# Scottish Patient Safety Programme

# Acute Adult

# Deteriorating Patient and Sepsis

Measurement Framework

March 2024

# Contents

# How to use this Measurement Framework

Measures are essential to help teams learn if the changes they are making in their deteriorating patient work are leading to an improvement. Measuring your deteriorating patient improvement work will help to:

- Recognise the variation that exists within your system and processes.

- Work out whether your changes are making an improvement.

- Help tell your improvement story.

This measurement framework is designed for use in conjunction with the SPSP Deteriorating Patient and SPSP Sepsis driver diagrams and change packages, as well as the SPSP Essentials of Safe Care change package and measurement framework. The SPSP Essentials of Safe Care readiness for change and prioritisation tool may help you in understanding where you might want to focus your improvement work.

**Please note there is no mandatory national reporting requirement in this measurement framework.**

To learn more about measurement: Introduction to measurement for improvement (NHS Education for Scotland)

## 1.1 Choosing Measures

An improvement project should have a small family of measures that track the progress of improvement work over time. These should include:

- **Outcome measures**: to understand whether the changes being made are helping to achieve the stated aim. For example, rate of cardiac arrests in your hospital.

- **Process measures**: to understand whether the changes you are making are improving the parts of the system that need to change to support achievement of the overall aim. For example, appropriate frequency of NEWS2.

- **Balancing measures**: to identify unintended consequences elsewhere in the system. For example, how does a new change idea impact on staff experience.

**Teams should only select measures which will be help them understand if the changes they are making are leading to an improvement.** We encourage teams to seek local quality improvement support to develop alternative measures if required. NHS Education for Scotland have a range of resources which can support you in developing your measures.

## 1.2   How to measure

When planning your data collection consider:

- What data will you collect?
- Who will collect the data?
- When will you collect the data?
- How will you collect/record the data?

**To learn more about data collection:** Data collection (NHS Education for Scotland)

## 1.3   Sampling

Measuring for improvement often relies on small sample sizes, 'just enough' data to learn from. When it is not possible to access or collect a larger amount of data, it is suggested that a random selection of 5 records per week, giving 20 records per month will gather enough data.

## 1.4   Presenting data

Run Charts (see example below) are useful for presenting data to help you to understand what is happening in your system. They are used to distinguish between random variation (variation that affects all processes, people, and outcomes equally) and non-random variation, which could be due to the changes you have introduced. A toolkit for generating run charts has been included with this framework. NHS Education for Scotland have a range of resources to support you to present your data.

Scotland
All Submitting Sites

**Cardiac Arrest Rate**

Baseline Median:
1.42
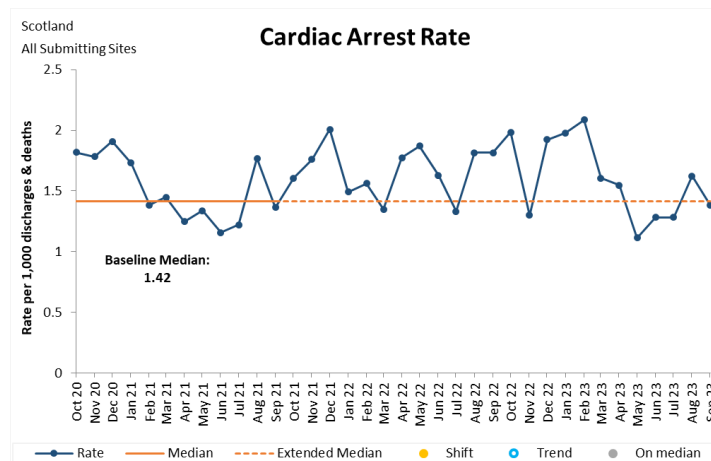
## 2.0 SPSP Acute Adult Deteriorating Patient Measures

Teams should select a small set of measures to support them in understanding the progress and impact of their improvement work. One outcome measure, two to three process measures, and a balancing measure are likely to be enough.

