

Board of Directors (in Public)

Item 5.2

Subject: Mortality Review and Improvement Annual Report
Date of Meeting: Tuesday 26th November 2024
Prepared by: Mr Manoj Kuduvalli, Medical Director
Presented by: Mr Manoj Kuduvalli, Medical Director
Purpose of Report: For Note

BAF Reference	Impact on BAF
BAF 1	Impact on patient outcomes

Level of assurance (please tick one) <i>To be used when the content of the report provides evidence of assurance</i>					
<input checked="" type="checkbox"/>	Acceptable assurance Controls are suitably designed, with evidence of them being consistently applied and effective in practice	<input type="checkbox"/>	Partial assurance Controls are still maturing – evidence shows that further action is required to improve their effectiveness	<input type="checkbox"/>	Low assurance Evidence indicates poor effectiveness of controls

1. Executive Summary

This paper provides assurance to the Quality Committee on mortality improvement; the measures in place to maintain the improvements, to review deaths and ensure learning.

- The measures of Trust mortality are within expected range
- Clinical systems and processes are in place to minimise the risk of death
- Consultant outliers are performance managed according to divisional performance management policies
- Organisational learning has developed at all levels in the organisation particularly in learning from deaths.

2. Background

Hospital mortality results from a complex interaction of both individual and systems factors. Inadequate systems can adversely affect mortality outcomes of a competent practitioner. An example would be inadequate infection prevention policies. Historically, apart from infrequent outliers reported through Dr Foster (now renamed as Telstra Health), the trust has had a risk adjusted mortality rate within the expected range of statistical variation due to the continued efforts at mortality reduction. Any outlier data has been scrutinised with a deep dive and these have been presented to the Board of Directors as they arise.

The trust developed a service line specific mortality reduction strategy in 2018/19 led by the medical director and the divisions. Notable improvements included the establishment of a high-risk MDT for cardiac patients; uniform practice in assessment of critically ill PPCI patients and a number of Quality Improvements in Critical Care. There have been continued improvements in organisational learning and the implementation of Learning from Deaths, which includes contributions with thematic learning from the Mortality Review Group. Organisational learning is delivered by the divisions at the Operations Board and at divisional governance. There are fortnightly sharing and learning meetings. Learning from deaths is presented at divisional audit days.

Raw mortality rate targets are reviewed working closely with Telstra Health to explore underlying trends and causes of mortality fluctuation. Mortality data is presented at monthly points to demonstrate variation together with a twelve -month rolling average to smooth out any monthly variation.

The Trust has had long term focus on the following to try and reduce multi factorial factors contributing to mortality.

1. Practitioner performance management
2. Ensuring compliance with Trust wide policies and procedures that reflect best practice
3. Monitoring of Surgery specific quality metrics
4. Organisational learning from deaths, incidents and harm
5. Successfully embedding PSIRF (Patient Safety Incident Response Framework) in the organisation

The Organisational Learning Sharepoint is now fully functional and accessible. Its availability is advertised in the weekly Patient Safety Learning update which is circulated to all staff, and they can request access via the link provided. There are a number of areas within this portal.

- The mortality section includes the number of deaths dashboards and the mortality review presentations from the joint audit days
- The Safety Learning – PSIRF tab contains all the weekly Patient Safety Learning update slides
- The Sharing and Learning tab contains all presentations from the bimonthly Sharing and Learning meeting
- The Clinical Quality tab contains links to numerous reports and presentations regarding local and national audit and QI reports

3. Mortality Measurement and Review Processes

3.1 Mortality Indicators – Organisational/Telstra Health

The trust works closely with Telstra Health to measure and understand the factors that influence mortality. The data is derived from HES data and the principal tool is HSMR (Hospital Standardised Mortality Ratio).

- The Hospital Standardised Mortality Ratio (HSMR) is a type of relative risk calculation used to monitor mortality rates at NHS Trusts.
- If the number of in-hospital deaths are higher than would be expected given the case mix in the population being studied, the HSMR will be greater than 100.
- HSMRs are placed into one of three bandings based on confidence intervals: Higher than Expected; As Expected; Lower than Expected.
- Two sets of data are available for HSMR. One is all diagnoses and one for the 56 diagnoses that account for approximately 80% of all in-hospital deaths.

