothers and young children, assigns key responsibility for service provision to children 0 – 2 years to the health sector. In addition to the health sector's traditional role of providing health and nutrition programmes for pregnant women, infants and children, the policy assigns additional roles to the health sector including provision of parenting support programmes and increasing opportunities for learning and play for children from birth to two years through health facilities and home visits by community health workers for children at risk of poor development outcomes.

However, translating these global and national commitments into changes in how frontline health services are designed and delivered remains a challenge, especially as the health sector has historically focused on primarily providing a package of maternal and child survival services, frequently delivered as vertical programmes. Caring for young children (0 – 2 years) and issues related to development and learning

have been left to families.⁹ In addition, whilst the ECD policy provides a comprehensive blueprint for improving the lives of young children in South Africa, ECD is still largely understood in the South African context to be about centre-based early child care and education programmes for children 3 – 5 years of age. Whilst such programmes are likely to improve school readiness, they will not achieve their full potential unless complemented by a focus on the first 1,000 days.

What are the key interventions that need to be delivered during the first 1,000 days?

Two important documents which can assist countries to re-orientate their health systems towards a more comprehensive understanding of ECD were published in 2018. The Nurturing Care Framework¹⁰ provides a framework for a comprehensive package of services and support for early childhood development, whilst the second, the country ECD Countdown Country Profiles,¹¹ provide a basis for measuring progress over time and comparing progress between and within countries.

Box 6: Key components of nurturing care

1. Good health

Young children's good health is the result of caregivers:

- monitoring children's physical and emotional condition;
- giving affectionate and appropriate responses to children's daily needs;
- protecting young children from household and environmental dangers;
- having hygiene practices which minimise infections;
- using promotive and preventive health services; and
- seeking care and appropriate treatment for children's illnesses.

2. Adequate nutrition

- The mother's nutrition during pregnancy affects her health and well-being, as well as the developing child's nutrition and growth.
- All mothers should be supported to breastfeed exclusively from immediately after birth until the child is six months old.
- From the age of six months, young children need complementary foods that are frequent and diverse enough, and which contain the micronutrients they need for the rapid growth of their body and brain.
- When children's daily diet fails to support healthy

growth, they need micronutrient supplements or treatment for malnutrition (including obesity).

- Food safety and family food security are essential for adequate nutrition.

3. Responsive caregiving

Responsive caregiving includes observing and responding to children's movements, sounds and gestures, verbal requests and emotional needs. It is the basis for:

- building trust and social relationships;
- protecting children against injury and the negative effects of adversity;
- recognising and responding to illness; and
- enriched learning.

4. Opportunities for early learning

Children need:

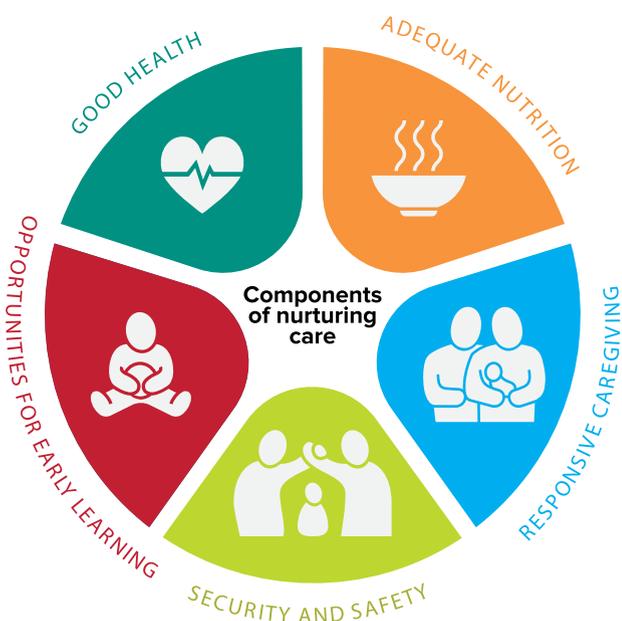
- affectionate and secure caregiving from adults; and
- opportunities to play.

5. Security and safety

Children need:

- to live in safe environments; and
- to be protected from abuse and harsh punishment.

Figure 26: The five components of nurturing care



These two documents provide a useful lens for considering how the South African health sector has, and should, respond to the imperative to use the first 1,000 days as a platform to ensure that children not only survive, but thrive.

