REPORT TO:	**BOARD OF DIRECTORS**
DATE:	**6 APRIL 2018**
SUBJECT:	**MEDICAL DIRECTOR'S MORTALITY REPORT**
BOARD SPONSOR:	**MEDICAL DIRECTOR**
PAPER AUTHOR:	**MEDICAL DIRECTOR**
PURPOSE:	**DISCUSSION**
APPENDICES:	**NONE**

BACKGROUND AND EXECUTIVE SUMMARY

This report encompasses the following areas:

1. **East Kent Hospitals University NHS Foundation Trust (EKHUFT) Mortality**
   East Kent Hospitals University NHS Foundation Trust's crude and risk-adjusted mortality rates, and the work-streams being undertaken to review and improve these, are overseen by the Trust's Mortality Information Group (MIG), chaired by the Medical Director.

   The Trust's crude mortality rate is in the 50th to 75th percentile of Acute Trust Peers and in keeping with National rates is slowly rising.

   The Hospital Standardised Mortality Ratio (HSMR) is in the 25th percentile of Acute Trust Peers and in the latest dataset period (January 2017 to December 2017) was 82.3.

   The Risk Associated Mortality Index (RAMI) of 90 for this reporting period (January 2017 to December 2017) is within the peer 50th to 75th percentile.

   The latest Summary Hospital Mortality Index (SHMI) reported on NHS Digital is from the October 2016 to September 2017 period and was 1.02 (0.90-1.11, 95% over dispersion control limits).

   Diagnostic conditions significantly contributing to mortality are detailed in the report but it should be noted that the Trust has received an outlier alert from the Care Quality Commission (CQC) concerning Septicaemia.

2. **Learning from Avoidable Deaths**
   From December 2017 one of the Learning from Deaths requirements is for Trusts to submit data nationally and publish mortality data to the Trust Board on a quarterly basis, including the number of deaths reviewed and/or investigated, and the number of those found to be more than likely due to problems in care. The report reviews the Trust's progress to date, methods of reporting and details results of structured judgement reviews.

IDENTIFIED RISKS AND MANAGEMENT ACTIONS:	Risks: 1. Patient safety risks from poor safety culture (compliance with transfer policy, delays in completing Venous Thromboprophylaxis (VTE) assessments, missed doses of critical drugs, failure/delays in escalation of the deteriorating patient, deficiencies in infection prevention and

	control). 2. Delivery of inconsistent quality of care through differences in service availability by day of the week. Actions: 1. Review key components of transfer and handover between sites. 2. Continue monthly review of individual VTE assessment performance and implement mandatory risk assessment through the T3 project. 3. Implement the recommendations of the Medication Safety Officer for missed doses; accelerate as far as possible the introduction of electronic prescribing. 4. Review progress against provision of 7 day services through audit against the 4 priority 7 day services standards and address gaps identified.
LINKS TO STRATEGIC OBJECTIVES:	**Patients:** Help all patients take control of their own health. **People:** Identify, recruit, educate and develop talented staff. **Provision:** Provide the services people need and do it well. **Partnership:** Work with other people and other organisations to give patients the best care.
LINKS TO STRATEGIC OR CORPORATE RISK REGISTER	SRR 2 - Failure to maintain the quality and standards of patient care. CRR 4 - Failure to recognise or treat Patients with sepsis in a timely way. CRR 18 - Failure to comply with the recommendations in the Mazar's report which include case note review of each and every patient death. CRR 22 - Failure to record/carry out timely VTE risk assessments. CRR 46 - Delays in signing off and implementing Consultant job plans. CRR 47 - Inability to prevent deterioration in the number of healthcare associated infection metrics. CRR 62 - Failure to comply with standards for medical education and training in particular areas.
RESOURCE IMPLICATIONS:	Implementation of 7 day services will have staff resource implications as will the full implementation of the National Quality Board's guidance on Learning from Deaths.
COMMITTEES WHO HAVE CONSIDERED THIS REPORT	N/A

PRIVACY IMPACT ASSESSMENT: *NO*	**EQUALITY IMPACT ASSESSMENT:** *NO*

RECOMMENDATIONS AND ACTION REQUIRED:

Members of the Trust Board are requested to receive this report and to:

- Be advised that significant work has been undertaken to ensure EKHUFT's mortality rates are closely monitored and that any diagnostic groups with a higher RAMI or SHMI are being reviewed and learning and action taken where applicable.
- Note the progress being made with Structured Judgment Reviews and the further progress required.
- Be advised that additional staff time resource will be required to achieve the necessary implementation of the Learning from Deaths programme both corporately and at specialty level.
- Be assured that where deaths have been considered to be 'more than likely due to problems in care' these have been investigated by the Patient Safety Team.

