Safety Measurement and Monitoring Maturity Matrix

Overall purpose:
The Safety Measurement and Monitoring Maturity Matrix (SaMMMM) (Carthey and Downham, 217), aims to help healthcare organisations reflect on their approach to measuring and monitoring safety. SaMMMM was developed by Dr Jane Carthey and Nick Downham with support from funding from The Health Foundation.

Based on the Health Foundation's Framework for Measuring and Monitoring Safety (Vincent, Burnett and Carthey, 2013), the Matrix helps healthcare organisations and teams to: ○
Visualise the five domains of the Framework
- ○ Structure conversations with staff when exploring the use of the Framework.
- ○ Identify and reflect on the reasons why different stakeholders have varying perceptions about current approaches to measuring and monitoring safety.
- ○ Identify where there are gaps between current systems and that described as mature; thus, being able to plan to strengthen areas of their systems to reduce the gap. ○

Broaden horizons around the possibilities of safety, measurement, and monitoring systems.

The idea for the Safety Measurement and Monitoring Maturity Matrix (SaMMMM) was borne out of previous work on the Manchester Patient Safety Framework
(Kirk S, Parker D, et al. (1997), who used Westrum's (1992) model of safety culture maturity to develop tools to evaluate safety culture in primary care, acute, mental health and ambulance Trusts.
We have taken their approach and built on it to develop a maturity matrix that specifically focuses on answering the question, 'How mature is our organisation's approach to measuring and monitoring safety?'

General guidance notes:

Printing and format:
- This document can be read electronically or printed. We recognise there may be differences in the ability to access colour printers amongst people who want to use SaMMMM so we have produced both colour and black and white versions of the matrix.

Who to use it with:
- SaMMM is designed to be used with a wide range of healthcare stakeholders, including healthcare teams delivering patient care, senior managers, patient safety and risk teams, Boards, and CCG teams.

What it is, and what it is not:
- It *is* designed to communicate the key elements of the Measurement and Monitoring of Safety Framework (Vincent, Burnett and Carthey, 2013).
- It *is* designed to help an organisation begin to understand its areas of focus when measuring and monitoring safety, and to identify where there might be gaps.
- It *is not* intended as an assessment of safety culture.
- It *is not* intended to be used to evaluate the impact of a safety programme over time.
- **It should not be used for bench-marking or performance management purposes**. Rather it is tool for communication, education, and self-reflection.

WHEN TO USE IT:
- At the beginning of your exploration of the Safety Measurement and Monitoring Framework (Vincent, Burnett and Carthey, 2013). It is important to use it at the start of your work on the Framework because it will help stakeholders develop a consistent understanding of the five different lens through which safety is measured and monitored. These lens' are past harm, reliability, sensitivity to operations, anticipation and preparedness, and integration and learning.

HOW TO USE IT
- We are mindful of being overly-prescriptive about the way SaMMMM is used. The guidance below one way to use SaMMM to self-reflect on where your organization is now.
- You may think of other uses for the Matrix beyond what is set out in our guidance.

Preparing for the group based assessment

Identify a facilitator
- You will need to identify a facilitator to run the group based exercise. The facilitator must have read the full Health Foundation report on the Measurement and monitoring of Safety (Vincent, Burnett and Carthey, 2013).
- The facilitator could be a member of your senior team who has the responsibility of the Safety Measurement and Monitoring programme in your organization or someone who has a passion for improving safety.
- The facilitator should be familiar with the matrix and its aims and objectives.

Organise a suitable location and date
You will need to identify a suitable room large enough for your participants for two hours to complete the assessment and to start initial discussions around plans to improve any levels which may need improving.

Inform the participants
Ensure you give plenty of notice to healthcare team members who you would like to attend the group based assessment. This will not only maximise attendance but will also mean more perspectives are heard. This will in turn support you in developing plans for improving any gaps found.

Explain the aims and objectives of the session and provide a brief background to the Safety Measurement and Monitoring Maturity Matrix.
Materials required

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You will need the following materials to run the assessment:

- Print outs of the detailed Maturity Matrix and terminology for each participant.
- Print outs of the blank Maturity Matrix template and spider diagram for each participant.
- Pens.
- Laptop and projector. You will need to provide a background to the assessment. This can be done using the print outs or by sharing the information on screen.
- Flip charts to log any actions.