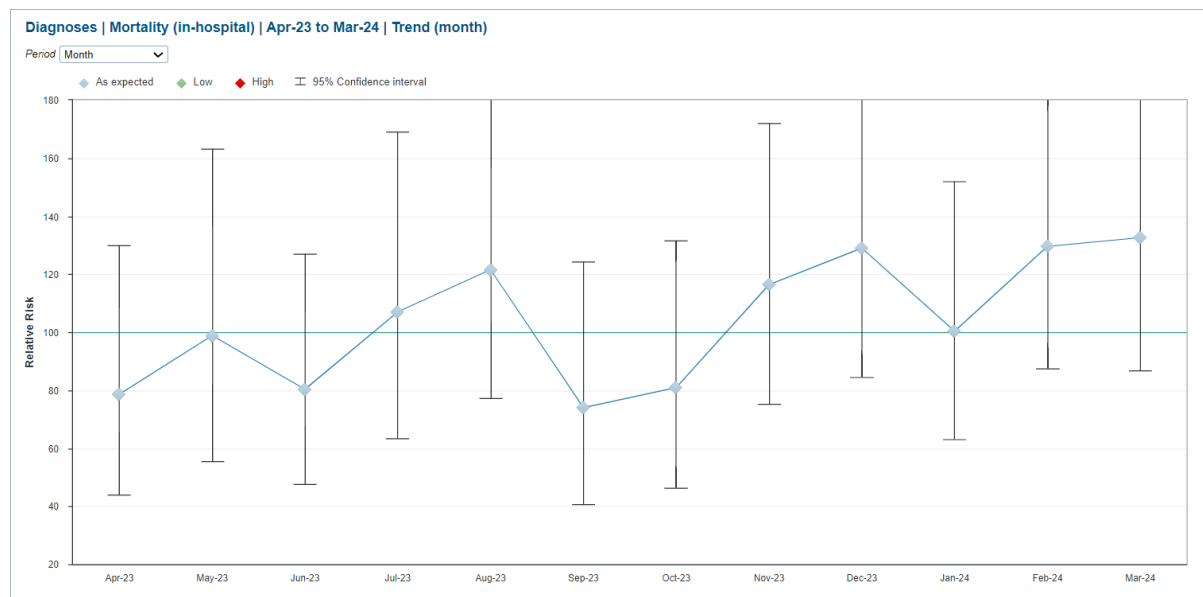
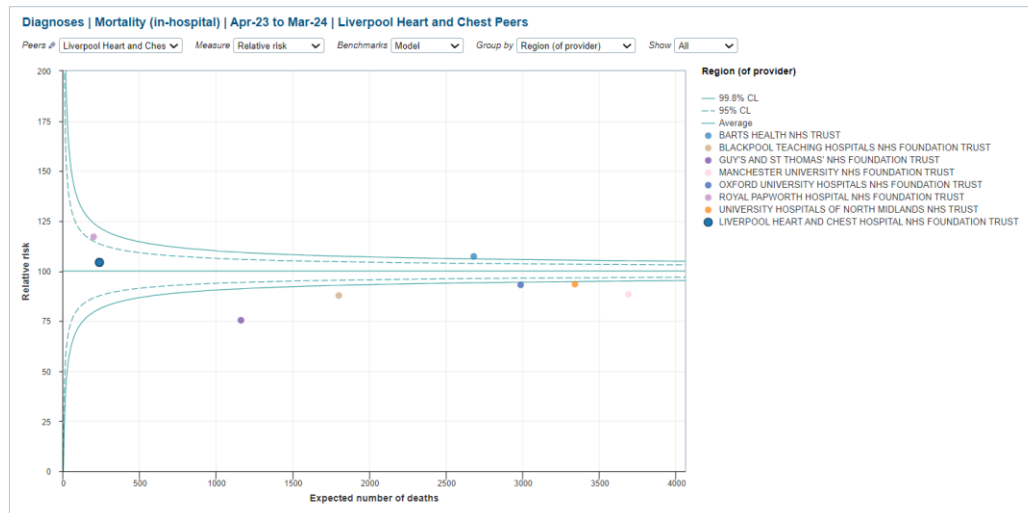
The expected mortality is generated by evaluating twelve case mix factors; Age, Gender, Method of admission, Comorbidity (Charlson), Interaction between comorbidity/age, Deprivation (Carstairs), Palliative Care, Diagnosis sub-group, Source of admission, Year of discharge, Month of admission, Number of emergency admissions in 1 year.