The Nurturing Care Framework

The Nurturing Care Framework, which was launched at the 71st World Health Assembly in 2018, is an important step in translating the concepts associated with the first 1,000 days into action, especially within the health arena.¹² The framework identifies five key components that young

children require to thrive: good health, adequate nutrition, to be cared for responsively and with love, to be given opportunities to satisfy their innate capacity to learn, and to be safe and secure (see Box 6). Nurturing care is provided by parents and caregivers who, in turn, require a facilitating environment of supportive policies and services.

The Nurturing Care Framework also identifies the role of different sectors in providing nurturing care (see Box 7) and a number of key strategies or requirements for successful implementation. These are leadership and investment; a focus on families and communities; strengthening of services; monitoring progress; and using data to innovate.¹³

ECD Countdown Country Profiles

The ECD Countdown Country Profiles¹⁴ represent an important first step in reaching consensus on the best indicators for tracking progress and addressing poor outcomes for young children. The profiles also allow for countries to benchmark themselves and to measure progress over time.

Each country profile provides information on two key areas, namely threats to children’s health, nutrition and development outcomes; and support and services for ECD. The latter is further divided into two sections – the first focuses on the extent to which services outlined in the Nurturing Care Framework are provided, and the second on the extent to which a policy environment that facilitates ECD is in place.

It should be noted that population-level indicators related to responsive caregiving and early learning are often lacking

Box 7: Role of health, education and social sectors in promoting nurturing care

Role of the health sector

- Ensure women and young children have access to good-quality health and nutrition services.
- Make health and nutrition services more supportive of nurturing care.
- Increase outreach to families and children with the greatest risk of suboptimal outcomes.
- Establish specialised services for families and children with developmental difficulties and disabilities.
- Collaborate with other sectors to ensure a continuum of care.

Role of the social and child protection sectors

- Guarantee citizenship for every child.
- Shield families and children from poverty.

- Link benefits to services that support nurturing care.
- Ensure there is a continuum of care.
- Protect children from maltreatment, violence and family break-up.

Role of the education sector

- Reinforce the fact that education begins at birth.
- Ensure good health practices and hygiene in early childhood programmes.
- Put family engagement at the core of early childhood programmes.
- Integrate children who have additional needs and reach out to the most vulnerable.
- Invest in education for adolescents and adults.

and/or poorly standardised – this reflects the low importance assigned to these areas within and outside of the health sector.

Is South Africa making progress in delivering key interventions and improving outcomes for young children?

Progress in South Africa, based on data from the ECD Countdown Country Profile and other sources, is shown in Table 7. Wherever possible, population-based data using

standardised global indicators are presented, but where these are not available or do not sufficiently address the South African context, local data are presented. Indicators used in the 2013 *South African Child Gauge* to assess progress in ECD service delivery are also included to allow for comparison over time. Likewise, where possible, information on children 0 – 2 years is presented; however, where age disaggregation is not available for key indicators, data on children 0 – 5 years (and in some cases 0 – 18 years) are presented.

Table 7: Status of young children and threats to optimal early childhood development

Indicator	Baseline	Most-recent estimate
Proportion of young children at risk of poor development ¹	52% (2005)	38% (2015)
Maternal mortality ratio ²	200 per 100,000 live births (2011)	134 per 100,000 live births (2016)
Neonatal mortality rate ¹	13 per 1,000 live births (2011)	12 per 1,000 live births (2017)
Infant mortality rate ²	28 per 1,000 live births (2011)	23 per 1,000 live births (2017)
Proportion of births with birthweight < 2.5 kg ³	13.1% (2012)	12.9% (2018)
Number of children living in extreme poverty ⁱ (< \$1.90 per person per day) ⁴	9.3 million (2003)	4.3 million (2017)
Number of children living in poverty ⁱⁱ (< R1,183 per person per month in 2018) ⁴	14.1 million (2003)	12.8 million (2017)
Proportion of children under five years who are stunted ⁱⁱⁱ	27% ⁵ (2003)	27% ⁶ (2016)
Number of children 0 – 15 years with HIV infection ⁷	429,140 (2012)	312,133 (2018)
Proportion of young children who experience harsh punishment	No data available	No data available ^{iv}
Inadequate supervision of children	No data available	0.1% of children 1 – 4 years were left in the care of a person younger than 18 ⁹

Sources:

