RCEM QUALITY IMPROVEMENT GUIDE

A practical guide for clinicians undertaking quality improvement in Emergency Departments

The Royal College of Emergency Medicine

November 2016

Foreword

Constant improvement in the quality of care we provide for our patients lies at the very heart of what we do in the Emergency Department. The Royal College has been at the forefront of many efforts to introduce Quality Improvement (QI) initiatives to improve the care we try to deliver in our complex and at times intense working environments.

This work provides an innovative step change in those efforts that will provide Fellows and Members with the knowledge and tools to help them in this rapidly evolving field. While the FRCEM exam will undoubtedly drive interest in this guide, it cannot be emphasised enough that quality improvement is a skill that all emergency physicians should understand, plan, perform, reflect and of course - go again!

There will no doubt be QI aficionados that will want to help improve this work further and the authors will welcome feedback on what has been an absolutely excellent start. I am grateful to the authors, from multiple RCEM committees, for all their efforts and congratulate them for creating the tools that will help our members and more importantly our patients.

Dr Tajek B Hassan
President
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Contents

Scope

This guide is intended to assist Fellows and Members who are undertaking Quality Improvement (QI) work in their Emergency Departments. It is intended to help bridge the gap between improvement science and implementation. This is intended to be complimentary to many of the excellent guides that already exist, such as the Academy of Medical Royal College's report on [Training for Quality Improvement](#) and those produced by the [Health Quality Improvement Partnership](#).

Key concepts

There has been increasing recognition that traditional audits and performance management tools are not always effective at improving the delivery of healthcare. Much effort is wasted on quality assurance exercises. QI methods have been adopted from industry and are effective in improving the safety, efficiency and effectiveness of care.

All clinicians will be familiar with a traditional audit, which has a useful quality assurance role. Table 1 shows some of the key differences between quality assurance and quality improvement.

Table 1: The differences between quality assurance and quality improvement

	Quality assurance	Quality improvement
Motivation	Measuring compliance with standards	Continuously improving processes to achieve high quality care
Means	Inspection	Prevention
Attitude	Required, defensive	Chosen, proactive
Focus	Outliers: "bad apples" Individuals	Processes Systems, Patient focused
Scope	Medical provider	Patient care
Responsibility	Few	All

Traditional audits have limited ability to influence clinicians to improve care and culture in a timely fashion. QI has been defined as "better patient experience and outcomes achieved through changing provider behaviour and organisation through using a systematic change method and strategies". (1)

QI methods differ by providing a quicker turn-around, so that the nuances of understanding a problem and effective intervention are not lost. There are multiple points where evaluation is performed. Multiple interventions can be attempted and evaluated. Ineffective interventions can be quickly and usefully discarded, while contributing to overall understanding of the problem. There is a much greater emphasis on the culture and engagement of a team and the psychology of changing behaviour. Feedback is quicker, or ideally almost immediate, and by implication, more effective. Many consultants will probably do a lot of QI work informally.

Change management

QI obviously involves change, and Quality Improvement Projects (QIPs) will involve the management of change. There is a large literature about change management theory and practice, but not all of this is relevant to performing a QIP. Firstly, not all change is aimed at improving quality, as change can be aimed at cost improvement, efficiency, or be a reaction to change. Secondly, much change management theory evolved in a business setting; many health services have a lesser focus on profit motive, less clear lines of management, and involve complex, changing systems.

Change management applied to QIPs consists of four elements:

1. Defining vision and clear aims, you should be able to explain the problem that you are trying to sort out very simply to anyone in your department in under five minutes. Having a clear picture of what success looks like helps.

2. An analysis and option appraisal. Analysis may include an initial internal analysis and an external analysis (e.g. PEST or SWOT) and analysis of potential barriers to change (stakeholder and Forcefield analysis).

> **The 6S's of internal analysis and option appraisal**
> - Strategy
> - Skills
> - Shared Values (indefinable)
> - Structure (allocation of staff)
> - Style
> - Systems (budgets, training, audit, communication

3. Planning of the change. This may involve, allocation of tasks and deadlines, monitoring, establishing rewards, anticipating contingencies, methods of liaison, consideration of implications for cost, time and effect outside the department.

4. Establishing effect of the change and next steps. There will inevitably be unexpected outcomes and it is important to review these promptly, learn from them and try alternative strategies.

Changing staff behaviour

Over 70% of changes that are attempted in any organisation fail, usually due to the lack of engagement with the staff involved. Everyone involved in changing care for patients has to choose to change, and this becomes much easier when they are involved in the change that is taking place, rather than having something imposed. Quality improvement explicitly sets out to be collaborative.

Different people have different reactions to change - some enthusiastic, some find it threatening. This can depend on the person themselves, or their relationship with the person leading the change, on the change itself or the amount of change that has been happening within a department recently. Understanding and exploring some of these barriers is a key part of leading successful change.

Ownership of the problem
Most of the key theories of quality improvement emphasise the need to start with a problem and not a solution. This is essential not only to get a good solution to the problem, but also to allow the team to feel involved and that the solution has been thought through by those affected by the change. The team will be engaged by finding a solution that will make a difference and that they will feel is worthwhile. Developing and sharing both a vision and a journey towards that vision will engage people who can see the big picture and also people who need to see achievable steps.

Consider personal styles
Different people have different personal styles that affect how they respond to information and how they communicate thoughts and ideas. Some will need more data driven information, some rely more on feelings. Understanding this can lessen conflict. Also understanding different personality types can be an essential part of gathering and encouraging a team. Getting the right people on the team and then asking them to do things that play to their strengths is important. Understanding the difference between 'asking' and 'telling' is a useful approach in QI.

DIFFUSION OF INNOVATION MODEL

EARLY MAJORITY 34%

LATE MAJORITY 34%

EARLY ADOPTERS 13.5%

LAGGARDS 16%
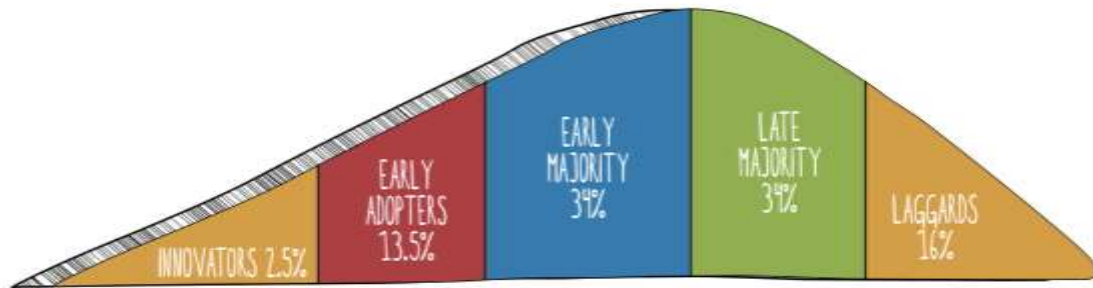
INNOVATORS 2.5%

(2) Rogers EM, 1995

Diffusion of innovators is a concept that splits people into five categories of behaviour change (2). The theory suggests that improvement needs about 20% of people to change before the rest will follow. Each different group may need a different approach to enable them to change. Just influencing the innovators and early adopters will not usually be enough to lead to sustained change.

Tips for engaging staff

1. Educating staff about the process of change and the management of this, as well as the planned change itself increases the chance of success. The level of involvement of each staff group needs to be proportional to the effect the change will have on them. Staff need to understand why a change is necessary and you may need to create a sense of crisis. Educating a whole department is a daunting task, and it may be better to target the people who really need to know.

2. Build in some 'quick wins' for staff, so they can see the value of the QIP. Consider what difficulties staff might have and find ways to make this easier. The Beckhard and Harris change equation states that the desire to change, combined with the vision of the improvement and the difficulty of the first stages must be greater than the resistance to change.(3) Change management can be viewed as a process of modifying these variables.

