NHS Ayrshire & Arran

Meeting:	**Ayrshire and Arran NHS Board**
Meeting date:	**Monday 15 August 2022**
Title:	**Hospital Standardised Mortality Ratio (HSMR)**
Responsible Director:	**Crawford McGuffie, Medical Director**
Report Author:	**Gillian Biggans, Quality Improvement Lead for Resuscitation Services and Deteriorating Patient** **Jason Brown, Resuscitation Officer**

1. Purpose

This is presented to the Board for:

- Discussion

This paper relates to:

- Annual Operational Plan

This aligns to the following NHS Scotland quality ambition(s):

- Safe
- Effective
- Person Centred

2. Report summary

2.1 Situation

From the 1st of April 2021 to 31st March 2022, 82 case notes of patients who died within NHS Ayrshire and Arran's Acute Hospitals were fully reviewed by a multi-profession group.

The aim of the reviews is to assess the quality and safety of care that is delivered to patients through a standardised review process and to identify and implement any learning.

This paper provides Board members with the most recent outcome data related to these reviews and outlines key themes identified.

2.2 Background

The Hospital Standardised Mortality Ratio (HSMR) project was launched in NHS Scotland in 2009 with the following aims:

- To use routinely available coding data to drive improvement
- Build a statistical model that would predict the number of expected patient deaths at an individual hospital level
- Compare the predicted number of deaths generated by the model with the actual number of deaths observed over the same period either in hospital or within 30 days of discharge from hospital
- To ensure learning from patient deaths and patient harm
- To share any learning within Boards or between Boards
- To reduce the HSMR nationally and in each hospital

Since 2009, monitoring hospital mortality has become a standard part of assessing the quality and safety of the care provided.

Through reviewing case notes with a multi-disciplinary team as part of the HSMR review process, emerging themes from patient care can be identified and shared more widely. This includes episodes of high quality care and areas where the care provided could be further improved.

The HSMR data for January 2021 to December 2021 in Figure 1 below is provided by NSS Discovery. It should be noted that the data for the latest quarter is not due for release until August.

Figure 1

Location	Observed Deaths	Predicted Deaths	Patients	Crude Rate (%)	HSMR	Comparison to Scotland on the chart
Scotland	**28,365**	**28,365**	**588,880**	**4.8%**	**1.00**	**n/a**
NHS Ayrshire & Arran	2,275	2,335	39,305	5.8%	0.97	n/a
Arran War Memorial Hospital	18	40	256	7.0%	0.45	●
University Hospital Ayr	879	926	16,045	5.5%	0.95	●
University Hospital Crosshouse	1,311	1,304	22,312	5.9%	1.01	●

The funnel chart at Figure 2 below gives comparison of the acute hospitals within NHS Ayrshire & Arran (NHSAA) against other acute hospitals in Scotland.