- 1 Richter LM, Black M, Britto P, Daelmans B, Devercelli A, Dua T, Fink G, Heymann J, Lombardi J, McCoy D & Vargas-Baron E (2018) *Thrive: Nurturing care for early childhood development. country profiles for early childhood development*. Johannesburg: University of the Witwatersrand.
- 2 Dorrington R, Bradshaw D, Laubscher R & Nannan N (2019) *Rapid Mortality Surveillance Report 2018*. Cape Town: South African Medical Research Council.
- 3 Department of Health (2019) District Health Information System data. Viewed: 11 June 2019: <https://za.dhis.dhmis.org/>
- 4 Hall K & Sambu W (2018) Income poverty, unemployment and social grants. In: Hall K, Richter L, Mokomane Z & Lake L (eds) *South African Child Gauge 2018*. Cape Town: Children's Institute, UCT.
- 5 Department of Health, Medical Research Council & OrcMacro (2007) *South Africa Demographic & Health Survey 2003*. Pretoria: DoH.
- 6 Department of Health, Statistics South Africa, South Africa Medical Research Council and ICF (2017) *South Africa Demographic & Health Survey 2016 Report*. Pretoria: DoH.
- 7 Thembisa model. Viewed 10 October 2019: <https://thembisa.org/content/downloadPage/Provinces2019>.
- 8 Richter L, Mathews S, Kagura J & Nonterah E (2018) A longitudinal perspective on violence in the lives of South African children from the Birth to Twenty Plus cohort study in Johannesburg-Soweto. *South African Medical Journal*, 108(3): 181-186.
- 9 Statistics South Africa (2019) *General Household Survey 2018*. Pretoria: Stats SA.

i International line used to track progress towards elimination of extreme poverty.

ii The upper-bound poverty line is linked to the minimum requirement for basic nutrition as well as other basic needs.

iii More rigorous standards were used to define stunting in 2016 than 2003.

iv The Birth to Twenty study in Soweto found half of pre-school children had experienced physical punishment by a parent or caregiver.⁸

Table 8: Support and services for ECD

Indicator	Baseline	Most-recent estimate
Proportion of women who receive four antenatal care visits	56% ¹ (2003)	76% ² (2016)
Proportion of women who attend antenatal care before 20 weeks ³	40% (2011)	67% (2018)
Proportion of pregnant women living with HIV on treatment ³	24% (2012)	> 95% (2018)
Proportion of HIV-exposed infants who are tested for HIV infection at birth and 10 weeks	63% of infants tested at eight weeks ⁴ (2011)	96% tested at birth, 71% retested at 10 weeks ³ (2018)
Rate of mother-to-child transmission (MTCT) of HIV ⁵	8% (2012)	4.5% (2019)
Proportion of newborns receiving postnatal care within six days of birth ³	63% (2012)	75% (2018)
Proportion of children under five years with fever and cough where health care was sought	66% ¹ (2003)	88% ² (2016)
Proportion of children fully immunised at one year of age	Immunisation coverage remains uncertain. It was previously reported that 95% of children under one year of age were fully immunised. ⁶ However the estimate was lowered to 75%, following revised population estimates. The comparable figure for 2018 is 82%. ³ Survey data show lower figures: the 2016 South Africa Demographic Health Survey reported that only 61% of children age 12 – 23 months had received all basic vaccinations and only 53% received all age-appropriate vaccinations. ²	
Proportion of infants who initiate breastfeeding early (within one hour of birth)	39% ¹ (2003)	67% ² (2016)
Exclusive breastfeeding (proportion of infants 0 – 6 months exclusively breastfed ⁱ)	8% ¹ (2003)	32% ² (2016)
Proportion of children 1 – 5 years who received two doses of vitamin A ³	36% (2011)	57% (2018)
Children 6 – 24 months receiving an acceptable diet	No data	23% ² (2016)
Children 0 – 2 years reported to attend: a preschool, nursery school, crèche, educare centre or playgroup	No data	21% ⁷ (2017)
Proportion of children registered within one year of birth	90% ⁸	81% ⁷
Children receiving the Child Support Grant ⁹	6.6 million (2011)	12.3 million (2018)

Sources:

- 1 Department of Health, Medical Research Council & OrcMacro (2007) *South Africa Demographic & Health Survey 2003*. Pretoria: DoH.
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i Routine data show that 49% of infants receiving 14-week immunisations were exclusively breastfed; up from 34% in 2013.³