3. Communication is a vital aspect in managing the human dimensions of change. Keeping the team and the department updated about the project will allow gradual spread of knowledge and for problems to be dealt with before a project is launched. It is important to be inclusive, positive and engaging when delivering messages about the project. Use all available methods to communicate within your department (e.g. newsletters, roadshows, e-mail, noticeboards and meetings). Visibility of the process is important. A clear message of what you are aiming for is vital. An email or poster in isolation is an ineffective way of communicating what you are trying to do.

4. Consideration of the emotional effects of change. It may reveal conflicts within the system, and has been likened to the emotional effect of bereavement. Staff are being asked to 'do things differently' which implies what they are currently doing is somehow 'poorer', and they may 'mourn' the 'old ways'. Attention to some of the smaller details (e.g. where is your new proforma, is it easily available?) may help.

5. Leadership style is important. Direct and visible leadership is important; 'Management by Walking About' is considered to improve efficacy of change, and can help greatly with immediate feedback (bi-directionally), troubleshooting of issues that arise and increase the chance of QIP success.(4) Engaging respected, influential individuals can role model the interventions.

Case studies on change management

Recording of violent crime

The Emergency Department was expected to contribute monthly anonymous data about the location, date and weapon used in assault cases to the local community safety partnership, following RCEM Guidelines and the ISTV program, but the quality of the data was poor and not being used. The data were supposed to be collected by the receptionists, collated by an analyst and sent to the safety partnership. The emergency physician went to talk to the reception manager who was unaware that this was needed, or even how it could be important. The reception manager spoke to her team, but there was a lot of resistance from the receptionists, citing poor IT, excessive workload and little point in the task. The consultant organised for a senior police officer to meet with the receptionists and explain why this was important and how it could help stop violent assaults in the city centre. Each month, the data was reviewed for usability and this was shared with the receptionists. The quality of the data gradually improved and the emergency physician encouraged the receptionists by positive feedback and showing them the data. The police also encouraged by showing examples of how the information had been used. After 12 months, the emergency physician encouraged the police to present the receptionists a community safety award. The overall effect was that the number of assault patients dropped by 30%.

Asthma care

A recent audit had shown that the care of patients with acute asthma in the Emergency Department, though safe, was not meeting most national standards, particularly around measuring peak flow, prescription of steroids, documentation of follow up and written information. An emergency physician decided to try and improve matters and emailed the forty page audit report to all ED staff. He presented the audit results at the departmental audit meeting, attended by other consultants, senior nurses and representatives from the Trust audit team. He also presented the results to a respiratory audit meeting. He put a poster in the majors area showing the British Thoracic Society's guidelines. He completed an effectiveness trail and repeated the audit a year later. This showed no improvement in the audit performance.

In the first example, the emergency physician has been very targeted in his approach. He has involved both internal and external staff. He has had a clear aim, and engaged the reception staff well. He has spent time talking to the people who can make the change and got the benefits. In the second example, the emergency physician has not taken the time to understand what the problem is. At no point does he go and talk to the people who do the majority of asthma care in his department. Email and posters in isolation are frequently ineffective tools for change management.

Measurement and QI

Measurement is of vital importance in QI. If you do not measure, you cannot know if you have made a difference (for better or for worse).

However, choosing what to measure is important, as if you do not select the correct measures you will be unable to demonstrate improvement (if any). Choosing the wrong metrics, like choosing the wrong QI methodology, may alter efficacy of the QI project (or at least the demonstration of efficacy). Ideally, data collection should be continuous, with multiple metrics.

Data for improvement differs from data for research and for assurance in ways listed in the table below.

Table 2: The differences between data for improvement, research and assurance

Data for improvement	Data for research	Data for assurance
Hypothesis changes	Hypothesis fixed	No hypothesis
Just enough data, small sequential sample/continuous data	Large amount of data 'just in case'	All relevant, available data
Accept bias (consistent)	Design to eliminate bias	Measure for bias, adjust for bias
Data for use by those involved only	Subjects data confidential	Data in public domain
Test seen	Test blinded	For performance evaluation, no test
Sequential tests	One (large) test	No test
Aim is improvement	Aim is new knowledge	Aim is evaluate/compare

For example, if you choose to look at procedural sedation and compliance with a checklist as part of your QI project, a large sample of patients (such as the 2015 RCEM national audit) is not required. You are not testing which sedation agent, adverse events list or procedural checklist to use. A small sample is sufficient, if compliance with checklist occurs in 10% of events, it is likely that this will be seen in a sample of 10. The checklist use (or non-use) will be fed back early, and possibly checklist changed to increase compliance (examples of hypothesis change and bias acceptance).

It is also important to be careful when interpreting the metrics. All data has variability, if you measure one thing more than once it may well be different each time; a good example would be the number of patients attending your Emergency

Department each day. This is known as 'common cause' or natural variation: this is stable (and predictable) variation in the data caused by phenomena in the system (often unknown). For example, you can look at numbers of patients attending your department on a daily basis, and plot the average and range of the data over days of the week, seasons of the year etc., but you cannot say at the start of any particular day the exact number of patients that will attend. Generally, more patients come to the department on a Monday than Tuesday, however if you looked (by chance) at the numbers on a busy Tuesday and a quiet Monday there may be more attendances on the Tuesday. Hence, if you ascribe natural variation to an effect of your QI project, you may be misled.

Special case variation is unpredictable, unexpected, often new or surprising data. While natural variation affects all aspects of the process, special case variation may not. For example, the natural variation in attendances usually mirrors variability in waiting times within the system, as the same phenomenon affect both, but a large spike in attendances such as a major incident (a special case variation) may not affect all waiting times. It is important not to ascribe special case variation as natural variation and vice versa. Special case variation is 'out of control' as it cannot be influenced.

Hence the importance of continuously collected data, and the plotting of this data on to a run chart or Statistical Process Control (SPC) charts. A run chart is simply data plotted over time and assists with interpretation of changes to that data. For example, it can identify changes or trends, when persistently (more than one or two) data points are different. SPC charts generally have the data plotted on them, together with a line to represent mean value of this data, and lines delineating 'unlikely' values called control limits (this is often three Standard Error of Mean above and below mean, but can be other statistical values such as Inter-Quartile Ranges): values outside these lines are likely to be due to special case variation. This then allows differentiation of variation types as above, but also interpretation as to the effects of process changes on the chosen metrics. Definitions vary, but in general, at least six points continuously on the opposite side of the average signal a shift, and at least five in a row trending the same way a trend. Note also that if your run chart 'joined dots' do not cross the average at least twice, it is a sign that not enough data has been collected.

The data collected for QI can be outcome measures, process measures or balancing measures. Outcome measures are 'the voice of the patient', that is, what actually happens to the patient. Patient satisfaction is an example, as are outcomes such as survival, morbidity and mortality. Process measures are 'the voice of the system', that is measures of processes with the system (e.g. waiting times, reviewing and endorsement of investigations). Balancing measures are those metrics which look at the system from different angles; these are important because changing one part of the process may affect other outcomes, as in the example below.

Choosing the correct metrics is of vital importance. For example: you notice from complaint letter and incident investigation that there is a long time to recording and interpretation of ECGs in your department. After reviewing the process, you notice that the 'Rapid Assessment' process is very prolonged leading to a queue for this. You decide to alter the process of Rapid Assessment sequentially as part of a MFI/PDSA methodology. What metrics might you choose?

Process measures such as time to ECG, and time to doctor reviewing of ECG might be good examples (if you can collate this data continuously and easily). A process measure such as 'Time to PCI' may not have as much utility, as less common outcome, and processes less subject to influence. If you choose 'high level' outcomes such as improvement in 'time in department' (a key performance indicator), there may not be an improvement. It is possible that some metrics e.g. 'time to assessment' may show an improvement, but this may depend on how you implement change. If you choose a system of re-triage for chest pain and filtering these patients out may be neutral for influence on this metric.

