ACTUARIAL SOCIETY OF SOUTH AFRICA

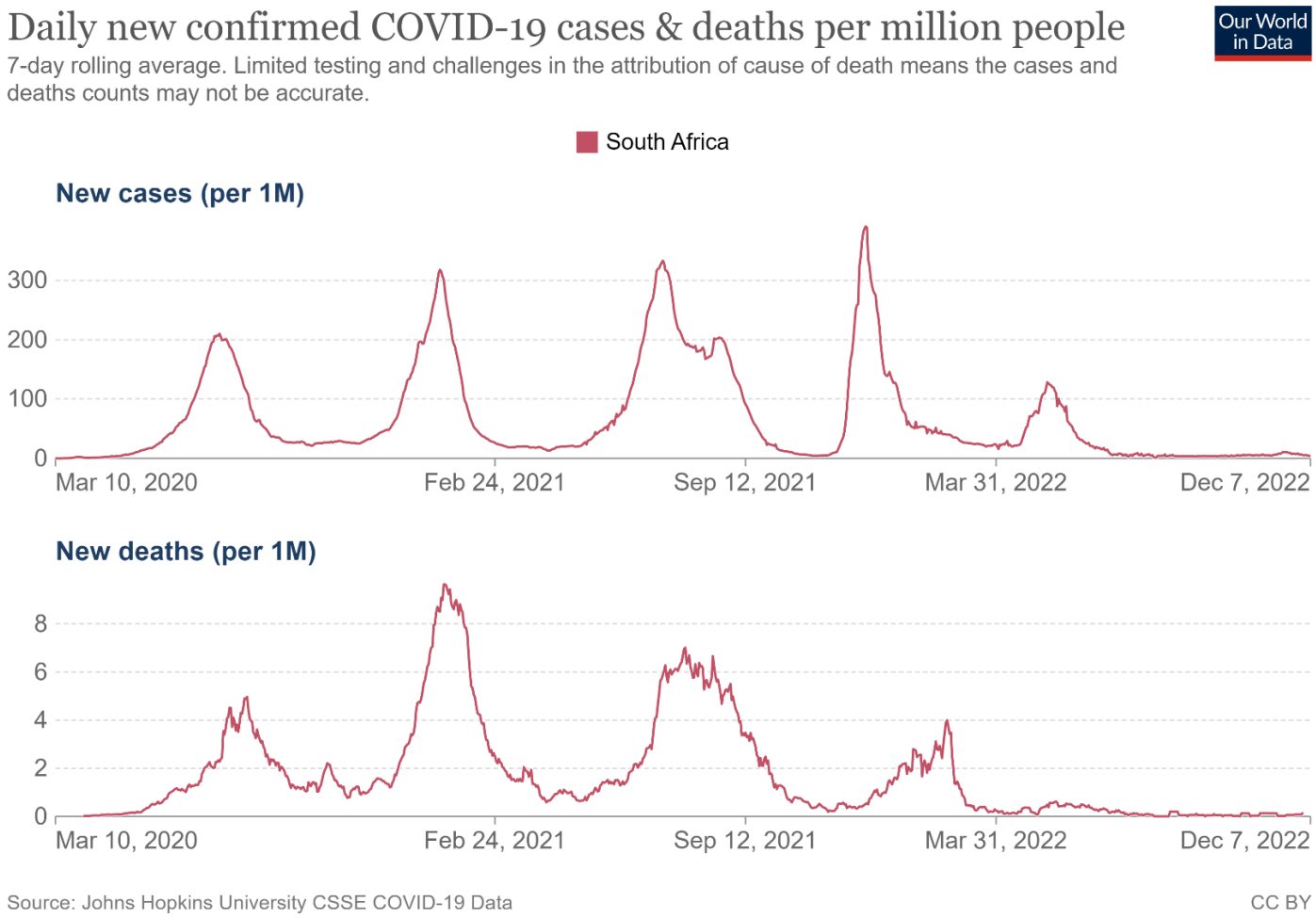
ASSA COVID-19 Task Team: Reflections on the Pandemic- Healthcare Stream

The Actuarial Society of South Africa (ASSA) has formed the COVID-19 Task Team to consolidate the learnings from the pandemic and enhance preparedness for future pandemics. Towards the end of 2021, the Healthcare stream of the Task Team produced a supplement to the SA Actuary magazine containing a series of papers on various aspects of the pandemic, and these are summarised and updated where necessary in this short paper.