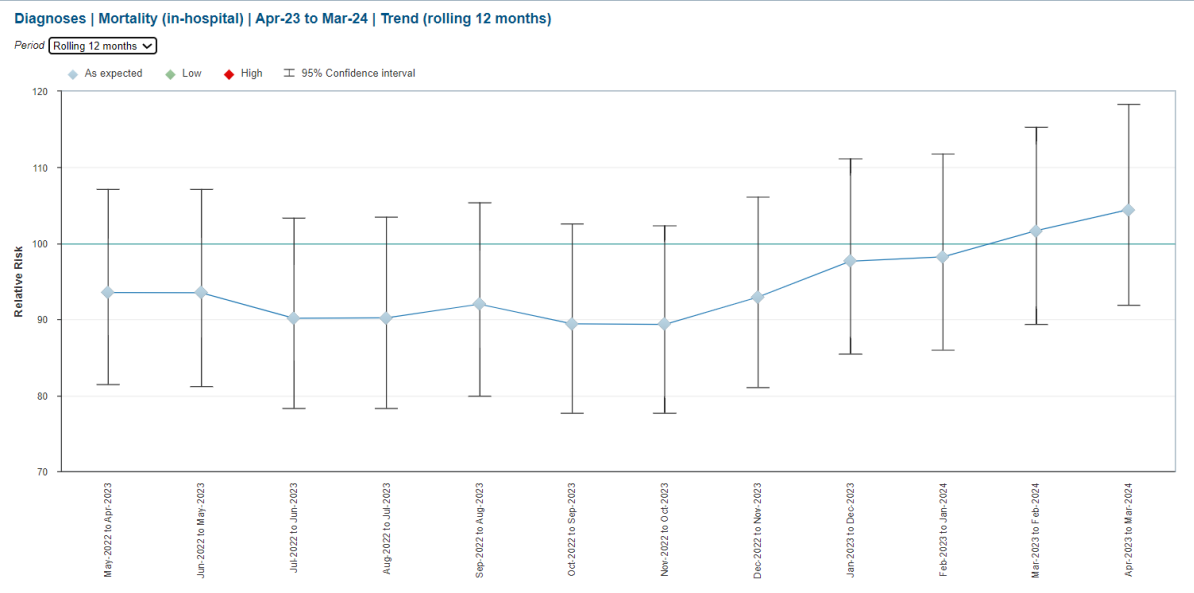
3.2 Data from April 2023 - March 2024

The funnel plots and trend data below run from **April 2023** to **March 2024** but do not significantly differ from calendar year data. Any outlier data for specific disorders is subject to a review process and the data has been scrutinised since the last dataset available.