What about outcome measures? Similar issues apply; if you choose measurements such as outcomes for patients with Acute Coronary Syndromes you are unlikely to see much change. However, safety outcomes such as reducing missed or late diagnosis rates may be affected.

As for balancing measures, it could be that other 'Rapid Assessment functionality' such as time to analgesia or sepsis treatment could be adversely affected by this, and maybe balancing measures looking at these should be considered. Outcomes such as chest pain discharge rates or outpatient referrals may also conceivably be affected, and may need to be monitored.

In summary, measurement is a key element in the QI process. Metrics should be:
- carefully and prospectively selected
- continuously measured
- multiple metrics used
- ideally plotted on a run chart
- carefully interpreted

Example of a run chart

Time to Triage
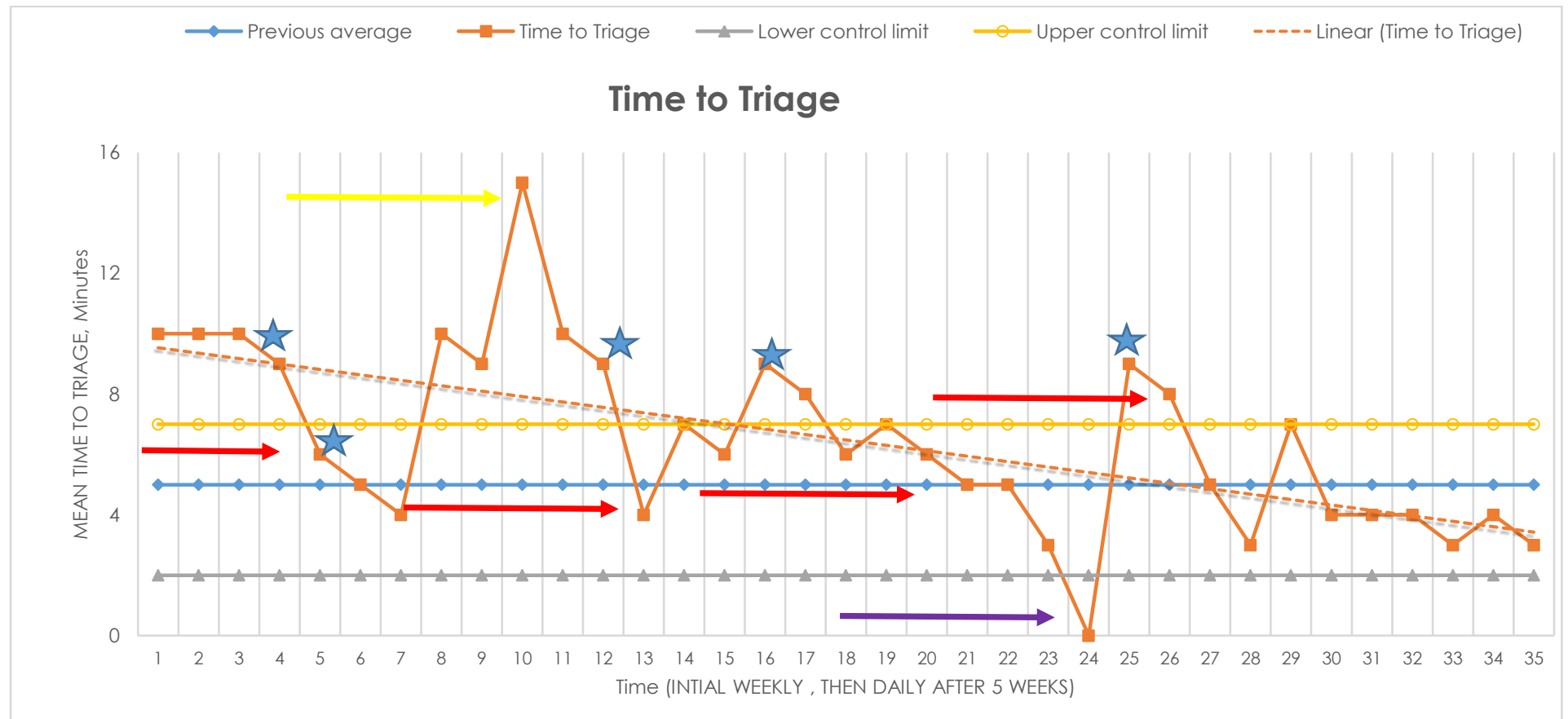
Legend:
- Insufficient sampling (purple arrow)
- A shift (red arrow)
- Special case variation (yellow arrow)
- ★ Changes and interventions performed as part of PDSA cycle

Skills, knowledge, values and behaviours in quality improvement

The Academy of Medical Royal Colleges has suggested the attributes required to conduct effective quality improvement work for trainee doctors. We have further proposed consultant and associate specialist abilities below. Each department should have a QI lead and this is a separate, but overlapping role to the audit lead. Trainees should be encouraged to perform a QIP as an alternative to an audit.

	Knowledge	Skills	Values and behaviours
Undergraduate	Can compare and contrast quality assurance and quality improvement, and describe the relationship of audit and quality improvement to clinical governance. Understands the principles of, and differences between, quality improvement, audit and research. Can describe PDSA cycles, human factors and reporting error.	Has actively contributed to a quality improvement activity (this does not necessarily need to be in a clinical setting)	Has actively contributed to a quality improvement activity (this does not necessarily need to be in a clinical setting)
Foundation	Can compare and contrast quality assurance and quality improvement, and describe the relationship of audit and quality improvement to clinical governance. Understands the principles of, and differences between, quality improvement, audit and research. Can describe PDSA cycles, human factors and reporting error.	Has taken part in systems of quality assurance and quality improvement, in the clinical environment, and actively contributes to a clinical improvement project	Recognises the need for a continuous improvement in the quality of care and for audit to promote standard setting and quality assurance

	Knowledge	Skills	Values and behaviours
Core / Basic Training	Describe tools available for planning quality improvement interventions Explains process mapping, stakeholder analysis, goal and aim setting, implementing change and sustaining improvement Understands and describes statistical methods of assessing variation	Designs and implements, completes and evaluates a simple quality improvement project using improvement methodology as part of a multi-disciplinary team Supports improvement projects to address issues of quality of care undertaken by other trainees and within the multidisciplinary team Demonstrates how critical reflection on the planning, implementation, measurement and response to data in a QIP have influenced planning for future projects	Demonstrates the values and actively supports quality improvement in the clinical environment
Higher Training and Middle Grade Doctors	Compares and contrasts improvement tools and methodologies Compares and contrasts the principles of measurement for improvement, judgement, and research. Describes types of measures, and methods of assessing variation	Proactively identifies opportunities for QI and leads multidisciplinary quality improvement project teams with minimal supervision Supervises a QIP involving junior trainees and other members of the multidisciplinary team using improvement methodology Leads and facilitates team-based reflective evaluation of a project	Demonstrates advocacy for clinical quality improvement

	Knowledge	Skills	Values and behaviours
Consultant and Associate Specialists	Compares and contrasts improvement tools and methodologies Compares and contrasts the principles of measurement for improvement, judgement, and research Describes types of measures, and methods of assessing variation Understands principles of change management	Proactively identifies opportunities for QI and leads multidisciplinary quality improvement project teams with minimal supervision Supervises a QIP involving junior trainees and other members of the multidisciplinary team using improvement methodology Leads and facilitates team-based reflective evaluation of a project Organises and prioritises a departmental QIP	Encourages and supports trainees and other clinicians who want to start clinical quality improvement Engages staff outside the Emergency Department in quality improvement

Quality improvement methods

There are a number of methods that can be used to support a quality improvement project. They have some common features, but different methods should be used to tackle different problems. Effective quality improvement entails using multiple methods, for example a root cause analysis can be used to increase the understanding of a clinical audit that has revealed important deficiencies in care. This list is not exclusive, and a successful QIP may use other methodologies.