Progress of the Pandemic in Cases and Deaths

The first COVID-19 infections in South Africa began to be reported in March 2020, and various publications have tracked numbers of cases and other metrics since then. Most report the 'official' numbers from the National Institute of Communicable Diseases which reflect only those confirmed positive through a laboratory test (initially only PCR tests, later updated to include rapid tests).

These reports have been used through the pandemic to track the 'waves' of infection as they have progressed. The reported deaths notably may not reflect the full death toll from COVID-19, and the 'excess deaths' metric is often deemed the more accurate measure. Nonetheless although the magnitudes are different the trends broadly coincide, meaning the reported deaths are still useful for tracking infection waves. One such summary of the 7-day average number of new confirmed cases and confirmed deaths is shown in the graph overleaf.



The key features of the wave pattern though the South African pandemic include:

- Four significant waves of infections (peaking in July 2020, January 2021, July 2021 and January 2022 respectively);
- Different characteristics in each wave, with:
    - a lower peak in the first wave;
    - significant spikes and a fast drop-off of both cases and deaths in the second wave;
    - an extended but lower peaking third wave (which produced the highest cumulative numbers of cases and deaths); and
    - a less severe fourth wave with a large spike in infections but a low peak of deaths.
- Some evidence of a fifth wave in 2022 from the case numbers but only a very minor peak of deaths; and
- Seemingly limited infections since May/June 2022, although anecdotal evidence suggests this is more likely a result of reduced testing as well as an absence of new cases.

Some of the wave patterns and features may be explained by the development of variants of the SARS-COV-2 virus. Notably the first wave was driven by the original virus form, the second by the Beta variant (known at the time as the South African variant), the third by the Delta variant and the fourth and subsequent waves by the Omicron variant.

Research into the three variants suggests that the Beta variant was more severe (both in terms of death rates and overcoming immunity) but not significantly more transmissible than the original virus, the Delta variant was significantly more transmissible but not as severe as the Beta variant, while Omicron was more transmissible but significantly less severe than the prior two variants. These characteristics seemingly manifested in the wave patterns (high peak of deaths for the second Beta wave, large number of infections and deaths in the third Delta wave and lower numbers of deaths in the fourth and fifth Omicron waves).

Given the experience from January to November 2022 and the fifth wave's limited impact, the general conclusion has been that the worst of the pandemic is likely over. However, the emergence of a new variant or other unexpected event could cause a recurrence of the high impact waves seen in 2020 and 2021 – although this is considered unlikely due to a level of immunity now present in the population.

Impact on Medical Schemes' Claims Experience

The Task Team intends to request and consolidate data from schemes to provide a base for analytics specifically in respect of the pandemic's impact on medical schemes finances. However, the anecdotal experience of the Task Team members who work with medical schemes suggests that the largest impact on medical scheme claims from the pandemic was reduced expenditure resulting from the impact of lockdowns, which more than offset the increase in expenditure due to COVID cases.

While no consolidated research in the medical scheme population is currently available, actuaries and other experts from Insight, Discovery Health and the South African Reserve Bank amongst other have published articles noting lower healthcare utilisation during the pandemic attributed to lockdowns primarily. The Task Team hopes to build on these analyses and provide a consolidated industry view. As such, we expect that many medical schemes are now grappling with how they will redistribute the excess funds that have been added to their reserves during the pandemic, while ensuring appropriate pricing levels as claims costs return towards pre-pandemic levels.

Vaccine Rollout: Progress and Challenges

A key route out of the pandemic was the rapid development of multiple vaccines against COVID-19. These began to be administered in South Africa in March/April 2021, with healthcare workers and older people prioritised initially. Boosters continue to be available and anyone over the age of 12 is eligible for vaccination. In his article in the SA Actuary Supplement, Barry Childs characterised the vaccination rollout into four phases (or Acts) as follows:

- Act 1 was labelled as 'Medical Emergency' and comprised of finding an initial supply of vaccines to provide to healthcare workers on the front line of the pandemic and resulted in the Sisonke trial whereby research stock of vaccines were procured from Johnson and Johnson (J&J) and 450 000+ healthcare workers received vaccines by May 2021;
- Act 2 (Groundwork) was where the procurement processes of government began to bring vaccines into the country (principally Pfizer vaccines initially) and these began to be administered through private and public sector sites starting with the highest risk elderly population;
- Act 3 (Building Pace) was when large quantities of vaccine stock (both Pfizer and J&J) began to enter the country, eligible age groups were rapidly expanded and rules relaxed to reach as many people as possible, with a peak of over 100 000 doses per day reached and sustained for much of August and September 2021; and

- Act 4 (A Race to the Finish) referred to the - at the time - ongoing efforts to reach the unvaccinated population and bring the country to a 'population immunity' scenario where restrictions could be released and life could begin to return to normal.