Figure 2

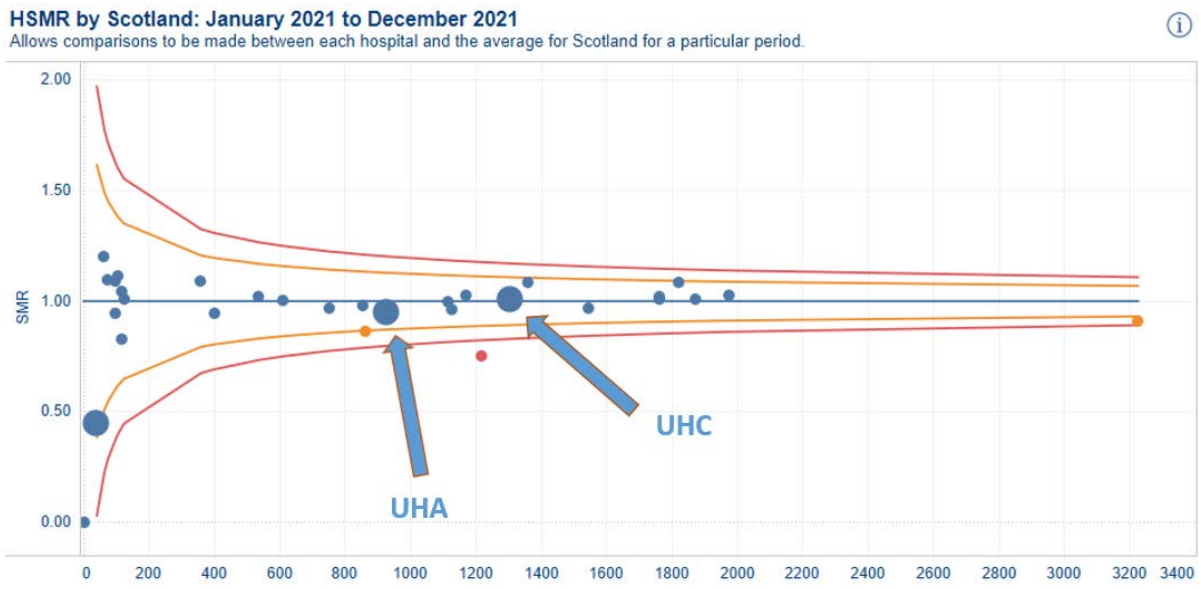
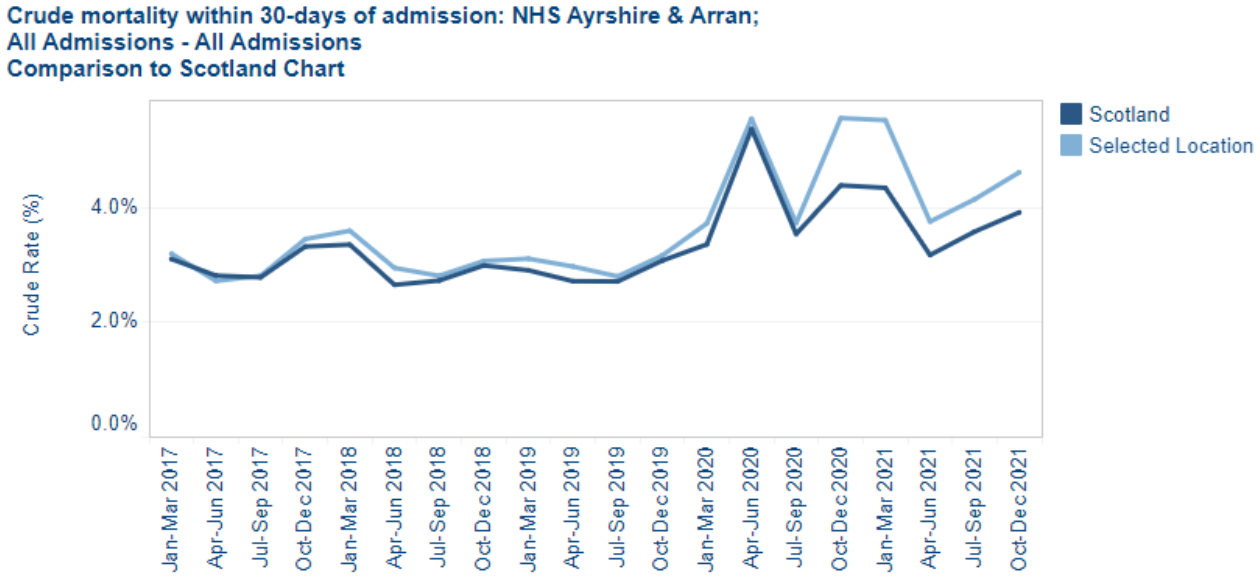


Figure 3 below demonstrates that the crude mortality rates (within 30 days of Admission) for acute sites within NHSAA have been above the national average for a sustained period (from October 2017 – December 2021).

Figure 3



Each month, a random sample of all deaths within NHSAA acute hospitals are reviewed with every tenth death selected for review and five case notes reviewed within each month on each acute site. The review team typically consisted of a Consultant, Senior Charge Nurse, Advanced Nurse Practitioner, Pharmacist, Resuscitation Officer and an Admin support from the Quality Improvement team. Data from the review meeting was directly inputted into the Quality Improvement Portal by the Admin Support.

From 2021 the responsibility for HSMR reviews and reporting was moved within the scope of the Resuscitation Service.

During 2021/22, there has been intermittent redeployment of the Resuscitation Service team to support clinical pressures, which has unfortunately resulted in delays in progress in terms of the learning feedback loop since this update was last presented to the Board in 2021.