Using the matrix in a group based exercise:

To carry out the group based exercise you will need to run through the following steps:

Explain the objectives (10 minutes)
It is important that you begin the exercise by explaining the following:

- The aims and objectives of the session – why is everyone here today.
- The role of everyone in the room.
- The process you will work through.
- What you will achieve by the end of the two hours.
- Ground rules: Everyone should feel comfortable in having open discussions around the five domains. Different viewpoints are valid and everyone's opinions need to be listened to.
- You are asking participants to self-reflect how things are now, not how they should be.

Explain the background behind the Maturity Matrix (15 minutes)
Before you start you need to provide an overview of the Safety Measurement and Monitoring Framework (Vincent, Burnett and Carthey, 2013) and SaMMMM so that everyone understands the background and context. You then need to clearly explain:

- How it can help your organisation.
- What it is and what it is not.
- The five domains and the five levels of maturity.

Use the guidance document and supporting resources to help you.

Individual assessment (20 minutes)
Next, we advise that you encourage each participant to carry out their own individual assessment of where the organization sits on each of the five dimensions of safety in the matrix.
We recommend starting off by giving individual's the opportunity to self-reflect because this eliminates the problem of (i) a junior member of staff being influenced by a senior member's thinking and evaluation, (ii) only the more vocal participants' views being shared.

- Give each participant a copy of the detailed matrix and a copy of the terminology sheet.
- Explain how to read the matrix. For example, the level of maturity increases as you read each row from left to right, hence the level descriptions build up.
- Explain what a level five means.
- Remind everyone that their own individual assessment is where they believe their **organisation** is at not as individuals or as teams / departments.
- Now, give each member a copy of the matrix template.
- Ask each member to identify the level they believe best represents your organisation.
- Guide participants to go with their gut reaction: Testing of the matrix has shown that one or two sentences in a box usually resonate with an individual. If one's gut reaction to several statements in a box on the matrix is 'That describes us' or 'That's what we do', then this is the box that they should place themselves in.
- It is preferable that one level is chosen for each domain. If members are finding it difficult to choose one level over another ask them to think about the descriptions and where they feel most their practice is.
- Ask participants to note down the reasons and evidence behind their choice of level of maturity for each domain: This is important information which needs to be captured.

Sharing individual responses and group discussion (50 minutes)

- Work through each of the five domains in turn and ask individuals to state the level they have chosen, and their reasons for choosing this level.
- The facilitator should plot all responses on a spider diagram at the front of the room. This will provide a visual mechanism to share and to highlight any variation in levels chosen between the team.
- Ask the group to feedback on the responses, referring to the reasons and evidence behind their choices. Ask the group to think about any domains where there is a lot of variation between the levels chosen. Why do they think this has occurred?
- There may be differences between individuals on which level they believe your organisation is at. As facilitator, you will need to identify the reasons for these different viewpoints and capture them on flip chart paper.

Developing action plans (15 minutes)

- From your group assessment, you will most probably find that your organisation is doing well and others where you are doing less well. Lower maturity levels may also suggest you have less organisational emphasis on a domain than others.
- Think about where you are now and where you want to get to.
- The participants need to decide on how they will take the work forward and develop action plans to improve their maturity. As an organisation you may want to consider:
    - Looking at existing organisational planned safety work. Is there any work that can help fill the gap? If not, do we need to think about starting a new piece of work? ○ Gathering different perspectives from across the organisation. For example, consider involving front line teams in future discussions.
    - Making a commitment to a timetable for progress.
- ○ Planning future meetings to complete the exercise periodically