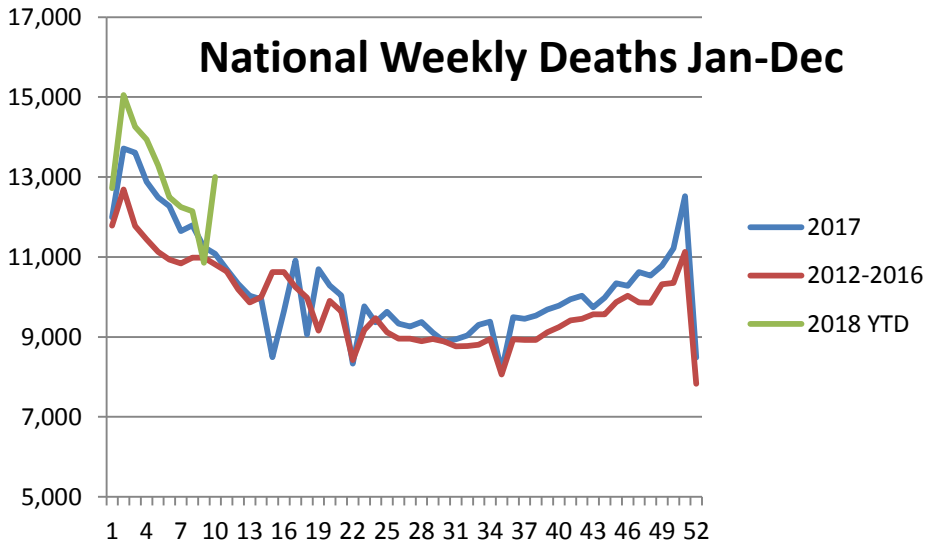
Mortality and Learning from Avoidable Deaths

1. EKHUFT mortality rates and what the data is telling us

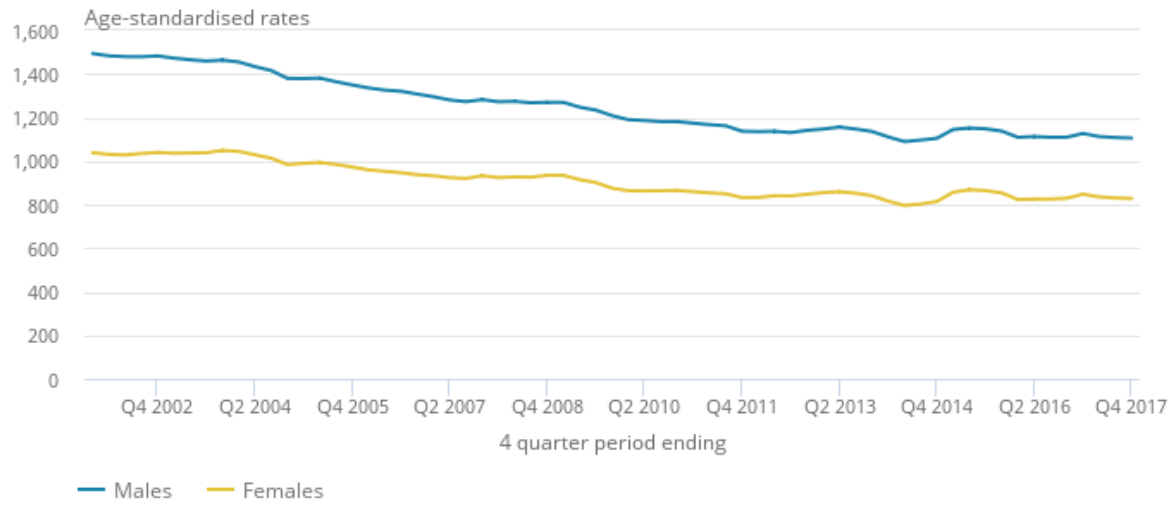
1.1 Crude Mortality (proportion of discharges where death is the outcome)

Crude mortality for February 2018 was 1.75% and is within the 50th to 75th peer percentile of the Hospital Episode Statistics (HES) for Acute Trusts. How the Trust's crude mortality rate has varied with time is shown in the Statistical Process Control Chart (SPC) run chart below.