2.3 Assessment

<u>Demographics</u>

- 92% of the cases reviewed were admitted for active treatment – the remaining patients were admitted at time of admission for End of Life care
- 95% of patients were admitted to a ward – the remaining were admitted to Intensive Care Unit (ICU). No reviewed cases were admitted directly to High Dependency Unit (HDU)
- Median Age – 77
- Median length of stay – 21 days
- 52.3% of Admission diagnosis' matched the diagnosis at discharge
- 39.5% had a history of cancer
- 94.2% had a history of a long term condition

- 9.3% were admitted from a care home
- 23.3% of patients were admitted with a DNA CPR already in place

Patients admitted for End of Life Care

- Of the six patients admitted for End of Life Care, only one was identified who could have been cared for in the community with their current support package. One could have been cared for in the community, but an appropriate support package was not in place. The remaining four patients required care within a hospital setting
- 50% of End of Life Care admissions were identified as being out of hours
- Two patients admitted for End of Life Care had an anticipatory care plan already in place but neither had the patient's preferred place of death documented
- Only one patient out of the six had documented evidence of a last days of life care plan
- Five out of the six patients had evidence of anticipatory prescribing for the five key symptoms

Summary of Reviews

Excluding the six patients admitted for End of Life Care, 76 Patient case notes were fully reviewed as they were admitted for active treatment into a ward environment. The documentation within the case notes is used as a surrogate marker for the quality of care provided.

- 47.7% of cases reviewed had different admission and discharge diagnoses of which one patient case idenfied evidence of planning failures within the first 48 hours which has contributed to their death
- Three cases identified evidence of lack of clinical observations being carried out on the ward
- There was no evidence in any reviewed case of a lack of responsiveness to nursing concerns by clinicians caring for the patient
- It was of the review teams opinion that one case should have been transferred for High Dependency Care in the first 24 hours of the patients hospital journey
- 98.3% of patients had a DNA CPR in place at the time of death. A Consultant was identified as the top signatory with the documentation completed, on average, 5 days prior to patient's death and 6.5 days (median) from admission date
- 44.7% of reviewed cases had evidence of an event that occurred in the proximity of the progression to death
- In one case there was evidence of miscommunication between health care professionals and a futher two cases where there may have been
- 39.5% of reviewed patients had evidence of Acute Kidney Injury during their hospital journey
- 85.5% of cases had a National Early Warning Score compliance rating of either Good or fully complaint for documentation

Triggers and Adverse Events

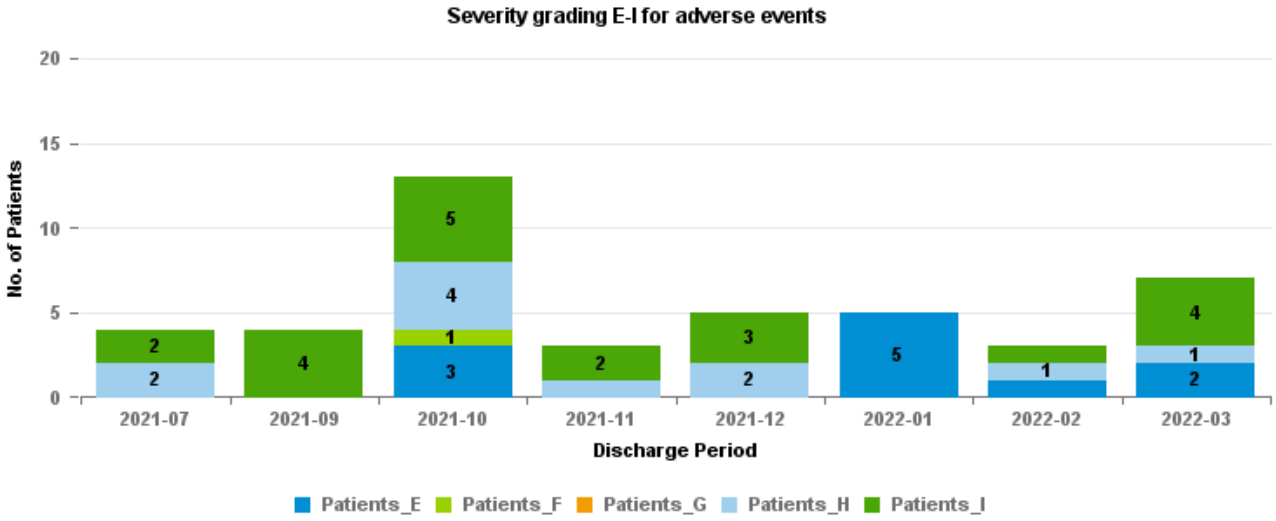
As part of the review process, the review team sought to identify any events (see appendix 1) that took place within the patient's hospital journey that lead to any patient

harm. These events were then graded into severity categories dependent on the impact these events had on patient outcomes.