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		LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
Past Harm	***Has patient care been safe in the past?***	Very few mechanisms exist to learn from past harm and those that do are not used: Under-reporting of incidents is the norm. Staff are reluctant to speak up and to report incidents. Monitoring of patient mortality rates is cursory. Incident investigations are not always carried out and when they are the focus is on individuals, not learning and improving. Patient experiences of past harm, (e.g. through patient stories, complaints), are not sought out. The organisation is unable to answer the question, 'Has patient care been safe in the past?'	The approach is very reactive: Lessons are only learnt from serious incidents when media or regulatory pressure forces the organisation to investigate thoroughly. Patient mortality data is not routinely monitored or there are gaps in existing monitoring processes: The organisation only becomes aware of patient mortality rates after regulatory or media pressure forces it to review the data. There is little or no participation in national audits or routine databases that assimilate past harm data from clinical specialties.	Improving patient safety is a tick box exercise: Activity focuses on regionally, provincially and nationally mandated measures: The approach is on proving to regulators that case review[1], mortality statistics, systematic record review[2], trigger tools[3], reporting systems[4], never event reporting[5], investigation methods, and other. Routinely reported data measures are in, place not on learning and improvement. The understanding of past harm focuses on the more traditional, treatment specific clinical harm areas. Patient stories are used in a tokenistic way.	A broad range of past harm measures are used. Specialty-specific harm metrics exist. Incident investigation is used to proactively identify what could go wrong in the future, not just to identify root causes. Reporting and Learning from near misses, good catches and 'what went well' is embedded.The measurement of harm, and associated safety indicators, result in enquiry, learning and improvement, rather than punishment and sanction. Feedback from patients and families, (e.g. patient stories, complaints, claims etc..), who have been harmed is acted on to improve. Measures have been mapped and formulated to ensure clarity of each measure's purpose and to ensure that together, a portfolio of measures provide a picture of system safety vulnerabilities. There is a proactive approach and recognition that past harm measures are always evolving.	The cultural norm is that safety measurement should constantly evolve and that complacency needs to be avoided, even when safety performance is good. There is ongoing scrutiny of past harm measures and a mature understanding of the negative side effects of simply having volumes of past harm measures in place. Healthcare teams feel ownership of safety measures and are empowered to refine them. Collaborative innovation between staff, patients and families takes place to introduce and refine past harm measures. A broad definition of past harm has been agreed. It encompasses treatment specific harm, overtreatment, failure to provide treatment, delay or inadequate diagnosis, psychological harm and feeling unsafe. There is a shared awareness of the breadth of past harm. Past harm measurement crosses healthcare boundaries, so where measures need to be in place across community, mental health, and/or secondary care pathways, these have been implemented.
Reliability	***Are our clinical systems processes reliable?***	Unreliable clinical systems, processes and pathways are accepted as the norm. The culture is one of tolerating unreliable clinical systems. Process reliability is rarely measured. Where audits are carried out and problems are identified, no actions are taken to implement improvements. Assumptions exist that patient care is delivered as described in safety policies, procedures and in IT, and equipment specifications.	Measurement of clinical system, process and pathway reliability is externally driven: The only reliability measures in place are those set nationally or by provincial bodies (eg. Ministries, councils etc.). The culture is one of waiting for and accepting reliability measures that come down from national, provincial, or regional bodies. A process of rolling clinical audits exists but it just generates action plans. 'Action-plan-itis' exists; the cycle of audits is continuously repeated but action plans are not implemented. When reliability measurement data shows the world as it is envisaged in safety policies and procedures does not reflect reality, the response is to either question the data or blame 'staff non-compliance'.	Measurement of clinical system, process and pathway reliability takes place but the approach is bureaucratic: Activity focuses on 'ticking the boxes' and providing a 'paper-trail' of audit evidence to meet performance management goals and/or targets. There is some recognition that unreliable systems exist but the focus is on collecting data, not improvement. There is also some recognition that 'Action-plan-itis' exists, but attempts to change the culture to one of enquiry and improvement are unsuccessful. Reliability measures are sometimes misapplied leading to false assurance when answering the question, 'Are our clinical systems and processes reliable?'	