<table>
<tr>
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**Readiness for change and identifying opportunities for improvement**
- Readiness for change and prioritisation assessment
- Engagement with adverse events team and/or regular case note review to identify opportunities for improvement

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<tr>
<td>Outcome Measures</td>
<td>

- Cardiac arrest rate

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<tr>
<td>Process Measures</td>
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Recognition of acute deterioration
- NEWS2 frequency
- Time from NEWS2 ≥5 or clinical concern to critical care admission
- Delirium screening and Delirium response

Standardised, structured response and review
- Complete structured response
- Patient records with concerns of patients, families, or carers documented at least daily
- Delivery of care informed by patient's documented views and concerns

Person centred care
- Patients with a completed Treatment Escalation Plan
- CPR with DNACPR in place at time of CPR

Leadership to support a culture of high-quality care and patient safety
- MDT cardiac arrest reviews

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<tr>
<td>Balancing Measures</td>
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- Medical emergency calls
- Critical care admission rate
- Hospital Standardised Mortality Ratio
- Patient, family, and staff experience (Qualitative)
- Significant adverse event reviews where recognition and or structured response to deterioration was a component

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## 2.1    Sepsis specific measures

The following table outlines sepsis-specific measures for teams undertaking focused improvement work on sepsis as a subset of their deteriorating patient work. Teams undertaking sepsis improvement work can select their small set of measures from either the sepsis specific measures or the deteriorating patient measures depending on the focus of their work.

| Outcome Measures | • Infection related mortality (proxy for suspicion of sepsis) |
|---|---|
| Process Measures | • Sepsis 6 performed within 3 hours for patients with NEWS2 ≥5 or 6 (or 3 in single parameter) with documented suspicion of infection<br>• Patients with NEWS2 ≥7 and suspicion of infection who receive the first dose of IV antibiotics within 1 hour |
| Balancing Measures | • Patterns of antimicrobial resistance<br>• Hospital Acquired Infection rates |

# 3.0 Readiness for change & identifying opportunities for improvement

| Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| Readiness for change and prioritisation assessment | • The SPSP Essentials of Safe Care readiness for change and prioritisation assessment will support you to identify the key changes you will want to make. This will help you to understand your system and its readiness for change. | Readiness for change assessment and prioritisation tool. | N/A | N/A |
| Engagement with adverse events team and/or regular case note review to identify opportunities for improvement | • A regular review of case notes or adverse events helps to identify issues and types of potential and actual harm and inform future opportunities for improvement.<br><br>• The **Global Trigger Tool (GTT)** is one example of a tool which can be used to identify adverse events within your system and identify areas for improvement. Developed by the Institute for Healthcare Improvement, the tool is an easy-to-use tool for measuring the rate of harm over time. | Review of electronic record system/case notes/template<br><br>Number of case notes reviewed each month using locally agreed tool (aim for 20 electronic records/case notes). | Monthly | Pareto Analysis |

# 4.0   SPSP Deteriorating Patient Measures

## 4.1 Outcome Measures

| Concept/Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| **Cardiac arrest rate**<br><br>Rate of cardiac arrests (per 1,000 discharges plus deaths) | **Definition:**<br><br>All individuals in eligible clinical areas receiving chest compressions and/or defibrillation and attended by the hospital-based resuscitation team (or equivalent) in response to the 2222 call.<br><br>The cardiac arrest data collection improvement resource can support teams to improve reliability of data collection.<br><br>**Numerator:**<br>The total number of cardiac arrests in the ward/dept./unit for the month<br><br>**Denominator:**<br>The total number of deaths plus live discharges in the month<br><br>**Rate**:<br>(Numerator/Denominator) *1000<br><br>**Excluded areas (numerator and denominator):**<br>Emergency Departments, Coronary Care Units, Intensive Care Units, Maternity Units, Outpatients and Day Case procedures. Local teams should consider collecting cardiac arrest data in their emergency departments; however, this is not submitted as part of the SPSP Deteriorating Patient Programme. | As per incident management system or local data collection tool | Monthly data points reported quarterly | Run chart<br><br>**For rare events** – data can be visualised locally as days between. |

## 4.2 Process Measures

| Concept/ Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| **Recognition of acute deterioration**<br><br>Percentage compliance with correct frequency of observations using NEWS2.<br><br>**Goal:**<br>Process reliability at 95% or greater | **Definition:**<br><br>The National Early Warning Score (NEWS) 2 augments clinical judgement in the identification of acutely ill and deteriorating patients.<br><br>**Numerator:**<br>The number of patients with the last 5 NEWS2 observations performed at the correct frequency as per local policy<br><br>**Denominator:**<br>The total number of patients in sample<br><br>**Percentage compliance:**<br>(Numerator / Denominator) * 100<br><br>**Inclusion Criteria:**<br>• Patients admitted > 24 hours<br>**Notes**<br>• Requires locally agreed definition of frequency of observations for data collection<br>• Review of last 5 NEWS2 observations should be conducted for no more than the previous three days of the patients stay | **Primary data source:**<br><br>NEWS2 chart.<br><br>Check frequency of observations per patient, using a random sample of 20 patients per month per unit (sample 5 patients per week). When looking at all six observations for one patient, this is an all or nothing measure | Monthly | Run chart |