> **Common features of quality improvement methods**
>
> - Defining the problem (responding to concern) – What care do you want for the patient (not solution based)
>
> - Identification of standards or best practice (frequently by a literature review)
>
> - Involve relevant stakeholders
>
> - Define measurement
>
> - Continuous evaluation
>
> - Learning and intervention
>
> - Reporting
>
> - Dissemination
>
> - Culture Change

Choosing the correct method is important. You should consider your aim and the advantages and disadvantages of each method carefully, and be able to explain why you have chosen your method(s).

National and local clinical audit

Use to: Check clinical care meets defined care standards and monitor improvements to address shortfalls. Used extensively for quality assurance and regulatory approval.

How to: Use predetermined standards either retrospectively or prospectively. Data is collected, compared to standards and interventions are identified. The standards can be developed locally, or adopted from national bodies, such as Royal Colleges, or guideline writing organisations such as NICE. The audit is then repeated after intervention to see whether there have been improvements. The effectiveness can be enhanced by performing rapid cycle audits of standards that have been difficult to achieve.

Advantages: Audit is well understood, established, intuitive and usually supported by an administrative structure. It is an effective tool for benchmarking performance against other Emergency Departments. There is some evidence that hospitals taking part in audits provide better care than non-participating hospitals. Clinical audits can be a potential start point to identify the area for a QIP to improve.

Disadvantages: Audit can be cumbersome and slow. There is surprisingly little evidence that clinical audit is effective at driving improvement. National benchmarking can be slow and this hinders the implementation of interventions. There is little emphasis on the change management and a lot of data is normally required.
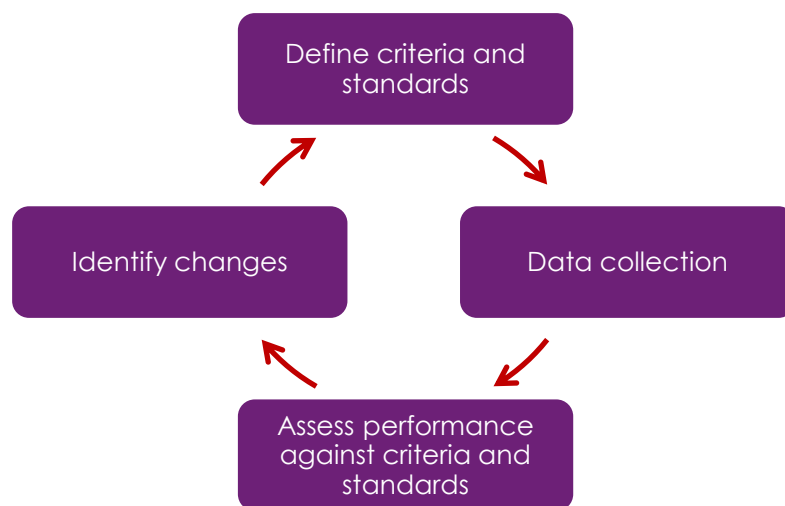
Example
RCEM has published, organised and collated data on care for patients with fractured neck of femur. There are set standards for time to analgesia, x-ray, pain scoring and so on. These are applied retrospectively to a consecutive sample of patients attending Emergency Departments across the United Kingdom. A report is produced which provides evidence of departmental performance against national standards and bench marking against other departments.

Model for improvement (MFI) and the plan, do, study, act cycle (PDSA)

Use to: Learn the right questions to ask – and set aims that are patient centered and achievable. Find out what is really the problem – not hearsay. Measure the problem then do multiple small interventions to improve a solution and to scale up the right one

How to: Three fundamental questions need to be asked of the team to define the problem and how to decide on some solutions

1. What are we trying to achieve, and for which patients?

2. How will we know that a change is an improvement?

3. What changes can we make that will result in an improvement?

Test changes with a series of iterative Plan, do, study act cycles before disseminating widely. These are done on a small scale first to check for unintended consequences.
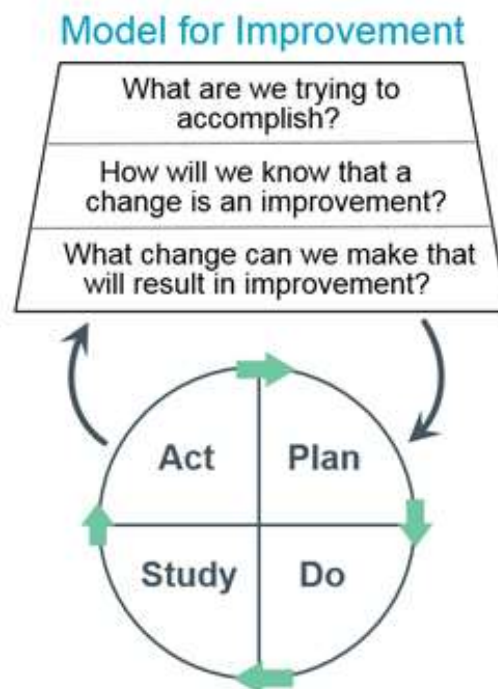
Institute for Healthcare Improvement, 2009

Advantages: This is more responsive than traditional audit as it allows a series of interventions to be tested, adapted and evaluated quickly. They are effective at changing culture and improving care.

Disadvantages: Involving stakeholders can be time consuming and frustrating. They are less useful for regulators and quality assurance. Engaging all staff with the final process can be difficult.

Example using model for improvement and the PDSA cycle

A novel approach to improving coagulation sample ordering in an Emergency Department (5)

Emma Murphy, Sile MacGlone, Claire McGroarty

Abstract

Driven by Emergency Department targets, there is a need for rapid initial assessment and investigations of attendees to the department, and blood tests are often performed before full patient assessment. It has been shown that many investigations ordered in the Emergency Department are inappropriate. Coagulation samples are acknowledged as one the commonest blood samples requested on admission. We predicted that the majority of the routine coagulation samples performed in our ED department were unnecessary.

We aimed to determine if coagulation tests sent from our department were appropriate, develop guidance for appropriate testing and to increase the percentage of appropriate tests to 90%. Criterion based audit was used. All coagulation samples sent from the ED over a one week period were reviewed and the indications for testing compared to guidance developed by consensus with ED consultants.

On the first data collection, 66 of 369 (17%) samples were deemed appropriate. Feedback to clinical staff was given at educational meetings and appropriate indications discussed. In collaboration with both senior nursing and medical staff, coagulation screen request bottles were removed from the main clinical area and were only available in the resuscitation area.

Following these interventions, 69 of 97 (71%) samples were deemed appropriate and a further intervention is planned to reach our standard.

This improvement could lead to a £100,000 saving annually and a cross-site collaborative study is planned to spread these improvements.

Lean / Six sigma

Use to: Analyse healthcare systems to eliminate waste and redirect resources towards a more efficient, improved and consistent quality of care. Lean and Six sigma are often effectively combined.

How to: Lean uses process mapping with associated stakeholders to identify inefficiencies in care, enabling actions for improvement. Aim to eliminate 'just in case' and duplicate activity, holding excess inventory, multiple assessments and unnecessary waits. Six sigma uses DMAIC and control charts are used to study adjusted processes over time. DMAIC is defined below. This can use statistical process control charts.

DMAIC definition

Define: state the problem, specify the patient group, identify goals and outline the target process

Measure: decide the parameters to be quantified and the best way to measure them, collect the baseline data and measure after changes have been made.

Analyse: identify gaps between actual performance and goals, describe the causes of these gaps and decide how process inputs affect outputs and rank potential solutions.