Within year the seasonal variation in crude mortality can be clearly seen with an increase in mortality rates from November through to January/February and this is a constant feature in National data too, as is the trend for an increase in crude mortality with time. Provisionally there were 498,285 deaths registered in England in 2017, more than in each of the last five years and the highest since 2003. This is shown graphically in the figure below, together with the first few weeks of data from 2018 which indicate that this trend is continuing.



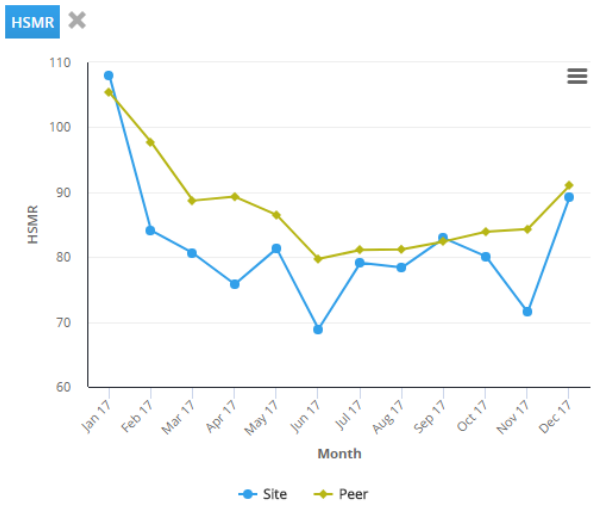
However, crude mortality is simply the number of deaths occurring per unit of time and despite the increase in crude mortality the age-standardised mortality rate for England has progressively improved. The figure below depicts age standardised mortality from Q4 2002 through to Q4 2017 for men and women in England.

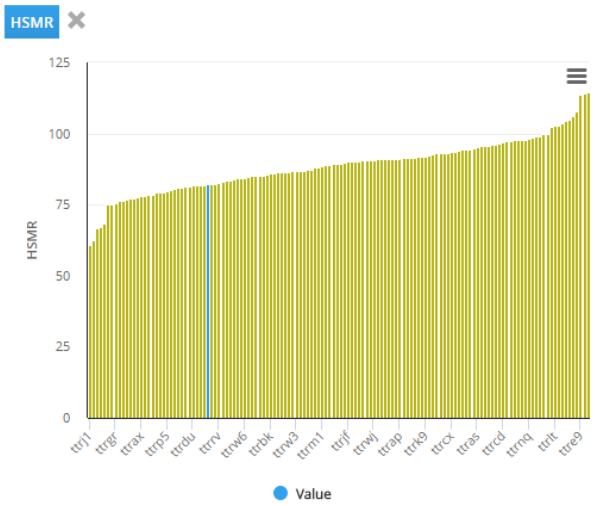


The age-standardised death rates from cardiovascular disease have declined in both men and women, but the proportion of all deaths with an underlying cause of dementia and Alzheimer's disease had the largest increase (0.9%) between 2016 and 2017 compared with any other cause group. This may be partly related to the drive to improve the diagnosis of dementia.

1.2 Hospital Standardised Mortality Ratio (risk adjusted mortality where patients die in hospital over a 12 month period within 56 diagnostic groups covering at least 80% of deaths)

The hospital standardised mortality ratio (HSMR) for the latest period (January 2017 to December 2017) was 82.3 and continues to be in the lower quartile of the HES Acute Peer.