Table 7 shows that young children face many threats. Using a composite indicator based on under-five stunting or poverty, it is estimated that 38% of young children are at risk for poor physical and cognitive development.¹⁵ Whilst maternal and infant mortality rates have fallen, they remain high for a middle-income country such as South Africa. High levels of stunting persist with approximately one quarter of children under five years of age being short or stunted.¹⁶ Stunting and poor cognition correlate well at a population level, and high levels of stunting are therefore a strong predictor of poor educational attainment.¹⁷ In South Africa, these issues are further compounded by the HIV epidemic – not only are children with HIV infection at high risk of poor growth and development, but increasing evidence suggests that this is also the case for the almost one third of South Africa's children who are HIV exposed but uninfected.¹⁸

The persistently high levels of stunting in South Africa are therefore very concerning. Reducing these levels will depend on implementation of a package of interventions which focus on improving child nutrition (especially exclusive breastfeeding and complementary feeding practices) but also on reaching mothers and families, and improving their living environment and nutrition.¹⁹

Coverage of essential ECD services is shown in Table 8. Coverage of basic maternal, newborn and child health services is generally high with significant progress since 2011, although is not yet universal and deficiencies in the quality of care

continue to be documented.²⁰ High coverage is an opportunity to expand the scope of service and provide additional services. For example, high antenatal coverage provides an opportunity to expand the scope of services to include assessment and support for psychosocial issues including maternal mental health and preparation for parenting.

Likewise, within the Prevention of Mother-To-Child Transmission programme, attention needs to be paid to providing adherence support and ensuring that all women are virally suppressed during pregnancy and breastfeeding. This ensures that the mother remains healthy and reduces the risk of vertical transmission (to the child). The postnatal period has been identified as a period of vulnerability during which mothers receive little support; this affects particularly HIV-infected mothers negatively.

An innovative facility-based intervention to address this problem is described in Case 3. Mothers who acquire HIV during pregnancy or while breastfeeding are likely to pass on HIV infection to their children; thus, reducing new maternal infections during pregnancy is also critical for further reductions in vertical transmission. Despite a decline in the number of children who are HIV infected, estimates continue to suggest that antiretroviral therapy (ART) coverage in children remains low with only 53% of eligible children receiving treatment.²¹

Coverage of key nutrition interventions has increased, although exclusive breastfeeding rates remain below the

Case 2: Catalysing community health workers

Kopano Mabaso, Grow Great Campaign

The Grow Great Campaign aims to galvanise South Africa towards a national commitment to achieving zero stunting by 2030. As part of the campaign, the Champions for Children Club was launched in 2018. The club is a community of practice for community health workers (CHWs) that celebrates, recognises and affirms CHWs for the important work they do. This opt-in club and its resource hub offer support to CHWs through a telephonic information line, opportunities for training on First 1,000 Day interventions, performance-based incentives and access to a social network of other CHWs across the country.

Approximately 200 CHWs based in the Ehlanzeni district of Mpumalanga and the Mopani district of Limpopo are currently participating in the Champions for Children Clubs. During the programme's first nine months, these CHWs have provided First 1,000 Days care and support

to almost 4,000 young children and their caregivers. This included breastfeeding support, screening children for malnutrition, screening for perinatal depression, identifying early signs of pregnancy and encouraging early antenatal booking, identification and referral of at-risk children and children who are not benefitting from a CSG, and educating primary caregivers on the importance of early stimulation and play.

After six months, the confidence of CHWs in their understanding of issues related to maternal mental health, and in conducting screenings for perinatal depression, had improved significantly. CHWs also reported significantly improved knowledge and confidence to support early antenatal bookings, identify at-risk babies (especially low birth weight babies), screening for malnutrition, and assisting caregivers to obtain birth certificates.

Case 3: Postnatal clubs

Aurelie Nelson, *Doctors without Borders (MSF)*

Despite reductions in vertical transmission of HIV infection, challenges such as relatively high postnatal transmission remain. Adherence to antiretroviral treatment (ART) and retention in care may be low among women during the period after giving birth, resulting in sub-optimal health and an increased risk of mother-to-child transmission through breastfeeding.²² Reasons for poor maternal retention are many and include high patient volumes, long waiting times, non-disclosure of HIV status, travel costs, inadequate knowledge, stigma, regimen fatigue, and lack of partner involvement.²³

In response to these challenges, Médecins Sans Frontières (MSF), mothers2mothers and the City of Cape Town Health Department introduced postnatal clubs (PNCs). This holistic patient-centred model of care addresses both the medical needs of HIV-positive mothers and their HIV-exposed infants, whilst providing peer support, psychosocial support and ECD support in line with the Western Cape's "First 1,000 Days" campaign.