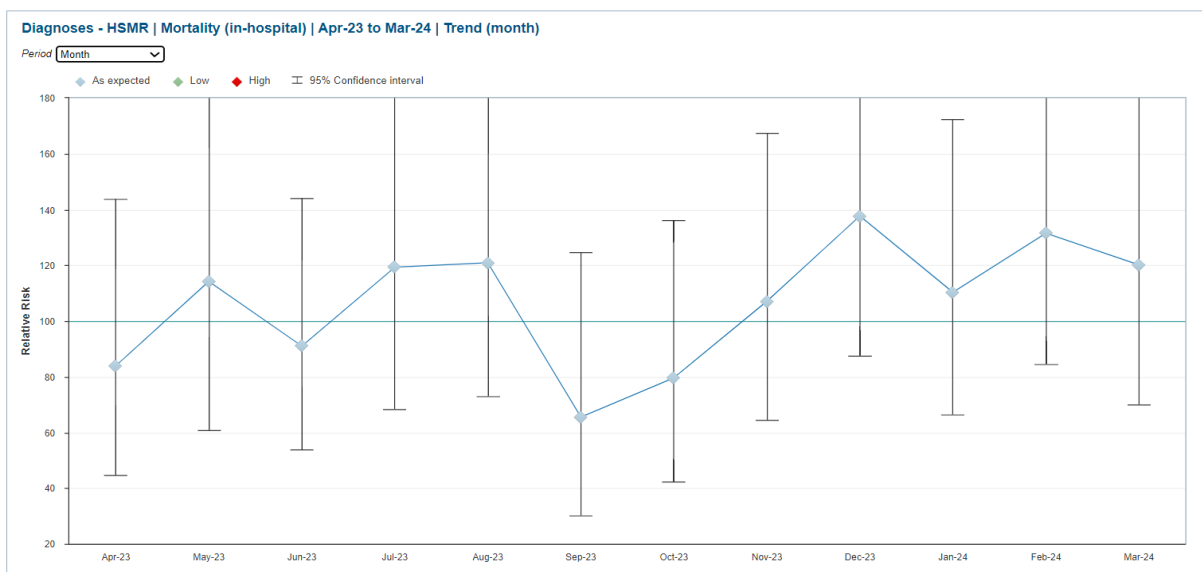
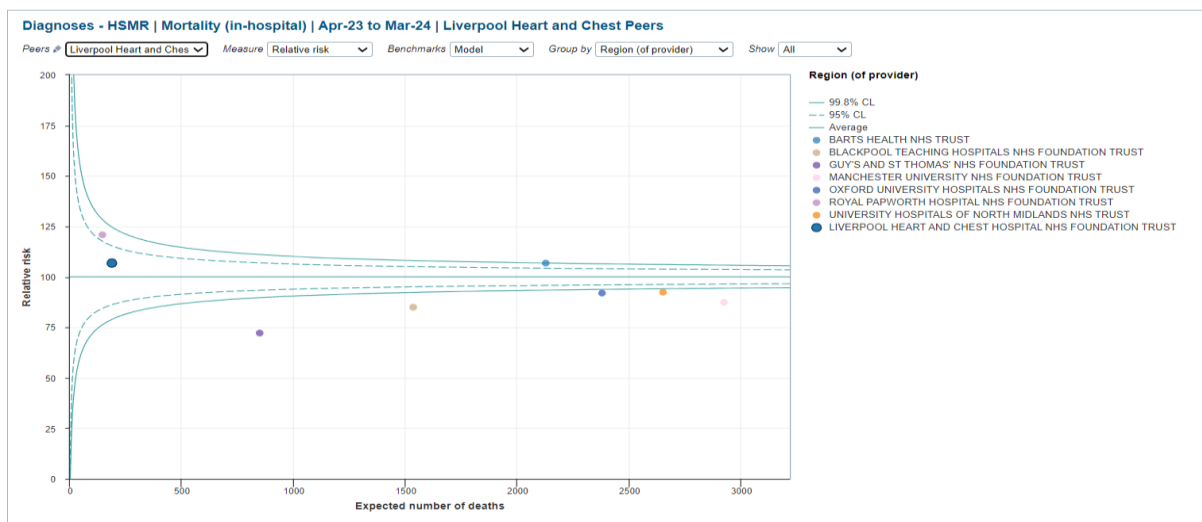
The SMR and HSMR remain within the expected range.

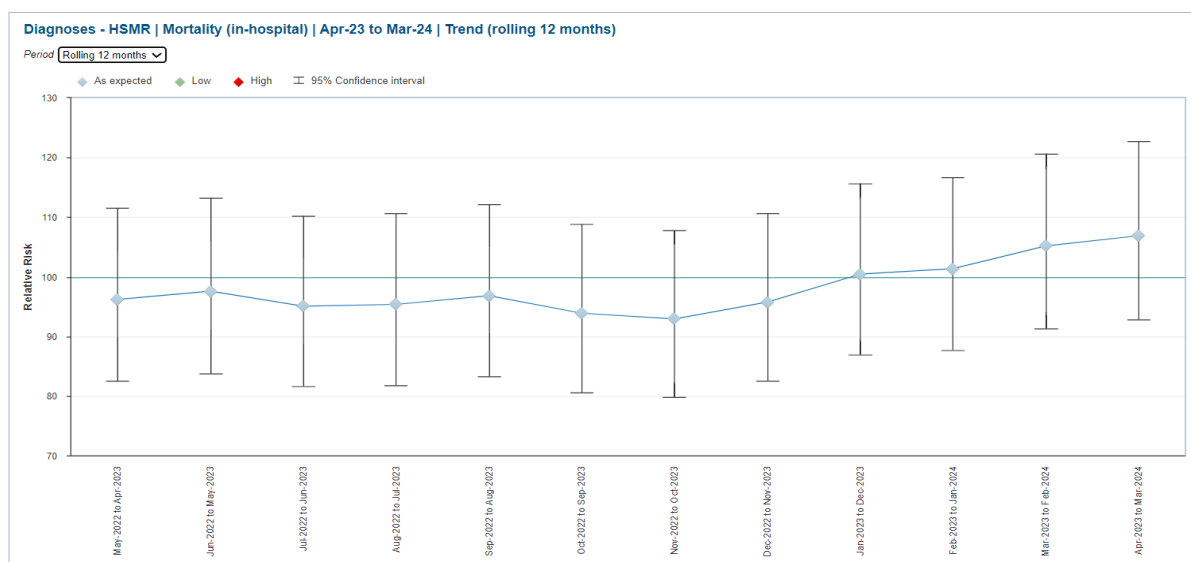
SMR Mortality (all diagnoses) Apr-23 – Mar-24





HSMR Mortality (56 diagnoses that account for approx. 80% of all in-hospital deaths)





HSMR - LHCH remains statistically 'within-expected'. Although the Trust has seen an increase in the relative risk, LHCH is securely within the expected banding, since the LCI is below 100 (and has been since May-22 – Apr-23). The Trust's HSMR for data period Apr-23 – Mar-24 is 106.9.