Improve: decide on interventions, identify which are easiest and most effective to implement

Control: share a detailed solution monitoring plan, observe implementation and perform regular updates.

Advantages: This can be effective at reducing waste and improving processes. Similar to MFI and PDSA.

Disadvantages: Involving stakeholders can be time consuming. This can require a lot of data, and data quality needs to be good, ideally automated, to produce reliable maps. This is less good for complex problems and is not often patient centered.

Example of using Lean / Six sigma

Reducing Door to- Balloon- Time for Acute ST Elevation Myocardial Infarction in Primary Percutaneous Intervention: Transformation using Robust Performance Improvement
Samir Aljabbari, Tristan Harold Mananghaya, Salama J. Raji, Abdulmajeed Al Zubaidi

Prompt reperfusion access is essential for patients who have Myocardial Infarction (MI) with ST-segment elevation as they are at a relatively high risk of death. This risk may be reduced by primary percutaneous coronary intervention (PCI), but only if it is performed in a timely manner. Guidelines recommend that the interval between arrival at the hospital and intracoronary balloon inflation (door-to-balloon (D2B) time) during primary PCI should be 90 minutes or less. The earlier therapy is initiated, the better the outcome.

Our aim was to decrease the door-to-balloon time for patients with ST segment elevation myocardial infarction (STEMI) who come through the Emergency Department (ED) in Sheikh Khalifa Medical City, a tertiary hospital in UAE, to meet the standard of less than 90 minutes.

A multidisciplinary team was formed including interventional cardiologists, catheterization laboratory personnel, Emergency Department caregivers and quality staff.

The project utilized the Lean Six Sigma Methodology which provided a powerful approach to quality improvement. The process minimized waste and variation, and a decreased median door-to-balloon time from 75.9 minutes to 60.1 minutes was noted. The percentage of patients who underwent PCI within 90 minutes increased from 73% to 96%.

Conclusion. Implementing the Lean Six Sigma methodology resulted in having processes that are leaner, more efficient and minimally variable. While recent publication failed to provide evidence of better outcome, the lessons learned were extrapolated to other primary percutaneous coronary intervention centers in our system. This would have marked impact on patient safety, quality of care and patient experience.

Experience based co-design (EBCD)

Use to: Work in partnership with patients and families to improve services from their perspective. Using EBCD offers unique insights into what makes a good experience for service users, and enables improvements to be co-designed by patients, families and staff.

How to: Observations are made about the day to day running of the service. Patients, families and staff are invited to share stories about what they like and dislike about the service. Key "touch points" within the service are identified and assigned a positive or negative emotion. Short films are made and are a powerful tool by which to reflect back to the team what really matters to the service users. Staff, patients and families then work together to respond to the findings, and co-design improvements. A useful toolkit can be found here: www.kingsfund.org.uk/projects/ebcd.

Advantages: EBCD is a truly patient centred approach. It offers a unique opportunity to generate new ideas from diverse perspectives that respond to what really matters to patients and their families. It also engages staff, giving them a voice in achieving change and improvement in the care they provide.

Disadvantages: EBCD takes significant time and resource to implement in its full form. However adaptations can be made, such as "accelerated EBCD" whereby archived "trigger films" can be used to start conversations about your service by surfacing key themes. Though not locally produced for each service, studies have shown the impact is as powerful in facilitating co-designing of locally bespoke improvements. Some examples are available here: www.healthtalk.org/peoples-experiences/improving-health-care/trigger-films-service-improvement/topics.

Example of using experience co-based design

John Hunter Hospital Emergency Department, New South Wales, Australia
In 2007 the team at John Hunter Hospital ED in New South Wales, set out to improve the experience of patients, carers and staff using EBCD.(6)(7) Patient and staff stories were collected using film and audio recordings. Stories were analysed and key themes identified. Emotional touch points were mapped to demonstrate positive and negative experiences. Initially patient and family groups met together, separate to staff groups each prioritising improvements to be made. The groups then came together to decide on next steps and co design them together.

Key themes surfaced included:
- Keeping patients and their carer together
- Being kept informed when waiting
- How professionals cooperate and share information with each other
- Belief in professionals' ability
- Physical comfort
- Caring for the whole patient and their family
- Resources for families

Co-designed solutions included:
- Education and training for staff around optimal verbal and non-verbal communication with patients and families
- Introduction of pagers for carers to use if they need to leave the ED
- Revised roles for front of house team, including a lead role for communication with patients in the waiting room
- Improved communication with speciality admitting teams by forming a partnership group with the top 5 most frequently contacted specialities which has enabled fast track admissions to those teams
- Streamlining of GP referrals into ED by implementation of a referral proforma, referral pathway for urgent but non-emergency cases to outpatients, and GP hotline for diagnostics dilemmas
- Improved environment, food and drink facilities
- Introduction of volunteers
- Production of fact sheets for patients and families

Evaluation of the project in 2010 demonstrated sustainable change, and ongoing benefits of the co-design work. Blogs and support groups have continued and led to patients and family being actively involved in safety work, inspections and action plans for the betterment of the department.

Staff reported a new energy in how they communicate and engage with patients and families and in being truly patient centered. There was recognition of the potential for solutions to be spread across other clinical teams and areas. Challenges included ensuring good communication about the work to embed solutions and on-going training for staff given high turnover. Strong senior clinical leadership and executive buy in was key to ensuring success.

Healthcare failure modes and effects analysis (HFMEA)

Use to: Systematically and proactively evaluate processes for quality improvement opportunities. This design emphasises proactive prevention. This is useful for identify potential patient safety risks before an adverse event happens.

How to: Staff collaborate to describe the steps in a process, identify potential failures (what could go wrong?) explain and understand failure and describe the consequence of a potential failure in a process.

Advantages: This is useful when a new pathway, technology or process is introduced.

Disadvantages: The proactive and preventative nature of this work means that you may not be sure if your intervention has worked.

Example of using healthcare failure modes and effects analysis

Background: Communication in the Emergency Department (ED) is a complex process where failure can lead to poor patient care, loss of information, delays and inefficiency.

Aim: To describe the investigation of the communication processes within the ED, identify points of vulnerability and guide improvement strategies.

Methods: The Failure Mode Effects Analysis (FMEA) technique was used to examine the process of communication between healthcare professionals involved in the care of individual patients during the time they spent in the ED.

Results: A minimum of 19 communication events occurred per patient; all of these events were found to have failure modes which could compromise patient safety.

Conclusion: The communication process is unduly complex and the potential for breakdowns in communication is significant. There are multiple opportunities for error which may impact on patient care. Use of the FMEA allows members of the multidisciplinary team to uncover the problems within the system and to design countermeasures to improve safety and efficiency

Practical advice

Choosing a QI project

It can be a little daunting and confusing trying to decide what problem needs a quality improvement project. The following principles should guide the choice of a QIP. The problem should be important to both you and your patients. The project should aim, explicitly, to improve the quality of care for patients. Projects that aim to save money or meet performance targets are important, but not necessarily quality improvement, though a QIP might lead to savings. Your own interest is vital to sustain the project and enthuse others. You also need to ensure that this is not duplicating other QI work in your department, there should be a consultant in each department who maintains a log of all the quality improvement activity. Discussing the aim of your project with a few appropriate patients can be extremely useful. Talking to your patients can suggest what is and isn't useful and meaningful. It can be helpful looking through some recent complaint letters to see if there are any particular recurring themes. Effective projects start with very focused problems, it is tempting to be overly ambitious at the start of a project. Truly effective change starts incrementally with small, achievable goals.

