Finding the Achilles' heel in healthcare

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Widely thought to be the great hero of the Trojan War and the Iliad, Achilles is remembered today for his death – felled by a simple arrow – which found its way to pierce the one place where he was vulnerable: his heel. When his mother, Thetis, had dipped her newborn baby Achilles into the magic river Styx, she believed she had created an immortal. She did not know it, but her unwitting error had sealed her son's fate. The place where she held his ankle did not touch the charmed water; vulnerability was created.

The problem of patient safety has been well-described in the UK, particularly since the government report *An Organisation with a Memory*.[1] Today, despite many years of focus on patient safety, it is clear that there are still many vulnerabilities (Achilles' heels) in healthcare. Indeed often the same errors occur repeatedly.

Strenuous efforts to map these points of potential vulnerability, identify the complex causation and put in place mitigating factors are needed. There are examples of success, such as the effort to reduce accidental overdoses of potassium chloride as a result of drug misidentification.[2] Yet, there are too few examples of harm which has been consistently lessened, let alone problems eradicated.

Without understanding the nature and strength of the defences that protect against vulnerability, which leads to patient harm, at each step of a process of care, the probability of patient injury or death remain unquantifiable. Opportunities to avoid harm to patients cannot be effectively identified nor can mitigating actions be taken.

It is our experience that although some Achilles' heels are obvious, such as poor information transfer or inadequately used reporting systems, others are not. They lie hidden deep within hospital systems. Only careful and detailed study and mapping of processes of care will identify these vulnerabilities. Arguably, the absence of this solid groundwork is why so few patient safety problems in healthcare have been reliably solved.

In most pathways of patient care, there are many steps between the first and the last points. Some involve decisions and procedures that carry inherent risk. But few healthcare professionals, or their patients, have a clear understanding of the full process of care and the hazards at each stage. Some work has been done: recently the World Health Organization (WHO) defined the process of care for radiotherapy and systematically identified risk at each stage.[3] This risk profile examined vulnerability at each stage of the typical process of care.

Processes of care have been studied in the wider quality improvement movement. Unfortunately, less attention has been given to analysing processes of care systematically, to understand why and how they can be unsafe. In improvement science the emphasis has been on how to simplify the process, re-engineer it to reduce waste, make it more patient-centred and more efficient. There is still a mountain to climb in making a virtuous circle of occurrence, understanding, learning and effective preventative action to build more resilient systems.

We know that generating such systems is eminently possible, as other industries have used this mechanism to identify their Achilles' heels and to restructure based on the findings. In 1990, British Rail investigators carried out an extensive survey of signals passed at danger (SPADs). The findings were surprising. The problem was with a few SPAD-prone signals, for example as a result of

location and conspicuity, rather than SPAD-prone drivers.[4] Similarly, in a study of aircraft maintenance incidents, more than half were recognized as having happened before. In the majority of cases, the maintenance engineers interviewed were clear that the same or similar errors could happen again.[5]

Healthcare, therefore, has a clear challenge if it is to identify these vulnerabilities. This will require a coordinated approach by all. First, finding mechanisms to encourage frontline workers to look at healthcare as pathways, and to identify the weak spots in such systems. This involves every member of the healthcare team, if all risk is to be effectively identified. Otherwise, tragedies such as intrathecal vincristine will never be prevented effectively.[6]

Second, this approach needs to be embedded in the education and training of all healthcare staff to make it habitual. Recently WHO has advocated for the teaching of patient safety science and practice back to the undergraduate level. If change is to be truly achieved, it must start early.[7]

Third, boards and chief executive officers need to develop strategies for uncovering these hidden weak spots through scrutiny and better learning. This involves not just education and peer review of processes to identify risk, but innovative thinking and action to protect patients. For example, Toyota's LEAN methodology, which brings together all relevant professionals to map inefficiencies in processes of care, has been increasingly popular in identifying inefficiency and improving performance. Applications of such tools could be extended to risk identification and modification.[8]

Too often we fail to identify the weak spots and develop mitigation strategies. Perhaps though there is an even greater risk alluded to in the vulnerability story of Achilles' heel. Are we also guilty of the Thetis error, believing that there is one magic solution to each problem, and that instigating a change will prevent harm? We must therefore remember that patient safety is about continuous vigilance, self-scrutiny and unending learning.

References

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