Mothers with babies born in the same month are grouped with PNCs, starting around 10 weeks after

giving birth (although education on PNCs happens during pregnancy). The clubs meet monthly until infants turn six months old, then once every three months until children reach 18 months. A PNC starts with a peer educator-led support session which includes information on ART adherence, infant feeding (encouraging exclusive breastfeeding), health promotion messages (e.g. on disclosure of HIV, family planning, etc.) and ECD activities. The peer educators also weigh the mothers and babies, screen for TB and for maternal depression (six monthly) as well as distributing pre-packed ART. Mother-infant pairs are thereafter seen by a professional nurse who provides an integrated package of HIV and non-HIV care.

Between July 2016 and 15 June 2018, 335 mothers were recruited into PNCs (18 were high-risk) and 340 infants (five sets of twins). After 18 months, 79.2% of the mothers were still in care and with viral load testing and suppression remaining above 90% throughout. A high proportion of infants were also fully immunised.

For more information, see bit.ly/PNCtoolkit.

global target of 50% by 2025,²⁴ whilst complementary feeding practices remain poor with only a quarter of children 6 – 24 months receiving an appropriate diet.²⁵ Further increases in exclusive breastfeeding, as well as significant improvements in complementary feeding practices, will be needed to reduce stunting levels.

What must the health sector do differently to ensure young children thrive?

Declines in child mortality rates are encouraging; yet these rates remain unacceptably high and further reductions are required. Likewise, whilst improved coverage of many interventions is welcomed, the health sector needs to ensure that all mothers and children receive high-quality services.

Early learning and issues related to safety and security have not been considered historically as core health sector concerns. Ensuring that births are registered and that eligible children receive the Child Support Grant (CSG) represent interventions that can be undertaken by health-care workers as part of a package of ECD interventions.

Health-care workers can also play a key role in promoting early learning. Since 2016, questions on stimulation provided

to young children (0 – 4 years) have been included in the General Household Survey. In 2018, nearly half (47%) of children had never read a book, drawn (43%), or named different items with a parent or guardian (26%).²⁶

Community health workers are particularly well placed to integrate these activities and to provide a comprehensive and integrated package of services to underserved communities (see Case 2).

The Nurturing Care Framework addresses not only the content of services, but also how these services are delivered, and places caregivers and families at the centre, with health and other services playing a supportive role. The national Department of Health has recently developed a more comprehensive Road to Health Book (RTHB) which focuses attention on children's health, nutrition, care and development, and is accompanied by the Side-by-Side campaign which aims to build a stronger partnership between children's caregivers and health care workers.²⁷ The Side-by-Side campaign is described in Case 4.

There are several key issues that need to be addressed in order to maximise the potential for achieving improved outcomes through a focus on the first 1,000 days.

Case 4: The Side-by-Side campaign

The Side-by-Side campaign aims to empower mothers and caregivers to ensure that their children grow and develop optimally. The central message of the campaign is “You are central to your child’s nurturing, care and protection – and their lifelong health outcomes. Your health worker is there to support you”.

The name Side-by-Side describes the supportive relationship between a child and the caregiver, as well

as the relationship between health care workers and practitioners who support and advise the caregiver. Side-by-Side aims to convey the concept of partnership and togetherness and addresses the shared child-rearing journey that caregivers embark on with their children and all those who help and support them.

The Side-by-Side campaign is shaped by the five pillars of the Road to Health Book as outlined in Figure 27.

Figure 27: The five pillars of the Road to Health Book

	NUTRITION Good nutrition is important for you and your child to grow healthy. It starts with breastfeeding.
	LOVE Your child learns from looking at you when you hold them close to you and love, play and talk to them.
	PROTECTION Your child can be protected from disease and injury by getting immunised and by playing in safe places.
	HEALTHCARE Your child needs help from you or a health worker when they are sick or injured.
	EXTRA CARE Your child may need special care or support and knowing what to do and where to go will help both of you.

Source: Slemming W & Bamford L (2018) The new Road to Health Booklet requires a paradigm shift. *South African Journal of Child Health*, 12(3): 86-87.