Case study 1: The pain problem

Repeated RCEM audits had demonstrated that the department's care for patients with a fractured neck of femur was poor, compared to both the proposed national standards and benchmarked against other hospitals. The RCEM audit contained several standards, against which performance was poor. Talking to his patients and their relatives indicated a lot of frustration with delays to analgesia. Reviewing the complaint letters over the last six months showed that there were often absent pain scores and long delays to analgesia. The consultant looked at all the standards and discussed the problem with his colleagues. Informal shop floor discussions with the nursing staff indicated a desire to try and fix the problem of long waits for analgesia. He decided to focus on time to initial analgesia for severe and moderate pain for people with fractured neck of femur. He decided not to look at the time to x-ray or time in the department.

Case study 2: The blood test problem

The operations manager and pathology services manager contact the Clinical Director as they are concerned that too many blood tests are being done in the Emergency Department and the laboratory is overwhelmed. They show that many of the blood tests are not acted upon. Most of the blood tests are requested by phlebotomists at triage and this process aims to have results available to the clinician when they evaluate the patient. They ask the Clinical Director to 'sort out the expensive problem of inappropriate tests'. The Clinical Director delegates this project to a junior doctor who is in the Emergency Department for a year and asks him to report back 'when it's sorted.'

Both quality improvement projects are trying to tackle important problems, but the pain project is much more likely to succeed. The project is much more focused on a specific problem and a specific patient group. The blood test project is not focused, though this could be refined (such as reducing the number of clotting tests that are taken on patients with abdominal pain.) The 'top down' and delegating approach of the Clinical Director, who is responding to a concern from outside the ED is unlikely to garner much sustained support. It also isn't clear whether other ED staff, both medical and nursing staff, would support this project. The blood test problem isn't really aiming to improve quality of care for patients, though it could be argued that reducing costs would allow money to be spent on improving care elsewhere. Quality improvement projects should not explicitly set out to save money, though this can be a side benefit.

Supervising a trainee performing QI project

This section is to help a consultant supervise a trainee who is conducting a QIP project. Trainees should be encouraged to practice small QI projects during foundation and core training, either as collaborators or project leads. It is generally accepted that trainees do better if they choose their own subject areas as this helps maintain interest. Regular review of a trainee's project is important.

Core Training

At this stage trainees, should collaborate with departmental QI projects. The trainee should be encouraged to understand the basic principles of QI and reflect on why some projects work better than others.

ST3

Start to assimilate theoretical knowledge about approaches to QI from teaching sessions and suggested resources. Also take notice of QI projects happening around your workplace and note in particular, strategies that work as well as those that don't to inform your approach. Offer to help a QI team to gather data and help with PDSA cycles.

ST4

At the beginning of a job it is easier to see clearly the areas that need improvement. Take advantage of the fresh eyes phenomenon of starting in a new department to note down areas which might benefit from improvement and start to think about the viability of projects. It would be ideal for you to complete a project within this rotation but consider you will be likely to need a minimum of 6 months from the start of any changes to see a project through to adequate completion. You should have a project plan and some measurement done before the ST4 ARCP.

ST5

You can use the time in ST5 before FRCEM revision to write up the project and sustain the changes with visits to the ST4 placement, if needed. Full write up of the project needs to be in time for your ST5 ARCP and with the Head of School a minimum of one month before the submission date for the exam.

Suggested timescales for a QIP

	Core Training	ST3	ST4	ST5
Collaborate in departmental QI projects	██████████████			
Develop and understand concepts of QI methodology	████			
Investigate areas of interest with preliminary work		███		
Define and design QI Project		███		
Carry out QI Project			██████	
Write up QI Project				███
Review by Head of School at least one month before submission				★

Disseminating learning from your QIP

All too often something that has been shown to work well in one place is not adopted by another place that could benefit. Dissemination and diffusion of effective work relies on multiple methods. Publishing your work in an academic journal helps provide your work with some credibility, but can take a long time and has no guarantee of success. Presenting at a conference or scientific meeting can generate useful debate and networking, but you may not be presenting to the right people. You should aim to target your messages at the people who can use the information most easily. You should also aim to make the message as simple as possible, busy staff can only retain so much information.

The Health Foundation has described five 'golden rules' for communicating quality improvement findings: www.health.org.uk/publication/using-communications-approaches-spread-improvement

1. Take the time to assess the current concerns of the people you need to influence. Look for any connections you can make between their priorities and yours. If you want to influence inpatient consultants, they may have a series of competing priorities to yours and you will need to acknowledge these.

2. Ensure that they hear your message from people they trust. This may mean asking a more senior person or a staff member outside your role to communicate on your behalf.

3. Gather the evidence, data and stories that support your case. Different people are influenced by different types of information. A professor may want to see graphs and reams of data, while a junior nurse may be more swayed by a patient story. A mix of a narrative and data is more effective than only data or a narrative alone.

4. Do not expect busy people to come to you. If your project involves the nursing staff doing something slightly different, go to the staff handovers and make your case.

5. Pay attention to the more vocal sceptics. Being challenged is infinitely better than being ignored! A person who challenges you is already engaged, you should avoid pretending to have all the answers.

Writing up a QI project

These headings, which are based on the [SQUIRE Guidelines,](#) will assist in writing up a QIP.

Title

Indicate that the manuscript concerns an initiative to improve healthcare (broadly defined to include the quality, safety, effectiveness, patient-centeredness, timeliness, cost, efficiency, and equity of healthcare).

Abstract

Provide adequate information to aid in searching and indexing.

Summarise all key information from various sections of the text using a structured summary such as: background, local problem, methods, interventions, results and conclusions.

Introduction

- Problem: Describe the nature and significance of the local problem; define the need for intervention and what was trying to be accomplished

- Background: Summarise the current knowledge base

- Setting: Describe the department or service where the project took place, outline the staff or patient groups involved

- Specific aim: Purpose of the project and of this report

Methods

- Design: Describe what study design was used. Explain what change was envisaged, how this was to be done, and how this was to be recorded and studied

- Interventions: Description of the intervention(s) in sufficient detail that others could reproduce it

- People: Specifics of the team involved in the work

- Measures: Measures chosen for studying processes and outcomes of the intervention(s), including rationale for choosing them, their operational definitions, and their validity and reliability. Methods employed for assessing completeness and accuracy of data

Results

Effects of the change: How did you measure the effects of your change? What happened as a result of the interventions? Initial steps of the intervention(s) and their evolution over time (e.g., time-line diagram, flow chart, or table), including modifications made to the intervention during the project. Describe details of the process measures and outcome.

Observed associations between outcomes and interventions. Unintended consequences such as unexpected benefits, problems, failures, or costs associated with the interventions. Details and a judgement about missing data and this influences results

Discussion

Summary: Key findings including relevance to the rationale and specific aims.

- Particular strengths
- What has been done to ensure the change is not temporary
- Interpretation:
  - Nature of the association between the intervention(s) and the outcomes
  - Comparison of results with findings from other publications
  - Impact of the project on people and systems
  - Reasons for any differences between observed and anticipated outcomes, including the influence of context
  - Costs and strategic trade-offs, including opportunity costs

Limitations

- Identify limits to the generalisability of the work
- Describe factors that might have limited internal validity such as confounding, bias, or imprecision in the design, methods, measurement, or analysis
- Outline efforts made to minimize and adjust for limitations

Conclusions

Describe the:

- Usefulness of the work
- Sustainability
- Potential for spread to other contexts
- Implications for practice and for further study in the field
- Suggested next steps

Funding

Outline sources of funding that supported this work

Exam requirements

RCEM has, from August 2016, implemented an assessment system within the training structure which includes the requirement for trainees to complete Quality Improvement Project (QIP). This new assessment system has been approved by the United Kingdom (UK) General Medical Council (GMC). 'Principles of Quality and Safety Improvement' is a domain in the GMC Common Curriculum (domain CC9), this curriculum is common to all doctors in training in the UK; the RCEM GMC approved curriculum [1] outlines how this relates to practice in Emergency Medicine, including knowledge, skills, behaviours, and level descriptors. The level 4 (that is the level that a consultant is expected to function at) descriptor includes 'implements change to improve service'.