- Severity Category E (Contributed to or resulted on temporary harm to the patient and required intervention)
- Severity Category F (Contributed to or resulted on temporary harm to patients and required initial or prolonged hospitalisation).
- Severity Category G (Contributed to or resulted in permanent patient harm).
- Severity Category H (Required intervention to sustain life).
- Severity Category I (Contributed to patients death).

In line with the agreed HSMR process map (see appendix 3) any events scoring a Severity Category I were considered for onward referral to the Associate Nursing and Associate Medical Directors for further review and sharing if deemed appropriate.

72 Triggers were identified with 44 of those being identified as adverse events. (see appendix 1)



Severity Category E (Contributed to or resulted on temporary harm to the patient and required intervention).	
Number of instances	**Trigger (Code)**
3	Patient Falls (G2)
3	Pressure Ulcers (G3)
1	Drop in Platelet count (L0)
1	Hospital Acquired Infection (COVID) (L11)
2	Calcium Resonium (M9)

Severity Category G (Contributed to or resulted in permanent patient harm).	
Number of instances	**Trigger (Code)**
0	None identified

Severity Category F (Contributed to or resulted on temporary harm to patients and required initial or prolonged hospitalisation).	
Number of instances	**Trigger (Code)**
1	Pressure Ulcer (G3)

Severity Category H (Required intervention to sustain life).	
Number of instances	**Trigger (Code)**
1	Shock (G5)
2	Transfer to higher level care (G8)
2	Unplanned transfers to ICU (I2)
4	Transfusion (L2)
1	Abrupt drop in Hb or Hct (L3)
1	Rising urea or creatinine >2x baseline (L4)

Severity Category I (Contributed to patients death)	
Number of instances	**Trigger (Code)**
2	Patient Falls (G2)
5	Shock/ Cardiac Arrest (G5)
2	Complication of procedure or treatment (G7)
6	Hospital Acquired Infection (L11)
1	Positive blood culture
2	Abrupt drop in Hb or Hct (L3)
3	Rising urea or creatinine >2x baseline (L4)

Ten cases were further escalated based on multidisciplinary team decision making framework and are either closed off, or currently under review. It was the opinion of the review team that all other cases with an adverse event that had not been put forward for further escalation showed clear evidence that remedial actions had been taken. The review team agreed that these were either unavoidable or expected as part of patients condition.

As this is the first annual report led by the Resuscitation service, work is underway to format a standardised method of return for feedback from the reviews back to clinical areas. Version 1 of the feedback form is currently being tested (see appendix 2).

2.3.1 Quality/patient care

HSMR reviews continue to be a key component of improving patient safety outcomes. As the revised method for HSMR reviews continues, this will have a positive impact on reducing the number of true cardiac arrests and improving patient experience.

2.3.2 Workforce

Identification of learning from excellence can be shared with staff, to ensure good clinical outcomes are recognised and celebrated. Opportunities for improvement will require ongoing collaborative engagement from staff across the organisation i.e. clinical staff, Quality Improvement Team and leaders for Deteriorating Patient Workstream.

2.3.3 Financial

It should be noted that reduced performance in relation to HSMR measure may have a financial impact for example extended length of stay. By using a quality improvement approach within HSMR reviews whilst identifying, themes and trends for sharing could reduce harm and length of stay.

2.3.4 Risk assessment/management

Ongoing clinical pressures have had some impact on multidisciplinary team availability and attendance at scheduled HSMR reviews. Resuscitation Services have worked alongside the Quality Improvement support team to widen the reviewer team.

2.3.5 Equality and diversity, including health inequalities

An impact assessment has not been completed because the policies for this improvement work are derived from a national standard. Implementation of this work impacts positively on all patients and service users for example, regardless of inequalities, or protected characteristics.

2.3.6 Other impacts

- Best value
    - Vision and leadership
    - Effective partnerships
    - Governance and accountability
    - Use of resources

- Compliance with corporate objectives
  Protect and improve the health and wellbeing of the population and reduce inequalities, including through advocacy, prevention and anticipatory care

2.3.7 Communication, involvement, engagement and consultation

This is an update paper to the Board and therefore there was no requirement for stakeholder engagement in the development of this report.

2.3.8 Route to the meeting

An annual report paper was discussed by Healthcare Governance Committee on 1 August 2022.

2.4 Recommendation

This paper is presented to Board members for discussion and assurance.

Board members are asked to discuss and endorse the continuation of HSMR Review Process, where themes will be widely shared throughout the organisation to ensure learning and continuous improvement (Appendix 1 and 2).

In-depth discussion of the paper and the associated recommendations have taken place at the Healthcare Governance Committee.

