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Cover Picture credits:
RDP houses in Langa, Cape Town. Ashraf Hendricks/GroundUp. This image is licensed under a Creative Commons Attribution-NoDerivatives 4.0 International License. Khayelitsha informal settlement. Keitumetse Lebelo.

Note

Reviewing the burden of diseases and its major determinants is an ongoing endeavour and data and analysis of additional conditions contributing to the burden of disease will be added in subsequent iterations of the report.
Foreword

The Western Cape Burden of Disease Reduction project results were released in 2008, characterising the burden of disease in the province and identifying upstream interventions to address the burden of disease. These interventions were focussed on the major upstream risks for the five main burden of disease components viz. infectious diseases, mental health conditions, injuries, cardiovascular and childhood diseases. This report presents a rapid review of progress made since 2008 to address the burden of disease, distribution of social determinants and selected interventions implemented in the province since the 2008 Burden of Disease Reduction project.

Although the Western Cape has seen a reduction in early mortality between 2009 and 2016, when looking across sex and age, results are mixed. This is indicative of areas of success and failure in addressing the burden of disease. The reduction in early mortality reflects successful implementation of health interventions, especially reducing HIV and young child (under 5) deaths, resulting in a shift in the population to increased life expectancy. However, this success means that people are living longer, often with complex, multiple health conditions. This shift has important implications for the healthcare service delivery burden and planning. In contrast, the increase in violence-related deaths, especially in young men, is a concern. This report also assesses the spatial distribution of disease burden and inequity, despite being hampered by the loss of local-level mortality surveillance. Loss of this surveillance is a major obstacle to a health intelligence and data-informed approach to service planning.

It is clear from this report that the Health Department is not solely responsible for population wellbeing; close collaboration and intersectoral interventions are needed to achieve community health and wellness. The Whole of Society Approach (WoSA) is a recent transversal strategy by the Western Cape Government to address social determinants of health across government departments. The First 1000 Days Initiative is an apex priority of the Department of the Premier for the next five years. The early investment in childhood wellbeing and parental support aims to ensure that children can attain their full potential across the life-course, with positive effects on health, communities and society in the long term.

Thank you to Health Impact Assessment for driving this review on the Western Cape’s burden of disease.

Dr. Beth Engelbrecht
Western Cape Head of Health
February 2020
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1. Executive Summary
Changes in overall burden of disease 2009 to 2016

- From 2009 to 2016, **early mortality decreased by 17% in the Western Cape Province**. The rate of premature mortality (measured as years of life lost [YLL] relative to estimated life expectancy per 100,000 population) decreased from 14,657/100,000 (2009) to 12,115/100,000 (2016). **However, most of this decrease occurred from 2009 to 2013, with no further decline to 2016.**

- **Age-specific mortality rates declined from 2009 to 2016 by >40% for all children <5 years of age**, with the biggest decreases being due to fewer deaths from HIV/AIDS (76% reduction), diarrhoea (71%) and malnutrition (69%). There was a more modest 30% decline in neonatal deaths.

- Age-specific mortality rates decreased at all ages in females aged 15 years and older, most markedly in those 20-34 years old where age-specific mortality dropped by >30%. This is largely due to reduced HIV/AIDS and tuberculosis (TB)-related deaths with a shift to deaths at older ages (>40% rate decrease). Among males aged ≥25 years, age-specific mortality rates decreased with the largest declines of >20% in those aged 35-44 years. As in women, this is mostly due to reduced HIV/AIDS/TB deaths, but the reduction is far more modest than in women. **As with overall mortality, the major reduction in HIV-related mortality was from 2009 to 2013 with little change thereafter.**

- Most concerning, **age-specific mortality increased by ~13% in males aged 15-24 years** from 2009 to 2016, largely due to increased mortality from intentional injuries. There was a 52% increase in the number of intentional injury deaths in men aged 15-39 years in 2016 vs. 2009 and **the age-specific mortality rate due to intentional injuries increased by >40% in males 20-29 years.**

- Age-specific non-communicable disease (NCD) mortality rates have mostly decreased in men and women, except for diabetes. However, **the absolute number of NCD deaths in both men and women has increased due to a growing older population, which has important implications for service delivery burden and planning.**

- The **leading cause of premature mortality in the province remains HIV/AIDS/TB, accounting for nearly 1 in 5 YLL** (albeit a smaller proportion than the 1 in 4 YLL due to HIV in 2009). However, **among males, intentional injuries have overtaken HIV/AIDS/TB as the leading cause of premature mortality in the Western Cape, with both conditions accounting for approximately 1 in 5 YLL.**
Population, spatial distribution of poverty and burden of disease

- Local-level mortality surveillance at sub-district level has not been feasible after 2013, and at district level after 2015, a major limitation in accurately assessing changes in distribution and inequity of the burden of disease (BoD) with consequences for service planning.

- The Western Cape (estimated population ~7 million in 2019) is one of the most unequal provinces despite being considered one of the wealthiest provinces in South Africa (SA). Of concern, inequity (measured by Gini coefficient) has increased since 2009. In addition, the proportion of people living in poverty increased from 2011-2015, offsetting some of the poverty reduction achieved from 2006 to 2011.

- In the Cape Town Metro, the overwhelming majority of people live in the South East with low socio-economic index, however even within the poor South East sub-districts (Khayelitsha, Eastern, Tygerberg and Klipfontein) there is heterogeneity in socio-economic index with pockets of extreme poverty within these areas. Heterogeneity of socio-economic status within sub-districts means that data that is more spatially granular than sub-district level is needed to fully understand inequity in burden of disease, and monitor progress towards improving equity.

- In 2015 HIV/AIDS/TB was the leading cause of YLL across almost all districts in the province. In the Cape Town Metro HIV/AIDS/TB remained the most important cause of YLL in females in Khayelitsha, Eastern, Klipfontein and Mitchells Plain, with cancer being the leading cause in other sub-districts. HIV/AIDS/TB is the 2nd leading cause of YLL in men in Khayelitsha, Eastern, Northern, Mitchells Plain and Western.

- The most notable change in ranking of causes of YLL across districts from 2009-2015 is the increase in the percent of YLL due to intentional injuries among males in the Cape Town Metro, now the leading cause of premature mortality in men in the Metro. By 2013 intentional injuries had become the leading cause of YLL in males across all sub-districts in the Metro except Southern, accounting for more than 1 in 4 YLL in Khayelitsha, Klipfontein and Mitchells Plain. As a result, the all cause age-specific mortality rates for males aged 15-25 years were higher in 2013 vs 2009 in several Metro sub-districts especially Klipfontein, Mitchells Plain and Tygerberg. These increases are closely correlated with increased availability of guns and a growing proportion of homicides being due to firearm assault.

- Central Karoo remained the district with highest age-specific mortality in 2015, with ongoing BoD inequity between districts. It is especially concerning that under 5 mortality in Central Karoo in 2015 was persistently high.

- In the Cape Town Metro, despite decreases in age-standardised mortality from 2010-2013, there remains considerable inequity between sub-districts, with the highest burdens in Khayelitsha and Mitchells Plain (males and females) as well as Klipfontein and Tygerberg (males).
Conditions that are major contributors to burden of disease

Intentional injuries

There has been a year-on-year increase in the number of homicides per day in men in the province (2010-2018). This is largely due to an unprecedented increase in firearm-related homicide where the age-standardised mortality rate doubled from 17 to 35/100,000 from 2010 to 2016. This increase is most marked in the Cape Town Metro: Klipfontein (~4-fold increase), Tygerberg, Mitchells Plain and Khayelitsha. Major barriers to decreasing intentional injury mortality have been poor adherence to gun control with increased firearm availability and relaxation of alcohol access controls, despite development of an Integrated Violence Prevention Policy Framework.

**Recommendation:** The Integrated Violence Prevention Policy Framework interventions need urgent implementation, including the “quick wins” of gun control and implementing the Alcohol Harm Reduction policy.

Road traffic injuries

Age-standardised road traffic injury (RTI) mortality rates have remained relatively constant. There has been a significant decrease in motor vehicle injury age-standardised mortality in Central Karoo (2010-2016) although the rate remains much higher than any other district due to the high number of fatal crashes on the N1. Substantial efforts to address RTIs include Average Speed Over Distance Technology (ASOD) since 2010, rolling out Random Breath Test (RBT) operations with mobile evidentiary breath alcohol testing (EBAT) since 2017 and the Safely Home multimedia campaign. Challenges have included resistance to speed limit reduction, inappropriate speed limits near informal settlements and limited resources for ASOD and RBT operations.

**Recommendation:** Developing an integrated and safe public transport system with particular attention to low income road users, who frequently travel long distances to work daily and feature prominently in road fatalities as passengers and pedestrians.
Non-communicable Diseases

Although age-specific mortality for most non-communicable diseases (NCDs) has decreased slightly since 2009, this means more people are living for longer with conditions requiring chronic health care, which has major implications for health services. The increase in diabetes age-specific mortality is concerning, especially given the high proportion (~70%) of diabetics in care with uncontrolled glucose. There is limited data on the population prevalence of NCDs, however progress with using proxy disease markers by the Provincial Health Data Centre (PHDC) can contribute substantially to enumerating caseload, outcome surveillance and service planning. It is important to evaluate the long term impact of interventions that have been implemented with potential to substantially reduce the NCD burden, including reducing sodium food content, sugar-sweetened beverage tax and the Western Cape on Wellness initiative.

**Recommendation:** A dual focus on public health policy interventions to reduce population level risks for NCDs (e.g. reducing sodium, sugar, tobacco and alcohol consumption) and optimal management of those with NCDs to limit morbidity and premature mortality.

Mental Health

There are major challenges with quantifying the true burden of mental illness. The South African Stress and Health Survey (SASH) conducted in 2004 indicated that the Western Cape had the highest 12-month and lifetime prevalence of mental illness in SA (39.4%). There have been several programmatic interventions to address mental health especially since 2018, including a Provincial Mental Health Strategy, better management of waiting lists for specialist services, strategies to improve patient retention and proposals for integrated counselling strategies. In addition, several implementation projects at different facilities/sub-districts/districts are underway with promising results.

**Recommendation:** Improved estimates are needed both of the true population burden of mental illness as well as the service burden. Recent interventions to address mental health disease burden and outcomes should be evaluated and scaled up if successful.
HIV/AIDS and tuberculosis

As the leading cause of premature mortality, there has been immense effort at policy and programme-level as well as intersectorally to reduce HIV/AIDS/TB-related morbidity and mortality, with HIV having more programmatic interventions than any other condition. There have been enormous successes in reducing mother-to-child transmission of HIV as well as HIV-related mortality in adults, with well over 90% of adults living with HIV knowing their diagnosis, and ~90% of patients on antiretroviral therapy (ART) being virally suppressed. However, most reductions in HIV/AIDS/TB-related age-specific mortality were from 2009 to 2013, with little subsequent improvement. Major challenges are (i) the relatively low proportion of people living with HIV on ART (~60%) with a major reason being poor retention among those that have previously started ART, (ii) modest declines in HIV incidence compared to other provinces, (iii) the enormous service requirements of a large ART programme and (iv) challenges with infection control, preventive therapy, integration of HIV, TB and other health care services as well as finding, treating and retaining all patients with TB.

Recommendation: Priority interventions to address HIV/AIDS/TB should include tackling upstream determinants, pre-exposure prophylaxis (PrEP) for HIV prevention especially in young women and girls, TB preventive therapy, integration of HIV, TB and other health care, finding missing TB cases, improving retention and linking lost patients back to care as well as infection prevention and control.
Transversal interventions

Several transversal interventions have potential to impact on multiple burden of disease conditions, including the First 1000 Days, Whole of Society Approach (WoSA), Community Oriented Primary Care (COPC) and the Alcohol Game Changer. In addition, social grants play a major role in addressing socio-economic need and inequity. Provincial commitment to intersectoral first 1000 days / early life course packages of services that are linked to health interventions is critical to achieve the full benefits of these transversal interventions. Learnings from these interventions, in particular evaluation of their impact, is essential. To this end, as recommended in the BoD 2008 report, a reliable and valid information system, including local-level mortality surveillance, is vital. The province has made great strides in mortality and morbidity surveillance through institutionalising mortality surveillance at sub-district level from 2010 to 2013, as well as development of the integrated information platform of the PHDC. To accurately assess the impact of interventions and plan services, local-level mortality surveillance must be re-established. In addition, as we address mortality, more patients will be living with chronic conditions and multiple comorbidities requiring ongoing health care and service integration. The capacity of the PHDC for morbidity surveillance, actionable reports and listings of individual patients requiring intervention as well as measuring service load will be increasingly important for planning efficient and effective services. Beyond health, linkages between digital platforms such as the PHDC in Health with digital platforms in other provincial and national departments such as Education and Social Services could provide opportunities for developing and evaluating targeted, stacked interventions to the most vulnerable, thus addressing health inequity.

**Recommendation:** There is a need for a stock take of policies and interventions in light of changes in the burden of disease, including strengthening more upstream interventions such as WoSA, given the worsening burden of injuries in particular.
### List of abbreviations

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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACT</td>
<td>Assertive Community Treatment teams</td>
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<tr>
<td>AIDS</td>
<td>Acquired immunodeficiency syndrome</td>
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<td>ART</td>
<td>Antiretroviral therapy</td>
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<td>ATC</td>
<td>Anatomical therapeutic classification system</td>
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<td>BoD</td>
<td>Burden of disease</td>
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<td>CBO</td>
<td>Community based organisation</td>
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<td>CCT</td>
<td>Conditional cash transfer</td>
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<td>CHW</td>
<td>Community health worker</td>
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<td>CoCT</td>
<td>City of Cape Town</td>
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<td>COPC</td>
<td>Community-oriented primary care</td>
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<td>CRE</td>
<td>Carbapenem-resistant enterobacteriaceae</td>
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<td>CSG</td>
<td>Child support grant</td>
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<td>CT</td>
<td>Cash transfer</td>
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<td>CVD</td>
<td>Cardiovascular disease</td>
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<td>DALY</td>
<td>Disability-adjusted life year</td>
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<td>DHA</td>
<td>Department of Home Affairs</td>
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<td>DOTS</td>
<td>Directly observed treatment, short-course</td>
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<tr>
<td>DR-TB</td>
<td>Drug resistant tuberculosis</td>
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<td>ECD</td>
<td>Early childhood development</td>
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<td>FDC</td>
<td>Fixed dose combination</td>
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<td>FPS</td>
<td>Forensic pathology services</td>
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<td>HAST</td>
<td>HIV/AIDS, STI and TB</td>
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<tr>
<td>HbA1c</td>
<td>Glycosylated haemoglobin, measure of glycaemic control in diabetics</td>
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<tr>
<td>HCT</td>
<td>HIV counselling and testing</td>
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<tr>
<td>HIV</td>
<td>Human immunodeficiency virus</td>
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<td>HSV-2</td>
<td>Herpes simplex virus-2</td>
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<tr>
<td>ICD-10</td>
<td>International classification of diseases 10\textsuperscript{th} revision</td>
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<td>LLMS</td>
<td>Local-level mortality surveillance</td>
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<td>MH</td>
<td>Mental health</td>
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<td>MRC</td>
<td>South African Medical Research Council</td>
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<td>MSAT</td>
<td>Multisectoral action team</td>
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<td>MSF</td>
<td>Médecins Sans Frontières (Doctors without Borders)</td>
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<td>NIDS</td>
<td>National Income Dynamics Survey</td>
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<td>NCD</td>
<td>Non-communicable disease</td>
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<td>NCF</td>
<td>National curriculum framework</td>
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<td>NHLS</td>
<td>National health laboratory services</td>
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<td>PACK</td>
<td>Practical approach to care kit</td>
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<tr>
<td>PEPFAR</td>
<td>[U.S.] President’s Emergency Plan for AIDS Relief</td>
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<td>PHCIS</td>
<td>Primary healthcare information system</td>
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<td>PHDC</td>
<td>Provincial Health Data Centre</td>
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<td>PLHIV</td>
<td>People living with HIV</td>
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<td>PMI</td>
<td>Patient master index</td>
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<td>PMTCT</td>
<td>Prevention of mother-to-child transmission</td>
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<tr>
<td>PREHMIS</td>
<td>Patient record and health management information system</td>
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<td>PrEP</td>
<td>Pre-exposure prophylaxis</td>
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<td>PRIME</td>
<td>Programme for improving mental health care</td>
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<td>PSG</td>
<td>Provincial strategic goal</td>
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<td>SA</td>
<td>South Africa</td>
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<td>SPV</td>
<td>Single patient viewer</td>
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<td>STI</td>
<td>Sexually transmitted infection</td>
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<tr>
<td>TB</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>TVET</td>
<td>Technical and vocational education and training</td>
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<td>UCT</td>
<td>Unconditional cash transfer</td>
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<td>UNAIDS</td>
<td>Joint United Nations AIDS Programme on HIV/AIDS</td>
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<td>VL</td>
<td>Viral load</td>
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<td>WCG</td>
<td>Western Cape Government</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<td>WoSA</td>
<td>Whole of society approach</td>
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<td>YLL</td>
<td>Years of life lost, measure of premature mortality</td>
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### Glossary

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<td><strong>Human Development Index (HDI)</strong></td>
<td>A summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and having a decent standard of living. The health dimension is assessed by life expectancy at birth and the education dimension by mean years of schooling for adults aged ≥25 years and expected years of schooling for children of school entering age. The standard of living dimension is measured by gross national/regional income per capita. It does not reflect inequalities.</td>
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<td><strong>Gini coefficient</strong></td>
<td>The Gini coefficient is a measure of income inequality, ranging from 0 to 1. A value of 0 represents a perfectly equal society (for example, where everyone has the same income), and a value of 1 (or 100%) represents a perfectly unequal society.</td>
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| **UNAIDS 90-90-90 targets** | The UNAIDS 90-90-90 targets are targets for the HIV care programme which, if achieved, should substantially reduce HIV incidence, morbidity and mortality. The targets are that:  
- 90% of people living with HIV (PLHIV) should know their HIV status  
- 90% of people diagnosed with HIV should be on antiretroviral therapy (ART)  
- 90% of people on ART should be virally suppressed with viral load <1000 copies/ml. |
| **Age-specific mortality rate** | A mortality rate limited to a particular age group (per year): the numerator is the number of deaths in that age group in a year; the denominator is the mid-year population in that age group. |
| **Age-standardised mortality rate** | A weighted average of the age-specific mortality rates per 100,000 persons per year, where the weights are the proportions of persons in the corresponding age groups of a “standard population”. Age-standardised mortality rates can be used to compare the mortality rates of regions without being affected by the difference in age distributions of the population from region to region. Without using this standardisation, it would be unclear if differing mortality rates were due to age or as a result of other factors. |
| **Premature mortality (years of life lost)** | Premature mortality is a summary measure of unfulfilled life expectancy and gives more weight to the deaths of younger people than to older people. It is often measured as years of life lost (YLL) which estimates the years of potential life lost (relative to estimated life expectancy) due to premature deaths. |
| **Social determinants of health** | The social determinants of health are the conditions in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels. The social determinants of health are mostly responsible for health inequities - the unfair and avoidable differences in health status seen within and between countries. |
| **Upstream interventions** | Upstream interventions focus on improving fundamental social and economic structures in order to decrease barriers and improve supports that allow people to achieve their full health potential. |
2. Background

Brief summary of previous Burden of Disease report

Understanding the burden of disease (BoD) is fundamental to planning and decision-making in health departments. However, reducing the burden of disease frequently requires “upstream” interventions outside the sphere of the health department in order to address social determinants of disease. If such interventions are successful, the health sector will have more capacity to address diseases that cannot currently be managed because of resource constraints.