Subsequent to the article being published, further vaccine doses were used to provide booster vaccines 2-6 months after the last dose and to provide a single dose of the Pfizer vaccine to children from 12-18 years old. As at the end of October 2022, 67.1% of those over the age of 60 had been fully vaccinated (two Pfizer doses or a single dose of J&J), along with 64.5% of those aged 50-59, 51.9% of those aged 35-49, 32.6% of those aged 18-34 and only 12.5% of those aged 12-17 (who would receive a single dose of the Pfizer vaccine). The statistics continue to be updated but limited change has been experienced in recent weeks.

While the vaccine programme continues and further efforts are being made to encourage the unvaccinated to come forward, it appears from the fifth wave that population immunity is beginning to impact the transmission of the virus and consequently restrictions were mostly released in April 2022.

The issue of vaccine safety and efficacy was also a key consideration and research was undertaken into the body of evidence available in terms of the COVID-19 vaccines. While given the newness of the vaccine at the time, the evidence was mostly in respect of short-term effects and the long-term effects are unknown, the key features of the evidence compiled was that:

- Vaccination had a significant positive impact (lower rates) on the incidence of severe disease, hospitalisation and death relative to an unvaccinated population, with relative reductions of up to 90% in vaccinated populations;
- The evidence was more mixed or showed a lower impact when measuring rates of less severe infection as well as rates of transmission, with some studies showing up to a 60% effect and others reporting no effect or a negligible effect;
- While the duration of both vaccine and natural immunity remains uncertain, immunity was shown to wane over a period of several months, which led to many countries including South Africa allowing people to receive so-called 'booster' vaccines after a period of time;
- The evidence is again unclear on the efficacy of vaccine induced immunity relative to 'natural immunity' i.e. immunity from previously having been infected with the virus, but it is generally argued that vaccines provide a predictable immunity (both in terms of knowing who in the population has immunity and the underlying immune system responses to the virus and vaccines respectively) relative to natural immunity and as such most countries have used vaccination rollouts as a key part of their COVID-19 response;
- The role of hybrid immunity i.e. prior infection and vaccination together, with some studies starting to conclude that it provides the strongest protection, while others report increased side-effects of vaccination in those who have prior infection; and
- While some side effects of vaccination have been reported the body of evidence (albeit collected over a short period) appears to support that the benefits of vaccination outweigh the risks, even in populations where specific additional risks have been identified, and further that risk arising from infection with the SARS-COV-2 virus outweighs that from vaccination. Monitoring of side effects remain to be monitored internationally.

Other Clinical and Immunological Research/Evidence

Other research and evidence compiled by various members of the task team and the profession included:

- The significant positive impact on mortality experienced when pulse oximeters are provided to members at high risk of severe infection or death (the oximeter measures blood oxygen levels and allows for the ongoing monitoring of potential hypoxaemia);
- Analysis of age- and disease-related mortality and morbidity levels for COVID patients, which confirmed the rationality of the government's age-based rollout plan for vaccines;
- A cost-benefit analysis of Discovery Health's data by Roseanne Harris in respect of the (at the time) proposed vaccine rollout to assess whether it was appropriate to target the entire adult population and the potential return on the 'investment' in the vaccine;
- Impact analyses which showed the role of physical activity in enhancing the protection offered by vaccines against severe COVID-19 infection; and
- Discussions around the nature of vaccine hesitancy as well as the likelihood of COVID-19 becoming 'endemic' in the global population post vaccination rollout.

This report was published in July 2023. The ASSA COVID-19 Task Team membership at the date of publication included: Adam Lowe (lead – healthcare workstream), Alex Brownlee, Barry Childs, Claiton Manikai (chair), Karsten Roux (lead – life workstream), Louis Rossouw (deputy chair), Michael Davies, Pamela Hellig, Paresh Prema, Roseanne Harris, Sarika Besesar, Siebert Benade (lead – market conduct workstream), Simon Henderson, Thandanani Mbhele (secretariat), Zandile Gobe (secretariat) and Zane Heyl