Board members are asked to remit Healthcare Governance Committee to monitor against delivery of the recommendations and only report back to Board if HGC felt the risk was not been managed/mitigated or if there has been a significant change in our HSMR performance.

3. List of appendices

- Appendix No 1 – Global Trigger Tool
- Appendix No 2 – Learning from HSMR Review – Learning Note
- Appendix No 3 - the summary of the latest HSMRs for hospitals within the Board that were released into the public domain on Tuesday 9th August 2022.

Global Trigger Tool

The Global Trigger Tool – NHS Ayrshire & Arran

Hospital: **Month & Year:** **Speciality:**

KEY
Category E: Contributed to or resulted on temporary harm to the patient & required intervention
Category F: Contributed to or resulted on temporary harm to patients & required initial or prolonged hospitalisation
Category G: Contributed to or resulted in permanent patient harm
Category H: Required intervention to sustain life
Category I: Contributed to the patient's death

KEY (MEWS & PVC)
Fully: No Omissions
Good: 1 – 3 Omissions
Fair: 4 – 6 Omissions
Poor: Inconsistent (more than 6)

Trigger		+	Event Description and Severity E-I
	General Care Module		
G1	Lack of early warning score or early warning score requiring response		
G2	Any patient fall		
G3	Pressure Ulcer		
G4	Readmission to hospital within 30 days		
G5	Shock or cardiac arrest		
G6	DVT/PE following admission evidenced by imaging +/or D dimers		
G7	Complication of procedure or treatment		
G8	Transfer to higher level of care		

	Surgical Care Module		
S1	Return to theatre		
S2	Change in planned procedure		
S3	Removal/Injury or repair of organ		

	Intensive Care Module		
I1	Readmission to ICU or HDU		
I2	Unplanned transfer to ICU or HDU		

	Fully	Good	Fair	Poor	No Chart
MEWS					
PVC					

COMMENTS:

	Patient identifier	
	Total events	
	Total length of stay	

Trigger		+	Event Description and severity E-I
	Medication Module		
M1	Vitamin K		
M2	Naloxone		
M3	Flumazenil		
M4	Glucagon or 50% glucose		
M5	Abrupt medication stop		
M6	Adrenaline administration (anaphylaxis)		
M7	Antihistamines (Chlorphenamine)		
M8	Antiemetics		
M9	Calcium Resonium		

	Lab Test Module		
	Haematology		
L0	Platelet count <100 x10 9/1		
L1	High INR (>5)		
L2	transfusion		
L3	**Abrupt drop in Hb or Hct (>25%)**		
	Biochemistry		
L4	Rising urea or creatinine (>2x baseline)		
L5 L6	Electrolyte abnormalities Na* <120 or >160 K* <2.5 or >6.5		
L7	Hypoglycaemia (<3mmol/l)		
L8	Raised Troponin (>0.03 mcg/l)		
	Microbiology		
L9	MRSA bacteraemia		
L10	C. difficile		
L11	Hospital acquired infection		
L12	Wound Infection		
L13	Nosocomial pneumonia		
L14	Positive blood culture		

Our purpose

Working together to achieve the healthiest life possible for everyone in Ayrshire and Arran

NHS Ayrshire & Arran

Learning from HSMR review - Learning Note

CATEGORY: Clinical/information governance **AUTHOR:** **DATE WRITTEN:**

Review Summary **Case 1** **Case 2** **Case 3** **Case 4** **Case 5** **Review team to ensure any cases identified as having an adverse event that does not require escalation should provide rationale as to why this decision has been made.**

Learning from excellence?	What can we improve?

Our values

Caring Safe Respectful

Our purpose

Working together to achieve the healthiest life possible for everyone in Ayrshire and Arran

Action Notes & QI

Action Point	Level of Urgency	Person Responsible	Date of Completion (& by Whom)