The previous comprehensive review of BoD in the Western Cape (referred to as the BoD 2008 review in this report) was conducted from 2005-2007 by a large team of stakeholders from the Western Cape Government Department of Health (WCG: Health) and academic institutions across the Western Cape.1 Its aim was to advise on how to reduce the BoD and promote equity in health in the province. Objectives included determining the extent of the BoD in the province and the major causes/risk factors of different BoD components and identifying potential interventions including those beyond the health sector that could influence these risk factors. The major categories of risk factors identified in the BoD 2008 review and spheres for intervention are summarised in Appendix Table 1.

A key recommendation of the BoD 2008 review was the need for a reliable and valid information system, including mortality surveillance, institutionalised within Provincial Government structures. This system could provide ongoing monitoring of the BoD and assess the impact of interventions across sectors. This recommendation has largely been implemented within the Health Impact Assessment (HIA) Directorate of WCG: Health.
Scope and aims of update report

It has been more than 10 years since the BoD 2008 report was released. A task team has therefore undertaken a rapid review of the burden of disease, distribution of social determinants and selected interventions implemented in the Western Cape.

Aim

The aim of the BoD 2019 review is to provide a rapid update on the major contributors to burden of disease in the Western Cape and the distribution of some of their key social determinants, as well as to describe selected interventions undertaken to address these.

Objectives

1) Provide updated estimates of the major diseases or conditions causing premature mortality and morbidity in the Western Cape down to sub-district level where feasible.

2) Describe the spatial distribution of key social determinants of health using published reports of census and survey data.

3) Provide more granular descriptions of particular disease categories and determinants, key interventions undertaken to address these as well as successes and challenges with implementation of such interventions. From the outset this was intended to be an ongoing piece of work, with more granular descriptions of additional conditions to be added in the future.

Importantly, unlike the previous BoD 2008 review, this review does not include an extensive literature review on social determinants of morbidity or mortality and does not attempt to comprehensively include all interventions implemented since the previous review. Rather, it aims to highlight the major conditions responsible for premature mortality and morbidity in the province and, by way of example, describe selected interventions implemented to address these conditions, challenges experienced and priorities for the next 5 years. These are described in a “deep dive” section on selected major contributors to the BoD. Selected upstream transversal interventions that address multiple conditions are described in section 7 of the report.
Data sources

Various data sources were used to review the changes in BoD, if any, since the last BoD project in 2008. One of the key recommendations from the 2008 project was a reliable and valid institutionalised information system, underpinning the importance of these systems for surveillance and service planning. Three main data sources were utilised to review the BoD since 2008 viz.

- **Routine indicators**: aggregate data, as captured on to Sinjani
- **Mortality surveillance**: local-level mortality surveillance and Statistics South Africa mortality data
- **Health information management systems with data linked through the Provincial Health Data Centre (PHDC)**: including, but not limited to Clinicom (hospital information management system), PHCIS (primary health care information management system), NHLS (national health laboratory services), electronic pharmacy dispensing data.

Figure 1 graphically depicts the overlap in data sources, despite being separate source systems. For example, if a patient died in hospital, they will be captured via routine indicators, and separately be included in mortality surveillance. Patient care received in hospital, and all prior care received will be captured in the multiple health information management systems that are part of the PHDC.

The detailed data sources for this report are in Table 1.

**Sinjani** is WCG: Health’s platform for capturing routine aggregate indicators, down to a facility level.

**Mortality surveillance data** has shifted from the local-level surveillance system described in Section 7 to relying on the data released by Statistics South Africa. This **significantly hampers our ability to assess the geographic distribution of burden of disease to sub-district or more granular geographic location, which is a major barrier to service and targeted intervention planning.**
Table 1: Burden of disease review data sources

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<td>Provincial Health Data Centre</td>
<td>Multiple source systems Various years Across the Western Cape</td>
<td>Bespoke extract analyses or “care cascade” Dependent on earliest electronic evidence of health condition Data used from the maternity, diabetes, HIV and TB cascades</td>
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*Refer to Appendix about implications of change from local-level mortality surveillance to reliance on Statistics South Africa data from 2014 onwards.

The **Provincial Health Data Centre (PHDC)** provides a consolidated data environment, comprising multiple health information source systems, to ensure data completeness and continuity. Direct support of patient care is one of the PHDC’s core functions, although there are numerous potential uses (Figure 2; more detail on the PHDC in Section 7). The PHDC, through combining the multiple source systems, has inferred selected health conditions based on coding, laboratory investigations, treatment and electronic registers. To date, not all disease conditions have been enumerated into a care cascade by the PHDC. Selected conditions that have robust data available to allow for review have been included in this report.

Figure 2: Schematic diagram of Provincial Health Data Centre

NMCs=notifiable medical conditions; Epi=epidemiological
3. Overview of burden of disease in province and changes over time

Has the burden of disease changed overall?

Figure 3: Total number of years of life lost (dashed line) and rate of years of life lost /100,000 population (solid line): 2009-2016
Source: Mortality surveillance

Both the total number of years of life lost (YLL) and the rate of YLL per 100,000 population (YLL/100,000) are important measures of the overall BoD and premature mortality (years of life lost relative to estimated life expectancy). The total YLL reflects the total BoD the province is facing due to both disease burden and population size. Total YLL decreased overall from 823,534 in 2009, reaching a low of 734,645 in 2013 (11% decrease), but increased subsequently and were 800,522 in 2016 (only 3% lower than in 2009) (Figure 3). The rate of YLL/100,000 takes into account changes in the population size and reflects whether we are doing better at preventing early mortality. YLL/100,000 decreased by 18% from 14,657 (2009) to a low of 11,999/100,000 (2013) and despite a blip in 2015, remained 17% lower in 2016 than in 2009 at 12,115/100,000 (Figure 3). However the data source for assessing mortality changed from local-level mortality surveillance to reliance on Statistics South Africa data from 2014 onwards; hence interpretation is challenging as some of the mortality trends in this period may be due to differences in the way deaths are coded between these two systems (see Appendix).

Age-specific mortality rates (i.e. mortality rate per year for a specific age group) declined from 2009 to 2016 by >40% for all children <5 years of age (Figure 4). Among females aged ≥15 years, age-specific mortality rates decreased at all ages, but most markedly in those 20-34 years old.
where the age-specific mortality rate has dropped by >30%. Among males aged ≥15 years, age-specific mortality increased by ~13% in those aged 15-24 years between 2009 and 2016. Among males aged ≥25 years, age-specific mortality rates decreased, with the largest decreases of >20% in those aged 35-44 years.

**When and why are deaths occurring in those 15 years and older and how has this changed from 2009 to 2016?**

**Patterns of age-specific mortality in males**

In males aged 15-35 years, injuries, especially intentional injuries, are the major cause of death. From age 35-50 years, HIV and TB account for most deaths, thereafter non-communicable disease (NCD) deaths (malignancies, cardiovascular disease [CVD], diabetes, other NCDs) predominate (Figure 5).
Figure 5a: Number of deaths from different causes by age at death: 2009 vs. 2016
Ca = cancer; CVD = cardiovascular disease; Infect/parasitic = infectious/parasitic; Int. inj. = intentional injuries; Mat/Peri/Nutr = maternal/perinatal/nutritional; NCD = non-communicable disease; Unint. inj. = unintentional injuries. Source: Mortality surveillance.
Figure 5b: Age-specific mortality rate for different causes: 2009 vs. 2016

Source: Mortality surveillance
Changes in number and rates of mortality at different ages in men

Age-specific mortality in men has increased in those aged 15-24 years but decreased at older ages (Figures 4, 5, 6). Of concern in males is the large increase in both number and age-specific rates of death due to intentional injuries. There were 1058 more deaths due to intentional injury in men aged 15-39 years in 2016 vs. 2009 (52% increase) and the age-specific mortality rate increased by >80/100,000 (>40%) in males aged 20-29 years (Figures 5, 6; Table 2). While there were increases in the number of NCD deaths in men aged >50 years from 2009 to 2016, the age-specific mortality rates have mostly decreased except for diabetes, suggesting generally better NCD outcomes and that the increased deaths are due to a growing number of older men in the population. There have been marked reductions in HIV/AIDS/TB deaths between 2009 and 2016 both in total number (969 fewer deaths in men aged 20-59 years; 24% reduction) and rate (>100/100,000 fewer deaths; >40% rate reduction). Infectious/parasitic deaths, which may also reflect HIV deaths, have also declined (260 fewer deaths; 43% reduction; 20-40 fewer deaths/100,000; >50% rate reduction). Nonetheless, the persistently high HIV/AIDS/TB age-specific mortality in men aged 25-64 years, reaching 282/100,000 in men aged 50-54 years, is an ongoing challenge.

Patterns of age-specific mortality in females

The pattern of age-specific mortality in females is strikingly different to males. Overall mortality is lower with HIV/AIDS/TB accounting for most deaths until age 50 when NCD deaths, especially malignancies, predominate (Figures 4, 5, 6).

Changes in number and rates of mortality at different ages in women

Age-specific mortality in women has decreased across all ages, but especially in those aged 20-34 years, primarily due to a large reduction in HIV/AIDS/TB deaths between 2009 and 2016 both in number (931 fewer deaths in women aged 20-59 years; 27% reduction) and rate (>100/100,000 fewer deaths in women aged 25-34 years; >40% rate reduction). Infectious/parasitic deaths, which may also reflect HIV deaths, have also declined (235 fewer deaths; 43% reduction; 11-30 fewer deaths/100,000; >50% rate reduction). Nonetheless, as for men, HIV/AIDS/TB age-specific mortality is persistently high, reaching 180/100,000 in women aged 35-39 years. While there were increases in the number of NCD deaths from 2009 to 2016, especially after age 45 years, the age-specific mortality rates have mostly decreased except for diabetes and among women >60 years old, suggesting generally better NCD outcomes and that the increased deaths are due to a growing number of older women in the population, rather than due to worse disease outcomes.
Figure 6: Disease age-specific-mortality rates for males and females: 2009, 2013 and 2016

Source: Mortality surveillance

- Cancer
- Cardiovascular disease
- Diabetes
- Other NCDs
- Intentional injuries
- Unintentional injuries
- Infectious / parasitic
- HIV / TB

5-year age group
Cancer

Cardiovascular disease

Diabetes

Other NCDs

Intentional injuries

Unintentional injuries

Infectious / parasitic

HIV / TB

Maternal/perinatal/nutritional

Note different axis scale

5-year age group
Table 2 a) Change in number of deaths from 2009 to 2016 from different causes by 5-year age group (15 – 64 years) and sex. Negative values indicate decreases and positive values indicate increases. Colours of cells indicate largest decreases (dark green) to largest increases (dark red). Source: Mortality surveillance

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Table 2 b) Change in age-specific mortality rates per 100,000 population from 2009 to 2016 for different causes by 5-year age group (15 – 64 years) and sex. Negative values indicate decreases and positive values indicate increases. Colours of cells indicate largest decreases (dark green) to largest increases (dark red). Source: Mortality surveillance

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How has under 5 mortality changed from 2009 to 2016?

Overall mortality in children aged 1 to 59 months

There were 753 fewer deaths in children aged 1-59 months in 2016 vs 2009 (38% reduction) (Figure 7).

Causes of death in children aged 1 to 59 months

The age-specific mortality rate in those aged 0-4 years for HIV/AIDS/TB has decreased from 53 to 13/100,000 (76% reduction), while for infectious/parasitic causes it has decreased from 200 to 78/100,000 (61% reduction) (Figure 8). The age-specific mortality rate has also declined for maternal/perinatal/nutritional causes, but this has been more modest at 36% (Figure 8).
The reduction in number of deaths was due to declines in deaths from almost all causes, with the biggest declines in number of deaths due to HIV/AIDS (76%), diarrhoea (71%) and malnutrition (69%) (Figure 9). Number of deaths due to septicaemia, meningitis and tuberculosis decreased by ~50%, and respiratory tract infections (RTI) by 34%. As these deaths may partially reflect HIV deaths, the true decline in HIV deaths may be even greater. There was an increase in deaths due to congenital anomalies, but this may be due to improved diagnosis.
**Neonatal mortality**

The reduction in neonatal deaths is smaller than for children aged 1 – 59 months with **295 fewer deaths in neonates in 2016 vs 2009 (29% reduction)** (Figure 7). Deaths due to most causes decreased by ~30%, but deaths due to severe infection dropped by 48% (Figure 10).

*Figure 10: Number of deaths in neonates due to different causes in the Western Cape: 2009 to 2016
Percent change in number of deaths shown in boxes at the top; negative values = decrease, positive values = increase.
mo=month
Source: Mortality surveillance*
What are the leading causes of premature mortality (YLL) in the province and how has this changed?

When considering the whole population, HIV/AIDS/ TB remains the leading cause of YLL in the province, although in 2016 accounted for a smaller proportion of YLL than in 2009 (about 1 in 4 vs. 1 in 5) (Table 3 and Figure 11). The number of HIV/AIDS/TB deaths declined steeply from 2009 to 2013, but has increased thereafter. As a group, the proportion of YLL due to CVD, cancer, diabetes and other NCDs increased from 45% to 51%; CVD, cancer and other NCDs each caused about 15% of YLL in 2016, and diabetes 6%. Cancers are now the second major cause of YLL in the province, but this may be partly due to better diagnosis in recent years. Of note, although intentional injuries account for about 14% of YLL overall, they are the leading cause of YLL in men: 1 in 5 YLL in males in the Western Cape was due to intentional injury. Intentional injuries was the cause of death that saw the steepest increase in both number and proportion of YLL.

Figure 11: Number of years of life lost (Western Cape) due to different causes for all persons, males and females: 2009-2016
Mat/Peri/Nutr=maternal/perinatal/nutritional; NCD=non-communicable disease
Source: Mortality surveillance
<table>
<thead>
<tr>
<th>Rank</th>
<th>Persons</th>
<th></th>
<th>Males</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Cardiovascular</td>
<td>14.7</td>
<td>Cancers</td>
<td>15.9</td>
<td>Intentional injuries</td>
<td>14.4</td>
<td>HIV/AIDS &amp; TB</td>
</tr>
<tr>
<td>3</td>
<td>Cancers</td>
<td>13.9</td>
<td>Other NCDs</td>
<td>14.9</td>
<td>Cardiovascular</td>
<td>13.1</td>
<td>Cancers</td>
</tr>
<tr>
<td>4</td>
<td>Other NCDs</td>
<td>12.0</td>
<td>Cardiovascular</td>
<td>14.0</td>
<td>Cancers</td>
<td>12.5</td>
<td>Other NCDs</td>
</tr>
<tr>
<td>5</td>
<td>Intentional injuries</td>
<td>9.7</td>
<td>Intentional injuries</td>
<td>13.5</td>
<td>Other NCDs</td>
<td>11.7</td>
<td>Cardiovascular</td>
</tr>
<tr>
<td>6</td>
<td>Infectious/parasitic</td>
<td>9.0</td>
<td>Unintentional injuries</td>
<td>8.8</td>
<td>Unintentional injuries</td>
<td>10.5</td>
<td>Unintentional injuries</td>
</tr>
<tr>
<td>7</td>
<td>Unintentional injuries</td>
<td>8.2</td>
<td>Diabetes</td>
<td>6.2</td>
<td>Infectious/parasitic</td>
<td>8.1</td>
<td>Infectious/parasitic</td>
</tr>
<tr>
<td>8</td>
<td>Diabetes</td>
<td>4.3</td>
<td>Infectious/parasitic</td>
<td>5.1</td>
<td>Mat/Peri/Nutr</td>
<td>3.4</td>
<td>Diabetes</td>
</tr>
<tr>
<td>9</td>
<td>Mat/Peri/Nutr</td>
<td>3.7</td>
<td>Mat/Peri/Nutr</td>
<td>3.1</td>
<td>Diabetes</td>
<td>3.1</td>
<td>Mat/Peri/Nutr</td>
</tr>
</tbody>
</table>

NCD=non-communicable disease; Mat/Peri/Nutr=maternal/perinatal/nutritional; Source: Mortality surveillance
4. Overview of population and socio-economic data for the Western Cape

The total number of people living in the Western Cape is estimated to have increased from about 5.5 million in 2009 to nearly 7 million in 2019, and is expected to increase to more than 8 million by 2024 (Figure 12). The age and sex distribution suggests increased numbers at all ages, but a particular bulge in those aged 20-35 years (Figure 13).

Figure 12: Total population of the Western Cape: 2009-2019
Note: All estimates are based on the most recent Statistics South Africa data. These should not be regarded as official Department of Health figures, but rather the most up to date data from Statistics South Africa.

Figure 13: Population pyramids for the Western Cape: 2009, 2013, 2016, 2019
Spatial distribution of poverty and population in the province and changes over time

The Western Cape is considered a wealthy province with individual poverty incidence (proportion of individuals below the food poverty line) of 6-14%. Across South Africa (SA), including in the Western Cape, Statistics South Africa reported that although the prevalence of individual poverty decreased from 2006 to 2011, it increased from 2011 to 2015, with 37% of people in the Western Cape below the upper bound poverty line of R992 per person per month (Figure 14). The Western Cape is also one of the most unequal provinces with a Gini co-efficient >0.5. The Gini coefficient measures the relative equality or inequality of income distribution, ranging from complete equality at 0 to complete inequality at 1. Inequity as measured by the Gini coefficient has increased since 2011 across the province and all districts (Figure 15). This increase has occurred despite improvements in the human development index (Figure 15), a measure of the relative development of a population including, inter alia, education, health and living conditions, ranging from 0 (low development) to 1 (high development). The difference between trends in the Gini coefficient and human development index suggest that improvements in development have not been equitably distributed, with growing provincial inequality (Figure 16). The spatial distribution of poverty is therefore critical to understanding the provincial BoD.

