

Introduction

South African care delivery reimbursement structure is based on a **fee for service (FFS) model**.

- FFS favours volume over value of care services

Mortality is a sentinel outcome measure of quality of care helpful in understanding the healthcare system performance and improvement. The intention of public reporting on mortality is to drive system accountability where all healthcare organisations participate in quality improvement measurement. Given the **FFS** environment there is no structured team working together. Measurement is done at a hospital level since the belief is that the hospital can hold and manage that team function and drive improvements.

Mortality is one of AHRQs **inpatient quality indicator measures**, suggesting that high mortality may be associated with deficiencies in quality of care.

Conditions measured from the ARQH IQI list

Average Mortality Rates (MR) for Jan 2017 – Dec 2019 were calculated as:

$$= \frac{\sum \text{all deaths for a condition within 30 days from admission at the hospital}}{\text{All admissions at the same hospital for the condition over the same period}}$$



AMI:
8,026 admissions
Avg MR: 8.6%



Stroke:
11,140 admissions
Avg MR: 6.8%



Pneumonia:
33,195 admissions
Avg MR: 5.3%



CABG:
3,104 admissions
Avg MR: 3.5%

Method

A statistical risk adjustment model is developed to understand, for the general admitted population, its relative risk of dying and the various risk factors that influence the probability of death.

The relative distribution of individual risks for each hospital system is then statistically modelled in a second model so as to obtain a relative risk score per hospital after accounting for the individual patient differences.

Two steps to the risk adjustment approach:

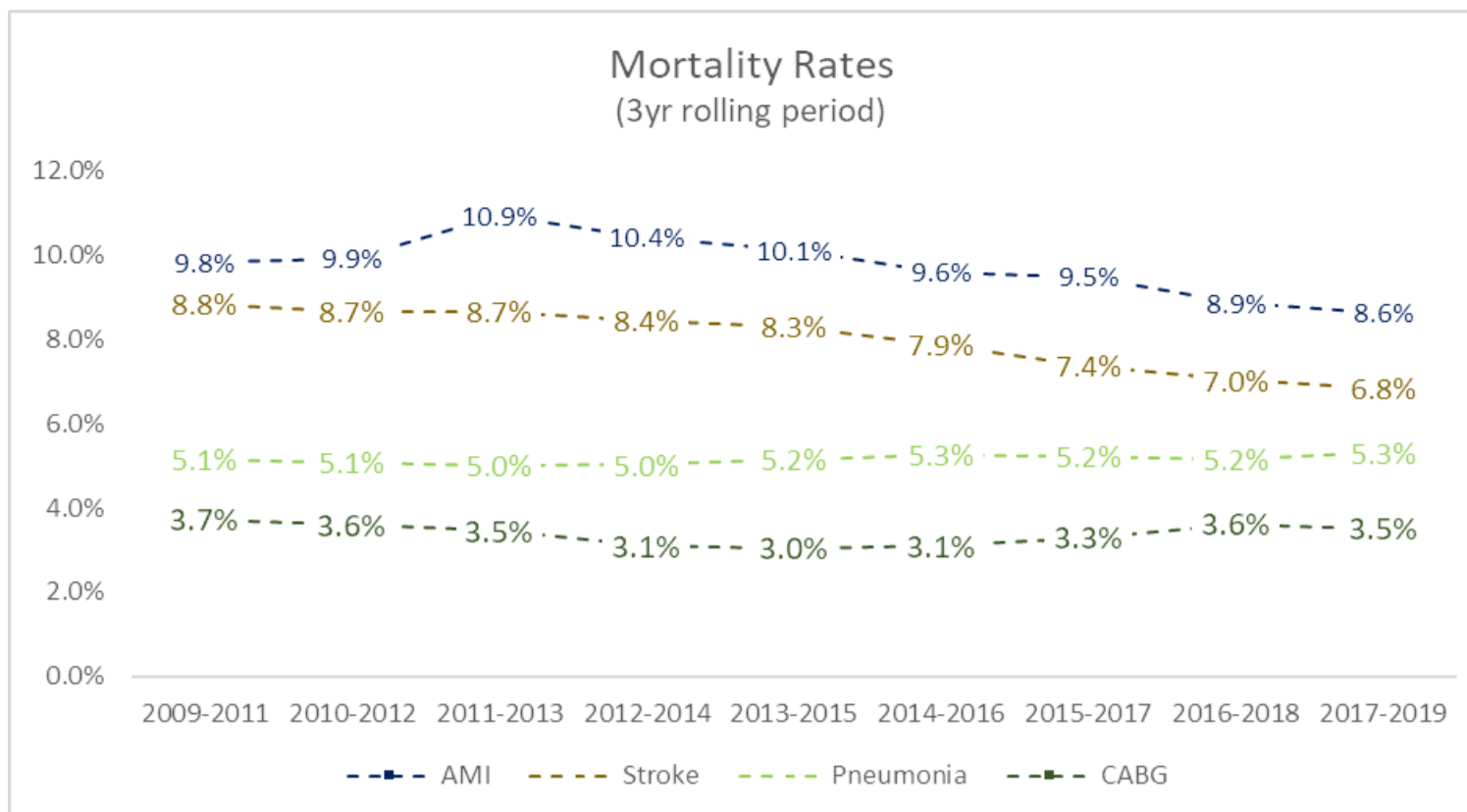
1. Data is modelled at the patient level
2. Subsequently data is modelled at a hospital level to account for the variance in standardised mortality rates (SMR's) within and between hospitals.

Following clinical risk adjustment of the data and the resulting output of hospital level SMR's, each hospital is **analysed relative to the average of all hospitals**.

The total cohort of hospitals analysed is regarded as a **national representation**, therefore each individual hospitals' SMR is reported on as the following:

- **Statistically significant more** deaths than the national average
- Deaths **not statistically different** than the national average
- **Statistically significant fewer deaths** than the national average

Results



- The highest mortality rates were observed in AMI & stroke
- Mortality rates improved over time since engagements started with the hospital groups (2018)

Statistically significant classification of hospitals relative to the National Average Mortality Rate calculated per condition

	PNEUMONIA 2019 *AMR (5.3%)	CABG 2019 *AMR (3.2%)	STROKE 2019 *AMR (8.0%)	AMI 2019 *AMR (9.7%)
STATISTICALLY BETTER THAN (Fewer deaths than the national avg)	5	0	3	2
Statistically No Different	160	33	114	71
STATISTICALLY WORSE THAN (More deaths than the national avg)	18	1	5	4
Hospitals with too few cases to be reported on	25	22	76	104
Total No. of Hospitals	208	56	198	181

- **Pneumonia**; 5 hospitals had MRs **statistically better than** the national average & 18 had MRs that were **statistically worse than** the national average.
- **CABG**: 0 hospitals had MRs **statistically better than** the national average & 1 had MRs that were **statistically worse than** the national average.
- **Stroke**: 3 hospitals had an MR that was **statistically better than** the national average & 5 had an MR that was **statistically worse than** the national average.
- **AMI**: 2 hospitals had an MR that was **statistically better than** the national average & 4 had an MR that was **statistically worse than** the national average

Conclusion

It is our view that the measurement and reporting of quality of care outcome metrics, such as standardized mortality rates, is a valuable approach to enabling a culture of learning and continuous improvement within healthcare systems.

Ultimately, outcome metrics chosen for measurement should be those that matter to patients and families, and the methodology applied to measurement must be robust in highlighting opportunities for improvement.