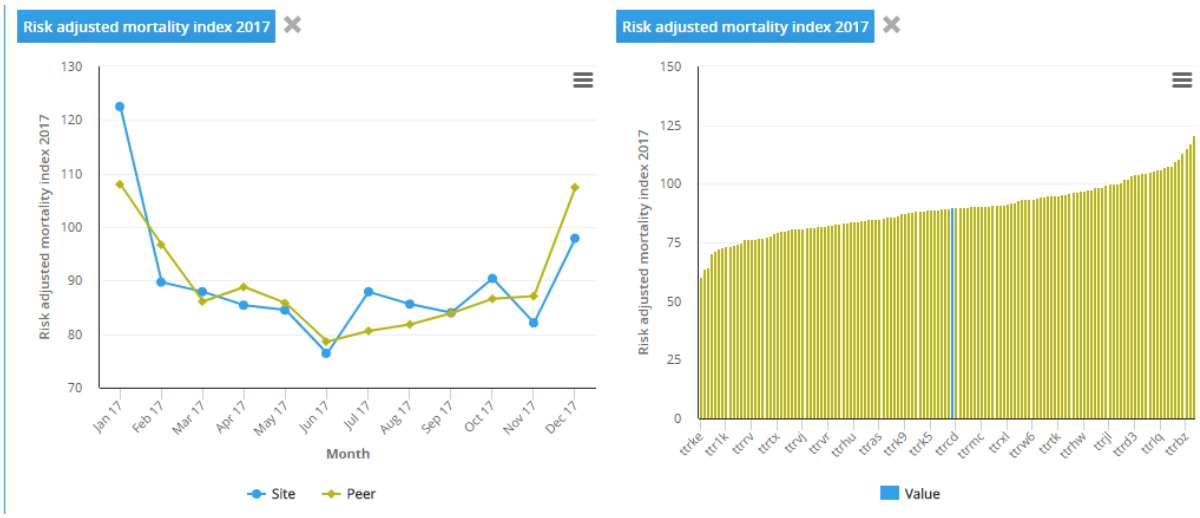




HSMR also varies throughout the year and follows the same pattern as crude mortality. The diagnostic groups are chosen to cover over 80% of in hospital deaths and during this reporting period covered 87.8% of in hospital deaths.

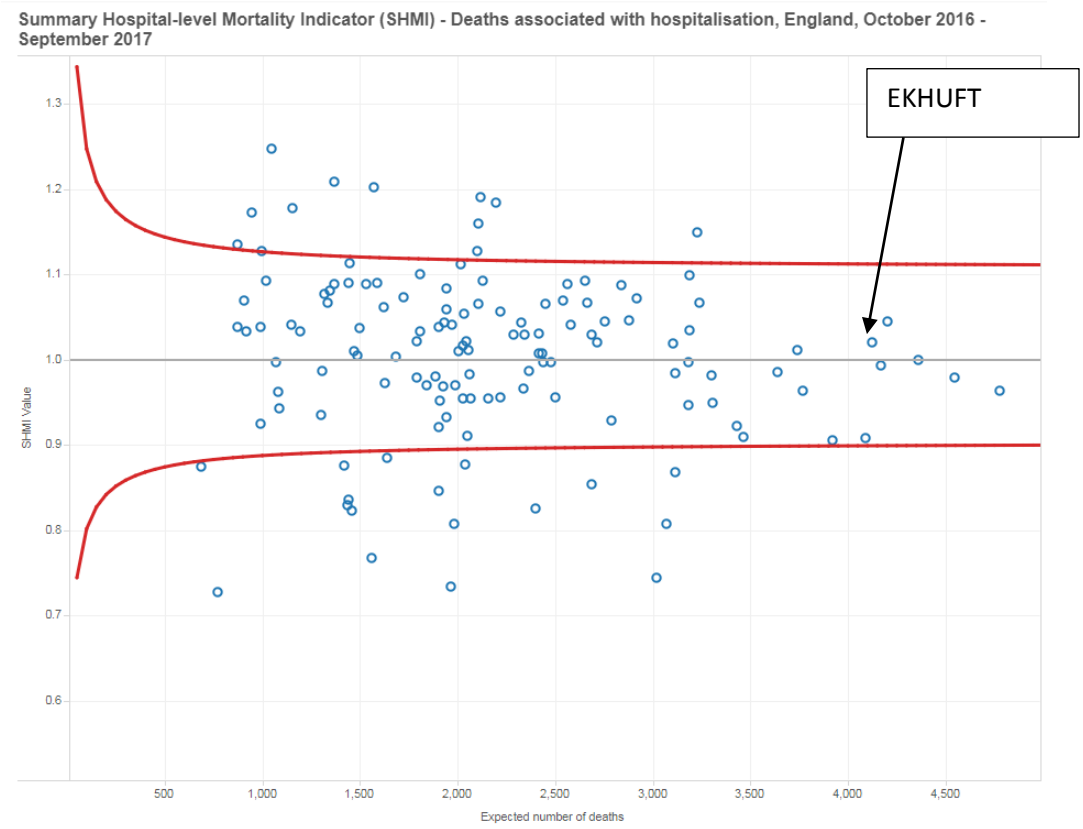
1.3 Risk Adjusted Mortality Index (Includes all activity including well babies and palliative care)