Figure 15: Gini coefficient and human development index by district in the Western Cape: 2009-2018
Source: Western Cape Provincial Treasury
Figure 16: A) Map of 9 quantiles of poverty distribution at municipal level. The darkest blue areas represent 26 municipalities with individual poverty incidence from 4–9 percent. The darkest red displays the poorest quantile with poverty rates between 33 and 67 percent.

B) Map of 9 quantiles of distribution of inequity (Gini coefficient) at municipal level. The darkest blue areas represent 26 municipalities with lowest quantile of Gini coefficient (0.37-0.44). The darkest red displays the highest (most unequal) quantile with Gini coefficient >0.53.

Source: Statistics South Africa: Poverty Mapping in South Africa using data from Census 2011 and the 2010/11 Income and Expenditure survey.3

The overwhelming majority of the Cape Town Metro’s population are located in the South East with socio-economic index indicating high levels of need, however even within the poor South East sub-districts (Khayelitsha, Eastern, Tygerberg and Klipfontein) there is heterogeneity in socio-economic index with pockets of extreme poverty within these areas (Figure 17). Poor areas are also scattered across other sub-districts e.g. Du Noon in Western and Imizamo Yethu and Masiphumelele in Southern.

Figure 17 overleaf: Number and distribution of individuals according to socio-economic index in A) the Cape Town Metro and B) the Western Cape by Census 2011 sub-place

The Census 2011 Socio-Economic Index is classified from very needy to very good and based on a weighted sum of the Economic Index (employment, income, economic dependency ratio; weight 0.3), Household Services Index (lighting energy source, water supply, refuse disposal, toilet; weight 0.3), Education Index (illiteracy, schooling, maximum education level of adults; weight 0.2) and Housing Index (dwelling type and room density; weight 0.2). Size of circle represents number of people in each sub-place. Sub-places with <20 households recorded in Census 2011 are excluded.

Source: Research, Population & Knowledge Management Directorate, Department of Social Development, Western Cape Government and City of Cape Town Policy and Strategy Department
### 5. Spatial distribution of burden of disease

**District**

What are the leading causes of YLL in different districts and how has this changed – 2009 to 2015?

**Table 4 a): League Table showing rank of percent of years of life lost for all persons due to different causes for each district in the province: 2009 vs 2015**

(Note data at district level not available for 2016) NCDs=non-communicable diseases; Int. injuries=intentional injuries; Unint. Injuries=unintentional injuries; Infect/parasitic=infectious/parasitic; Mat/Peri/Nutr=maternal/perinatal/nutritional

Source: Mortality surveillance

<table>
<thead>
<tr>
<th>Rank</th>
<th>Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cape Winelands</td>
</tr>
<tr>
<td>1</td>
<td>HIV/AIDS &amp; TB</td>
</tr>
<tr>
<td></td>
<td>23.7</td>
</tr>
<tr>
<td>2</td>
<td>Cardiovascular</td>
</tr>
<tr>
<td></td>
<td>14.5</td>
</tr>
<tr>
<td>3</td>
<td>Cancers</td>
</tr>
<tr>
<td></td>
<td>14.4</td>
</tr>
<tr>
<td>4</td>
<td>Other NCDs</td>
</tr>
<tr>
<td></td>
<td>13.2</td>
</tr>
<tr>
<td>5</td>
<td>Unint. injuries</td>
</tr>
<tr>
<td></td>
<td>10.4</td>
</tr>
<tr>
<td>6</td>
<td>Infect/parasitic</td>
</tr>
<tr>
<td></td>
<td>8.2</td>
</tr>
<tr>
<td>7</td>
<td>Mat/Peri/Nutr</td>
</tr>
<tr>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>8</td>
<td>Diabetes</td>
</tr>
<tr>
<td></td>
<td>3.4</td>
</tr>
</tbody>
</table>

The table above provides the percentage of years of life lost (YLL) due to different causes for each district in the province of Western Cape, South Africa, for the years 2009 and 2015. The causes include HIV/AIDS & TB, Cardiovascular diseases, Cancers, Other NCDs, Unint. injuries, Infect/parasitic, Mat/Peri/Nutr, and Diabetes. The data shows the change in the ranking of these causes of YLL across different districts.
### Table 4b: League Table showing rank of percent of years of life lost for males and females due to different causes for each district in the province:

**2009 vs 2015**

*Source: Mortality surveillance*

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cape Winelands</th>
<th>Central Karoo</th>
<th>Cape Metro</th>
<th>Garden Route</th>
<th>Overberg</th>
<th>West Coast</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
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<td>14.0</td>
</tr>
<tr>
<td>4</td>
<td>12.9</td>
<td>12.6</td>
<td>11.9</td>
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<td>10.8</td>
<td>10.8</td>
<td>10.8</td>
</tr>
<tr>
<td>6</td>
<td>Infect/parasitic</td>
<td>Mat/Peri/Nutri</td>
<td>Diabetes</td>
<td>Mat/Peri/Nutri</td>
<td>Diabetes</td>
<td>Mat/Peri/Nutri</td>
</tr>
<tr>
<td>7</td>
<td>7.5</td>
<td>3.9</td>
<td>2.6</td>
<td>2.6</td>
<td>3.9</td>
<td>3.9</td>
</tr>
<tr>
<td>8</td>
<td>Mat/Peri/Nutri</td>
<td>Diabetes</td>
<td>Mat/Peri/Nutri</td>
<td>Diabetes</td>
<td>Mat/Peri/Nutri</td>
<td>Diabetes</td>
</tr>
<tr>
<td>9</td>
<td>Diabetes</td>
<td>Mat/Peri/Nutri</td>
<td>Diabetes</td>
<td>Mat/Peri/Nutri</td>
<td>Diabetes</td>
<td>Mat/Peri/Nutri</td>
</tr>
</tbody>
</table>

### Table 4b: League Table showing rank of percent of years of life lost for males and females due to different causes for each district in the province:

**2009 vs 2015**

*Source: Mortality surveillance*

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cape Winelands</th>
<th>Central Karoo</th>
<th>Cape Metro</th>
<th>Garden Route</th>
<th>Overberg</th>
<th>West Coast</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>24.8</td>
<td>17.1</td>
<td>21.2</td>
<td>21.2</td>
<td>24.8</td>
<td>17.1</td>
</tr>
<tr>
<td>3</td>
<td>15.8</td>
<td>15.6</td>
<td>19.6</td>
<td>19.6</td>
<td>15.8</td>
<td>15.6</td>
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<tr>
<td>4</td>
<td>12.9</td>
<td>13.5</td>
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<td>17.7</td>
<td>12.9</td>
<td>13.5</td>
</tr>
<tr>
<td>5</td>
<td>9.0</td>
<td>7.6</td>
<td>5.9</td>
<td>5.9</td>
<td>9.0</td>
<td>7.6</td>
</tr>
<tr>
<td>6</td>
<td>Mat/Peri/Nutri</td>
<td>Unint. injuries</td>
<td>Diabetes</td>
<td>Mat/Peri/Nutri</td>
<td>Diabetes</td>
<td>Mat/Peri/Nutri</td>
</tr>
<tr>
<td>7</td>
<td>7.2</td>
<td>4.4</td>
<td>4.4</td>
<td>4.4</td>
<td>7.2</td>
<td>4.4</td>
</tr>
<tr>
<td>8</td>
<td>Mat/Peri/Nutri</td>
<td>Int. injuries</td>
<td>Diabetes</td>
<td>Mat/Peri/Nutri</td>
<td>Diabetes</td>
<td>Mat/Peri/Nutri</td>
</tr>
<tr>
<td>9</td>
<td>Int. injuries</td>
<td>Diabetes</td>
<td>Diabetes</td>
<td>Diabetes</td>
<td>Int. injuries</td>
<td>Diabetes</td>
</tr>
</tbody>
</table>
HIV/AIDS/TB remains the leading cause of YLL across all districts in the province with the exception of Overberg where it is second to cancers. The most notable change in ranking of causes of YLL across districts is the increase in percent of YLL due to intentional injuries among males in the Cape Town Metro which are now the leading cause of YLL in men accounting for 23% of YLL, and the 3rd leading cause of YLL overall in the Metro. The proportion of YLL due to diabetes, has increased in all districts especially in women in Overberg where it has more than doubled. There have been relatively small increases across districts in the proportion of YLL due to cancers and other NCDs, while the proportion of YLL due to CVD has decreased in most districts except Overberg.

How has the total burden of disease changed in different districts?

There have been decreases across all districts in YLL/100,000 ranging from 1.7% decline in Overberg to 16.4% in Cape Winelands (Figure 18). YLL/100,000 decreased more in females (12%) than in males (8%). Districts with the biggest percent decreases for females were Cape Town (14%), Cape Winelands (13%) and Garden Route (10%) whereas for males only Cape Winelands (19%) and Central Karoo (11%) had ≥10% decrease in YLL/100,000. Figure 19 below shows that the biggest contribution to decreases in YLL/100,000 across districts has been in HIV/AIDS/TB ranging from 37% (females) and 32% (males) reductions in Cape Town and Central Karoo to 7% reduction (males) and 1% increase (females) in West Coast. There have also been notable decreases in early mortality from Communicable/Maternal/Perinatal/Nutritional conditions (>40% reduction in Cape Winelands and ~35% reduction in Cape Town and West Coast with smaller decreases in other districts but little change in Overberg). Injury YLL/100,000 in men have decreased in Cape Winelands (19%), Overberg (17%) and Garden Route/Eden (10%) but increased by 17% in Cape Town. In females, injury YLL/100,000 have decreased in most districts but increased in Central Karoo (by 51%) and West Coast (by 22%) although overall injury YLL/100,000 in females is low. NCD YLL/100,000 have increased by 5% or less in most districts except Overberg where they have increased by >15% (both sexes) and Central Karoo by 11% in females, while in males in Cape Winelands they have decreased by 12%. 

Figure 18: Percent change in years of life lost (YLL)/100,000 population by district and in the province overall for persons (green), males (blue) and females (purple): 2009 to 2015

Source: Mortality surveillance
Figure 19: Years of life lost (YLL) /100,000 population for different broad causes by district and sex: 2009 to 2015. Percentage change in YLL/100,000 per broad cause from 2009 to 2015 shown in the 2015 bar for each district; negative values are decreases, positive values are increases. Source: Mortality surveillance

<table>
<thead>
<tr>
<th>District</th>
<th>Sex</th>
<th>Non-communicable</th>
<th>Injuries</th>
<th>HIV/AIDS and TB</th>
<th>Comm/Mat/Peri/Nutr</th>
</tr>
</thead>
<tbody>
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<td>4 309</td>
<td>3 819</td>
<td>2 035</td>
</tr>
<tr>
<td></td>
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<td>6 762</td>
<td>5 045</td>
<td>5 089</td>
<td>1 357</td>
</tr>
<tr>
<td>Winelands</td>
<td>Male</td>
<td>7 281</td>
<td>4 265</td>
<td>4 265</td>
<td>2 002</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>6 320</td>
<td>3 997</td>
<td>3 438</td>
<td>1 002</td>
</tr>
<tr>
<td>Central Karoo</td>
<td>Male</td>
<td>6 378</td>
<td>3 449</td>
<td>3 232</td>
<td>1 002</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>6 619</td>
<td>3 438</td>
<td>3 602</td>
<td>1 002</td>
</tr>
<tr>
<td>Eden</td>
<td>Male</td>
<td>9 341</td>
<td>5 353</td>
<td>5 535</td>
<td>2 064</td>
</tr>
<tr>
<td></td>
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<td>9 226</td>
<td>5 227</td>
<td>5 227</td>
<td>2 006</td>
</tr>
<tr>
<td>Overberg</td>
<td>Male</td>
<td>7 854</td>
<td>3 688</td>
<td>3 688</td>
<td>1 727</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>8 108</td>
<td>3 313</td>
<td>3 313</td>
<td>1 385</td>
</tr>
<tr>
<td>West Coast</td>
<td>Male</td>
<td>5 743</td>
<td>4 601</td>
<td>4 601</td>
<td>1 269</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>6 829</td>
<td>3 836</td>
<td>3 836</td>
<td>1 162</td>
</tr>
</tbody>
</table>

Source: Mortality surveillance
Age and sex pattern of changes in total burden of disease in different districts – 2009 to 2015?

**Men:** Age-specific mortality for men aged >25 years decreased in all districts except for increases in men >50/55 years old in Overberg and Garden Route. In the Cape Town Metro and Central Karoo age-specific mortality in men aged 15-24 years increased. (Figure 20).

**Women:** Age-specific mortality decreased for women of all ages in the Cape Town Metro and Winelands, while Central Karoo and Garden Route showed decreased age-specific mortality for women aged 25-40 years but increases at older ages. There was little change in age-specific mortality in Overberg and West Coast except for an increase in older women in Overberg and a decrease in West Coast (Figure 20).

**Children:** Under 5 mortality rates have decreased between 2009 and 2015 in most districts. Notable exceptions with minimal change in mortality are in Central Karoo, Garden Route and Overberg (Figure 20).
Figure 20: Age-specific mortality in males and females by district: 2009 vs. 2015
Source: Mortality surveillance
Have differences between districts in age-specific mortality changed – 2009 to 2015?

Differences in age specific-mortality rates for different districts appear to have decreased from 2009 to 2015, especially for females (Figure 21). Central Karoo and Overberg remain the districts with highest and lowest age-specific mortality respectively across most age groups for both sexes. **It is concerning that the under 5 mortality rate in Central Karoo in 2015 remains persistently high, especially in males.**

Figure 21: Age-specific mortality by district and sex: 2009 & 2015 Source: Mortality surveillance
City of Cape Town

What are the leading causes of YLL in different sub-districts in Cape Town and how has this changed – 2010 to 2013?

Due to changes in legislation related to births and deaths registration, local-level mortality surveillance at sub-district level has not been feasible after 2013.

Analysis in changes of burden of disease by sub-district and changes in the major causes of YLL is therefore restricted to changes until 2013, a major limitation in accurately assessing changes in distribution and inequity of the burden of disease.

The major feature of the causes of YLL in the City of Cape Town (Table 5) is that by 2013 intentional injuries had become the leading cause of YLL in males across all sub-districts except Southern, and accounted for more than a quarter of premature mortality in men in Khayelitsha, Klipfontein and Mitchells Plain. HIV/AIDS/TB remains the most important cause of YLL in females in Khayelitsha, Eastern, Klipfontein and Mitchells Plain, with cancer being the leading cause in other sub-districts. HIV/AIDS/TB is the second most important cause of YLL in men in Khayelitsha, Eastern, Northern, Mitchells Plain and Western. Between 2009 and 2013 there were small increases across almost all sub-districts in the proportion of YLL due to cancers, CVD and other NCDs in both males and females. From 2009 to 2013 the proportion of YLL due to diabetes decreased or remained unchanged across all sub-districts except among women in Khayelitsha and Eastern, however the more recent district level data from 2015 suggests that subsequently the proportion of YLL due to diabetes has increased across the Cape Town Metro.
Table 5: League Table showing rank of percent of years of life lost for males and females due to different causes for each sub-district in the City of Cape Town: 2010 vs 2013 (Note data at sub-district level only available for 2010-2013)

Int. inj.=intentional injuries; NCDs=non-communicable disease; CVD=cardiovascular disease; Unint. inj.=unintentional injuries; Infect/paras=infectious/parasitic; Mat/Peri/Nutr=matriatal/perinatal/nutritional

Source: Mortality surveillance

<table>
<thead>
<tr>
<th>Rank</th>
<th>Khayelitsha</th>
<th>Eastern</th>
<th>Northern</th>
<th>Tygerberg</th>
<th>Klipfontein</th>
<th>Mitchells Plain</th>
<th>Southern</th>
<th>Western</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Int. inj. 23.7</td>
<td>HIV/AIDS &amp; TB 22.0</td>
<td>Int. inj. 15.1</td>
<td>HIV/AIDS &amp; TB 17.5</td>
<td>Cancers 14.4</td>
<td>HIV/AIDS &amp; TB 16.7</td>
<td>Cancers 14.3</td>
<td>CVD 15.5</td>
</tr>
<tr>
<td>3</td>
<td>Unint. inj. 13.5</td>
<td>Unint. inj. 12.6</td>
<td>CVD 13.8</td>
<td>Int. inj. 13.7</td>
<td>Cancers 16.7</td>
<td>CVD 14.3</td>
<td>Other NCDs 13.9</td>
<td>Other NCDs 12.2</td>
</tr>
<tr>
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<td>Other NCDs 8.9</td>
<td>CVD 11.9</td>
<td>Other NCDs 13.6</td>
<td>CVD 13.1</td>
<td>Other NCDs 14.3</td>
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<td>5</td>
<td>Other NCDs 7.2</td>
<td>Inf. paras 8.2</td>
<td>Cancers 12.3</td>
<td>Unint. inj. 10.8</td>
<td>Other NCDs 11.7</td>
<td>Int. inj. 13.7</td>
<td>HIV/AIDS &amp; TB 12.0</td>
<td>CVD 11.3</td>
</tr>
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<td>6</td>
<td>CVD 5.6</td>
<td>Cancers 5.8</td>
<td>Cancers 5.6</td>
<td>Inf. paras 10.0</td>
<td>Inf. paras 7.5</td>
<td>Inf. paras 8.5</td>
<td>Inf. paras 7.2</td>
<td>Inf. paras 7.8</td>
</tr>
<tr>
<td>7</td>
<td>Diabetes 2.3</td>
<td>Mat/Peri/Nutr 3.0</td>
<td>Diabetes 3.9</td>
<td>Diabetes 3.1</td>
<td>Diabetes 2.7</td>
<td>Diabetes 3.7</td>
<td>Diabetes 3.4</td>
<td>Diabetes 3.4</td>
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<tr>
<td>8</td>
<td>Diabetes 2.3</td>
<td>Mat/Peri/Nutr 3.0</td>
<td>Diabetes 3.9</td>
<td>Diabetes 3.1</td>
<td>Diabetes 2.7</td>
<td>Diabetes 3.7</td>
<td>Diabetes 3.4</td>
<td>Diabetes 3.4</td>
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<tr>
<td>9</td>
<td>Diabetes 2.3</td>
<td>Mat/Peri/Nutr 3.0</td>
<td>Diabetes 3.9</td>
<td>Diabetes 3.1</td>
<td>Diabetes 2.7</td>
<td>Diabetes 3.7</td>
<td>Diabetes 3.4</td>
<td>Diabetes 3.4</td>
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</table>
How has the total burden of disease changed in different sub-districts within the City of Cape Town – 2010 to 2013?