SMR – LHCH remains statistically 'within-expected'. Although the Trust has seen an increase in the relative risk, LHCH is securely within the expected banding, since the LCI is below 100 (and has been since May-22 – Apr-23). The Trust's SMR for data period Apr-23 – Mar-24 is 104.4.

3.3 Trust Raw Mortality April 2023- March 2024

The analytics team at LHCH have now developed a dashboard which allows data on raw mortality in the Trust to be viewed online and live. The data can be reviewed for different time periods, elective vs non-elective admissions and by Divisions, and patient level detail is also available through the dashboard for further study. Raw mortality by percentage is also available.

The audit team also maintains a 'Learning from Deaths' dashboard by quarter (which forms part of the quarterly 'Learning from Deaths' report that is presented at Board in Public. This dashboard includes data on the outcomes after mortality reviews by the Mortality Review Group, including timeliness of review completion and assigned degree of avoidability (by RCP criteria) to deaths after completion of the reviews.

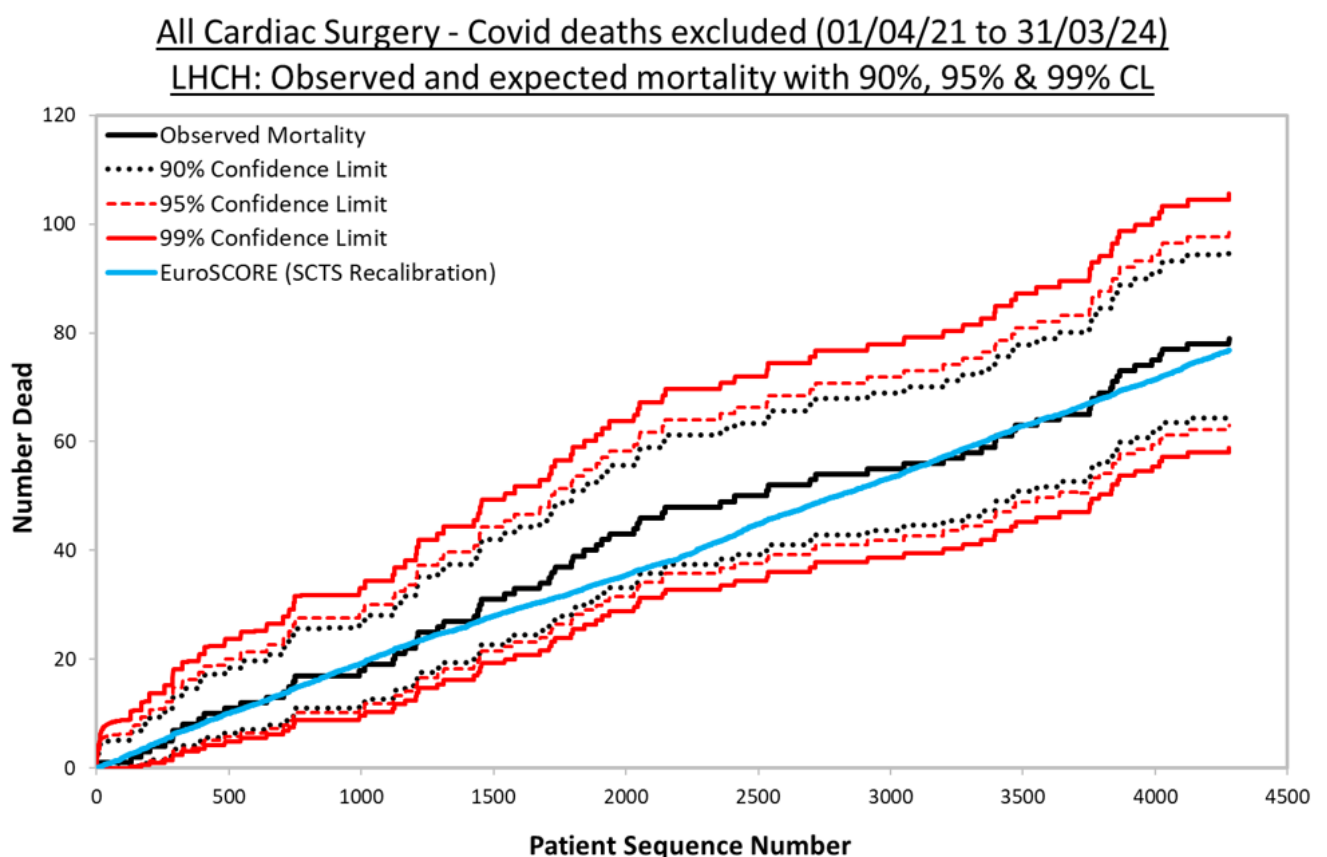
The table below shows the raw mortality (not risk adjusted) for the trust which for all patients. It is broken down further with the monthly variation up to the end of March 2024. The overall target for raw mortality is set at 1.5%. The trust dashboard reports the numbers of deaths monthly. There is clearly month on month variation which is normal biological variation.