The risk associated mortality index (RAMI) of 90 for this reporting period (January 2017 to December 2017) is within the peer mean and 75th percentile. Again there is variation within year for both our Trust and the HES Acute Peers.



1.4 Summary Hospital Mortality Index (risk adjusted mortality including both within hospital deaths and deaths within 30 days of discharge)

The latest summary hospital mortality index (SHMI) reported on NHS Digital is from the October 2016 to September 2017 period and was 1.02 (0.90-1.11, 95% over dispersion control limits).



A SHMI of 1.02 is categorised 'as expected' and how this compares with all other Acute Trusts is shown in the funnel plot above. For the period October 2016 to September 2017 there were 105,970 admission spells, 4122 deaths expected both in hospital and within 30 days of discharge and 4204 deaths observed. Overall 65.4% of deaths contributing to the SHMI occurred in hospital and 34.6% within the 30 days of discharge, these percentages have remained very consistent since October 2015.

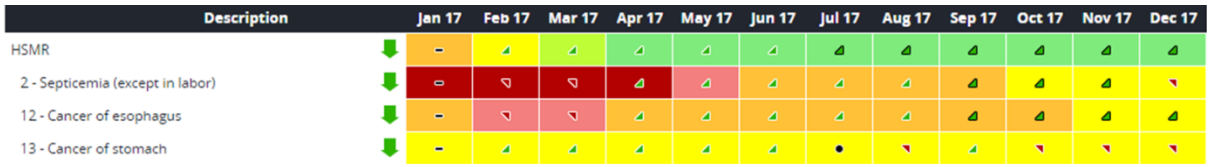
2. Which are the diagnostic groups most contributing to our mortality rates?

   There are 140 diagnostic codes that contribute to the SHMI analysis and we look at both these and the diagnostic codes contributing to the RAMI to identify conditions potentially alerting for increased mortality. From the latest SHMI data those conditions triangulating with RAMI are Septicaemia (except in Labour) and acute myocardial infarction. The full list of conditions, number of spells and observed versus expected deaths are detailed in the table below.

Diagnostic group	Spells	Observed	Expected
Acute Stroke	1228	244	217.8
Acute Myocardial Infarction	1523	164	118.2
Cancer of the lung	247	113	93.4
Cancer of the colon	319	36	30.3
Cancer of the oesophagus	111	27	25.2
Chronic obstructive airways dis.	1909	134	119.2
Congestive heart failure	872	134	126.7
Other gastrointestinal disorders	992	48	34
Septicaemia (except in labour)	2438	628	509.1

3. Action Taken In Response To Excess Mortality

Diagnostic codes alerting in the SHMI are triangulated with RAMI data through CHKS monitoring and reviewed by the mortality information group to assess trends (example heat map below – red = above 75th percentile, amber = 50th-75th percentile, yellow = 25th-50th percentile and green = below 25th percentile compared with Acute Trust Peer). Arrowheads represent either an improving or deteriorating trend compared with the previous period.