System, process, and pathway reliability data shapes the focus of improvement work. Safety policies, procedures, IT, and equipment specifications are proactively reviewed and continuously updated: There is a mature understanding that drifts or migrations from procedures provide valuable reliability data. Staff speak up to raise concerns about unreliable systems and processes: Their concerns are listened to and acted on. There is also a mature understanding of the strengths and weaknesses of reliability measures. Reliability measures are applied appropriately; where measures shape behaviour in unintended ways they are refined, or abandoned. Feedback on the levels of reliability achieved are tailored to specific audiences. The feedback is designed to support enquiry, learning and improvement.	Unreliable systems, processes and pathways are viewed as unacceptable: There is a broad programme of improvement activity which focusses on identifying and improving levels of reliability across ALL clinical and non-clinical areas. The responsibility for measuring reliability and reducing variation around standards is owned by professional groups. Innovation takes place to develop and implement measures of reliability that cross organisational boundaries; where measures need to be in place across community, mental health, and/or secondary care pathways, these have been implemented. Specifications for new IT systems, clinical pathways etc. are created through a process of co-production by multi-disciplinary teams who have current process, patient, and subject area knowledge. Approaches to identify and create reliable systems are harnessed from other industries: The culture is outward looking and innovative.
Sensitivity to Operations	***Is care safe today***	Little or no importance is attached to observing how care is delivered, or to listening or seeking feedback from healthcare teams, patients, or families. Safety walk-rounds have never been embedded: Senior managers' have assumptions about levels of safety because taking time to listen and observe how care is delivered is not a priority. Teams go through the motions of handing over or discussing patients but emerging safety risks are not recognised and acted on.	The culture is reactive: Information on how treatment has been delivered in the 'real world' is only sought out when a serious incident or when high profile patient harms occur. After something goes wrong informal safety intelligence is sought from patients and healthcare teams, but this activity is abandoned once investigations or reviews have been completed. Where there are formal and informal systems in place to maintain awareness of operations, these do not provide real-time information or the safety information they generate is inaccurate.	There is some effort to gather and use real time safety data. Safety walk-rounds, patient safety officers, operational meetings, briefings and debriefings, conversations with patients, families and healthcare staff are in place. However, opportunities to learn from less formal real time safety data are missed because safety metrics on dashboards are valued more. Safety huddles[6] or real-time patient monitoring systems have been implemented, but their content and format has been decided by managers, not clinical teams.	The culture is one where feedback from patients, families, healthcare teams is sought out every day. Informal safety intelligence gathered from observations and conversations, has an equal value to safety measurement data (e.g. safety metrics and audit findings). The proactive approach is organisation-wide, not restricted to a few teams or areas. The methods and approaches in place are sensitive enough to pick up subtle changes and disturbances, meaning the information gathered provides a meaningful answer to the question - 'Is care safe today?' Where safety huddles or real time patient information systems are implemented their design has been shaped by the healthcare teams who use them, who are empowered to lead safety improvement work.	There is a system of early, pre-emptive, identification of problems so that actions can be taken (today) before they cause harm to patients. Real-time information systems have been implemented which take the pulse of the organisation on a moment by moment basis: This involves acting on real-time patient, carer, and staff feedback systems, and intelligent data forecasting systems that predict patient flow and emerging safety threats. Feedback mechanisms are specific to different audiences and are constructed to ensure no ambiguity in response. Sources of informal safety intelligence go beyond the organisation's boundaries meaning soft safety intelligence from across a whole health economy or patient pathway, (including community, mental health, and secondary care providers), is routinely used.