The reporting figures have been reviewed with informatics and 214 deaths were recorded in the year to March 2024. The overall trust raw mortality data is at the Trust target of 1.5%. This is a slight increase compared to 1.34% in 2022-23 and lower than 2.14% in 2021-22.

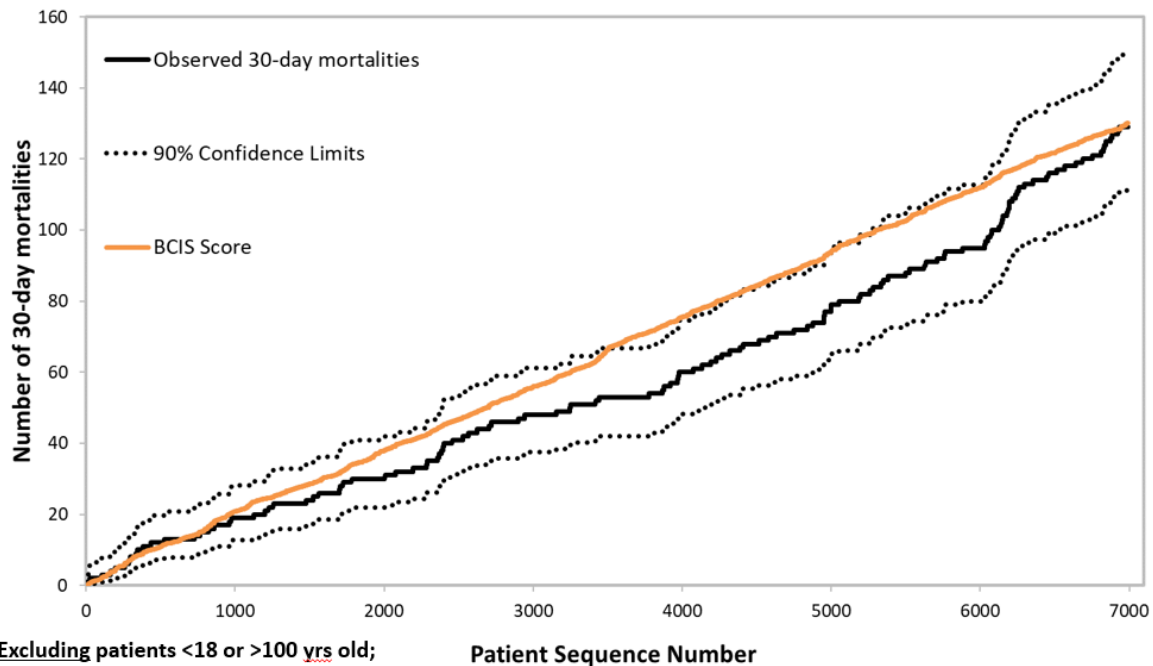
	MEDICINE			SURGERY			TOTAL		
	Numerator: Patients died	Denominator: All Discharges	%	Numerator: Patients died	Denominator: All Discharges	%	Numerator: Patients died	Denominator: All Discharges	%
Apr-23	5	778	0.6%	7	328	2.1%	12	1106	1.1%
May-23	8	813	1.0%	5	281	1.8%	13	1094	1.2%
Jun-23	12	913	1.3%	4	343	1.2%	16	1256	1.3%
Jul-23	9	793	1.1%	5	336	1.5%	14	1129	1.2%
Aug-23	13	835	1.6%	8	299	2.7%	21	1134	1.9%
Sep-23	10	793	1.3%	4	308	1.3%	14	1101	1.3%
Oct-23	8	865	0.9%	5	355	1.4%	13	1220	1.1%
Nov-23	13	842	1.5%	9	349	2.6%	22	1191	1.8%
Dec-23	17	765	2.2%	8	330	2.4%	25	1095	2.3%
Jan-24	11	876	1.2%	6	338	1.8%	17	1214	1.4%
Feb-24	12	864	1.4%	14	323	4.3%	26	1187	2.2%
Mar-24	10	851	1.2%	11	328	3.4%	21	1179	1.8%
TOTAL	128	9988	1.3%	86	3918	2.2%	214	13906	1.5%