Although YLL/100,000 decreased overall across all sub-districts for males and females, there are notable differences by sub-district and sex (Figure 22). Of particular concern is the increase in YLL/100,000 in males in Tygerberg (9%) and Klipfontein (4%), resulting in almost no overall change in overall YLL/100,000 in these sub-districts. Across all sub-districts except Northern, the decrease in YLL/100,000 was considerably higher in females than males, with the biggest decreases for females in Khayelitsha (39%) and Mitchells Plain (32%) and with decreases of 9-15% in females across the other sub-districts. In males, the biggest decreases in YLL/100,000 were in Khayelitsha (20%), and Northern (15%).

Reduced mortality due to HIV/AIDS/TB was the major reason for decreased YLL/100,000 between 2009 and 2013 across sub-districts, with the greatest reductions in Mitchells Plain (females 56%; males 38%) and decreases of >20% in females and males across almost all sub-districts (except females in Eastern [17% decrease] and males in Western [2% decrease]) (Figure 23). Similarly, there have been large decreases in Communicable/Maternal/Perinatal/Nutritional YLL/100,000 in most sub-districts, especially Khayelitsha, Eastern, Mitchells Plain, Northern and Tygerberg. However, injury YLL/100,000 in males increased by 49% in Tygerberg and 31% in Klipfontein with little change in other sub-districts. NCD YLL/100,000 increased by up to 10% in most sub-districts in males, but decreased in Khayelitsha (13% reduction) with small decreases in Western and Northern. In women, NCD YLL/100,000 decreased by up to 8% in most sub-districts, except Eastern (9% increase) and Northern (6% increase) (Figure 23).
Figure 23: Years of life lost (YLL)/100,000 population in the City of Cape Town for different broad causes by sub-district and sex: 2010 to 2013. Percentage change in YLL/100,000 per broad cause from 2010 to 2013 shown in the 2013 bar for each sub-district; negative values are decreases, positive values are increases. Source: Mortality surveillance

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<tbody>
<tr>
<td>Non-communicable</td>
<td>4081</td>
<td>3531</td>
<td>-13%</td>
<td>5184</td>
<td>4676</td>
<td>-9%</td>
<td>6884</td>
<td>6476</td>
<td>-6%</td>
<td>7572</td>
<td>7123</td>
<td>-5%</td>
<td>8154</td>
<td>7647</td>
<td>-4%</td>
<td>9887</td>
<td>9343</td>
<td>-4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injuries</td>
<td>7605</td>
<td>7360</td>
<td>-6%</td>
<td>3798</td>
<td>3458</td>
<td>-7%</td>
<td>5149</td>
<td>4869</td>
<td>-5%</td>
<td>7218</td>
<td>6847</td>
<td>-4%</td>
<td>9397</td>
<td>8967</td>
<td>-4%</td>
<td>11905</td>
<td>10716</td>
<td>-10%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV/AIDS and TB</td>
<td>5443</td>
<td>5384</td>
<td>-6%</td>
<td>3101</td>
<td>2801</td>
<td>-10%</td>
<td>3890</td>
<td>3690</td>
<td>-6%</td>
<td>2921</td>
<td>2721</td>
<td>-7%</td>
<td>1809</td>
<td>1689</td>
<td>-7%</td>
<td>2798</td>
<td>2678</td>
<td>-8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comm/Mat/Peri/Nutr</td>
<td>3297</td>
<td>1832</td>
<td>-17%</td>
<td>1910</td>
<td>1032</td>
<td>-46%</td>
<td>2122</td>
<td>1242</td>
<td>-41%</td>
<td>2066</td>
<td>1242</td>
<td>-41%</td>
<td>1488</td>
<td>1242</td>
<td>-24%</td>
<td>1045</td>
<td>729</td>
<td>-30%</td>
<td></td>
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</tr>
</tbody>
</table>

Source: Mortality surveillance
What is the age and sex pattern of changes in total burden of disease in different sub-districts – 2010 to 2013?

Women: From 2010 to 2013 there was a fairly consistent pattern of decreased age-specific mortality in women aged ~20-45 years in all sub-districts, with the biggest declines in Khayelitsha, Klipfontein and Mitchells Plain, likely reflecting decreased HIV/TB-related deaths (Figure 24). Age-specific mortality in older women in Khayelitsha, Klipfontein, Western and Northern decreased, but increased in the other sub-districts.

Men: In comparison to women, declines in age-specific mortality in men between 2010 and 2013 were more modest. Similarly to women, Khayelitsha and Klipfontein had decreases in age-specific mortality in men aged 25-40/45 years likely due to HIV/TB, with smaller decreases in Northern and Western. There was also decreased age-specific mortality in older men in Khayelitsha, but increases in Mitchells Plain and Tygerberg. There was a notable increase in age-specific mortality in young men aged ~15 to ~25 years in most sub-districts, especially Klipfontein, Mitchells Plain and Tygerberg.

Children: Between 2010 and 2013 under 5 mortality rate decreased in most sub-districts, with the biggest declines in the sub-districts with the highest under 5 mortality in 2010, suggesting some reduction in inequity in child mortality across the Metro.

Has inequity between sub-districts changed – age-standardised mortality in different sub-districts – 2010 to 2013?

Although the differences in age-standardised mortality between sub-districts decreased slightly from 2010 to 2013, considerable inequity remains especially for females (Figure 25), with persistently higher premature mortality in the poorer South East sub-districts. In 2010, the sub-district with the highest age-standardised mortality rate for females (Khayelitsha) had a rate nearly twice (1.96 times) that of Northern with the lowest mortality. This reduced to being 89% higher by 2013. In males in 2010 the age-standardised mortality rate in Khayelitsha (highest male age-standardised mortality) was 69% higher than in Northern (lowest). In 2013, Mitchells Plain had the highest age-standardised mortality rate due to sharp increases since 2012, and this was 63% higher than Northern, which continued to have the lowest age-standardised mortality rate.
Figure 24: Age-specific mortality in males and females by sub-district in the Cape Town Metro: 2010 vs. 2013 Source: Mortality surveillance
Figure 25: Age-standardised mortality across all sub-districts in the Cape Town for all causes 2010 and 2013 – males and females
Note different scale for axes for males and females. Source: Mortality surveillance
6. Deep dive into leading burden of disease conditions

Injuries

Intentional Injuries

Overview of data on intentional injuries

Figure 26: Number of homicides per month in males and females in the Western Cape: 2010-2018
Source: Forensic Pathology Services

![Number of homicides per month in males and females in the Western Cape: 2010-2018](source)

There has been a year-on-year increase in the annual number of homicides in men in the province from 2010 to 2018 (Figure 26). The major increase was homicide due to firearms where the age-standardised mortality rate doubled from 17 to 35/100,000 from 2010 to 2016 (Figure 27).

Figure 27: Age-standardised mortality rates for different causes of homicide in the Western Cape: 2010-2016
Source: Western Cape Injury Mortality Profile 2010-2016

![Age-standardised mortality rates for different causes of homicide in the Western Cape: 2010-2016](source)
Most of the increase in homicides in the province came from the Cape Town Metro (Figure 28) where Klipfontein, Tygerberg, Mitchells Plain and Khayelitsha had the highest age-standardised homicide mortality rates in males in 2016 (Figures 29 and 30), with steep increases since 2010 in Klipfontein, Tygerberg and Mitchells Plain.4
About 50% of homicide deaths tested positive for alcohol with 45% having alcohol concentration >0.05g/100ml (SA legal driving limit) (Table 6).4

<table>
<thead>
<tr>
<th>Major causes</th>
<th>Cases alcohol tested</th>
<th>Alcohol results (those tested)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0g/100ml</td>
<td>0.01 – 0.05g/100ml*</td>
</tr>
<tr>
<td>Total injuries</td>
<td>70%</td>
<td>51%</td>
</tr>
<tr>
<td>All assaults</td>
<td>80%</td>
<td>50%</td>
</tr>
<tr>
<td>Sharp object</td>
<td>83%</td>
<td>30%</td>
</tr>
<tr>
<td>Firearms</td>
<td>87%</td>
<td>73%</td>
</tr>
<tr>
<td>Blunt force</td>
<td>62%</td>
<td>60%</td>
</tr>
</tbody>
</table>

*South Africa’s driving legal limit

### Examples of interventions

- **Provincial government and National Department of health hosted the Milestones Meeting of the Global Campaign for Violence Prevention in 2011**

  This meeting of leading experts from around the world identified the absence of an overarching policy as a key impediment to delivering the sustained long-term interventions required to effect a fundamental change in the structural and social determinants for violence.

- **Consequently, in 2013, the provincial government developed an Integrated Violence Prevention Policy Framework**5 to enable the delivery of interventions according to 6 key themes recommended by the World Health Organization, namely:
  1) A focus on early interventions
  2) Increasing positive adult involvement
  3) Strengthening communities (e.g. addressing alcohol availability)
  4) Addressing cultural and societal norms
  5) Removing access to means (e.g. gun control)
  6) Strengthening social welfare and criminal justice systems

  The Policy Framework recognised the urgency of the situation as a key concern, which prompted the provision for “quick wins” (firearm and alcohol control) that could be applied to ensure traction while longer term and more sustained interventions were delivered.

- **Violence Prevention through Urban Upgrading (VPUU) project** [www.vpuu.org.za](http://www.vpuu.org.za) started in 2005 in Khayelitsha and was considered a promising intervention that demonstrated an integrated upstream approach to address the historic exclusion of vulnerable populations as a result of apartheid land use planning. It has since been expanded to other nodes in the Western Cape.
What have we learned? What worked and what has been challenging?

- There has been poor adherence to firearm control with deleterious effects, most notably in Cape Town, with the diversion by a criminal syndicate of approximately 2500 firearms from the police armoury in Gauteng to gangs on the Cape Flats. This has sparked an unprecedented increase in firearm homicides. This has taken place alongside a national lapse in enforcement of gun control, which saw the fast tracking of 1.3 million stalled applications, renewals and licenses at the Central Firearms Registry, fundamentally increasing the pool of licensed weapons that percolate into the illegal market over time through theft and loss (Figure 31).6 The extent of this increase is immediately apparent in the homicide data from the Western Cape Injury Mortality Profile (2010-2016).4

- Relaxation of alcohol access controls, which has seen alcohol becoming more widely available through the formal retail sector than ever before. This has prompted the development of a new Alcohol Harm Reduction policy (provincial Bill currently being drafted), which adheres more strictly to global best practice for alcohol access.7

- A significant association between proximity to the VPUU infrastructure and reduced exposure to violence.8

What next?

Unfortunately, poor implementation of the two quick wins has caused a reversal – in effect they have become “quick losses” – necessitating a severe enforcement response, which has culminated in the deployment of military personnel in mid-2019 to the Cape Flats. For this deployment to be “successful” it needs to be considered as a short-term/ emergency response that will provide a space for the diverse and comprehensive interventions outlined in the Policy Framework to be revisited and implemented with urgency, including implementation of the Alcohol Harm Reduction Policy.
Figure 32: Timeline of interventions to reduce intentional injuries including effects of interventions, challenges and recommendations

**WHAT WORKED?**
- **VPUU** → reduced exposure to violence, & depression symptoms

**WHAT IS CHALLENGING?**
- **Gun control:**
  - Poor provincial firearm control
  - National lapse in gun control: 1.3 million licences fast-tracked
  - → ↑ pool of licensed weapons percolate into illegal market through theft & loss
  - → increase in firearm homicides
- **Alcohol:**
  - Relaxed access controls → alcohol more widely available through formal retail than ever before

**QUICK WINS BECAME QUICK LOSSES**

**WHAT NEXT?**
- Interventions in IVPPF urgently revisited and implemented
- Alcohol Harm Reduction Policy

---

**2006 → Violence Prevention Through Urban Upgrading**
Address historic exclusion of vulnerable populations by co-creating safe and sustainable neighbourhoods
Khayelitsha (2006); Drakenstein & Theewaterskloof (2013); other City of Cape Town areas
http://vpuu.org.za/

**2011 Milestones Meeting of a Global Campaign for Violence Prevention**
Absence of overarching policy identified as key impediment to delivering interventions to change upstream determinants of violence

**2013 Integrated Violence Prevention Policy Framework (IVPPF)**
Interventions in 6 WHO themes:
- Early interventions
- Positive adult involvement
- Cultural & Societal norms
- Strengthening social welfare & criminal justice
- Remove access to means e.g. gun control
- Strengthening communities e.g. alcohol availability

"QUICK WINS"
Road traffic Injuries

Overview of data on road traffic injuries

Figure 33. Road injury deaths by transport mode in the Western Cape 2012 to 2018
Source: Forensic Pathology Services 2018

While the absolute number of road injury deaths has increased slightly between 2012 and 2018 (Figure 33), the growth of the population far exceeds the increase observed and as such, age-standardised road injury mortality rates have remained relatively constant. Data on road fatalities from 2012 to 2018 indicate the prominence of pedestrians amongst road injury deaths and a rise in passenger deaths, in keeping with rapid urban development that has increased individual travel requirements, particularly amongst lower income people.

Central Karoo has the highest motor vehicle mortality age-standardised mortality rate (Figure 34) mainly due to the high number of fatal accidents (of both residents and non-residents) occurring along the N1 national road, although this declined substantially between 2010 and 2016.

Overall, alcohol results were available for 57% of all motor-vehicle fatalities. Of those with alcohol results available, 48% had a positive alcohol result, and 42% had an alcohol level over the legal driving limit.4

Figure 34: Trends in motor vehicle age-standardised mortality rate by district Source: Western Cape Injury Mortality Profile 2010-2016
Examples of interventions

Western Cape Burden of Disease Reduction Project 2008

Priority of Road Traffic Injury interventions (systems approach)

- **Priority 1:** Reduce exposure to overall transport-related risks
e.g. urban planning and integrated mass public transport
(buses, rail and non-motorised solutions)
- **Priority 2:** Reduce risk of crash involvement
e.g. alcohol and speed
- **Priority 3:** Reduce crash severity and consequences
e.g. seat-belts and cycle helmets

**Speed and alcohol were identified as 2 quick wins** that could considerably reduce road traffic injuries while more upstream structural interventions were delivered. Several measures have been introduced by the Western Cape Department of Transport to reduce speeding and alcohol-related road injury.

### Speed

- **Average speed over distance (ASOD) technology (from 2010)** in operation in several sections of the N1, N2 and R61.
- The City of Cape Town has introduced several measures to **improve fine collection** to ensure a negative consequence to speeding behaviour.
- **Permanent counting stations** on national and major provincial roads are used within District Safety Plans to identify speeding hotspots to focus law enforcement efforts here.

### Alcohol

- Before 2017, **roadblocks** were the main form of screening drivers for alcohol intoxication. These were stationary operations of several hours duration in which road users were stopped and screened for a wide number of road traffic violations (including breath alcohol, car roadworthiness etc.) In 2011, the accuracy of the **evidentiary breath alcohol testing (EBAT) unit was challenged in court** and found to be flawed. The EBAT units were consequently removed from operations.

- **Random breath test (RBT) operations (2017 onwards)** alongside **mobile EBAT units** that were properly calibrated with strict operating procedures to ensure validity in prosecutions. RBT operations focus solely on screening motorists for alcohol intoxication (increasing the number of drivers that can be screened), consist of one-hour duration and move to several different locations over 4-5 hours and are accompanied by mobile EBAT units so all alcohol testing occurs on site. They are accompanied by a **strong social media presence** in which live photography and video of the operations is shared to alert drivers to their presence and dissuade drivers from driving drunk.

- **District Safety Plans target alcohol as a key risk factor** and include not just RBT operations but also aim to **influence alcohol licensing and supply in hotspot areas.**

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*Safely Home multimedia campaign* (radio, television and social media) (2014 onwards) focuses on speed in August annually. It has also produced **several advertisements that focus on both drunk driving as well as drunk walking.**

www.safelyhome.westerncape.gov.za

What have we learned? What worked and what has been challenging?

- **Speed**:
  - Resistance to speed limit reduction: Attempts to reduce speed limits both generally (through the Western Cape Provincial Road Traffic Bill) and on specific roads (through applications to Provincial Roads) were met with significant resistance and were not successful.
  - Insufficient funding for more ASOD equipment.
  - Non-payment of fines.
  - Inappropriate speed limits being set on roads that run past informal settlements.

- **Alcohol**
  - Insufficient resources for larger numbers of RBT operations.
  - Insufficient EBAT units (one in the City of Cape Town and three in the rest of the province).
  - Low levels of alcohol screening of drivers involved in non-fatal crashes and only selected road fatality victims (around 75%) are tested for blood alcohol. Hence, it is difficult to compare alcohol intoxication levels across road user types or over time and thus not possible to accurately measure the impact of alcohol harm reduction operations.
  - Low prosecution rates of drunk drivers in the criminal justice system.
  - Difficulty reducing alcohol supply in hotspot areas.

What next?
Evaluations currently being conducted for the WCG: Transport’s District Safety Plans indicate that in several outlying areas, *pedestrian deaths are increasing* and that *many low income road users are travelling long distances for work on a daily basis*. Rising pedestrian and passenger deaths, as well as attacks on rail infrastructure (and commuters using that infrastructure) highlight the *urgent need for an integrated and safe public transport system*. The District Safety Plan evaluations have also emphasised the *lack of appropriate non-motorised transport planning* in the Integrated Development Plans, with residential areas being built alongside high speed motorways and little infrastructure provided for either pedestrians or public transport. *Low income road users feature prominently in road fatalities and merit urgent attention.*
Figure 35: Timeline of interventions to reduce road traffic injuries including effects of interventions, challenges and recommendations

**2010 → Average Speed Over Distance Technology (ASOD) N1, N2, R61**

**2014 → Safely Home Campaign**
Multimedia speed & alcohol harms reduction campaign in August every year

**2017 → Random Breath Tests with mobile Evidentiary Breath Alcohol Testing (EBAT)**
Screening for alcohol intoxication only
Moves to different locations over 4-5 hrs
Mobile EBAT units alcohol testing on site
Strong social media presence

**District Safety Plans**
Target alcohol as key risk factor
Aim to ↓ alcohol supply in hotspots

---

**WHAT WORKED?**
- Safely home → adverts won SA & international awards
- ASOD likely key factor in reduced road traffic mortality in Central Karoo

**WHAT IS CHALLENGING?**
- **Speed:**
  - Resistance to speed limit reduction
  - Insufficient funding for more ASOD equipment
  - Inappropriate speed limits on roads near informal settlements
- **Alcohol:**
  - Insufficient resources for more RBT operations
  - Too few EBAT units
  - Low levels of alcohol screening in crashes → difficult to measure impact of alcohol harm reduction
  - Low prosecution rates of drunken drivers
  - Difficult to reduce alcohol supply in hotspots

**WHAT NEXT?**
- Integrated & safe public transport
- Focus on low income road users
  - Travel long distances to work daily
  - Pedestrian deaths increasing
  - Appropriate non-motorised transport plans needed

---

**BoD 2008 approach:**
↓ crash exposure
urban planning, public transport
↓ crashes
Alcohol, speed
↓ crash severity
Safety belts, helmets
**“QUICK WINS”**
Non-communicable Diseases (NCDs)

Overview of data on non-communicable diseases

Prevalence and service burden of non-communicable diseases

Various national and provincial surveys indicate wide variation in the prevalence of common NCDs depending on the source of the estimate and method of measurement. This variability limits our ability to estimate the true burden of people living with NCDs in the province. However, the Provincial Health Data Centre (PHDC) has made progress in the use of proxy disease markers such as dispensing records and laboratory requests to better enumerate disease caseload. The figures below illustrate using this data to estimate case load and programme performance for diabetes, using diabetic medication as evidence for disease. This method will progressively be applied to other NCDs.