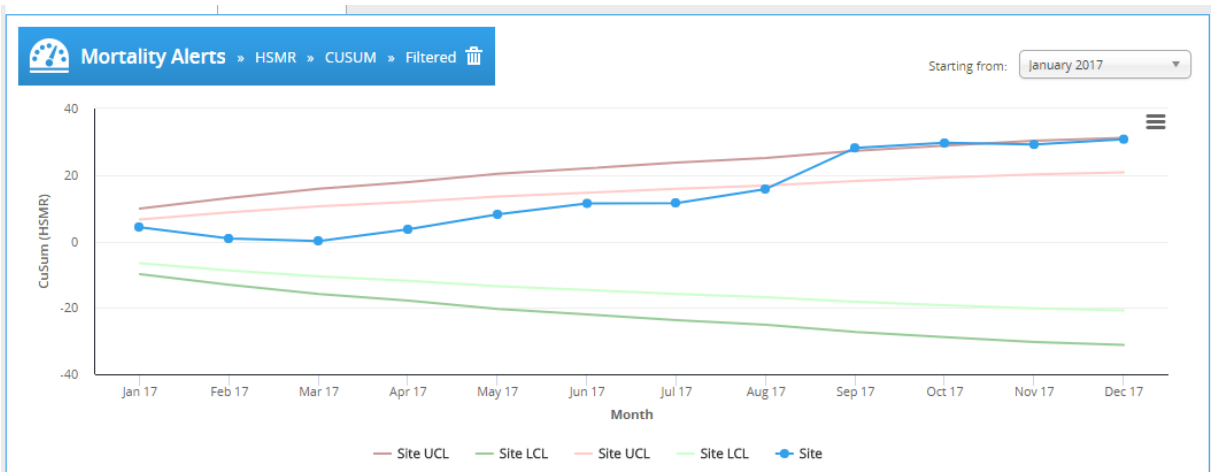


Description	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17
HSMR												
2 - Septicemia (except in labor)												
12 - Cancer of esophagus												
13 - Cancer of stomach												

Additional mortality indices are reviewed together with the trend over time, in this example below for acute myocardial infarction, where all indices are above the 75th percentile in comparison with peers.

Description	Site Numerator	Site Denominator	Excess (mean)	Current Period	Performance	25th Percentile	Peer Value	75th Percentile	Alert
Mortality Rate	131	1518	31.2	8.6%		5.7%	6.6%	7.7%	
Risk adjusted mortality index 2017	131	109.5	21.5	119.6		75.1	95.6	108.8	
HSMR	139	108.2	30.8	128.4		75.9	93.5	105.9	
SMR	139	108.2	30.8	128.4		75.9	93.5	105.9	

How the HSMR for this diagnostic group has varied with time is best shown using a cumulative sum control chart (CUSUM). This is a sequential analysis technique developed for monitoring change detection and the CUSUM chart below clearly demonstrates the problem.



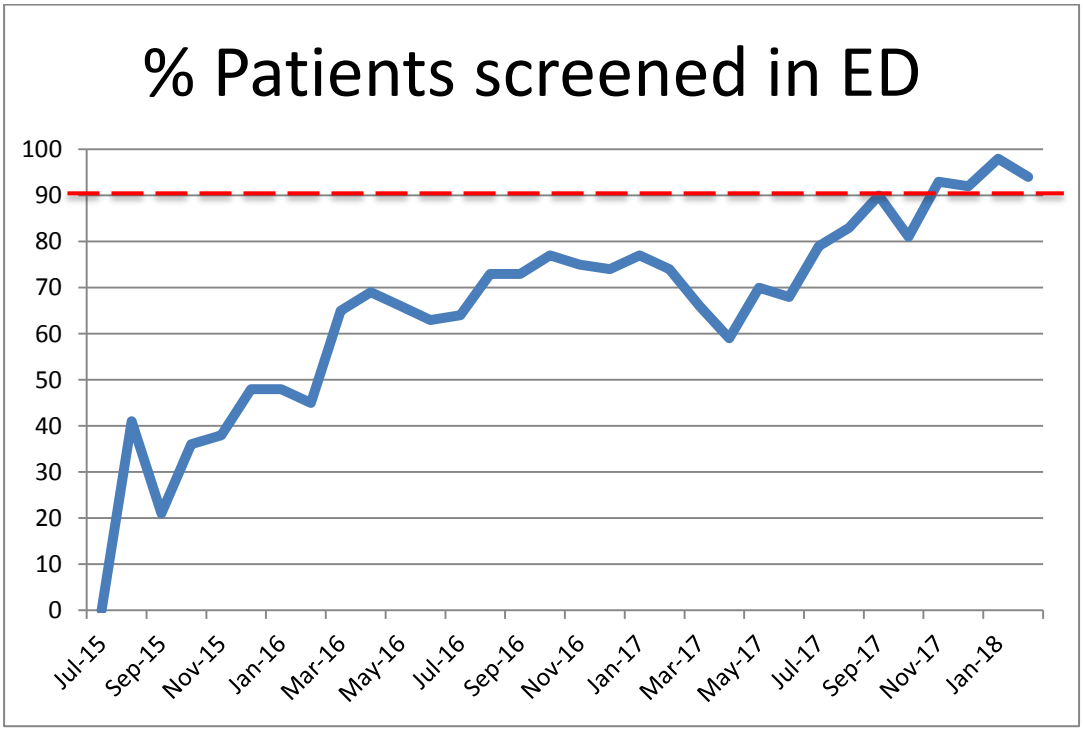
Having clearly demonstrated a change we have randomly selected 30 patient deaths from the period of interest admitted with a primary diagnosis of acute myocardial infarction for further investigation and analysis. Data collected will include demographics, details of the admission pathway and diagnoses and details of medical reviews and interventions. The structured judgement review methodology will be used as described in the Learning from Avoidable Deaths policy.