| Concept/ Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| **Delirium screening** Percentage compliance with 4AT screening<br><br>**Goal:** Process reliability at 95% or greater | **Definition:**<br><br>A new onset Delirium or confusion is a clinical condition that can indicate that a patient has deteriorated and is unwell. Delirium is a medical emergency. The 4AT tool (www.the4at.com) is designed to be used by any health professional at first contact with the patient, and at other times when delirium is suspected.<br><br>**Numerator:**<br>Total number of patients with a completed 4AT score as per locally defined delirium screening criteria.<br><br>**Denominator:**<br>The total number of patients in the sample<br><br>**Percentage compliance:**<br>(Numerator / Denominator) * 100<br><br>**Inclusion criteria:**<br>All patients who meet the locally defined delirium screening criteria | **Primary data source:**<br><br>The patient's medical and nursing notes including NEWS2 and 4AT/TIME chart as per local documentation<br><br><br>Sample five patients weekly per ward/department who meet the locally defined delirium screening criteria or include all patients if numbers less than 20/month | Monthly | Run chart |

| Concept/ Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| **Delirium response** Percentage compliance with TIME bundle implementation within 2 hours for patients with 4AT score of $\geq$ 4 **Goal:** Process reliability at 95% or greater | **Definition:** All patients identified as experiencing delirium with should have the TIME bundle for delirium management implemented within 2 hours of 4AT score of $\geq$ 4. TIME bundle • **T**hink, exclude and treat possible triggers • **I**nvestigate and intervene for possible underlying causes • **M**anagement plan initiated • **E**ngage and explore in discussion with the family **Numerator:** The total number of patients with a 4AT score of $\geq$ 4 who have evidence of the 4 elements of the TIME bundle documented within 2 hours of the trigger score **Denominator:** The total number of patients in the sample. **Percentage compliance:** (Numerator / Denominator) * 100 **Inclusion criteria:** Patients with a new confusion, who have been screened and have 4AT score of $\geq$4. | **Primary data source:** The patient's medical and nursing notes including NEWS2 and 4AT/TIME chart as per local documentation Sample five patients weekly per ward/department with a 4AT score of $\geq$4 or include all patients if numbers less than 20/month | Monthly | Run chart |

| Concept/ Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| **Score to door time (STDT)**<br><br>Mean time from NEWS2 of 5 or more to Critical Care admission per month<br><br>**Goal:**<br>Mean 'Score to door' time of ≤ 4 hours.<br><br>For **island, remote and rural NHS boards**, goal may need to be adjusted dependent on local context. This may also be 2 measures if the NHS board has a High Dependency area. | **Definition:**<br><br>Time from NEWS2 of 5 or more or clinical concern to time of admission to a higher level of care (High Dependency, Coronary Care, Intensive Care Unit or time Emergency Retrieval Service accepts referral of the patient for island, remote and rural NHS boards where applicable).<br><br>**Numerator:**<br>Cumulative total score to door time for all patients in sample.<br><br>**Denominator:**<br>The total number of patients in the sample.<br><br>**Mean STDT:**<br>Numerator / Denominator<br><br>**Inclusion criteria:**<br>All patients who were emergency admissions from wards to Critical Care<br><br>**Exclusions:**<br>Patients transferred from Emergency Departments, Maternity Units and Outpatients, High Dependency and Coronary Care areas to Intensive Care | **Primary data source:**<br><br>The patient's medical and nursing notes including NEWS2 chart to identify time when NEWS2 became 5 or more and time of admission to Critical Care.<br><br>Local electronic systems may track time of NEWS2 5 or more and time of admission to a Critical Care environment | Monthly | Run chart |