3.4 Trust Risk Adjusted Mortality for Cardiac Surgery and PCI

Risk adjusted mortality for Cardiac Surgery and PCI has been regularly analysed biannually at the Trust. This analysis generates CUSUM (Cumulative Sum) Charts comparing actual mortality and risk adjusted predicted mortality, with confidence intervals. The risk adjustment is performed using nationally recognised risk scoring systems supported by the professional societies – SCTS for Cardiac Surgery and BCIS for PCI. The expectation is for the Trust mortality outcomes to be within 99% CI. They are usually calculated for a 3-year period in order to minimize the impact of natural variation, which is inevitable. The CUSUM Charts for Cardiac Surgery and PCI for the 3-year period between April 2021 and March 2024 are as below and are within the expected range.



LHCH: Observed and expected 30-day mortality with 90% confidence limits



* Excluding patients <18 or >100 yrs old;
Patients ventilated pre-operatively;
Patients with date conflicts;
Redo PCI's within the same admission

Patient Sequence Number

Cardiac Surgery and Cardiology risk adjusted CUSUM curves are reviewed every 6 months, reported to the Divisions and reviewed at Divisional Governance Meetings. Cardiology MACCE (Major Adverse Cardiac & cerebrovascular Events) is reviewed bimonthly with discussion between operators and learning points circulated. CUSUM data is also reviewed at the quarterly QSEC (Quality Safety Experience Committee) meetings.

3.5 Practitioner Performance

Individual Consultant performance is monitored to ensure early intervention if deterioration in their outcomes occurs.

Where required Consultants are managed by the Trust's policies "Measurement and Management of Performance in Cardiac Surgery" and "Measurement and Management of Performance in Cardiology Invasive Procedures". This process is led by the surgical division DMD, Clinical Leads and audit lead reporting to the Medical Director. The application of the policy ensures continued performance scrutiny and offers remediation in a step wise process starting with mentoring and extending to retraining until the results fall within expected.

4. Mortality Improvement Group Update 2023-24

The Mortality Improvement Group (MIG) was formalised in November 2021 as part of the mortality improvement plan. The principal purpose of the MIG is to ensure continuous monitoring of mortality data, detailed analysis of underlying contributing causes of mortality and to drive continuous improvement as a result of data analysis.

The group is multidisciplinary and has additional responsibility for standard setting and promoting mortality management within the trust. The membership currently comprises:

- Medical Director (Chair)
- Senior Consultant -Telstra Health UK (Dr Foster)
- Patient Safety Lead
- Chair of MRG (or representative)

- Informatics Representative
- Data Scientist
- Senior Information Analyst
- Senior Clinical Coder
- EPR Representative
- One Divisional Representative: one Divisional Director of Nursing, or one Divisional Director of Operations to represent each Division.
- Divisional Medical Director attendance dependant on clinical responsibilities
- Admin support.

The MIG meets every three months. The standing agenda includes a formal update from Telstra Health with deep dives into underlying trends and drivers of mortality; updates from MRG, coding, EPR, the divisions and information/audit.

The MIG reports to the Board of Directors through this report. The minutes are part of the Quality Committee agenda

Ongoing work includes

- Further analysis of 30-day mortality after patients are discharged
- Monitoring of deaths on the waiting lists
- Further improvements in data quality
- Continued work with the division on acute pathways and monitoring of the divisional mortality improvement plans

5. Generic Multidisciplinary Systems and Processes Improving Mortality

5.1 GIRFT

The GIRFT process is aimed at improving all aspects of mortality and morbidity in specialties and maintaining uniform practice. The medical director oversees the process of implementation. The quality committee and Board of Directors receive separate reports detailing progress with all GIRFT improvement plans.