Figure 36: a) Number of people starting treatment for diabetes each year by sex: 2014-2018; b) Percent of all diabetic patients on oral medication only, insulin, only and both insulin and oral medication by district (sub-district for the Cape Town Metro) (includes all patients ever on treatment 2000-2017) Source: PHDC
The number of people starting medication for diabetes annually has remained relatively constant at ~18,000 (60% female) (Figure 36). The total number of diabetic patients is highest in Tygerberg, Western, Southern, Cape Winelands and Garden Route (Figure 37). Most (58%) diabetic patients are 40-65 years old, and nearly a third are >65 years of age (Figure 38). At least 80% of diabetic patients that had ever started medication between 2000 and 2017 were active in care at the end of 2018 in all districts/sub-districts except for Khayelitsha (79%) and Western (75%) (Figure 37). However, glycaemic control is poor: coverage of glycosylated haemoglobin measurements (HbA1c) varied from 46% to 65% across districts/sub-districts; HbA1c was >8% in 70% of these patients indicating poorly controlled or uncontrolled diabetes (Figures 39 and 40). Results were similar across districts/sub-districts.
Years of life lost due to different malignancies

Figure 39: Percent of diabetic patients (identified as started diabetic treatment between 2001 and 2017) in whom HbA1c was measured at least once during 2018 by district (sub-district for the Cape Town Metro) Source: PHDC

Figure 40: Percent of diabetic patients with different values of HbA1c among those tested in the last year Source: PHDC

Figure 41: Top causes of malignancy years of life lost (YLL) by % of all malignancy YLL contributed for females and males: 2009 to 2016. Other malignancies cause <5% of YLL in males and females. TBL=Trachea/bronchi/lung; excl=excluding Source: Mortality surveillance
Examples of interventions

- **Western Cape on Wellness (WoW!)**
The Western Cape on Wellness Initiative (WoW!) ([https://www.westerncape.gov.za/westerncape-on-wellness/](https://www.westerncape.gov.za/westerncape-on-wellness/)), launched in 2015, is linked to Provincial Strategic Goal 3 (increasing wellness, community safety and addressing social ills). WoW! aims to reduce the burden of NCDs by encouraging physical activity and healthy eating through training and support of champions across school, worksite and community settings.

- **Reduction of sodium content of certain foods**
Average salt consumption in SA is higher than recommended by the WHO and non-discretionary intake of salt is a significant contributor. Therefore, regulations for a two-step reduction in salt content of certain foods over a three-year period were promulgated by the National Department of Health in 2013. The first step of these reductions was brought into effect from June 2016.

- **Sugar-sweetened beverage tax**
A tax on sugar-sweetened beverages was first proposed in 2016 and came into effect in April 2018. The tax, referred to as a Health Promotion Levy, aims to reduce excessive sugar intake and is part of a broader strategy to reduce the prevalence of obesity by 10% by 2020.\(^{11}\) Taxation of foods high in sugar is considered very cost-effective as a measure to reduce diet-related disease.\(^{12}\) Despite initial proposals for a 20% tax, the current health promotion levy is 11%.

- **Integrated School Health Policy**
The Integrated School Health Policy and programme is a joint venture by the National Departments of Basic Education, Health and Social Development.\(^{13}\) A health education component of the programme, delivered via the subject Life Orientation, addresses nutrition and exercise education. A health screening component includes school based nutritional and physical assessment.

- **Alcohol game changer**
Reducing alcohol related harms has been identified as a priority intervention or “game changer” ([https://www.westerncape.gov.za/game-changers/game-changers/alcohol-harms-reduction](https://www.westerncape.gov.za/game-changers/game-changers/alcohol-harms-reduction)). It is focused on Khayelitsha Town 2, parts of Gugulethu and Nyanga in the Cape Town Metro and Drakenstein. The intervention has 3 “levers”: each lever includes a range of interventions. The levers are:
  1) Reducing access to alcohol by increasing legal outlets and closing down illegal outlets as well as enhancing sense of safety by installing surveillance cameras and deploying more law enforcement officers.
  2) Providing recreational and economic alternatives including digital gaming centres, sports and cultural programmes.
  3) Alcohol-related health and social services: The WCG: Health and Social Development Departments are providing alcohol-related harms interventions at public health and social service facilities.
What have we learned? What worked and what has been challenging?

- **WoW!:** There were 107 WoW! groups at the end of 2018 and 489 WoW! champions have been trained since 2015, with 78% remaining part of the initiative at the end of 2018. An evaluation of the WoW! Phase 1 pilot programme found that after 3 months of programme participation there was a marked reduction in blood pressure and waist circumference and significant improvements in self-reported healthy eating, physical activity, quality of life, general health status and reduced time spent sitting. Although overall retention at 3 or 6 months was only 40%, this was similar to other community-based interventions and was higher in community than school or work settings. In partnership with Qhubeka (https://qhubeka.org/), 3000 bicycles were distributed to 5 High Schools in Paarl East. Challenges have included retention, and lack of resources (venues, administration, equipment).

- **Reduction of sodium content:** The expected national impact of these regulations is 7400 fewer deaths due to CVD and 4300 fewer non-fatal strokes per year.15

- **Sugar-sweetened beverage tax:** It has been estimated that over a 20 year period a 20% sugar-sweetened beverages tax could see a reduction in incident diabetes cases and avert 21,000 deaths, 374,000 disability-adjusted life years (DALYs) and R10 billion in healthcare costs relating to Type 2 Diabetes mellitus in South Africa.12 The tax was however actually implemented at 11% so the benefits may be more modest.

What next?

- **Public health policy interventions to reduce population level risks for NCDs** e.g. reducing sodium, sugar, tobacco and alcohol consumption need to be implemented or strengthened and evaluated.

- **Optimal management of those with NCDs** to limit morbidity and premature mortality.
Figure 42: Timeline of interventions to reduce non-communicable diseases (NCDs) including effects of interventions, challenges and recommendations

**CVD**=cardiovascular disease; **DALYs**=disability-adjusted life years

### 2012 →
**Integrated School Health Policy**

- **Health education:** Life Orientation subject includes nutrition & exercise
- **Health screening:** School-based nutritional & physical assessment

### 2013 →
**Reduced sodium in food**

- 2-step ↓ in salt content of certain foods over 3 yrs
- Promulgated National Department of Health (2013)
- 1st step of reductions June 2016

### 2015
**Western Cape on Wellness Wow!**

- Trains & supports champions to promote healthy eating & exercise across school, work & community settings

### 2016 →
**Alcohol harm reduction game changer**

- Reducing alcohol related harms in 3 target areas: Khayelitsha Town 2, Gugulethu & Nyanga, Drakenstein
- 3 “Levers”:
  1) Reduce access to alcohol
  2) Recreational & economic alternatives
  3) Alcohol-related health & social services

### 2018
**Sugar tax**

- Taxation (11%) of sugar-sweetened beverages
- Part of broader strategy to ↓ obesity by 10% by 2020

---

### WHAT WORKS/WORKED?

- **Reduced salt content**
  - expected impact:
    - 7400 fewer CVD deaths/yr
    - 4300 fewer non-fatal strokes/yr
  - **WoW!**
  - Positive pilot results
- **Sugar Tax**
  - expected impact over 20 yrs nationally:
    - 21 000 fewer deaths
    - 374 000 fewer DALYs
    - R10 billion ↓ national healthcare costs

### WHAT IS CHALLENGING?

- **WoW!**
  - Poor retention in programme
  - Lack of resources (venues, equipment, administration)

- **Sugar tax**
  - Proposals for 20% tax unsuccessful, implemented at 11%
- **Poor control of diabetes**
  - 70% of diabetes patients poorly controlled or uncontrolled

### WHAT NEXT?

- ✓ Implement/strengthen/evaluate public health policy interventions
- ✓ Optimal management of those with NCDs to improve outcomes
Mental health

Overview of burden of mental illness

Quantifying the burden of mental illness is challenging both because of limited epidemiological studies and because mental illness is associated with morbidity rather than mortality, so the burden cannot be approximated from mortality surveillance data.\(^\text{16}\)

Disability-adjusted life years

Disability adjusted life years (DALYs) are more appropriate than mortality data to quantify the burden of mental illness, as DALYs combine morbidity (as years lived with disability [YLD]) with premature mortality (YLL). In SA in 2000 neuropsychiatric disorders were the 3rd leading cause of DALYs, however no data are available specifically for the Western Cape.\(^\text{17}\)

Suicides

Suicide may be a proxy for mental illness burden, since ~90% of people who commit suicide have a psychiatric disorder at the time of their death, although suicide figures in isolation are a gross underestimation of underlying mental disorders.\(^\text{1}\) From 2010 to 2016 the proportion of injury deaths due to suicide was unchanged at 11% (1.5% of all deaths) and the suicide age-standardised mortality rate was 3 times higher in males vs. females across all years (17 vs 5/100,000) with age-specific suicide mortality being highest in men 20-39 years (Figure 43).\(^\text{4}\)

National Income Dynamics Study (NIDS)

The National Income Dynamics Study (NIDS), a panel survey that has been conducted biannually from 2008 to 2017 in a nationally representative sample, reported depression prevalence using a brief measure of depressive symptoms. Depression prevalence was highest (22%) in 2008, decreased in 2013 (13%) with a small increase to 15% in 2017.\(^\text{19}\)

South African Stress and Health Survey (SASH)

The South African Stress and Health Survey (SASH) conducted in 2004 remains the main source of mental health prevalence data for SA.\(^\text{18}\) The Western Cape had the highest 12-month and lifetime prevalence of mental illness in SA (39%). Prevalence of anxiety disorders was 19%, mood disorders 14% and substance use disorders 21%.\(^\text{18}\)

Routine data

While the PHDC is developing methods to infer mental illness using evidences such as medications dispensed and ICD-10 codes which will quantify the service burden, these data will underestimate the true mental illness burden as the SASH study showed that only 1 in 4 people with criteria for a mental health disorder sought treatment.\(^\text{18}\)
Examples of interventions

Programmatic interventions

Mental health has only really drawn the attention of managers in recent years. The following programmatic interventions are ongoing:

- **Mental Health Policy Working Group** is developing the Mental Health Policy Framework for the province, using a life-course approach.
- **Provincial Mental Health Strategy** was initiated in 2018 with an analysis of mental health and subsequent workshop. In the Cape Town Metro psychiatric hospital chief executive officers will take the lead for the geographical service area where they are located. All stakeholders at different levels of service delivery and different disciplines will develop:
  - An in-depth analysis of which service packages are available at each level of care, resources and skill sets available each area.
  - A multisectoral resource list for each area.
  - A priority list for each area, aligned with the National Strategic Framework but developed with the needs of each area in mind.

Rural is doing an analysis of mental health services in their area and linking with provincial Review Boards and forensic services.

- **Waiting list management and reduction**: When a patient is referred to a specialist hospital they become the responsibility of the specific specialist hospital. Psychiatric hospitals can see on a daily basis how many people are on their waiting list and from where they have been referred. This helps to address waiting times and track how fast the waiting list is being reduced.

- **Retention in care**: On discharge, patients are given enough medication to last beyond their primary care appointment. The Mental Health (MH) nurse thus has enough time to activate community health workers (CHWs) to trace patients if they are not back for a repeat prescription in a month’s time. Contact with the MH nurse before discharge has also improved.

- **Integrated Counselling Strategy** being developed using Bachelor of Psychology qualified registered counsellors to address the shortage of psychologist resources for current counselling needs. Linkages from CHWs to MH nurses to registered counsellors to specialist hospitals (psychologists) can provide a workable counselling model. Registered counsellors have proven to work very well in 3 pilot projects running since 2011.20

- **Data validation**: Identifying data needed to minimise pressure in the system and re-look at service design.

- **Assertive Community Treatment Teams (ACT) (started 2007)** is a team-based treatment model that provides multidisciplinary, flexible treatment and support to people with mental illness.21 Teams for Valkenberg, Lentegeur and Stikland were established, comprising of a principal medical officer, chief professional nurse and senior social worker. Patients with mental disorders are assigned to key workers at discharge, who then conduct follow-up home visits as well as assist in facilitating other required interventions.22
There have also been several MH care implementation projects in partnership with WCG: Health. Selected projects and their outcomes are summarised in Table 7.

What have we learned? What worked and what has been challenging?

- Challenges include lack of mental illness data; low priority given to mental health and barriers to integrating mental health services into primary health care.
- ACT: In the Western Cape a modified ACT intervention was associated with a 32% decreased rate of readmission and 56% reduction in admission duration, with notable cost saving implications. Patients in ACT services also had efficient access to psychiatric beds when requiring admission, thus lowering the pressure on other services e.g. medical wards. However, the ACT intervention is both costly and labour intensive and improved community mental health services may eliminate/reduce the need for interventions such as ACT.
- Child support grants (CSG) have been shown to reduce transmission of parental mental illness to adolescents, in particular minimising the considerable negative effect of depressed fathers on teens. Further, in homes where the mother has symptoms of depression, receiving the child support grant halves the risk of intergenerational transmission of depression. The CHANCES 6 study currently underway aims to assess the impact of the CSG on young people’s mental health and life chances.

What next?

- Evaluate or complete evaluation of recent interventions.
- Improved estimates both of the true population burden of mental illness as well as services burden.
Table 7: Summary of selected mental health intervention projects and evaluations in the Western Cape.

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Evaluation</th>
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<tbody>
<tr>
<td><strong>Primary health care (PHC)</strong></td>
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</table>
| Integration of mental health into primary care guidelines (Practical Approach to Care Kit – PACK guidelines) (started 2014) | ✓ 35 master trainers trained to manage the programme  
✓ 331 facility trainers cascade training to facility level clinicians  
✓ 2640 clinicians have received PACK training covering all primary care facilities in the province  
✓ 4 annual editions of PACK guide published with updated policy & National & Provincial Department of Health guidelines  
✓ >33 000 hard copies distributed to public sector primary care facilities |
| Adapting PRIME (Programme for Improving Mental Health Care) model to develop a district mental health care plan (Eden District) | Results of implementing PRIME in a non-Western Cape district in SA:  
✓ ↑ identification of depression and alcohol use disorders  
✓ Significantly higher proportion of patients with depressive symptoms in PRIME intervention facilities had a >50% reduction in depression score and remission of depressive symptoms |
| ➢ ↑ capacity of primary care nurses to identify, diagnose, review common mental disorders  
➢ Implementation of stepped up referral system with clinic-based psychosocial lay counsellors, doctors and mental health specialists |                                                                                                                                                                                                             |
| Mental health training for Community Health Workers (2017)                  | ✓ Significant improvement in mental health knowledge of CHWs sustained at 3 months  
✓ Improved CHW confidence, benevolence, reduced social restrictiveness, and increased tolerance to rehabilitation of the mentally ill in the community but no change in authoritarian attitudes  
✓ Training was acceptable and feasible |
| ➢ Piloted in Strand and Mitchells Plain                                      |                                                                                                                                                                                                             |
| MIND:                                                                        | None yet                                                                                                                                                                                                     |
| ➢ Cluster randomised trial at 24 PHC facilities to assess different models of integrating mental health care for patients with chronic conditions |                                                                                                                                                                                                             |
## Intervention

<table>
<thead>
<tr>
<th>Maternal/perinatal mental health</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASSET: heAlth Systems StrEngThening in sub-Saharan Africa</strong></td>
</tr>
<tr>
<td>➢ Scale up screening and counselling for maternal mental health in WC</td>
</tr>
<tr>
<td><a href="https://healthasset.org/">https://healthasset.org/</a></td>
</tr>
<tr>
<td><strong>Perinatal Mental Health Project (started 2004)</strong></td>
</tr>
<tr>
<td>➢ Brief psychosocial intervention for pregnant women in Hanover Park</td>
</tr>
<tr>
<td>➢ Health worker training and advocacy</td>
</tr>
<tr>
<td><a href="https://pmhp.za.org/">https://pmhp.za.org/</a></td>
</tr>
<tr>
<td><strong>Lentegeur Spring Project (started 2014)</strong></td>
</tr>
<tr>
<td>➢ Turn Lentegeur, a psychiatric hospital with the name meaning “aroma of spring”, into an emblem of beauty and hope</td>
</tr>
<tr>
<td>➢ Transformation of hospital’s landscape into gardens</td>
</tr>
<tr>
<td>➢ Psycho-social rehabilitation and outreach programmes enabling food gardening, recycling etc. that develop social &amp; environmental skills</td>
</tr>
<tr>
<td>✔ Project included in the Cape Town World Design Capital 2014 programme</td>
</tr>
<tr>
<td>✔ Adopted as a flagship by Provincial Department of the Western Cape and the Premier’s 110% Green Campaign</td>
</tr>
</tbody>
</table>

## Evaluation

<table>
<thead>
<tr>
<th>Maternal/perinatal mental health</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔ Situation analysis completed and plan to implement in 4 intervention and 4 control Midwife Obstetric Units in 2020</td>
</tr>
<tr>
<td><strong>Perinatal Mental Health Project (started 2004)</strong></td>
</tr>
<tr>
<td>✔ 95% of women attending antenatal care agreed to screening</td>
</tr>
<tr>
<td>✔ Outcomes 6 – 10 weeks postpartum have been good</td>
</tr>
<tr>
<td>✔ 50 – 80% of women reported that their mental problems had improved significantly or resolved since counselling</td>
</tr>
</tbody>
</table>

## Severe mental illness

<table>
<thead>
<tr>
<th>Lentegeur Spring Project (started 2014)</th>
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<tbody>
<tr>
<td>✔ Project included in the Cape Town World Design Capital 2014 programme</td>
</tr>
<tr>
<td>✔ Adopted as a flagship by Provincial Department of the Western Cape and the Premier’s 110% Green Campaign</td>
</tr>
</tbody>
</table>

## Substance use

<table>
<thead>
<tr>
<th>Teachable Moment Programme (started 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔ Randomised controlled trial showed that intervention reduced substance use and depressive symptoms vs. educational brochure alone²⁸</td>
</tr>
<tr>
<td>✔ Cost of employing peer counsellors approximately 5x less than trained clinical psychologist to screen and deliver intervention</td>
</tr>
<tr>
<td>✔ Cost effective²⁹</td>
</tr>
</tbody>
</table>
Figure 44: Timeline of interventions to reduce mental health (MH) morbidity and mortality including effects of interventions, challenges and recommendations

GSA=geographic service area; PHC=primary health care; Rx=treatment

**2007 Assertive Community Rx Teams (ACT)**

Multidisciplinary, flexible treatment and support to people with mental illness by team

Teams for Valkenberg, Lentegeur & Stikland established

**2018 → Waiting list management**

Patients referred to specialist hospital become specialist hospital’s responsibility. Addressing and tracking reductions in waiting list: Psychiatric hospitals see daily number of people on waiting list and from where they have been referred.