| Concept/ Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| **Structured response**<br>Percentage compliance with structured response<br><br>**Goal:**<br>Process reliability at 95% or greater | **Definition:**<br>A structured process for responding to patient physiological deterioration includes Recognition, Response, Review and Reassessment.<br>Boards can locally define what constitutes a complete structured response. You may wish to consider the SPSP Principles of Structured Response when identifying 3 to 5 components which would indicate a complete structured response.<br><br>**Numerator:**<br>The number of patients with complete structured response within the sample<br><br>**Denominator:**<br>The total number of patients in the sample.<br><br>**Percentage compliance:**<br>(Numerator / Denominator) * 100<br><br>**Inclusion criteria:**<br>Patients with a NEWS2 score of ≥ 5 (or 3 in a single parameter), or Lactate of ≥ 4, or an expressed clinical concern, or locally defined trigger point | **Primary data source:**<br><br>The patient's medical and nursing notes and documentation including NEWS2.<br><br><br>Sample five patients weekly per ward/department with a NEWS2 score of ≥5 or include all patients if numbers less than 20/month | Monthly | Run chart |

| Concept/ Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| **Treatment escalation planning**<br><br>Percentage patients with a completed NHS Scotland Do Not Attempt Cardiopulmonary Resuscitation (DNACPR) form and a Treatment Escalation Plan<br><br>**Goal:**<br>Process reliability at 95% or greater | **Definition:**<br><br>Where patients have a resuscitation decision documented there is a corresponding Treatment Escalation Plan in place. Treatment Escalation Plans are a communication tool that summarises treatment goals, including resuscitation status.<br><br>**Numerator:**<br>The number of patients with a completed Treatment Escalation Plan within the sample.<br><br>**Denominator:**<br>The total number of patients with an NHS Scotland DNACPR form.<br><br>**Percentage compliance:**<br>(Numerator / Denominator) * 100 | **Primary data source:**<br><br>The patient's medical and nursing notes<br><br>Sample five patients weekly per ward/department with an NHS Scotland DNACPR form.<br><br>Include all patients with DNACPR if numbers less than 20/month | Monthly | Run chart |

| Concept/ Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| **Cardiac arrest reviews**<br><br>Percentage cardiac arrests with a multi-disciplinary review<br><br>**Goal**:<br>Process reliability at 95% or greater | **Definition:**<br>Multidisciplinary review of in-patient cardiac arrests.<br><br>**Numerator:**<br>The number of patients with a completed multi-disciplinary cardiac arrest review.<br><br>**Denominator:**<br>The total number of patients<br><br>**Percentage compliance:**<br>(Numerator / Denominator) *100<br><br>**Inclusion criteria:**<br>All patients who had a cardiac arrest.<br><br>**Exclusions:** (numerator and denominator):<br>Maternity and Outpatient Depts.<br>Local teams should consider reviewing cardiac arrests in their emergency departments and critical care areas to enable learning from across the system.<br><br>**Note:**<br>Cardiac arrest reviews should be structured using a locally agreed tool. Teams can then identify which themes they want to centre improvement work on and track over time. | **Primary data source:**<br><br>Datix/incident reporting system, 2222 review process documents as per local policy<br><br>All patients, added to Datix/incident reporting system or call review process documents as a result of cardiac arrest/2222 call event in the month (as per local recording policy). | Monthly | Run chart |

| Concept/ Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| Percentage of people receiving CPR with a completed DNACPR in place prior to cardiac arrest | **Definition:**<br>The proportion of people receiving CPR who had a DNACPR already in place.<br><br>**Numerator:**<br>The number of patients with a completed DNACPR prior to the cardiac arrest.<br><br>**Denominator:**<br>The total number of cardiac arrest reviews<br><br>**Percentage compliance:**<br>(Numerator / Denominator) *100<br><br>**Inclusion criteria:**<br>All patients who had a cardiac arrest.<br><br>**Note:**<br>Teams may choose to measure CPR for people who, upon cardiac arrest review, may have benefited from a DNACPR decision prior to their cardiac arrest. | **Primary data source:**<br><br>Cardiac arrest review documentation, clinical notes.<br><br><br>Include all cardiac arrest reviews. | Monthly | Run chart<br><br>**For rare events** – data can be visualised locally as days between. |