Commitment and leadership

Despite the comprehensive nature of the integrated policy, ECD is still largely understood in the South African context to be about early child care and education delivered to children 3 – 5 years of age through centres, whilst health services focus on survival, growth and health, but not on development or learning.²⁸

This perception is likely to skew investment away from the first 1,000 days, and means that additional responsibilities assigned to the health sector, such as parenting support, will remain un/underfunded. The Nurturing Care Framework and ECD Countdown Country Profiles have raised the profile of ECD within the global health community and should be used to advocate at national and sub-national levels that politicians as well as parents pay more attention to nurturing care.

Notwithstanding the above, many opportunities exist at all levels of the health system to ensure that components of the Nurturing Care Framework are introduced into routine

health service delivery. Community health workers are especially well-placed to provide a comprehensive package of ECD services at household and community level, and will be key to driving further improvements in ECD outcomes, especially amongst the most vulnerable and disadvantaged children. The new RTHB provides an excellent mechanism for providing comprehensive services, and health care and other practitioners at all levels should be encouraged to take the lead in using the five pillars outlined in the new RTHB (and Side-by-Side campaign) as the basis for empowering caregivers, and providing better and more comprehensive services for mothers, children and their families (see Box 3).

Addressing poverty and the social determinants of health

The first 1,000 days concept highlights the important contribution of poverty and undernutrition to poor health, educational and developmental outcomes, whilst the Nurturing Care Framework calls for intersectoral collaboration to ensure that young children grow up in an environment

that is safe and secure. Whilst this chapter has focused on the role of the health sector, it is clear that young children will not reach their full potential in the absence of reductions in poverty and inequality. Stunting in young children serves as a proxy measure for poor educational, economic and social outcomes, and can be used to foster public understanding and engagement, as well as to garner political commitment for investment in essential services.

Whilst the ECD policy should be used to drive formal intersectoral collaboration at a policy level, different sectors also need to work together at local level to improve outcomes for young children. As a minimum, efforts to ensure that all children's births are registered, and that all eligible children receive a CSG, should be part of the routine work of all health-care workers including, and especially, community health workers.

Empowering caregivers to improve their own health and that of their children

The Nurturing Care Framework acknowledges the central role of caregivers and households in ensuring that children receive their optimal development potential. This requires a paradigm shift among those who provide health care and other services to understand their roles in supporting and empowering families and communities to provide the care that children need, including early stimulation and responsive care (as captured in the Side-by-Side campaign). This requires a shift in attitudes and practice amongst health care workers and which needs to be reflected in maternal and child health curricula and training.

It also requires a shift towards investing in mental health care services at primary health-care level, including risk and resilience assessments of, and counselling and intersectoral referral and support services for, parents and caregivers, starting during pregnancy and continuing into childhood.

Providing a comprehensive package of health and nutrition services for all mothers and babies

The Nurturing Care Framework requires that women and young children have access to good-quality health and

nutrition services. Although coverage of many essential services has increased, more attention needs to be paid to ensuring full coverage, addressing deficiencies in the quality of care provided, and removing financial and non-financial barriers to using services. More attention also needs to be paid to services that are not currently provided at scale. These include breastfeeding support, provision of support to mothers suffering from maternal depression and other mental health problems, as well as better services for children with disabilities and developmental problems.

Tracking progress

Whilst the ECD Country Countdown Profiles are an important first step in agreeing how progress should be monitored, the profiles are likely to evolve over time, especially with regards to measuring responsive caregiving and early learning at population level. At a national level, attention should be paid to ensuring that global indicators are measured and that, where necessary, appropriate local indicators are identified and measured – which may require that these are incorporated into routine health information systems or collected through surveys. At a local level, child health practitioners should continue to monitor local mother and child mortality and health service delivery indicators, but also consider how maternal and child development and well-being can be measured and monitored.

Conclusion

Early intervention during pregnancy and the first two years of a child's life can result in significant gains on the long-term physical and cognitive development of a child. However, improving these gains will require that underlying social determinants of health are addressed, that health services are strengthened so that mothers and children receive a comprehensive package of services, and that mothers and other family members are supported to implement all five components of the Nurturing Care Framework successfully. These in turn will require leadership and investment in ECD, as well as improved systems for tracking progress and addressing deficiencies.

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- 15 See no. 11 above.
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