**2018 → Retention in care**

- Patients given medication beyond PHC appointment on hospital discharge
- MH Nurse time activates tracing by Community Health Workers if no return for repeat prescription
- Contact with MH nurse before discharge

**MH Policy Working Group & MH Strategy**

Develop MH Policy Framework

Metro: Stakeholder teams for each GSA led by Psychiatric Hospital CEOs
- Analysis of service packages in GSA at each level of care
- Multi-sectoral resource list
- Priority list for each area based on MH National Strategic Framework

**WHAT WORKS/WORKED?**

- **ACT**
  - ↓ readmission & ↓ admission duration
  - Patients in ACT services had efficient access to psychiatric beds when requiring admission – ↓ pressure on other services
- **Implementation/intervention projects**
  - Positive results – See Table
- **Child support grants**
  - ↓ transmission of parental mental illness to adolescents

**WHAT IS CHALLENGING?**

- Lack of mental illness data
- Limited priority given to mental health
- Barriers to integrating mental health services into primary health care

**WHAT NEXT?**

- Evaluate/complete evaluation of recent interventions
- Improved estimates of population burden as well as services load of mental illness

**2018 → Data validation**

Identifying data needed to minimize pressure in the system and re-look at service design

**2018 → Retention in care**

- Patients given medication beyond PHC appointment on hospital discharge
- MH Nurse time activates tracing by Community Health Workers if no return for repeat prescription
- Contact with MH nurse before discharge

**Mental Health (MH)**
HIV and Tuberculosis

Overview of data on HIV and tuberculosis

Prevalence and incidence of HIV in adults

The Thembisa HIV and demographic model (www.thembisa.org) estimates that in 2018 there were ~450,000 people living with HIV (PLHIV) in the Western Cape, including about 13,000 children <15 years of age. Among adults aged 15-49 years, estimated HIV prevalence in 2018 was 10.3% overall, but nearly twice as high in women (13.4%) as in men (7.3%) (Figure 45). HIV incidence in 2018 in those aged 15-49 years is estimated to be 4.7/1000, about 43% less than in 2007/8, and remains higher in females than in males (5.9 vs 3.6/1000) (Figure 46). Although HIV incidence in the Western Cape is one of the lowest among all provinces in SA, the rate of decline has been slower than other provinces (Figure 47).
Modelled estimates of mother to child transmission including during breastfeeding have decreased by nearly 75% in the last 10 years from 11.8% in 2008 to 3.4% in 2018, with corresponding declines in both child and infant mortality (Figure 48). In contrast to adults where at least 90% of PLHIV in the Western Cape know their status, it is estimated that only about 74% of children aged <15 years living with HIV have been diagnosed.30

Figure 48: Mother-to-child transmission (MTCT) rate and number of new MTCT cases in the Western Cape Source: Thembisa 4.2

HIV diagnosis, treatment, viral suppression
Figure 49: a) HIV Cascade by calendar year (2008-2018) showing percent of people living with HIV (PLHIV) who have been diagnosed, proportion diagnosed who are on antiretroviral therapy (ART), proportion with viral load measured (VL) and proportion virologically suppressed - progress towards the 90-90-90 targets b) Annual number of PLHIV newly diagnosed (new ID), starting ART and cumulative total on ART by calendar year (2008-2018) Source: PHDC

Mother to child HIV transmission

![Mother to child HIV transmission diagram](image-url)
There are approximately 300,000 PLHIV on ART in the Western Cape with declining numbers of new HIV diagnoses (~24,000 in 2018) and PLHIV starting ART (~34,000 in 2018) per year (Figure 49). The Western Cape Province has exceeded the target of 90% of PLHIV knowing their status, however <70% of those diagnosed are on ART (64% males; 67% females) due to a combination of suboptimal initiation and, more importantly, poor retention of PLHIV who previously started ART. Among those remaining on ART, about 80% are virally suppressed (<400 copies/ml), with similar proportions for men and women. Overall virologic control of PLHIV is thus ~50%, with a steady year-on-year increase from <10% in 2008 (Figure 49).

**Tuberculosis: Number and characteristics of cases, treatment, registration and drug resistance**

Using data from the PHDC, there were ~56,000 new tuberculosis (TB) cases in 2018, a decrease of ~9% since 2012, and an increasing proportion of cases started treatment, reaching 83% in 2018 (Figure 50). From 2012 to 2015 an increasing proportion of all TB cases were laboratory confirmed and recorded in the TB e-register, plateauing at ~70% and ~75% respectively thereafter. From 2012 to 2018 there was a year-on-year increase in the proportion of cases that are retreatment cases (from 26% in 2012 to 35% in 2018) and extra-pulmonary TB (from 7.1% in 2012 to 11.5% in 2018). Although the proportion of all TB cases with unknown resistance results has decreased from 58% (2012) to 36% (2018), the proportion of TB cases that are known to be drug-resistant has remained relatively constant since 2012 at 4-5%, and hence the proportion with confirmed drug-sensitive tuberculosis has increased from 38% (2012) to 59% (2018) (Figure 51).
Figure 50: a) Total number of tuberculosis (TB) cases 2012-2018 b) Percent of cases that have started treatment (Rx), have laboratory (lab) confirmed diagnosis, are captured in the e-register, and percent of cases that are re-treatment (grey dotted line) and extra-pulmonary tuberculosis (yellow dashed line) Source: PHDC

Figure 51: a) Percent of sensitive, drug-resistant and unknown sensitivity TB cases 2012 – 2018 b) Percent of different types of drug resistant TB (DR-TB) cases 2012-2018
MDR=multi-drug resistant; XDR=extensively drug resistant; Rif=rifampicin-resistant; Mono/Poly= resistant to ≥1 drug; Source: PHDC
Around 40% of patients with TB are also PLHIV and a growing proportion of them are on ART (66% in 2012 to 82% in 2018), with a particular increase in the proportion already on ART at the time of TB diagnosis (52% in 2012 to 71% in 2018) (Figure 52).
Examples of interventions

There have been considerable efforts to address the burden of disease due to HIV and TB with 3 "levels" of intervention.

1. **High-level policy frameworks** have been developed to provide overall plans to address HIV, TB and sexually transmitted infections (STIs) with the following focus areas:
   - Address structural, biomedical and human rights dimensions
   - Increase HIV Testing Services, focus on key populations and reduce stigma
   - Alignment of provincial, national and international strategies

2. **Intersectoral Collaborations & Campaigns**

   There have been several intersectoral collaborations. Examples include:
   - **National HIV testing campaign in collaboration with SANAC (2010)**
     - Expanded non-health HIV Counselling and Testing (HCT) services
     - Mobile HCT services in all districts
     - Premier’s HCT lottery ("Get tested and win") in 2011 & 2013
   - **Higher Education AIDS (HEAIDS) “First things first” (FTF) programme (started 2010)**
     - [https://www.heaids.ac.za/programmes/first-things-first/](https://www.heaids.ac.za/programmes/first-things-first/)
     - Implemented in TVET colleges in Western Cape
     - Access to key prevention services for young people including HCT, TB and STI screening and condom distribution
   - **South African Business Coalition on Health and AIDS (SABCOHA) collaboration from 2011**
   - **“One Man Can” programme with Sonke Gender Justice**
     - Encourages and supports men to advocate for gender equality, prevent gender-based violence, and respond to HIV
     - Klipfontein: Promotes health services for men including Men’s Wellness Centre (Gugulethu), medical male circumcision
     - Prisons: Collaborates with Department of Correctional Services, trains inmates and correctional officers as peer educators with focus on STIs, TB, anal and cervical cancer, contraception

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**Examples of policy frameworks**

**INTERNATIONAL**

**UNAIDS 90-90-90 (2014)**
- 90% of people living with HIV are diagnosed
- 90% of those diagnosed are on antiretroviral therapy (ART)
- 90% of those on ART are virally suppressed

**Stop TB Partnership Global Plan to End TB & 90-90-90**
- 90% of vulnerable groups screened for TB
- 90% of people with TB diagnosed and treated
- 90% TB treatment success rate

**NATIONAL**

National Strategic Plans for HIV, TB & STIs (2007-11; 2012-16; 2017-22)
Department of Basic Education (2017) National Policy on HIV, STIs & TB for Learners, Educators, School Staff

**PROVINCIAL**

Provincial Strategic Plans for HIV, TB & STIs (2012-16; 2017-22)
- **PEPFAR DREAMS and She Conquers from 2017**
  - PEPFAR’s DREAMS program is an integral part of the SA Government “She Conquers” campaign seeking to empower girls and young women. [http://sheconquerssa.co.za/](http://sheconquerssa.co.za/)
- **Tuberculosis communication campaigns e.g. #UnmaskStigma and #FixThePatentLaws**
  - Since 2017, WCG: Health has disseminated information on the #UnmaskStigma campaign through their Communications Directorate. Several sub-districts across the province participate annually and thousands of “zero stigma” masks have been distributed.
- **Western Cape and National Policies on Infection Prevention and Control and Occupational Health Care**
- **Improvements to reduce tuberculosis transmission in prisons (2012)**
- **Provincial Employees AIDS Programme**
- **Multi-Sectoral Action Teams (MSATs) until March 2019 and Community Based Response projects until 2016**
  - Multisectoral Action Teams (MSATs) coordinate HIV/AIDS and TB activities in different districts. MSATs are made up of Community-based organisations (CBOs) led by the Department of Health.34
  - Community-based response projects have been funded by WCG: Health for projects linked to HIV/AIDS and TB by CBOs in the MSATs. Projects include HIV awareness and trauma counselling, skills training to alleviate unemployment, establishing food gardens for people living with HIV/AIDS and TB, running aftercare programmes, and offering safe houses for vulnerable individuals.
  - These projects were supported by the Global Fund and have halted due to limited further funding availability.
- **Stricter tobacco control legislation in draft since 2012, but not yet promulgated.**
3. Programmatic Interventions

The HIV/AIDS, STI and TB (HAST) programme has probably seen the greatest number of interventions in the last 10 years, at least partly due to changes in national and global guidance. Examples and year of implementation where appropriate include:

- **Integration of TB & HIV services**
- **Improved diagnostics**
  - Rapid HIV tests, HIV-PCR including testing at birth of high-risk (2013) and then all (2015) HIV-exposed infants, HIV genotyping, TB-LAM, TB Gene Xpert (2011) including home-based testing by CHWs, reflex Cryptococcal antigen screening (CrAg)
- **Enhanced TB screening**
  - Symptom screening of all attending health services
  - CHWs screening all household members
  - SA is one of 13 priority countries for the Stop TB Partnership Initiative to “Find the Missing People with Tuberculosis”
- **Life Skills programme for primary schools and peer education programme for secondary schools (2002)**
- **DOTS stopped for tuberculosis treatment**
- **Voluntary medical male circumcision (2011)**
- **ART for all pregnant and breastfeeding women (Option B+) (2013)**
- **Adherence Clubs for ART (2015)**
- **Introduction of scented condoms & lubricants (2015)**
- **Isoniazid preventive therapy (IPT)**
  - Introduced for all people living with HIV (2011)
  - IPT has been prioritised since 2012/13
  - Pending revised national guidelines to align with WHO guidelines
- **Improved drugs and drug combinations**
  - Fixed dose combination (FDC) of tenofovir, lamivudine and efavirenz for first-line ART in 2013 reduced HIV pill burden to 1 pill daily
  - Introduction of dolutegravir instead of efavirenz in first-line ART planned for 2020
  - Inclusion of bedaquiline, linezolid and progressively delamanid for drug resistant TB treatment ↓ mortality & quicker culture conversion especially in PLHIV
  - Routine use of injectable agents for the treatment of DR-TB was discontinued in 2018, followed by a WHO recommendation supporting this bold step
- **TB treatment support groups piloted by MSF**
- **Universal ART for all people living with HIV (2016)**
What have we learned? What worked and what has been challenging?

- **HCT interventions**: While difficult to ascribe to a single intervention, **HIV testing coverage in the Western Cape is high with >1.4 million HIV tests performed in 2017-8** – in excess of the provincial target. Although provincial data suggests that close to 100% of PLHIV have been diagnosed, the true proportion is likely slightly lower when taking into account migration (both in and out) and deaths in those previously diagnosed. Nonetheless model estimates suggest that the **Western Cape is achieving or very close to achieving the “first 90” target**. The HCT lottery had mixed outcomes but for about 18% of clients this was their first HIV test, suggesting the campaigns attracted those who otherwise might not have tested. In 2016, HEAIDS FTF programme tested 14% of TVET and 11% of university students.

- **HIV treatment**: There are nearly 300,000 PLHIV on ART in the province. Number of new ART starts peaked in 2012 at >100,000 PLHIV in that year alone and has subsequently declined; in 2018 nearly 35,000 PLHIV started ART. **HIV FDC simplified adherence, reduced burden on clinic pharmacies and made adherence clubs more feasible**. Poor retention on ART is emerging as a major challenge: ~40% of patients that have ever started ART are not retained. This is a major reason that **we are falling behind in meeting the second “90” with only 66% of PLHIV being on ART**. About 1/3 of those not on ART are patients who have previously started treatment but are no longer on treatment. Among those on ART, VL testing coverage is 87%; 90% of tested patients are virologically suppressed. Provincial data on the 2\(^{nd}\) and 3\(^{rd}\) 90s closely matches latest modelled estimates from the South African HIV and Demographic Model, Thembisa 4.2.

- **Uptake of Medical Male Circumcision** has been suboptimal but increased in 2017/8 (16,544 procedures) vs. earlier years.

- **PMTCT**: The **prevention of mother-to-child transmission (PMTCT) programme remains one of the flagship HIV prevention programmes in the province**. In 2018, only 0.3% of HIV-exposed infants tested at 10 weeks of age were HIV positive, and modelled estimates of all mother-to-child transmission including during breastfeeding have decreased by nearly 75% in the last 10 years from 11.8% in 2008 to 3.4% in 2018.

- **ART Adherence clubs** were first piloted in Khayelitsha from 2007 with **loss to follow up reduced by 57% and virologic rebound by 67%**. ART clubs also reduce patient load in mainstream care, enabling clinicians to better concentrate on unstable patients and save patients’ time and money. The adherence club collaboration between MSF, WCG: Health and the Treatment Action Campaign won a platinum award from the prestigious Impumelelo Social Innovations Centre. About 45% of ART patients in the Cape Town Metro are currently in adherence clubs.

- Evaluation of **PEPFAR’s DREAMS** and similar interventions is ongoing (https://epicentre.org.za/mainprojects/dreams-impact-evaluation/).

- **Gene Xpert MTB/RIF** together with decentralised care reduced median time to DR-TB treatment start from 42 to 7 days for PLHIV, reducing infectiousness, morbidity and mortality.

- **TB-HIV integration** has created operational challenges for a health service that previously ran disease-specific programmes for TB and HIV that were not patient-centred, with treatment delivered by different healthcare staff, often in separate facilities. Policies support TB/HIV integration, but **integration at the facility level needs to be enhanced**.

- **Stigma and discrimination** related to HIV and TB persists in many communities and settings.
What next?