| Concept/ Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| **Patient, family or carer views and concerns recorded reliably**<br><br>Percentage patients with their views and concern recorded<br><br>**Goal**:<br>Process reliability at 95% or greater | **Definition:**<br>The views and concerns of patients, their families, or carers are reliably sought and recorded within 24hrs of admission and at least daily thereafter.<br><br>For example: '*How are you feeling*?' and '*How are you feeling compared to the last time we asked (or since you arrived in hospital/ward*)?'<br><br>**Numerator:**<br>The number of patients with their views and concerns about illness or trajectory recorded.<br><br>**Denominator:**<br>The total number of patients eligible to have their views and concerns recorded.<br><br>**Percentage compliance:**<br>(Numerator / Denominator) *100<br><br>**Inclusion criteria:**<br>All adult inpatients | **Primary data source:**<br><br>The patient's medical and nursing notes<br><br>Sample five patients weekly per ward/department.<br><br>Include all patients if total numbers are less than 20. | Monthly | Run chart |

| Concept/ Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| **Patient, family or carer concern acted on reliably**<br><br>Percentage patients where their recorded concerns have informed care<br><br>**Goal**:<br>Process reliability at 95% or greater | **Definition:**<br>The concerns of patients, families or carers inform the person-centred care plan.<br><br>**Numerator:**<br>The number of patients where their recorded concerns have informed documented approach to care delivery.<br><br>**Denominator:**<br>The total number of patients with concerns recorded<br><br>**Percentage compliance:**<br>(Numerator / Denominator) *100<br><br>**Inclusion criteria:**<br>All adult inpatients | **Primary data source:**<br><br>The patient's medical and nursing notes<br><br>Sample five patients weekly per ward/department.<br><br>Include all patients if total numbers are less than 20. | Monthly | Run chart |

## 4.3 Balancing Measures

| Concept/ Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| **Medical Emergency Calls**<br><br>Percentage medical emergency calls with identified recognition/response delay using locally agreed review tool | **Definition:**<br><br>Medical emergency calls are an important part of the escalation of deteriorating patients. Understanding the proportion of medical emergency calls where there was an opportunity to improve the timeliness or effectiveness of the recognition/response can inform improvement.<br><br>**Note**: the measure can be considered for use as an outcome measure in hospitals or health boards where cardiac arrest rate is a less helpful measure of timely recognition and intervention for the deteriorating patient<br><br>**Numerator:**<br>The number medical emergency calls with identified recognition/response delay using locally agreed review tool<br><br>**Denominator:**<br>The total number of calls in the sample.<br><br>**Percentage compliance:**<br>(Numerator / Denominator) * 100 | **Primary data source:**<br><br>Local system for recording medical emergency calls<br><br>Sample five calls weekly or include all calls if numbers less than 20/month<br><br>If targeted improvement work is being undertaken in a particular area, you may wish to segment call data to those areas | Monthly | Run chart |

| Concept/ Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| **Critical care admission rate**<br><br>Critical Care admission rate (per 1,000 occupied bed days)<br><br>**Goal**:<br>Monitor for impact of wider system changes related to rate of admission to Critical Care | **Definition:**<br>Critical care admission rate is a balancing measure for teams to identify the impact of changes made in different parts of their deteriorating patient work. Interpretation of the measure should focus on understanding any change. A change does not automatically indicate an improving or deteriorating system.<br><br>**Numerator:**<br>Total emergency transfers to critical care from emergency departments and downstream wards<br><br>**Denominator:**<br>Total occupied bed days<br><br>**Rate:**<br>(Numerator/Denominator) *1000<br><br>**Inclusion criteria:**<br>All patients who were emergency admissions to Critical Care (High Dependency, Coronary Care, Intensive Care or Emergency Retrieval Service assume responsibility for management of the patient for island, remote and rural NHS boards where applicable) from downstream wards<br><br>**Exclusions:**<br>Patients transferred from Maternity Units and Outpatients, High Dependency and Coronary Care areas to Intensive Care | Local electronic patient management systems may track number of admissions to critical care environments and bed occupancy | Monthly | Run chart<br><br>**For rare events** – data can be visualised locally as days between. |

| Concept/ Measure Name | What/ How to measure | Data Source |
|---|---|---|
| **Hospital Standardised Mortality Ratio (HSMR)** | Monitor for impact of wider system changes related to HSMR | PHS Discovery |
| **Patient and family experience**<br><br>**DPB2**<br><br>Qualitative measure | Use of Discovery Conversations within the Care Experience Improvement Model | Conversations with people, families, and carers. Care opinion, local service user feedback mechanisms, informal and formal complaint processes |
| **Staff experience**<br><br>**DPB3**<br><br>Qualitative measure | Staff experience and perceptions of safety within their clinical environment<br><br>Refer to SPSP Essentials of Safe Care driver diagram, change package and measurement plan | Local safety climate processes and tools |
| **Significant Adverse Event Reviews (SAERs) relating to deterioration.**<br>% SAERS with deterioration as a component | **Numerator:**<br>Total SAERs with deterioration identified as a component of the adverse event, using locally agreed criteria for identification.<br><br>**Denominator:**<br>Total number of SAERs in the sample<br><br>**Rate:**<br>(Numerator/Denominator) *100 | Local systems |