4. Notification of Septicaemia Mortality Outlier Alert

The Trust has received a formal request from the CQC to make an assessment of the significantly high mortality for the septicaemia (except in labour) primary diagnosis group. The request was received on 21 March 2018 with a deadline for response of 18 April 2018. This is an area that has been subject to review through the Mortality Information Group since its inception.

Although it was only in April 2017 that the coding standard instructed coders to code terms such as urinary sepsis, urosepsis, biliary sepsis, ocular sepsis and chest sepsis (where recorded in the medical record by the clinician) as a primary diagnosis of sepsis our own coders had begun to effect these changes since October 2015. Recognising that coding for sepsis was known to be poor and many cases nationally were known to be missed and incorrectly coded we had developed simple rule sets to help coders identify sepsis. As a consequence since that date we have captured more cases, coding many who were previously coded as pneumonia or urinary tract infection as sepsis. It is relevant that we have consistently had an excess of *expected* versus *observed* deaths (i.e. significantly lower mortality than expected) in both those primary diagnosis groups recorded on NHS Digital since October 2015 whilst at the same time the reverse subtended for the primary diagnosis of sepsis.

Sepsis Commissioning for Quality and Innvoations (CQUINs) were introduced in 2015/16 and since then we have measured screening for sepsis and delivery of antibiotics in those screening positive for sepsis, two process measures that should improve outcome. The screening of patients for sepsis in the Emergency Departments (EDs) has progressively improved over time.



The percentage of ED patients screened for sepsis receiving intravenous antibiotics within an hour of arriving at hospital is currently (February 2018 data) 85%. Screening of inpatients for sepsis is much more difficult to achieve

and relies on both alerting from early warning scores (EWS) and recognition. Inpatient screening is currently (February data) 60% with 80% of patients who screen positive receiving intravenous antibiotics within an hour.

The RAMI heat map shown in section 3 above demonstrates improvement in the septicaemia RAMI over time but nevertheless the mortality information group are in the process of in-depth assessment of the septicaemia mortality alert through an analysis of a randomly selected set of 30 case notes of patient death with a primary diagnosis code of septicaemia.

5. Learning from Avoidable Deaths

5.1 What does "Learning from Deaths" involve?

The National Guidance on Learning from Deaths includes a requirement for Acute Trusts to publish on a quarterly basis via Trust Board papers and in the Annual Quality Accounts:

- the total numbers of in-hospital deaths.
- the numbers of deaths fully reviewed as part of the relevant Specialty morbidity and mortality (M&M) process using the Structured Judgement Review tool (SJR) which is part of the National Mortality Case Record Review programme.
- the number of deaths assessed as having been more likely than not to have been caused by problems in care.
- evidence of learning and action that is happening as a consequence of this information.

There are certain categories of deaths where a full review is automatically expected (i.e. children; patients with Learning Disabilities, Severe Mental Illness, following an elective procedure). Full reviews should also be undertaken where family, carers or staff have raised a concern about the quality of care provision; where there is the potential for learning and improvement; and where there is a CUSUM alert for a diagnosis group or a Quality Improvement initiative.

Case record review can identify problems with the quality of care so that common themes and trends can be seen, which can help focus organisations' quality improvement work. Review also identifies good practice that can be spread. Investigation (root cause analysis and after action review) is more in-depth than case record review as it gathers information from many additional sources. The investigation process provides a structure for considering how and why problems in care occurred so that actions can be developed that target the causes and prevent similar incidents from happening again.