5.2 Trust-wide Policies and Care Bundles

These are groups of interventions that have been demonstrated to improve patient safety and reduce mortality. Examples include:

1. Ventilator Acquired Pneumonia (VAP) bundle
2. Urinary Catheter bundle
3. Peripheral line bundle
4. Central line bundle
5. Surgical site infection bundle
6. Sepsis bundle
7. Venous thromboembolism bundle

There is good uptake of these bundles across the organization with regular audits. The Infection Prevention & Control committee receives audits from the Directorates of the peripheral line bundle and catheter bundle. The recent implementation of Perfect Ward software will assist in monitoring compliance in all areas.

Compliance with surgical antibiotic prophylaxis is good and the subject of regular audits. Sepsis compliance data is audited on a regular basis and has improved considerably, achieving Trust targets.

5.3 Venous Thromboembolism Prophylaxis

EPR has allowed scrutiny of the risk assessment and prescription of medication to reduce thromboembolism. There had been a significant improvement in these areas, including the assessment of day case cardiology patients. Both screening assessment and treatment have fallen within target though reassessment has not, but the last metric has significantly improved by improving the way this is recorded. There have been EPR changes to facilitate reminders over VTE reassessment. The compliance is monitored by the divisions and presented as part of the Divisional dashboards.

5.4 Infection Risk

Application of the Sepsis Bundle

Compliance with the sepsis care bundle has been the subject of a considerable amount of work by the sepsis lead. The sepsis group has made good progress. The use of the screening tool and the reporting metrics have significantly improved and are compliant with Trust targets. Compliance remains under regular scrutiny.

The Trust continues its sepsis campaign continuing video presentations and educational workshops for all groups. Focus on education and accountability with the middle grade medical staff has improved compliance in all areas. Involvement of the outreach nurses has improved the timeliness of treatment. There is ongoing work around improving signage on Sepsis awareness in the Trust.

Surgical Site Infection Group

The SSI group has a well-developed action plan to address wound infection. As part of this the trust has invested in the ICNET SSI software to allow early identification and track trends in SSI. Continued work within the team has resulted in the availability of more granular data on wound infection. Deep infection rates, which cause the greatest harm, remain very low. The majority of the work so far has focused on SSI after cardiac surgery. Work is ongoing to improve the focus on SSI after thoracic surgery.

5.4 Stroke Management

A bundle approach has also been applied to managing the incidence of perioperative stroke. The Trust continues to have a very robust system for reporting stroke, and there is strong engagement with the Stroke team in managing patients who have a stroke. The stroke policy has been revised in response to some feedback from clinicians and after liaising with the Stroke team at Aintree Hospital. This included simplifying the policy and ensuring there was clarity as to who to contact and when. Amongst other things, it also included not needing the radiology hub to authorise urgent CT head requests, and a provision to perform a CT Head and angiogram at the same time. All of this should contribute to improve the acute management of stroke in our patients, and eventually to reduced mortality and better outcomes.

5.5 Mortality Review Group (MRG) Process

The Trust has had a well-established review process for all deaths since 2011. The mortality review process has been improved and brought up to date with national guidance issued in January 2016 and the trust has put in place the Learning from Deaths policy in 2017. There is a new chair of the group who, in conjunction with the trust patient safety lead has made thematic organisational learning the focus of mortality review. Mortality review starts with a screening of forms was introduced with a core group of eleven consultants doing a brief overview to establish whether an in-depth review was necessary. The 30-day target for completing mortality reviews was met in 83% cases in 2023/24 against a target of 80%, and

the 7-day target for screens to be completed was met in 70% against a target of 80%. Continued efforts are made to ensure timeliness and the data is reviewed at the MIG.

In addition to discussions at audit days MRG results with recommendations will be sent to the relevant division to manage through divisional governance. Organisational learning is on the agenda of the Operations Board, QSEC and Sharing and Learning.

5.6 Multi-disciplinary Team Meetings

There are established MDTs in the following areas: revascularisation, aortic surgery, mitral valve surgery, TAVI and high risk cardiac & thoracic MDTs. There is also a weekly imaging meeting to discuss the cardiac imaging which directs treatment pathways in various patient groups. There are other less frequent MDTs for niche areas of sub-specialisation.

6. Conclusion

The Trust has a comprehensive multi-faceted mortality improvement plan in place to manage the factors that contribute to mortality. All mortality related metrics are within target.

Several areas of performance have been enhanced over the last year including compliance with sepsis management metrics and VTE prophylaxis metrics. The MRG process has been further streamlined, is now incorporated into the InPhase system, with a focus on thematic organizational learning. SSI rates continue to be monitored, and rates of deep infection remain low.

7. Recommendations

The Board of Directors is asked to note the contents and progress with mortality review and improvement.