Quality improvement activity is consistent with various elements of the 'Duties of a Doctor' (9), and it is hoped that implementation of the new assessment structure including QIP will further embed QI activity in Emergency Departments.
It is anticipated that all Emergency Medicine Schools (or equivalents) will have a QI lead, who sits on the School board. This training lead will have the function of advising trainees (and trainers) on aspects of QI, and the RCEM assessment system. It is expected that the training lead will have some training in QI, either by one to the national bodies (see RCEM website for details), or ideally by attending an RCEM study day (there are generic QI study days and bespoke trainers QI study days, held nationally in 2015/6, and rolled out locally to schools from then onwards). These will report to and be advised by, the Head of School, and then ultimately to the RCEM Training Standards Committee (TSC).

It is also anticipated that each Emergency Department (ED) will have a QI lead, liaising closely with departmental governance, audit and safety leads (and within the hospital's Quality structure), whose function is to advice, advocate for and lead QI initiatives within the ED. These QI leads will be similarly trained to the School QI lead. The RCEM Quality in Emergency Care Committee (QEC), will be a key source of advice and guidance for QI lead, especially through the Quality and Standards, and Safer Care sub-committees. There are resources available on the RCEM website.

The Examination Committee has a QIP lead, whose Terms of Reference (available from the Director of Education) include ensuring the assessment process is managed appropriately (see below). There is a training programme for Examiners to ensure consistency. The process for application is described in the Examination Guidance and Information packs, and summarised below.

The QIP forms part of the suite of assessments leading to the award of the Fellowship of the Royal College of Emergency Medicine (FRCEM). The application process is via an online portal on the RCEM website (training and examinations section), with defined application periods. There are eligibility requirements described in the

information packs, most notably the requirement for completion of the Primary and Intermediate sections of the examination (or MRCEM), or exemption from this requirement. Until autumn diet of 2018 the assessment process will involve both a standardised viva voce examination and submission of a written report of the QIP, at the autumn 2018 diet the assessment will be on the written component alone; this is described in detail below.

Assessing a QIP

The Royal College have produced templates for assessing QIP submitted for the FRCEM final examination. The marking template is below (for both written and viva examination, please note above regarding cessation of viva voce examination). This is design to capture all the generic and essential elements of a QIP. It does not specify methods, metrics or successful implementation of QI, but it does expect that all domains are covered. This mark sheet has been developed 'de novo', however there are Standard for Quality Improvement Reporting Excellence (SQUIRE) guidelines which are described below. The main differences between SQUIRE and the RCEM assessment system are that the RCEM system does not mandate discussion of ethical considerations (taken as 'read'), contextual elements (although this may well form part of analysis of issue), measurement of both processes and outcome (see measurement section) or limitations (although this may form part of the reflection).

Advice for trainees

The QIP requires a combination of skills. The aim of the QIP written summary and discussion/viva is to explore the candidate's understanding of the chosen project and the ability to evaluate the evidence and present a cogent narrative. This understanding should be more than a surface appreciation of the issues related to implementing change, the academic grounding and the leadership required to implement a QIP. It is also useful to remember that as consultants (and as a part of appraisals) participation in quality improvement is expected. It is suggested that the scope of the QIP should be such that it takes 3-6 months to design and implement change, and another 3 months to assess and write up. In terms of scale, the work should ideally be in one Emergency Department, and require liaison with at least 2-3 stakeholder groups.

Given the timeframes above, it is anticipated that the QIP is started very early during a placement where the trainee will be working for at least a year. It is advisable that the trainee liaises with their supervising consultant (possibly before commencing post) about possible QIP topics; however it may be that the trainee identifies the subject of the project after having been working in a post.

The QIP should be the trainee's own, however it is appreciated that there may be a requirement for trainers to assist with identification of the topic, and to give some guidance during the project. However, the project should not be a simple management task that the Emergency Department requires action on.

The QIP will be unique and individual; not only due to the 'personal stamp' the trainee places on it, but due to the fact that it is influenced by the needs of the patients and the local aspects of the service. It may require an academic review of the evidence pertaining to the QIP, but this is not mandatory. Useful resources for QIP implementation and reporting are included in the appendices.

Therefore, the written summaries will vary, however there will be some common themes as discussed below that are likely to appear in all QIPs in some form:

- A narrative that makes it clear how and why the topic was chosen/ identified, and what issues were identified

- A review of the local situation, possibly together with a pilot audit/study, and how outcomes and potential solutions identified

- A description of the change and/or quality management processes involved; including assessment of the need for change and selection of mechanism for change

- Evidence of engagement with stakeholders

- Development and implementation of mechanisms to assess effect of QIP

- Assessment of the effect of change including subsidiary effects

- Remedial actions following implementation

- Outcomes/effects of QIP, and possible next steps

- Reflection on the process, and the lessons learnt. This constitutes a major part of both the mark scheme, and the narrative of the QIP; it should also establish the 'unique identity' of the QIP

The College is not didactic about the processes/ tools/ frameworks for these elements, provided the candidate has selected accepted processes and tools and referenced them appropriately (e.g. when implementing change trainees may use action research methodology, force-field theory, Moss Kanter approach etc., but there is no single 'correct' approach, as it will be determined by the local environment and culture). The QIP is not simply a management project, as these skills form part of the training programme, however it will involve and assess some management skills. Candidates should be guided by the mark scheme to infer what is required, and how this can be demonstrated.

The written summary should be a narrative report of the QIP. The 'narrative path' should be clear, and therefore preferably chronological.

Its structure should be determined by the project, and is likely to follow the themes listed above.

Again, it is useful to re-iterate that candidates should be guided by the marking scheme to infer what is required, and how this can be demonstrated.

The College believes that we should assume the candidate's written submission is excellent and only mark down if we feel they do not meet this standard. The candidate does not have to "earn" each point from a position of none but merely to prove they have addressed each area.

There is a 'house style' which includes:

- Vancouver referencing (use an automated program, such as Menderley)

- 11 point, double spaced

- Arial or Times New Roman font

- Electronic submission in Word format or PDF

- Headings as suggested by the marking scheme is advised, but not essential

- Frontispiece with executive summary, signatures from trainee and trainer confirming sole work of trainee

- Word limit: it is assumed that word count less than 2000 words will be inadequate, and over 6000 words probably excessive

- The QIP will usually be about 3000-4000 words in total (excluding tables, diagrams and references and appendices if used)

Written QIP mark sheet

38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

FRCEM Spring 2016 - QIP

Station 1: Both Examiners   **Circuit:** &Circuit

Candidate: &CandNo &CandName   **Date:** &Date

Please print ONE examiner name/number in the red box.

PRINT NAME WITHIN BOX

Examiner Number

	0 1 2 3 4 5 6 7 8 9
	0 1 2 3 4 5 6 7 8 9
	0 1 2 3 4 5 6 7 8 9

Written Agreed Marks

Issue/topic

Acceptable (A) - Clear concise description of problem with impact on patient care - why important in the department.

Unacceptable (U) - No description of issue or why important for department, no context given.

Comments

A ⎯

U ⎯

Presentation, narrative and structure

Acceptable (A) - Grammar acceptable. Good use of language, tables simple and demonstrates relevant points, logical structure, easy to follow and could be replicated.

Unacceptable (U) - Multiple spelling mistakes, incorrect underlining/use of bold, poor tables, incoherent narrative and unable to determine the project process.

Comments

A ⎯

U ⎯

38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

FRCEM Spring 2016 - QIP

Station 1: Both Examiners   **Circuit:** &Circuit

Candidate: &CandNo &CandName   **Date:** &Date

Examiner Number

	0 1 2 3 4 5 6 7 8 9
	0 1 2 3 4 5 6 7 8 9
	0 1 2 3 4 5 6 7 8 9

Measuring Outcomes

Acceptable (A) - Develops/identifies tools to assess outcomes, implements the tool effectively.

