Critical event analysis: Learning from past mistakes to prevent future amputations

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There has been a change in attitude with regards critical incident reporting in the NHS recently, with the focus shifting from individual error to systems analysis. This article looks at how this may affect the reporting of adverse incidents in diabetes care, with particular reference to the avoidance of amputation.

Article points

1. Amputation is a major complication of diabetes.
2. A major thrust of Department of Health strategy is to prevent avoidable harm.
3. The purpose of root case analysis is to uncover the actual events behind an incident and understand it — instead of simply fixing the most obvious problem or individual.
4. The traditional person-centred approach to the causes of adverse incidents is designed to attribute blame and identify the person who needs to be punished.

Keywords

- Amputation
- Adverse events
- Root cause analysis

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Amputation is a major complication of diabetes with up to 2.5/1,000 patients with the condition requiring amputation (major or minor) in areas of the UK (Rayman et al, 2004). In some instances, it has been suggested that amputation may have been prevented if appropriate care had been instigated and there is a considerable amount of guidance to indicate what constitutes appropriate care (National Institute for Health and Clinical Excellence [NICE], 2012) and how it should be delivered (NICE 2006; NHS Diabetes, 2011).

A major thrust of recent Department of Health (DH) strategy is to prevent avoidable harm (DH, 2010a) and it has clearly identified that the safety of patients should be everyone's highest priority (Patient Safety First, 2009). This is based on the quality, innovation, productivity and prevention document (DH, 2010b), which identifies work streams that focus on the provision of, as the document terms it, 'safe care' and 'right care', clearly identifying that patients should have high-quality care delivered first time, every time.

Unfortunately, in the real world this does not always happen and occasionally errors occur. When mistakes do take place it is generally acknowledged that they should be both properly reported and investigated, but that also that clinicians should learn from the event. This is termed as the reporting of a critical incident (see *Box 1* for alternative terms commonly used in practice).

Taub et al (2010) reviewed the literature in an attempt to identify patient safety systems for people with diabetes in primary care. They

Box 1. Alternative terms commonly used in practice

- **Critical incident: CI**
- **Serious incident: SI**
- **Serious untoward incident: SUI**
- **Serious incident requiring investigation: SiRi**
- **Adverse events: AEs**
- **Sentinel event: SE**

concluded that there is limited information in existence and that investigation into how adverse situations occur is needed.

Root cause analysis

One way of investigating critical incidents is to follow the principles of the root cause analysis (RCA). The purpose of RCA is to uncover the actual events behind an incident and understand them — instead of simply fixing the most obvious problem or individual. An RCA follows a process to identify the causes that underlie any variation in performance, including the occurrence of critical or sentinel events (any unanticipated healthcare event resulting in death or serious physical or psychological injury to a patient or patients, not related to the natural course of the patient's illness).

The RCA seeks to identify where a service's procedures and practices fell down and why — it is not designed to attribute blame. This has shifted the analysis of adverse events towards a 'human factors engineering' approach, dealing with the capabilities and limitations of human performance in relation to the design of tasks and the physical environment. This approach looks for system vulnerabilities rather than human error and other less actionable root causes (Bagian et al, 2002).

To date, there are no data on how many clinicians are currently undertaking RCAs on critical events related to diabetic foot care, but a recent English survey of tissue viability services caring for patients with pressure ulcers identified that 99% (n=147) were following an RCA process (Wounds UK, 2012). These processes should serve to help redesign service structures and act as an educational tool. Highlighting common errors in the care

Box 2. Case example

Case

- **Patient presents with catastrophic ulceration — has been seen in the community by podiatry services for the last three months**
- **Clearly, the community podiatrist is at fault and should be blamed for the patient requiring amputation**

But

- **Patient was seen with an 'at risk', but stable foot**
- **After six weeks, some deterioration was noted and an electronic referral was made into the acute service – at which point the podiatrist took two weeks annual leave**
- **The electronic referral was 'held' by the acute service (caused by an incorrect digit in a telephone number, which was not chased up despite being marked urgent on the referral)**
- **On return from leave the community podiatrist was horrified that the patient had not been seen and spent several hours organising immediate admission**

So whose 'fault' is it? Questions to ask

- **Did the person who accepted the referral make reasonable attempts to find the patient?**
- **Did the community podiatrist have an out-of-office message with appropriate redirection?**
- **Were there other details on the form that either:**
  - **Indicated the urgency of the request**
  - **Could have been used to track the patient**

process allows senior clinicians to provide focused education, for instance by using real life scenarios or vignettes to illustrate the importance of providing the right care.

The traditional person-centred approach to the causes of adverse incidents is designed to attribute blame and identify the person who needs to be punished. It suggests that individuals who make errors are careless, at fault or reckless, and that by removing an individual it is possible to improve safety.

The systems approach, however, suggests that poor organisational design sets people up to fail and the way to improve practice is to change the systems — see example in *Box 2*, where, under the old system, it would be easy to blame the community podiatrist.

The NHS Institute for Improvement and Innovation (2012) suggests the use of five 'whys' to identify the root cause of a problem, each removing a layer of the issues. Following the example in *Box 2*, the answer to the question, 'Did the clinician make reasonable attempts to contact the patient?' might be, 'No'. However, instead of using this as evidence of the clinician's fallibility, it might be more productive to ask, 'Why didn't they contact patient?' and so on until there are no more questions to be answered The technique is further explained in *Box 3*.

Box 3. How to complete the five 'whys'

- **Write down the specific problem — this helps you formalise the problem and describe it accurately. It also helps a team focus on the same problem**
- **Use brainstorming to ask why the problem occurs then, write the answer down below**
- **If this answer does not identify the source of the problem, ask 'why?' again and write that answer down**
- **Loop back to step three until the team agrees that they have identified the problem's root cause. Again, this may take fewer or more than five 'whys?'**

Useful resources

1. **Root cause analysis investigation:** ***http://www.nrls.npsa.nhs.uk/resources/collections/root-cause-analysis***
2. **Example from pressure ulcer pathway:** ***http://www.stopthepressure.com/path/docs/Reporting%20guidance.pdf***

Amputation

When considering the pathway to amputation, for instance, there are several common, but crucial, points to consider, including:

- Was this an undetected patient?
- Was there a slow deterioration?
- Was there inappropriate management?
- Was there an inappropriate pattern of patient behaviour?
- Was the incident related to an acute catastrophe?
- Was the incident a result of a fault in the processes?

Any of these factors could have The NHS Institute for Improvement and Innovation's (2012) five 'whys' applied to them in an effort to identify the cause. This is important because if the incident is indeed related to a system or process error then it may be repeated. In many instances, patterns will be uncovered by adverse event reporting and these should be addressed using a systems approach.

Conclusion

The NHS is increasingly focused on reporting incidents, in either a paper or electronic format (such as the Datix® system). If an incident is deemed sufficiently serious, it may be escalated into a report to the commissioning body, which could have implications for future funding.

However, clinical commissioning groups in some areas of the country are already using incident reporting to identify system and

process issues and in many cases working on service redesigns and reconfiguration. This can only result in improvements in service delivery and better outcomes for patients. ■

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