Anticipation and Preparedness	***Will care be safe in the future?***	Few or no measures to anticipate future harm are used except the risk register and assurance framework. These are completed to meet monthly or quarterly data submission schedules with little or no attention being paid to the risks they identify and how to mitigate them. Data collection for the risk register and assurance framework is patchy because accountabilities are unclear.	The culture relies on the risk register and assurance framework to anticipate future harm. The risk register and assurance framework processes are embedded across the organisation. However, it is largely a data collection exercise; processes to monitor action plans to mitigate risks are weak. There is little awareness of other approaches, for example, safety culture surveys, using sickness absence data to anticipate burnout, systems safety assessment or Failure Modes and Effects Analysis etc..	Methods to anticipate future harm are in place but the focus is on demonstrating to external regulators and payors (eg. Ministries, regions, LHINs etc.) they are being used. There is no or little appreciation of their diagnostic value and they are not used to thwart emerging safety threats. Healthcare teams use risk assessments for falls, violence, and aggression, Hospital Acquired Pressure Injuries etc.., but these create a paperwork burden that prevents early identification and intervention to thwart emerging safety risks. Risk assessments are not monitored against outcomes; their completion is isolated from decision making about safety.	There is an evolving culture of curiosity, enquiry, and empowerment to lead which enables early identification of emerging safety threats and quick intervention. Questioning is encouraged even at times of stability and success. Teams across the organization use a range of internal intelligence to create future harm scenarios. Scenarios are created formally and informally. They are proactively discussed, rehearsed, and simulated to prepare for and negate potential sources of harm. Questioning is encouraged even at times of stability and success. Actions are taken without there being a previous incident to prompt reflection. A wide range of proactive safety measures and approaches are routinely used.	A culture of curiosity, enquiry and empowerment to thwart safety threats is fully embedded both within the organisation and throughout the whole health region. Emerging safety risks that cross organisational boundaries are thwarted because measures that support anticipation provide real time data that is shared and quickly acted on. There is mature approach in which all types of safety data are viewed through the lens of answering the question - 'Will care be safe in the future?' When this question is asked, the conversations are not restricted to discussing safety threats within an organisation's boundaries. Rather recognition of the impact of other providers on future safety is recognised and collaboration occurs to resolve problems. A broad range of proactive safety methods are used in the design of new patient pathways and processes, such as safety cases[7], safety culture assessment[8] and human factors/reliability analysis[9].
Integration and Learning	***Are we responding and improving?***	Gaps in safety measurement and monitoring processes make integration and learning challenging. Opportunities to learn and improve are impeded by the tendency to blame individuals when things go wrong. Where data is available, discussions mainly focus on debating its usefulness and reliability. Feedback mechanisms to disseminate learning across healthcare teams are inadequate and inconsistent.	Safety data from past harm, reliability, sensitivity to operations and anticipation dimensions is only integrated after serious harm occurs or in response to requests from regulators. Feedback to healthcare teams on lessons learnt from safety measurement and monitoring activities is patchy. Integration is restricted to theming of past harm data: Themed data is only shared within divisions or clinical teams, as there is no recognition that lessons learnt may be relevant to other teams and divisions.	Some sharing of themed safety learning beyond departmental / local boundaries exists but there is a reliance on individual initiative rather than having robust feedback systems in place. Feedback and learning mechanisms look good on paper but sometimes do not work in practice. Safety dashboards are in place which meet regulatory requirements. There is little investment in employing experts with the skills to improve safety dashboards and integrate data from different sources.	Mature safety dashboards exist which integrate past harm, reliability, and anticipation metrics. Data analytic experts work alongside healthcare teams and patients to develop meaningful metrics. Feedback is timely and relevant: It is used to prompt open discussion and to inform safety improvement work. The importance of triangulating hard data from safety metrics with soft safety intelligence is understood. Lessons learnt reach frontline staff because robust feedback mechanisms are in place. There is a systematic approach for sharing learning across the organisation and a culture of thinking proactively about 'who else needs to learn from what happened here?'	Staff feel ownership of safety: There is an accurate understanding of safety performance, including how gaps in the wider health region's services impact on safety performance. Data analytic experts and healthcare teams have been successful in embedding real time information systems throughout the organisation. Useable, timely safety performance data is fed back and healthcare teams are empowered to refine metrics. Real-time safety data and lessons learnt are widely shared beyond organisational boundaries to partners in the local health region and others nationally can learn and improve. Equal emphasis is made to the rate of learning as to the rate of reporting of safety. Information is pulled in centrally and then shared back out in a timely and useable format.