The priority is to address upstream determinants of HIV and tuberculosis including poverty and gender inequity, alcohol and tobacco use, as well as transversal interventions such as community-oriented primary care and improved surveillance and use of information. At a programmatic level, priority interventions should include pre-exposure prophylaxis (PrEP) for HIV prevention especially in young women and girls, tuberculosis preventive therapy, infection prevention and control, finding missing tuberculosis cases, improving HIV retention and linking lost patients back to care to fully achieve the “90-90-90” targets. Additional key programmatic interventions include implementation of more robust HIV treatment (dolutegravir) and new drugs for drug-resistant tuberculosis (including pretomanid with trial data from Brooklyn Chest Hospital).
Figure 53: Timeline of a) policy and intersectoral interventions and b) programmatic interventions to reduce HIV and tuberculosis morbidity and mortality including effects of interventions, challenges and recommendations

HCT=HIV counselling and testing; SANAC=South African National AIDS Council; STIs=sexually transmitted infections; TB=tuberculosis

a) HIV / TB – policies & intersectoral activities

2010 → National HIV testing (with SANAC)
Expanded non-health HCT
Mobile HCT services in all districts
Premier’s HCT lottery (2011; 2013)

2012 → Stricter tobacco control
Legislation in draft since 2012; not yet promulgated

2012 → Improvements to ↓ TB transmission in prisons

Multi-sectoral action teams (MSATs)
CBOs + Dept. of Health team to co-ordinate HIV & TB activities in district
Halted in 2019 due to no further funding

2010 → Higher Education AIDS (HEAIDS) “First things first” (FTF)
TVET colleges in Western Cape
Access to key prevention services for young people incl. HCT, TB & STI screening & condom distribution

2012 → One man can
Men’s advocacy for gender equality, preventing gender-based violence & HIV in men
Klipfontein: Men’s Wellness Centre; medical male circumcision
Prisons: Trains inmates & correctional officers as peer educators; focus on STIs, TB, anal & cervical cancer, contraception

2017 → PEPFAR DREAMS
She conquers
Addresses structural drivers to ↓ girls’ risk of HIV infection

b) 2007 → International, National, Provincial policy frameworks

International
UNAIDS 90-90-90 (2014);
Stop TB Partnership Global Plan to End TB & 90-90-90

National
National Strategic Plans for HIV, TB & STIs
(2007-11; 2012-16; 2017-22)
Department of Basic Education National Policy on HIV, STIs & TB for schools
National policies on infection prevention and control and occupational health care

Provincial
Provincial Strategic Plans for HIV, TB & STIs
(2012-16; 2017-22)
Provincial policies on infection prevention and control and occupational health care

2010 → Higher Education AIDS (HEAIDS)
“First things first” (FTF)
TVET colleges in Western Cape
Access to key prevention services for young people incl. HCT, TB & STI screening & condom distribution

2012 → Stricter tobacco control
Legislation in draft since 2012; not yet promulgated

2012 → Improvements to ↓ TB transmission in prisons

2017 → TB awareness campaigns
e.g. #UnmaskStigma; #FixThePatentLaws

2017 → PEPFAR DREAMS
She conquers
Addresses structural drivers to ↓ girls’ risk of HIV infection
## HIV/ TB – programmatic interventions

### WHAT WORKS/WORKED?
- **HCT interventions**
  - High HCT coverage; achieving “first 90”
- **HIV treatment**
  - 300,000 PLHIV on ART; 90% suppressed
  - FDC simplified adherence, ↓ pharmacy workload
- **PMTCT**
  - Flagship programme in province
  - ↓ MTCT by 75% in last 10 years
- **ART Adherence clubs**
  - ↓ LTFU and viral non-suppression
  - ~45% of ART patients in Cape Town in clubs
- **Gene Xpert MTB/RIF & decentralized care**
  - ↓ time to DR-TB Rx start
  - ↓ infectiousness, morbidity, mortality

### WHAT IS CHALLENGING?
- **HIV treatment**
  - Poor retention -- ~40% of patients ever started on ART not retained
- **Voluntary medical male circumcision**
  - Suboptimal uptake but increased in 2017/8
- **TB/HIV integration**
  - Operational challenges integrating previous disease-specific programmes
  - Persistent HIV & TB-related stigma

### WHAT NEXT?
- Address upstream HIV/TB determinants
  - Poverty, gender inequity, alcohol & tobacco, COPC, surveillance, use of information
- Pre-exposure prophylaxis for HIV prevention
- IPT
- Infection prevention and control
- More robust HIV Rx (dolutegravir)
- Improve HIV retention
- Find missing TB cases
- New drugs for DR-TB

### Innovation Models of Care
- **2011 →**
  - **Expanded ART access**
    - Lifelong ART for all pregnant and breastfeeding women (2013)
    - Universal ART for all PLHIV (2016)
- **2015 →**
  - **Innovative models of care**
    - TB & HIV service integration
    - Adherence clubs for ART (2015)
    - TB treatment support groups piloted by MSF
    - DOTS stopped for TB Rx

### Enhanced TB symptom screening
- All attending health services
- CHWs screen households
- Stop TB Partnership priority country

### 2011 →
- **Improved diagnostics**
  - HIV: Rapid HIV Tests; HIV-PCR with birth testing of high-risk (2013) and all (2015) exposed infants
  - TB: TB-LAM; Gene Xpert (2011)
  - Other: CrAg screening

### 2011 →
- **Isoniazid preventive therapy**
  - Introduced for all PLHIV (2011)
  - Prioritized since 2012/13

### 2013 →
- **Expanded ART access**
  - Lifelong ART for all pregnant and breastfeeding women (2013)
  - Universal ART for all PLHIV (2016)

### 2013 →
- **Improved drugs**
  - FDC as first-line ART (2013): ↓ pill burden to 1 pill/day
  - Dolutegravir planned for first-line ART (2020)
  - Bedaquiline, Linezolid, delaminid for DR-TB Rx
  - Stopped routine use of injectables for DR-TB Rx

### 2015 →
- **Scented condoms**
- **Voluntary medical male circumcision**
- **Expanded ART access**
  - Lifelong ART for all pregnant and breastfeeding women (2013)
  - Universal ART for all PLHIV (2016)

### 2015 →
- **Innovative models of care**
  - TB & HIV service integration
  - Adherence clubs for ART (2015)
  - TB treatment support groups piloted by MSF
  - DOTS stopped for TB Rx
Brief focus: Maternal and perinatal health

Overview of data on maternal and neonatal mortality

The Western Cape is close to the 2030 Sustainable Development Goals of a maternal mortality ratio (MMR) of less than 70/100,000 live births (Western Cape 80/100,000 in 2017) and a neonatal mortality rate (NMR) of <12/1000 (WC 9.6/1000 in 2018). The number of deliveries in the province remains unchanged at ~100,000 per year. However, there are concerns that both neonatal and maternal mortality rates may be rising (Table 8).

What are the challenges?

Maternal mortality & morbidity:
- The main challenge is **bleeding during and after delivery**, which is a reflection of surgical and resuscitation skills as well as emergency transport.
- There is also an increase in deaths from **medical disorders, mostly cardiac disease and pulmonary embolus**.

Neonatal mortality & morbidity:
- The two main reasons why babies die are **stillbirths and preterm labour**. Most stillbirths occur in otherwise healthy women and are due to poor intrauterine growth not detected during routine antenatal care at low-risk community clinics. The two other main obstetric causes of death (**hypertensive disease of pregnancy and antepartum haemorrhage**) are also related to placental insufficiency. Preterm labour as well as stillbirth are strongly linked to education level, behavioural factors (alcohol and smoking) and nutrition.
- The main modifiable cause of death is **intra-partum asphyxia**, and is the cause of more than 30% of big (>1500g) babies born alive who die within the first few days after birth.

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**Table 8: Maternal and Neonatal mortality in the Western Cape: 2014-2017**

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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</thead>
<tbody>
<tr>
<td>MMR per 100,000 live births</td>
<td>65</td>
<td>68</td>
<td>83</td>
<td>80</td>
</tr>
<tr>
<td>NMR per 1000 live births</td>
<td>5</td>
<td>6.8</td>
<td>6.9</td>
<td>7.9</td>
</tr>
</tbody>
</table>

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**What next?**

- Programmatically, **effective antenatal care provision that includes ways to address social determinants** should be the main priority.
- Further research & roll-out of **umbilical artery Doppler**: Point-of-care continuous wave Doppler ultrasound (Umbiflow™) during routine antenatal care has already shown that it can reduce stillbirths.
- **Intra-partum asphyxia** is due to substandard care during labour and shortage of skilled staff. **Training in intra-partum care and recognition of foetal distress** is vital. Survivors of intra-partum asphyxia cost the province millions of Rand in litigation claims. Staff numbers & skills in units doing low risk deliveries must be addressed.
- **Access to emergency maternity theatres**: long waiting times for caesarean section, especially in large metro hospitals has been identified as an avoidable factor in perinatal mortality & morbidity.
Brief focus: Teenage pregnancies

Teenage pregnancies are not measured in mortality data, but cause substantial morbidity and are a risk for poor maternal, perinatal and child health outcomes. There has been a year-on-year increase in the number of pregnancies in adolescent girls aged 10-19 years (Figure 54), however this is largely due to (i) a growing population of adolescent girls and (ii) improved capture of pregnancy data, rather than an increasing rate of pregnancies in adolescents. There has been little change in number of pregnancies/1000 girls aged 10-19 years across the province since there has been complete capture of pregnancy data across all districts i.e. 2016 onwards (Figure 55).

Figure 54: Number of pregnancies in females aged 10-20 years: 2012-2018
Source: PHDC

About 56% of all pregnancies in girls aged 10-19 years occur in the Cape Town Metro. Rates of teenage pregnancy appear to vary widely across sub-districts in the Cape Town Metro, but are affected by referral of adolescents with high risk pregnancies (e.g. to facilities in Southern); changes over time are partly due to changing referral patterns once District Hospitals opened. (Figure 56).

Figure 55: Number of pregnancies/1000 girls aged 10-19 years for different districts: 2013-2018 Source PHDC

Figure 56: Number of pregnancies/1000 girls aged 15-19 years for different sub-districts in the Cape Town Metro: 2013-2018 Source PHDC
7. Transversal interventions

This section describes selected transversal interventions that have been implemented to address upstream determinants of several BoD conditions and/or to provide surveillance of BoD mortality, morbidity and service burden as well as improve patient care. These are:

- First 1000 Days
- Child support grants / cash transfers
- Mortality Surveillance
- Provincial Health Data Centre (PHDC)
- Whole of Society Approach (WoSA) including the Alcohol Game Changer
- Community-oriented Primary Care (COPC)
First 1000 Days

https://www.westerncape.gov.za/first-1000-days/

The first 1000 days of life provides one of the most significant opportunities within Health to address upstream determinants of BoD, as exposure to adverse childhood events has wide-ranging health related impact (www.nurturing-care.org). The First 1000 Days Initiative is therefore a critical preventive and promotive intervention not only for child health and wellbeing, but for health across the life course.

The First 1000 Days Initiative was launched in the Western Cape in February 2016 by the Members of the Executive Council (MECs) of Health and Social Development as a transversal communications campaign and component of Provincial Strategic Goal 3 (now Whole of Society Approach [WoSA]), namely: “Safe and Healthy Children”. The initiative incorporated three core themes informed by global neuro-scientific evidence (www.developingchild.harvard.edu) and expert opinion:
The framework was aligned to the Global Strategy for Women, Adolescent and Child Health’s strategic framework: Survive - Thrive – Transform (2017), and to the WHO Nurturing Care Framework (May 2018). The First 1000 Days is also a key element in other sector strategies, in particular as it relates to (a) Violence Prevention (Department of Community Safety), specifically Parent support, one of the WHO 7 INSPIRE strategies for Ending Violence Against Children, https://www.who.int/violence_injury_prevention/violence/inspire/en/, and (b) the 2015 National Integrated Early Child Development Policy (ECD) and Strategy (Department of Social Development) and the National Department of Health response to this mandate through the National Under 5 Side by Side campaign, https://sidebyside.co.za/, and new Road to Health Booklet.

First 1000 Days is coordinated by a core executive comprised of a provincial programme representative, a lead clinician and a communications lead, and supported by a wider team including public health specialists and representatives from Cape Town Metro and rural services.
The First 1000 Days initiative entails three key operational mechanisms:

1. **Communication:** Awareness through public campaign (2016), provincial First 1000 Days website, First 1000 Days roadshows for frontline staff in health and other sectors and non-governmental organizations (NGOs), community engagements, videos for facility waiting areas, numerous presentations at a wide range of fora, and recently an expanded strategy aligned to the National Side by Side Under 5 Campaign.

2. **Strengthening of health service activities:** (especially perinatal mental health and support for vulnerable pregnant women, parents, children and caregivers).
   
   Adopted by WCG: Health as a key priority from 2017 onwards, the First 1000 Days initiative is the vehicle for implementing the National Integrated ECD Strategy to provide health, nutrition services as well as mental health and parental support for pregnant women, parents and caregivers and children from conception to 2 years. A First 1000 Days Parent and Caregiver Support Package has been developed and is being implemented in the designated WoSA and COPC sites (with the intent to roll-out across the province). The package includes both facility and community based activities, with specific focus on known gaps such as risk assessment of and support for vulnerable pregnant women, infants and parents/caregivers, linkage to care and supportive services (including mental health and other sector services) as well as parent guidance and support.

3. **Intersectoral engagement** through:
   
   a) Parent Infant and Child Health Working Group involving academia, other sectors and NGOs to inform innovation.
   
   b) Extensive intersectoral engagement to construct a First 1000 Days Theory of Change was conducted in 2017 and a clear manifesto emerged for First 1000 Days: “Relationships Matter Most”.
   
   c) The First 1000 Days initiative is a crucial mandate underpinning key strategies for other sectors including: Departments of Social Development (Early Childhood Development; Child & Family Protection), Education (NCF 0-4), Community Safety (Violence Prevention), amongst others, with a First 1000 Days intersectoral policy drafted for discussion.

**Intended benefits**

1. Pregnant women and mothers are physically and mentally healthy, nurtured and supported.

2. Children at 2 years are resilient and able to reach their full potential.

3. Ensure that all pregnant women and children are nurtured and parents are supported from conception onwards, especially the most vulnerable, through WoSA approach so that children can achieve their full potential throughout the life-course.
Expected impact

**Survive** (Mortality): Ending preventable deaths.

**Thrive** (Morbidity): Reduction in low birth weight, stunting, improvement in ability to read by Grade 4.

**Transform** (Wellbeing): Secure attachments, reducing inequity and developing human capital.

Evaluation

- First 1000 Days Roadshow workshops held from April-September 2016 were attended by 667 participants from provincial and Metro Departments of Health, NGOs and the Department of Social Development.
- Knowledge about the first 1000 days improved after the workshops as assessed by questionnaire, with participants having increased awareness about how critical the first 1000 days is for a child’s health and neurodevelopment and the importance of maternal mental health.
- In follow-up telephonic interviews, workshop participants noted that it was difficult to apply the concept of a holistic maternal and child health approach in their everyday working practice, mainly due to a lack of resources and difficult work situations.


- The 2016 Provincial Health Research Day focused on the first 1000 days with the theme: Survive-Thrive-Transform, with a correspondingly themed Research Newsletter in November 2016.

What next?

To address child health and wellbeing, a **real investment into the First 1000 Days Initiative** should be undertaken as follows:

- **Early identification and support** of at risk pregnant mothers, children and parents/caregivers at facility and household level.
- Provide every vulnerable household with **relational support** for pregnant mothers, caregivers and children through integrating a structured First 1000 Days package for community health workers (e.g. Ibhayi Lengane Toolkit), starting from identification of pregnancy and continuing with regular support through antenatal, postnatal and beyond.
- Commit to strengthening **counselling, mentoring and mental health service** capacity for vulnerable clients and for frontline staff (including CHWs) working with vulnerable pregnant women, children and parents/caregivers.
- **Redesign perinatal services around the mother-father-infant triad** through the delivery of (i) an integrated multidisciplinary comprehensive package of care (fully integrating mental health with maternal and child health) and (ii) redress infrastructural and attitudinal barriers to providing holistic nurturing care.
Cash transfers /social grants as structural interventions.

Cash transfers (CT) are classified as structural interventions that foster health and well-being by addressing structural determinants. These determinants are contextual, societal or environmental factors that influence the distribution of money, power and resources and impact individual risk behaviour, morbidity and mortality. Poverty as a structural determinant has been shown to negatively impact child and adolescent survival, nutrition, education, health and development. CTs can be broadly divided in two groups; conditional and unconditional cash transfers (CCT and UCT).

**Conditional cash transfers (CCTs)**

**What are they?**
CCTs are paid to individuals/households contingent on specified behavioural requirements such as school enrolment and/or attendance, health service utilisation or some other behaviour like HIV/STI testing and/or remaining free of disease. They are not only for poor households. They are often transferred to the head of the family or main caregiver, depending on the CCT and/or the designated group e.g. adolescents.

**How are they thought to work?**
- May moderate risk exposure by reducing short-term poverty; also known as “income effects”.
- May mitigate financial barriers to behaviour change through reinforcement to “nudge” or promote healthy behaviour change; also known as “substitution effects”.
- Underlying principle is that the state or some other body forces certain decisions by citizens as they would not choose to spend their money for development or health behaviours due to lack of information or problems with future discounting or differences in value systems e.g. girl child education.

**Considerations for and against?**
- CCTs can exclude others based on the entry criteria into the programme, even though they also need the cash.
- CCTs are politically palatable as taxpayers tend to favour cash transfers that reward a behaviour rather than providing a “handout”.

**Unconditional cash transfers (UCTs)**

**What are they?**
UCTs are not conditional on any behaviour and are distributed with minimal inclusion criteria, for example citizenship, income, age or some other status.

**How are they thought to work?**
- UCT “income effects” overcome market failures and equitably increase household income and reduce household vulnerability by increasing capabilities and opportunities to reach one’s true potential and by transforming exclusionary systems of power for women and children in particular.
- Underlying principle is that poor households are constrained by a lack of cash but have the autonomy to decide for themselves how best to use their resources for development or preventive health behaviours.

**Considerations for and against?**
- UCTs are administratively cheaper and easier to roll out and scale up as they do not require a verification system of meeting the conditionality.
- Nobody is excluded.
Do cash transfers work?

Some examples from Africa have shown that provision of uniforms and/or school fees led to better school retention, later sexual debut, lower pregnancy incidence, being less likely to report age-disparate relationships, and lower HIV and HSV-2 prevalence.48-50 There was however no impact of cash transfers conditional on school attendance on HIV incidence in high-school girls in rural SA, although school attendance was significantly associated with reduced HIV risk.51 The relatively high school attendance rate of 95% in the area could have been one of the reasons for the limited effect of the CCT.51 It has been recommended that cash transfers should be augmented with other interventions to improve HIV-related knowledge, skills and capacities if they are to have sustained HIV-related population impact.52

What about social grants in South Africa?

SA has a long history of providing social grants which are unconditional. In post-apartheid SA, the following grants were made available: Child Support (CSG), Older Persons, Disability, Grant-in-Aid, Care Dependency, War Veteran’s and Foster Child grants. All of these grants except the Foster Child Grant and the Grant in Aid, are “means tested” and prioritise poor households.53 There have been annual increases in the number of recipients of most grants in the Western Cape, especially the Child Support and Older Persons Grants (Table 9).