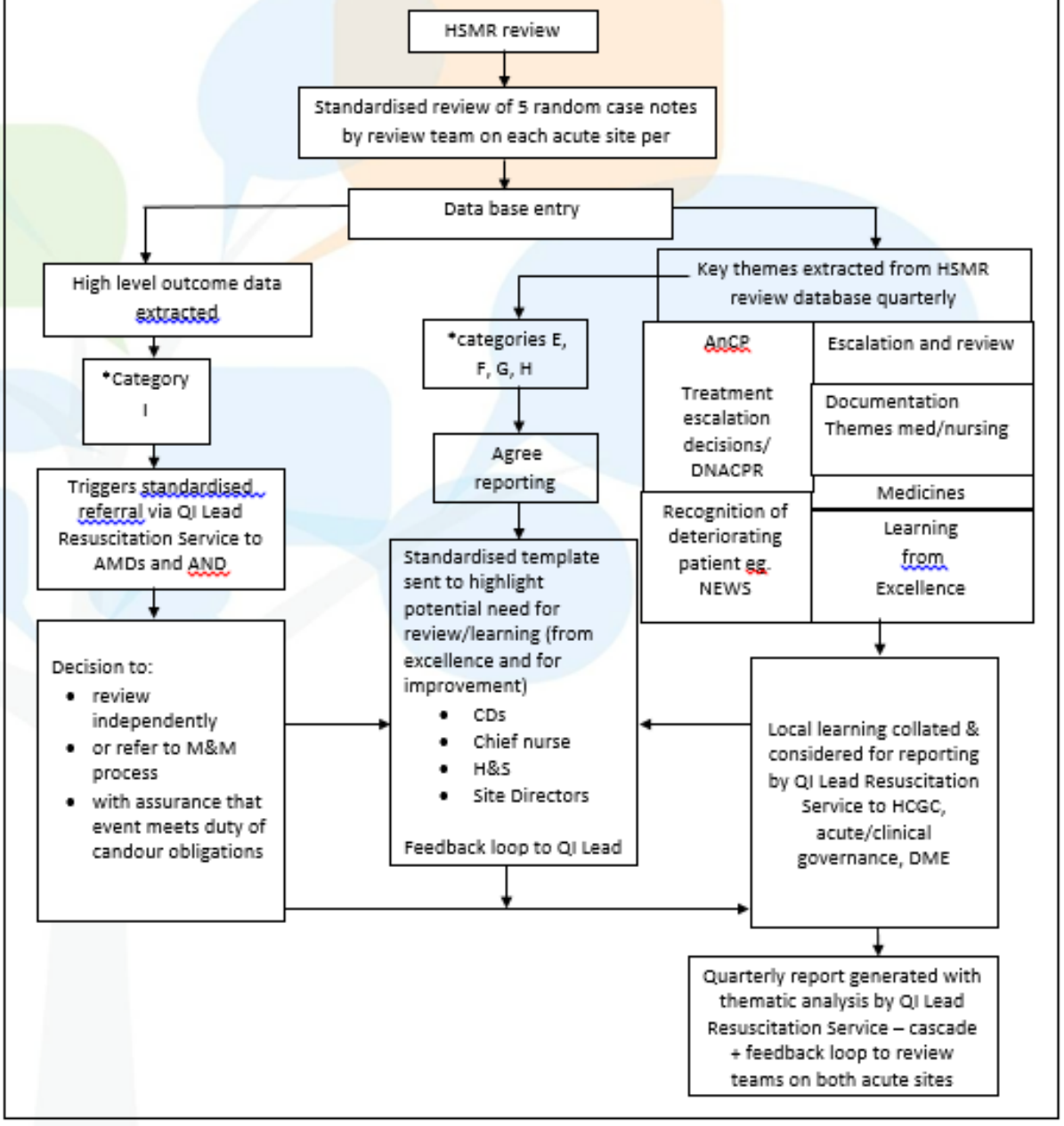
Monitoring hospital mortality has become a standard part of assessing the performance of hospitals and the quality of care provided. The objective of HSMR reviews is to identify harm to patients. By reviewing case notes with a multi-disciplinary team, emerging themes from patient care can be identified and shared throughout the organisation. By creating this feedback loop and providing a platform for recommendations to be suggested, processes can be changed to prevent future harm.

Our values

Caring Safe Respectful

Appendix

PROPOSED GOVERNANCE PROCESS MAP



Appendix 3

Health Board of Treatment: NHS Ayrshire & Arran

Period: April 2021 to March 2022

Location	Observed Deaths	Predicted Deaths	Patients	Crude Rate (%)	HSMR	Comparison to Scotland on the Funnel Plot
Scotland	**27,912**	**27,912**	**604,106**	**4.6%**	**1.00**	**n/a**
NHS Ayrshire & Arran	2,262	2,344	40,634	5.6%	0.96	n/a
Arran War Memorial Hospital	20	39	251	8.0%	0.52	●
University Hospital Ayr	887	934	16,662	5.3%	0.95	●
University Hospital Crosshouse	1,297	1,308	23,035	5.6%	0.99	●

Funnel Plot by Hospital: April 2021 to March 2022

Allows comparisons to be made between each hospital and the average for Scotland for a particular period