Unacceptable (U) - Limited measurement or assessment of impact of QIP

Comments

A ⎯

U ⎯

Engagement and team working

Acceptable (A) - Good evidence of engagement with team, minutes of meetings, discussion options.

Unacceptable (U) - Limited if unexplained engagement with teams, no evidence of team working.

Comments

A ⎯

U ⎯

Iterative process

Acceptable (A) - Good evidence of monitoring response to change, further changes planned clearly or undertaken.

Unacceptable (U) - Limited evidence of iterative process, response to results or next steps implementation.

Comments

A ⎯

U ⎯

FRCEM Spring 2016 - QIP

Station 1: Both Examiners   **Circuit:** &Circuit

Candidate: &CandNo &CandName   **Date:** &Date

Examiner Number

	0 1 2 3 4 5 6 7 8 9
	0 1 2 3 4 5 6 7 8 9
	0 1 2 3 4 5 6 7 8 9

Identification/analysis of the cause of the problem

Acceptable (A) - Good clear analysis and idetification of the cause of the problem.

Unacceptable (U) - Failure to analyse the problem sufficiently or identify root cause.

Comments

A ⎯

U ⎯

Evidence found

Acceptable (A) - Good search and critical review of evidence to support change.

Unacceptable (U) - No attempt to look for published solutions, no access to know resources for support, no critique of papers/evidence found.

Comments

A ⎯

U ⎯

Structure and implementation of change

Acceptable (A) - Clear implentation of changes; including description of tasks/deadlines, monitoring and managing progress; all following logically from planning stage.

Unacceptable (U) - No description of mechanism/approach to change, no outline of the project.

Comments

A ⎯

U ⎯

FRCEM Spring 2016 - QIP

PRINT NAME WITHIN BOX

Station 1: Both Examiners   **Circuit:** &Circuit

Candidate: &CandNo &CandName   **Date:** &Date

Examiner Number

| | 0 1 2 3 4 5 6 7 8 9 |
| 0 1 2 3 4 5 6 7 8 9 |
| 0 1 2 3 4 5 6 7 8 9 |

Reflection

Acceptable (A) - Reflection on both personal and institutional learning - suggestions for this how might be shared or done things differently.

Unacceptable (U) - Limited reflection in process.

Comments

A
U

Overall written

Please score one outcome.

Successful (S) - Only one unacceptable, or all acceptable.

Unsuccessful (U) - More than one unacceptable.

Comments

S
U

Viva QIP mark sheet

38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

FRCEM Spring 2016 - QIP

PRINT NAME WITHIN BOX

Station 1: Both Examiners **Circuit:** &Circuit

Candidate: &CandNo &CandName **Date:** &Date

Examiner Number

	0	1	2	3	4	5	6	7	8	9
	0	1	2	3	4	5	6	7	8	9
	0	1	2	3	4	5	6	7	8	9

VIVA Agreed Marks

Overview of project

Acceptable (A) - Good description of project - full but concise.

Unacceptable (U) - Unable to concisely summarise and give salient points.

Comments

A
U

Discussion of change plans

Acceptable (A) - Clear description of original problem, caused and why change was chosen.

Unacceptable (U) - Unable to explain why the change was implemented, the analysis of the cause.

Comments

A
U

Implementation

Acceptable (A) - Clear implementation overview, tasks, deadlines, rationale, including planning and milestones.

Unacceptable (U) - Chaotic description

Comments

A
U

FRCEM Spring 2016 - QIP

Station 1: Both Examiners

Circuit: &Circuit

Candidate: &CandNo &CandName

Date: &Date

Examiner Number

	0	1	2	3	4	5	6	7	8	9
	0	1	2	3	4	5	6	7	8	9
	0	1	2	3	4	5	6	7	8	9

Measuring and Outcomes

Acceptable (A) - Able to explain measures, results and implications - and link to what was originally required.

Unacceptable (U) - Limited identification of the outcomes to be measured and results - limited analysis of implications of results.

Comments

A
U

Reflection

Acceptable (A) - Can describe further improvements, how could do better next time, how project has been sustained or further modified.

Unacceptable (U) - Limited reflection - unable to describe benefits of QIP or limitations of the project undertaken.

Comments

A
U

Overall viva

Successful (S) - Successful in the domain marked unsuccessful in the written AND only one unsuccessful in viva.

Unsuccessful (U) - More than one unsuccessful in viva or continued unsuccessful in the written domain.

Comments

S
U

Resources

- [RCEM Quality Improvement Webpage](#)

- [RCEM Safety Toolkit](#)

- [HQIP Guide to Quality Improvement](#)

- [Health Foundation guide to communicating results](#)

- [AoMRC Quality Improvement Training for Better Outcomes](#)

- Practical advice on how to perform a QIP:
    - [NHS Improving Quality – A simple guide to quality improvement](#)
    - [Health Foundation - Quality improvement made simple](#)

- [RCEM (UK). 2015 EM Curriculum- Main Document](#)

- [RCEM (UK). FRCEM Final Information Packs](#)

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Appendix 1: Definitions

Quality	Safe, Effective, Patient Centred, Equitable, Efficient and Timely (IOM) Safety; clinical outcomes; and patient experience. NHS
Quality Improvement	Better patient experience and outcomes achieved through changing provider behaviour and organisation through using a systematic change method and strategies (Ovreveit)
Patient Safety	Prevention of errors and adverse effects to patients associated with health care (WHO)
National and Local Clinical Audit	A quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change
Rapid Cycle Audit	An adjunct to audit whereby very quick audits are performed on a few cases and standards to try and effect 'real time' change
Plan, Do, Study, Act	A quality improvement method, often combined with the Model for Improvement (see examples)
Model for Improvement	A quality improvement method, with PDSA cycles as an integral part (see examples)
Healthcare Failure Modes and Effects Analysis	A quality improvement method that proactively identifies deficiencies in care (see examples)
Lean	A quality improvement method useful for identifying inefficiencies in care, often combined with Six Sigma (see examples)
Six Sigma	A quality improvement method useful for identifying inefficiencies in care, often combined with Lean (see examples)
Run Chart	An analytical tool allowing the visual display of the data collected over time against a threshold
Statistical Process Control Chart	A graph used to study how a process changes over time. Data are plotted in time order. A control chart always has a central line for the average, an upper line for the upper control limit and a lower line for the lower control limit.

Change Management	Any approach to transitioning individuals, teams, and organisations using methods intended to re-direct the use of resources, business process, budget allocations, or other modes of operation that significantly reshape a company or organisation
Root Cause Analysis	An analytical tool that provides a structured approach to investigating adverse incidents
Fishbone	A graphical approach to support a Root Cause Analysis
Process Mapping	A visual representation of a patient journey or process happening within a department. The map shows how things are and what happens currently, rather than what should happen
Driver Diagram	A type of logic chart to help define factors that would lead to your aim or goal
Forcefield Analysis	A useful decision-making tool. Helps analyse the forces for and against your change and how to deal with these
Measures **- Outcome** **- Process** **- Balancing**	Outcome measure – patient related e.g. harm/death/experience Process measure – how the system is operating e.g. time/number of cannulas Balancing – how other things in the system may be affected by your change
Gantt Chart	A chart that shows tasks on the vertical axis against time on the horizontal axis. This allows an intuitive understanding of the progress of the component parts of a project. These are usually used for project management.
Pareto Chart	A graph that displays both a bar chart and a line. The left sided vertical axis is labelled frequency, the right sided vertical axis is cumulative percentage and the horizontal axis has the group names of the response variables. This allows an intuitive display of the relative importance of the differences between groups of data.

The Royal College of
Emergency Medicine

Excellence in Emergency Care

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