**Table 9: Number of grant beneficiaries by grant type in the Western Cape, 2016-2018**

Source: Provincial Economic Review and Outlook 2018, WCG: Treasury and WCG: Department of Social Development

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</thead>
<tbody>
<tr>
<td>Child support grant</td>
<td>471 847</td>
<td>516 328</td>
<td>630 208</td>
<td>728 901</td>
<td>797 881</td>
<td>863 440</td>
<td>865 753</td>
<td>935 687</td>
<td>966 345</td>
<td>983 435</td>
<td>1 006 045</td>
<td>1 021 092</td>
</tr>
<tr>
<td>Care dependency grant</td>
<td>7 399</td>
<td>7 960</td>
<td>8 899</td>
<td>9 355</td>
<td>9 960</td>
<td>10 791</td>
<td>11 028</td>
<td>12 021</td>
<td>12 626</td>
<td>14 342</td>
<td>15 147</td>
<td>15 763</td>
</tr>
<tr>
<td>Foster care grant</td>
<td>27 925</td>
<td>28 331</td>
<td>28 195</td>
<td>28 592</td>
<td>29 003</td>
<td>28 578</td>
<td>28 495</td>
<td>29 573</td>
<td>30 176</td>
<td>30 951</td>
<td>31 669</td>
<td>31 872</td>
</tr>
<tr>
<td>Grants-in-aid</td>
<td>7 220</td>
<td>7 376</td>
<td>7 824</td>
<td>8 468</td>
<td>9 048</td>
<td>9 620</td>
<td>10 034</td>
<td>10 903</td>
<td>13 976</td>
<td>16 129</td>
<td>18 938</td>
<td>21 821</td>
</tr>
<tr>
<td>Older persons grant</td>
<td>173 637</td>
<td>193 662</td>
<td>211 967</td>
<td>230 166</td>
<td>245 996</td>
<td>260 935</td>
<td>274 463</td>
<td>292 745</td>
<td>308 047</td>
<td>323 697</td>
<td>339 059</td>
<td>354 312</td>
</tr>
<tr>
<td>War veterans grant</td>
<td>460</td>
<td>364</td>
<td>304</td>
<td>255</td>
<td>213</td>
<td>160</td>
<td>120</td>
<td>92</td>
<td>66</td>
<td>50</td>
<td>39</td>
<td>28</td>
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<tr>
<td><strong>Total</strong></td>
<td>688 488</td>
<td>754 021</td>
<td>887 397</td>
<td>1 005 737</td>
<td>1 092 101</td>
<td>1 173 524</td>
<td>1 189 893</td>
<td>1 282 211</td>
<td>1 331 236</td>
<td>1 368 604</td>
<td>1 410 897</td>
<td>1 444 888</td>
</tr>
</tbody>
</table>

†Child support grant: 0-14 years ‡Child support grant: Jan 2009: 0-15 years; Dec 2009: 0-18 years i.e. under 18 years of age. For the Western Cape, beneficiaries up to 17 years of age from Feb 2011 onwards only.

Figure 57 shows that the age groups predominantly eligible for social grants (children, older persons) are the groups with the highest proportion of people living in poverty, and that at least for older people it appears that the Older Persons Grant might mitigate some of the effects of older age on poverty. The number of child-related grants in the province, especially CSGs, has increased in the last 10 years, with a growing proportion of the children receiving grants being 14-18 years of age, in keeping with the expanded age eligibility since 2011 (Figures 55 and 56).
Figure 57: Proportion of individuals below the upper-bound poverty line in South Africa by age group and calendar year.
Source: Statistics South Africa, Poverty trends in South Africa

Figure 58: Number of child-related grants provided in the Western Cape by calendar year.
†Child support grant: 0-14 years
‡Child support grant: Jan 2009: 0-15 years; Dec 2009: 0-18 years i.e. under 18 years of age. For the Western Cape, beneficiaries up to 17 years of age from February 2011 onwards only. Source: Provincial Economic Review and Outlook 2018, WCG: Treasury and WCG: Department of Social Development

Figure 59: Proportion of child support grants provided to children of different ages in the Western Cape by calendar year
Source: Provincial Economic Review and Outlook 2018, WCG: Treasury and WCG: Department of Social Development
What do Unconditional Cash transfers/Child Support Grants do?

- There is evidence from natural experiments in SA (incl. Western Cape samples) that the **South African unconditional social welfare child grants reduce HIV risk for adolescents**. CSGs are associated with reduced transactional and age-disparate sex for adolescent girls.54
- When combined with good parenting (specifically strong parental supervision of adolescents – i.e. parents setting and following rules on where adolescents are and who their friends are) and safe schools, CSGs reduced other HIV-risk behaviours for both boys and girls and improved multiple sustainable development goals including HIV retention, mental health, substance use, including among adolescents living with HIV, an important group for breaking the cycle of HIV transmission.55,56
- UCTs are not fully consumed but families use some of the money to invest.
- UCTs have been shown to be fiscally sustainable.

What do Unconditional Cash transfers/Child Support Grants not do?

- Handa and colleagues57 have also provided evidence that UCTs do not induce higher spending on alcohol or tobacco
do not create dependency and reduce participation in productive work
do not increase fertility
do not lead to negative community-level economic impacts.
- Other authors have also shown that the South African Child Support Grant does not increase fertility or teenage pregnancies.58,59

What next?

This evidence provides a provincial government that does not have a constitutional mandate to provide social grants with an opportunity to at a minimum leverage the national social grant system by focussing on the most vulnerable families and “stacking up” other supportive interventions. These interventions could include early childhood development, parental support, safer schools, adolescent-friendly health services, and community based services and could improve child and adolescent health and ultimately development. Moreover, the SA Social Grant system is developmental and aims to build capacity for self-reliance, fulfilment of potential and exit from the social grants system rather than inter-generational dependence on social grants.60 **The SA social grants system has one of the most sophisticated digital delivery platforms and provides a unique opportunity to access and follow up recipients to ensure achievement of desired health outcomes.**60 Digital linkages between the national social grant system and the digital platforms in WCG: Health and Education departments could provide opportunities for measurable, targeted, stacked interventions to the most vulnerable, thus addressing health inequity.
Western Cape provincial mortality surveillance

A key recommendation following the 2008 Western Cape Burden of Disease project was to establish a sustainable and integrated mortality surveillance system. The South African Medical Research Council (MRC) and WCG: Health worked together on establishing a local-level mortality surveillance system (LLMS).

The City of Cape Town (CoCT) has collected information on causes of death for more than a century, using copies of death notification forms received from the Department of Home Affairs (DHA). Since 1996 CoCT, on the advice of the MRC, started coding causes of death to a short list of ICD10-codes. From 2000, this data was used to produce reports on causes of the death for the Cape Town Metro. This system was piloted in 2003 in the Boland/Overberg health district, and in 2007, WCG: Health contracted the MRC to assist with extending this LLMS across the province. Furthermore, following the implementation of an electronic information system at Forensic Pathology Services (FPS) in 2006, provincial injury mortality profiles were compiled by the MRC for 2009 and 2010. The data flow is depicted in figure 60.
The 2009 mortality profile\textsuperscript{61} was the first report for all districts in the Western Cape. The mortality profiles noted the need to ensure sustainability of LLMS including resource allocation, institutionalising and cooperation across government departments viz. WCG: Health, CoCT Health, DHA and Statistics South Africa.\textsuperscript{61-63} The MRC successfully transferred skills to WCG: Health which produced the 2012 and 2013 mortality profiles.\textsuperscript{64,65} Unfortunately, the LLMS was no longer sustainable with a change in legislation in 2014.

In 2014 the Regulations on the Registration of Births and Deaths (Births and Deaths Registration Act, 1992) were amended.\textsuperscript{66} This amendment updated the death notification form, and made the page where cause of death information is recorded self-sealing. It also included the instruction that the page may only be opened by a Statistics South Africa official. Confidentiality is vital, however, \textit{this instruction denied WCG: Health access to identified cause of death information, as captured by healthcare workers.}

To date, the last local-level mortality profile by WCG: Health was for 2013. Statistics South Africa made district level mortality data available for 2014 and 2015. However, the 2016 mortality data was only made available at a provincial level (timeline, Figure 61). \textit{This loss of access has hampered efforts to provide accurate mortality statistics (injury and natural causes) at lower geographic area levels allowing for public health surveillance and actions to ultimately improve quality of life. The impact of losing access to this data is clearly demonstrated in this report which cannot quantify burden of disease at sub-district level for the last 5 years.}

Figure 61: Western Cape mortality surveillance timeline
DHA = Department of Home Affairs
Provincial Health Data Centre

WCG: Health has over the past two decades gradually implemented patient administration systems which share a unique health identifier or patient master index (PMI) in all fixed public-sector facilities. The increasing availability of patient-level data linkable on the PMI resulted in new opportunities for the use of data to improve care and services, through the formal establishment of a Provincial Health Data Centre (PHDC) in 2015. The PHDC harmonises data from multiple routine data sources, including but not limited to, the hospital information system (CLINICOM), primary care information systems (PHCIS and PREHMIS), laboratory data (NHLS), pharmacy data (JAC and CDU), and mobile health and tele-triage systems (Catch & Match, MomConnect, HelloDoctor).

Incorporating source data into the PHDC involves initial and ongoing curation in which each data point is linked to a person in the PMI, date and time, place (facility, household, ambulance location), and, where possible, master code lists (such as ICD-10 codes for diagnoses, and Anatomical Therapeutic Chemical [ATC] Classification codes for medicines); architecture shown in Figure 62). Once data are curated and imported, all available data are used to infer health service contacts (encounters), health conditions (episodes) and health outcomes for conditions (cascades). The inference of a master list of patient encounters ranging from household visits by community health workers, to primary care and hospital visits and admissions, is invaluable for tracking the care and utilisation trajectories of patients. Similarly, episodes are inferred from various data points that act as evidence for a health condition (e.g. antenatal blood tests and pregnancy, hypoglycaemic drugs and diabetes). Multiple evidences are combined to infer a health condition episode, some evidences being strong enough on
their own to infer the condition (e.g. viral load for HIV), and others only strong enough to support an existing episode as evidence of ongoing care (e.g. iron and folate supplementation in pregnancy). Once defined, cascades are built by augmenting episodes of health conditions with other information such as comorbidities, health outcomes, and retention in care. These cascades act as virtual cohorts from which alerts of new patients or patients requiring intervention can be sent out to be actioned.

Two patient level cascades are already actively being used to follow-up on patients needing clinical intervention, namely the TB cascade and the Pap smear cascade. The Pap smear cascade was the first cascade to be accessed by a range of service providers. It links laboratory information on abnormal cervical cytology to increase access to diagnostic and therapeutic colposcopy services in gynaecological follow-up clinics. Similarly, the TB cascade is being used to identify patients who have not yet started treatment or who were diagnosed in hospital but have not linked to primary care. Both these examples provide actionable individuated data on patients who require active follow-up, integrating data province-wide more efficiently than the historical paper-based registers. In addition to these actionable lists, alerts have been developed, such as the alert in response to the carbapenem-resistant enterobacteriaceae (CRE) outbreak, which is sent by email each morning to infection and prevention control officers at participating institutions each time a patient with previous confirmed or possible diagnosis of or exposure to the drug resistant pathogen presents at a hospital.
What is the function of the PHDC?

- Primarily to support patient care
  - Clinician interfaces for use during consultation.
  - Reports listing patients needing interventions.
  - The single-patient-viewer (SPV) has been developed, which is a prototype for how these data could be used in a web-based electronic health record or portal. SPV integrates clinical data for a single patient both longitudinally and cross-sectionally, in tabular and graphical views to assist clinicians in rapid information discovery.

- With the infrastructure in place to support patient care, there are many other potential uses of the consolidated data environment, including:
  - Management reports on quality of care & outcomes.
  - Activity summaries for broader business intelligence initiatives centred on efficiency.
  - Epidemiological analyses designed to evaluate or improve services.
  - Enables the Province to provide a single environment for managing external access to sensitive patient data, with single governance process.
Whole of Society Approach – WoSA

The Western Cape Government is committed to a “whole-of-society” approach (WoSA) to realise the objectives of the Provincial Strategic Plan: 2014-2019. This approach was adopted to mobilise the resources and all role players in the province (epitomised by partnerships between government, the private sector and civil society) to promote socio-economic development and address policy challenges. In addition to the 5 Provincial Strategic Goals (PSG), the province has identified “Game Changers” that will catalyse the implementation of the PSGs. These game changers are special focus areas that will be prioritised to deliver on the PSGs. Through PSG3 WCG:Health is committed to promoting safe, healthy and inclusive communities, where citizens take active ownership of their personal safety, wellness and that of their families. WoSA is currently being piloted in Khayelitsha and Manenberg/Hanover Park (Metro) and Saldanha, Drakenstein (Rural).

Western Cape Government Provincial Strategic Goals: 2014-2019

<table>
<thead>
<tr>
<th>PSG3 Outcomes</th>
<th>Game Changer!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy people living in safe, supportive and caring communities</td>
<td>Alcohol harms reduction, reducing alcohol related harms in 3 target areas</td>
</tr>
<tr>
<td>Community involvement in education</td>
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<tr>
<td>Rollout on the white paper on Families (Family Forum)</td>
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<tr>
<td>Social Cohesion Programme Focus</td>
<td></td>
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<tr>
<td>- Families, ECD, Youth and Sport Programmes</td>
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<tr>
<td>Safe and resilient families</td>
<td></td>
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<tr>
<td>Promote Positive Parenting</td>
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<tr>
<td>Provide preventive health services</td>
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<tr>
<td>Improve access to, uptake and quality of ECD services</td>
<td></td>
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<tr>
<td>Healthy children</td>
<td></td>
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<tr>
<td>Focus on first 1000 days of life</td>
<td></td>
</tr>
<tr>
<td>Preventive health services</td>
<td></td>
</tr>
<tr>
<td>Improve access to, uptake and quality of ECD services</td>
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<tr>
<td>Positive and engaged youth</td>
<td></td>
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<tr>
<td>Accessible sexual &amp; reproductive health services</td>
<td></td>
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<tr>
<td>Opportunities for youth to be active &amp; responsible citizens</td>
<td></td>
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<tr>
<td>Technology to communicate with youth</td>
<td></td>
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<tr>
<td>Strengthen mental well-being, self-esteem &amp; personal agency</td>
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</tbody>
</table>
Community-orientated primary care

Community-orientated primary care (COPC) is the provision of primary health care to a defined community, based on its health needs, integrating primary care practice and public health. Since 2017, COPC learning sites were set up across the province (15 rural health services, 4 metro health services). The principles and framework guiding COPC are detailed in Figures 63 and 64. While there may be practical differences in implementation, the principles underlying COPC are the same across the rural and metro health services. COPC is part of the process to restructure primary care services to align with Healthcare 2030’s vision of person-centred health care, improving disease prevention, and strengthening health promotion.
Learnings from 19 COPC sites

➢ Clarity of strategic intent & alignment with strategic policy
➢ Clear change management process needed
➢ Flexibility for local context
➢ Redesign existing service delivery models
➢ Redefine role of the CHW
➢ Meaningful community engagement and community ownership

Going forward

✓ Define a community in today’s terms
✓ Build trusting relationships
✓ Value different forms of knowledge
✓ Consider the complex adaptive nature of the health system
✓ Prioritise health needs, with a broader lens to address the social determinants (intersectoral collaboration)
✓ Redesign how we render health & social services from a citizen perspective
✓ Develop & nurture leadership capabilities to navigate required change
8. References


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national surveys and administrative data. 2006; 


9. Appendix

Appendix Table 1: Categories of social determinants and recommended upstream interventions: Western Cape Burden of Disease Reduction Project 2008

<table>
<thead>
<tr>
<th>Categories of recommended upstream interventions</th>
<th>Macro-level interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income inequality</td>
<td>Building the informal sector</td>
</tr>
<tr>
<td>Built environment</td>
<td>Housing</td>
</tr>
<tr>
<td>Built environment</td>
<td>Neighbourhood renewal</td>
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<tr>
<td>Environment</td>
<td>Water and Sanitation</td>
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<tr>
<td>Environment</td>
<td>Transport infrastructure</td>
</tr>
<tr>
<td>Systemic requirements to target risks and effects of risk reduction programmes</td>
<td>Information systems</td>
</tr>
<tr>
<td>Systemic requirements to target risks and effects of risk reduction programmes</td>
<td>Intergovernmental collaboration</td>
</tr>
<tr>
<td><strong>Strengthening communities</strong></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>Community leadership</td>
</tr>
<tr>
<td>General</td>
<td>Community participation</td>
</tr>
<tr>
<td>General</td>
<td>Literacy</td>
</tr>
<tr>
<td>Media and communication</td>
<td>Advertising</td>
</tr>
<tr>
<td>Media and communication</td>
<td>Communication campaigns</td>
</tr>
<tr>
<td>Media and communication</td>
<td>Reduction of violence in the media</td>
</tr>
<tr>
<td>Media and communication</td>
<td>Monitoring &amp; intervention</td>
</tr>
<tr>
<td>Media and communication</td>
<td>Product labelling</td>
</tr>
<tr>
<td>Address substance abuse</td>
<td>Regulations</td>
</tr>
<tr>
<td>Address substance abuse</td>
<td>Psychological trauma</td>
</tr>
<tr>
<td>Improved community safety and security</td>
<td>Sports and recreation</td>
</tr>
<tr>
<td>Improved community safety and security</td>
<td>Firearms control</td>
</tr>
<tr>
<td>Improved community safety and security</td>
<td>Improving the criminal justice and social services/assistance</td>
</tr>
<tr>
<td>Workplace setting</td>
<td>Early Childhood Development</td>
</tr>
<tr>
<td>Workplace setting</td>
<td>Diet and exercise programmes at Schools</td>
</tr>
<tr>
<td>Education and childcare setting</td>
<td></td>
</tr>
</tbody>
</table>
Mortality Data Sources

As noted in Table 1, the mortality surveillance data is comprised of three data sources viz. local-level mortality surveillance (2009 – 2013), injury mortality from Forensic Pathology Services (2010 – 2016) and Statistics South Africa causes of death (2014 – 2016). This review notes that most reductions in early mortality occurred between 2009 and 2013, with no further declines observed thereafter. It is important to note the change in data source, and the reliance on Statistics South Africa data in the period from 2014 onwards, when no early mortality declines were observed.

The coding of causes of death data using ICD-10 codes is a complex process, with a strict set of rules. Statistics South Africa is reliant on the correct and accurate completion of death notification forms by clinicians. Therefore, if the form is not completed correctly, Statistics South Africa officials are required to follow the coding rules for causes of death, often necessitating a default (often non-specific) cause of death based on how the form was completed (especially in cases with missing or incomplete information).

WCG: Health was fortunate to work with the South African MRC and was capacitated in the coding rules and data analyses when the local-level mortality surveillance was in place. Hence, the data analysis undertaken by WCG: Health follows the same process as the MRC. Ill-defined causes of death and “garbage codes”¹ get sequentially redistributed to plausible causes of death². For instance, atherosclerosis is proportionally redistributed by age and sex to aortic aneurism, ischaemic heart disease, peripheral vascular disease and stroke. Misclassified HIV-related deaths are also proportionally redistributed.

Once the province became reliant on Statistics South Africa data from 2014 onwards, there was a reduction in the ascertainment and improvement of data on causes of death prior to analysis. Therefore, it is likely that the change in data sources has resulted in subtle shifts in causes of death, limiting our ability to accurately assess changes in causes of mortality and premature mortality trends and patterns. Notwithstanding this limitation, there is evidence of a decline in the number of deaths each year and the disease conditions that result in early mortality remain largely unchanged. These conditions in turn highlight where additional interventions are required to make a more impactful shift in reducing early mortality.

¹ Garbage codes: (a) conditions that are not causes of deaths (b) conditions that are intermediate causes of death (c) conditions that are immediate causes of death, or (d) conditions not clearly specified.

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