# 5.0 Sepsis specific measures

## 5.1 Outcome measure

| Concept/Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| **Infection related mortality**<br><br>% infection related mortality | **Definition:**<br>Percentage of people with a Suspicion of Sepsis ICD-10 code in the first diagnostic position who die within 30 days of hospital admission.<br><br>**Numerator:**<br>The total number of people with a Suspicion of Sepsis ICD-10 code who died within 30 days of hospital admission.<br><br>**Denominator:**<br>The total number of people with a Suspicion of Sepsis ICD-10 code in the first diagnostic position.<br><br>**Percentage**:<br>(Numerator/Denominator) *100<br><br>**Exclusions** (numerator and denominator): people younger than 16 years old. | [PHS Discovery](#) | Monthly data points reported quarterly | Run chart<br><br>**For rare events** – data can be visualised locally as days between. |

## 5.2 Process measures

| Concept/ Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| Percentage of patients with NEWS2 5 or 6 (or 3 in a single parameter) with documented suspicion of infection with Sepsis Six performed within 3 hours of time zero<br><br>**Goal:**<br>Process reliability at 95% or greater | **Numerator:**<br>The total number of patients with NEWS2 5 or 6 (or 3 in a single parameter) with a documented suspicion of infection who have **all** elements of Sepsis Six as locally agreed, completed within 3 hours of time zero.<br><br>**Denominator:**<br>The total number of patients in the sample<br><br>**Percentage compliance:**<br>(Numerator / Denominator) *100<br><br>**Inclusion Criteria:**<br>Patients who score 5 or 6 (or 3 in a single parameter) on NEWS2 with a documented suspicion of infection<br><br>**Time Zero:**<br>Front Door – triage time<br>In-patient area – time of meeting inclusion criteria | **Primary data source:**<br><br>The patient's clinical notes, medication record, NEWS2 chart, and fluid balance chart<br><br>Sample five patients weekly per ward/department or include all patients if numbers less than 20/month<br><br>In specialty ward areas it might be helpful to batch similar wards together to provide a denominator of >10 | Monthly | Run chart |

| Concept / Measure Name | What/ How to measure | Data Source | Frequency of Reporting | Chart Type |
|---|---|---|---|---|
| Percentage of patients with NEWS2 7 or more (or 3 in a single parameter) with documented suspicion of infection commenced on IV antibiotics within 1 hour.<br><br>**Goal:**<br>Process reliability at 95% or greater | **Definition:**<br>Timely response to deterioration where sepsis is the suspected or confirmed cause.<br><br>**Numerator:**<br>The total number of patients with NEWS2 of 7 or more (or 3 in a single parameter) with documented suspicion of infection who receive first dose of IV antibiotics within 1 hour of time zero<br><br>**Denominator:**<br>The total number of patients in the sample<br><br>**Compliance:**<br>(Numerator / Denominator) * 100<br><br>**Inclusion Criteria**<br>Patients who score 7 or more (or 3 in a single parameter) on NEWS2 (or locally defined trigger) with a documented suspicion of infection<br><br>**Time Zero:**<br>Front Door – triage time<br>In-patient area – time of meeting inclusion criteria | **Primary data source:**<br><br>The patient's medical notes, medication record, NEWS2 chart, and fluid balance chart.<br><br>Sample five patients weekly per ward/department<br><br>or include all patients if numbers less than 20/month<br><br>In specialty ward areas it may be helpful to batch similar wards together to provide a denominator of >10 | Monthly | Run chart |

## 5.3 Balancing Measures

| Concept/ Measure Name | Data Source |
|---|---|
| **Patterns of antimicrobial resistance** | PHS Discovery ARHAI Indicators.<br>Local AMR data where available. |
| **Hospital Acquired Infection rates** | PHS Discovery ARHAI Indicators: HAI Surveillance |