Death due to a problem in care is one that has been clinically assessed using a recognised method of case record review, where the reviewers feel the death is more likely than not to have resulted from problems in care delivery/service provision.

5.2 What progress have we made to date?

The Trust's policy governing Learning from Avoidable Deaths was published in September 2017 and the structured judgement review tool produced nationally has been adapted to use on an electronic platform to enable data capture and analysis. Alongside this a dashboard has been developed for reporting (see below) but this is still under review through the mortality information group in terms of its final format.

Four members of the Trust underwent a 'training the trainers' programme in the structured judgement review methodology in October 2017. They in turn have since trained a further 57 reviewers across the Trust. The next steps are to ensure that all of the individual M&M meetings across the Trust follow the standardised SJR methodology.

Other Trusts in the country have introduced local Medical Examiners in advance of the proposed National Medical Examiner Role. The local Medical Examiner establishes the cause of death, ensures accurate medical certification of cause of death, liaises with the coroner and identifies any clinical governance concerns. A further critical function is early interaction with those bereaved. Pilots in Sheffield, Brighton and Leicester have demonstrated that using local Medical Examiners enables screening of upwards of 80% of all deaths, in turn leading to appropriate referral for structured judgement review both following Medical Examiner review and also following discussion with relatives where concerns relating to care had been raised.

The business case to support the Learning from Avoidable Deaths Policy will include both the support required for delivery of structure judgement reviews and a proposal for local Medical Examiners.

5.3 Learning From Avoidable Deaths Dashboard

As of March 2018 the dashboard records the first 92 structured judgement reviews that have been completed on the electronic platform. It should be noted that all of these reviews have been completed in areas where we expected to see some problems in the care provided. Of these 92 cases, in 5 the reviewers opinion was that death was more likely than not to have resulted from a problem in care, in 2 there were problems in care identified which may have contributed to death, and in 23 there were problems in care identified but these were very unlikely to have contributed to death.

The structured judgement review process also allows assessment and categorisation of problems in healthcare, some cases will have had more than one problem with care identified throughout the inpatient episode:

Problem	Led to Harm?		
	No	Probably	Yes
Assessment, Investigation or Diagnosis (including assessment of pressure ulcer, VTE or falls risk)	11	2	6
Medication/IV fluids/electrolytes/oxygen	6	4	5
Infection control	11	3	2
Related to operation/invasive procedure (other than infection control)	1	1	3
Clinical monitoring (including failure to plan, to undertake, or to recognise and respond to changes)	5	1	0
Resuscitation following a cardiac or respiratory arrest (including CPR)	6	0	7
Any other problem not fitting the categories above	1	0	0

Key themes emerging from structured judgement reviews.

The themes that have emerged necessarily reflect the reasons for selection of SJRs to date (driven initially by reviewing specific problem areas as opposed to a more even reflection of deaths in the organisation).

The top 5 themes are as follows:

- Cross site transfers (failure to comply with policy).
- Delays in completing VTE assessments by more than 24 hours.
- Missed doses of critical drugs.
- Failure/delays in escalation of the deteriorating patient.
- Late, no or inadequate consultant review.

The identified themes encompass areas that have been recognised as requiring action and briefly these actions are:

- A review of key components of transfer and handover between sites, continued embedding of use of the Situation, Background, Assessment, Recommendation (SBAR) tool in the handover process and a review of patients transferred in the cross site daily meetings. This was completed in an audit of SBAR documentation of handover in cross site transfers in February this year. Preliminary analysis shows that transfer forms are being completed but that completion of the medical component requires improvement as does recording of observations immediately prior to transfer (absent in up to a third of cases). An action plan will be drawn up and implemented through the Patient Safety Board.
- Continued monthly review of individual VTE assessment performance and implementation of mandatory risk assessment through the T3 project (longer term).
- Implementation of the recommendations of the Medication Safety Officer for missed doses; accelerate as far as possible the introduction of electronic prescribing through the T3 project (longer term).

- Review progress against 7 day working and address the gaps identified. The next audit of compliance with the priority standards for 7 day services in April to May 2018 will audit against all 4 priority standards (time to consultant review, access to diagnostics within 1 hour for critical patients and 12 hours for urgent, access to consultant directed interventions, and continuing daily consultant-directed review).