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Validating your maturity assessment:

Detail the reasons and evidence behind your choice of level of maturity for each domain. List your reasons and evidence for the level you have chosen and also those below it.

		LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
Past Harm	***Has patient care been safe in the past?***					
Reliability	***Are our clinical systems processes reliable?***					
Sensitivity to Operations	***Is care safe today***					
Anticipation and Preparedness	***Will care be safe in the future?***					
Integration and Learning	***Are we responding and improving?***					

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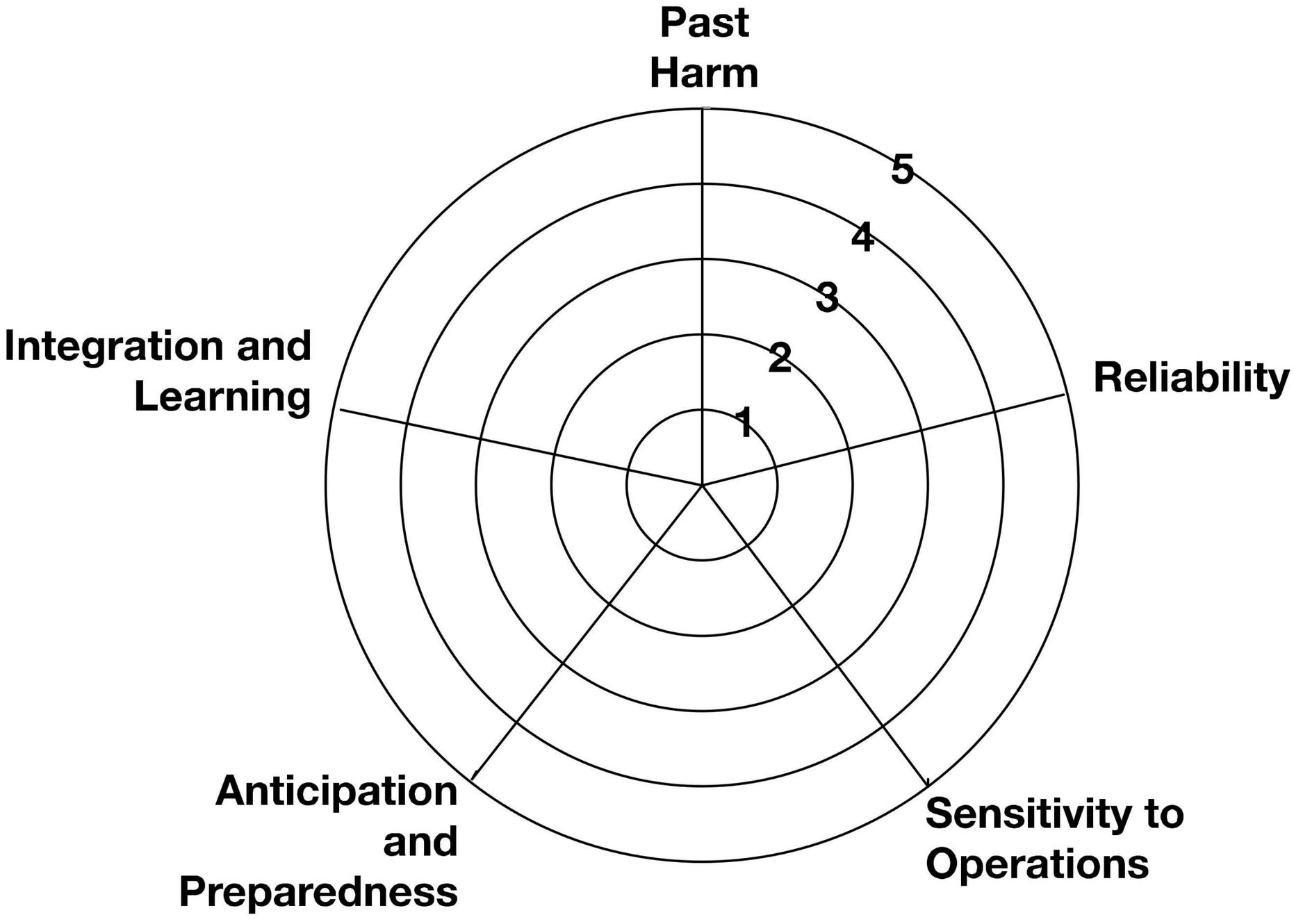
Graphical analysis of your results:



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Supporting notes on the terminology used:

Note this section is automatically placed at the end of a document by the MS Word Endnote function. In a future designed up version, this table of terminology would feature at the beginning of the document.
Full references to be added.

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[1] **Case review –** The selective review of patient notes following death in the care of an organisation. Themes are drawn out at organisational level. See section 6.5 of the originating *The Measurement and Monitoring of Safety* paper* for a summary.

[2] **Systematic record review** – Large scale, multi stage study of multiple case record reviews. Notes with key indicators are identified for specialist review to assess the presence of an adverse event. See section 6.5 of the originating *The Measurement and Monitoring of Safety* paper* for a summary.

[3] **Trigger tools** – Methods for the screening of medical records for triggers. Triggers are clues that an adverse event may or may not have happened – not adverse events themselves. See section 6.5 of the originating *The Measurement and Monitoring of Safety* paper* for a summary.

[4] **Reporting systems** – Generally the existing incident reporting systems within organisations. For a summary and discussion around their limitations see section 6.5 of the originating *The Measurement and Monitoring of Safety* paper*.

[5] **Never event reporting** – The Department of Health's list of 'never events' which trust's report on and for which there is previous guidance published which if implemented should prevent this type of incident from occurring. Examples of 'never events' include wrong site surgery, misidentification of patients and falls from unrestricted windows. See section 6.5 of the originating *The Measurement and Monitoring of Safety* paper* for a summary.

[6] **Safety huddles** - Daily focused frontline team discussions of specific patient harms, supported by improvement skills, coaching, data visualisation and feedback. For more on safety huddles see the Health Foundation website - http://www.health.org.uk/programmes/scaling-improvement/projects/scaling-patient-safety-huddles-enhance-patient-safety-and#sthash.w2c7WTW9.dpuf

[7] **Safety cases** – A formal process to demonstrate the evidence that, for example a new process, procedure, structure or pathway is safe. See page 59 of the originating *The Measurement and Monitoring of Safety* paper* for a summary.

[8] **Safety culture assessment** – A number of tools exist to measure safety culture within teams, departments and organisations. One of the most widely known is the Manchester Patient Safety Framework (MaPSaF). See page 59 of the originating *The Measurement and Monitoring of Safety* paper* for a summary.

[9] **Human reliability analysis** – The process of systematically examining a process of care to identify and anticipate possible failure points. See page 58 of the originating *The Measurement and Monitoring of Safety* paper* for a summary.

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