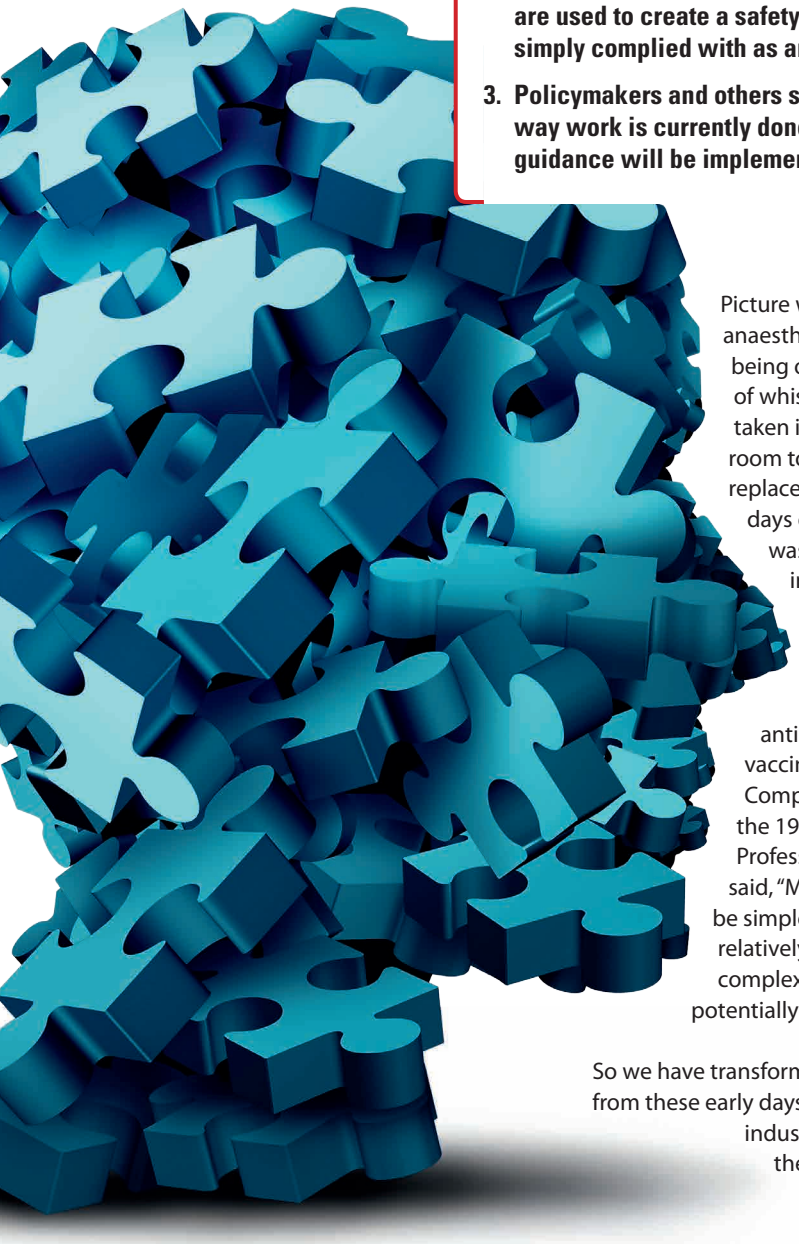
THE PROBLEM OF **MANY IMAGINATIONS**

Healthcare often looks to aviation to learn about safety, but the two fields are fundamentally different in many ways. Healthcare is innovative, with many highly skilled front line professions who often favour clinical judgement over standardisation. This can bring a 'problem of many imaginations', as **Suzette Woodward** explains.

KEY LEARNING POINTS

1. **Innovation is good. In healthcare, it has extended our survival and saved many lives, but too much unnecessary variation as a result has led to avoidable and preventable patient harm.**
2. **Judgement can be enhanced by rules, frameworks and checklists as long as they are used to create a safety net that prevents things from going wrong, and not simply complied with as an administrative task.**
3. **Policymakers and others should create guidance only if they truly understand the way work is currently done; the people, the culture and the conditions in which the guidance will be implemented.**



Picture walking into an anaesthetic room and being offered a large glass of whisky before being taken into the operating room to have your hip replaced. In the early days of medicine this was exactly the way in which patients would have been anaesthetised. Now consider a world without antibiotics or small pox vaccine or paracetamol. Comparing medicine in the 1950s with the 1990s, Professor Chantler once said, "Medicine used to be simple, ineffective and relatively safe. It is now complex, effective and potentially dangerous".

So we have transformed healthcare from these early days to an astonishing industry that improves the lives of many.

This is through a constant challenge of the status quo. Innovation and improvement is in our genes, it is at the very heart of what we do. We try to do the very best for our patients while constantly moving healthcare forward.

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An early innovator Florence Nightingale, who is clearly known for being at the forefront of nursing and nurse training, was also one of the earliest patient safety thinkers and statisticians. In the mid-1850s she noticed that many of the soldiers were dying in ways that she intuitively thought were avoidable. She plotted all of the reasons why soldiers died in the army in the Crimean War from April 1854 to March 1855 and found that most of the soldiers' illnesses were caused by what she describes as 'defects in the system'. She deduced that perhaps at least one in seven of the patients (around 14%) died from preventable diseases rather than their

battle wounds. As a result of this work she made huge improvements to the way the soldiers were being cared for. These were not isolated interventions but fundamental aspects of care; good nutrition, warm clothing, and good ventilation, and most importantly cleanliness and hand hygiene (Woodward, 2017).

Ignaz Semmelweis was a Hungarian physician who, around the same time as Nightingale in the 1850s, wanted to understand why some of his patients died after childbirth. In his first publication, Semmelweis described the tale of two maternity clinics at the Viennese hospital in which he worked. The first clinic had an average death rate, from infection called puerperal fever, of around 10%. The second clinic's rate was lower, averaging less than 4%. Interestingly, this fact was known outside the hospital and the women begged to be admitted to the second clinic. Semmelweis described how desperate women were begging on their knees not to be admitted to the first clinic. In fact some women even preferred to give birth in the streets.

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Semmelweis was puzzled and deeply troubled by the fact that puerperal fever was rare among women giving street births and that the first clinic had a much higher mortality rate. The two clinics used almost the same techniques, and Semmelweis started a meticulous process of eliminating all possible differences between them. He excluded a variety of potential causes; the only major difference was the individuals who worked there. The first clinic was the teaching service for medical students, while the second clinic had been selected in 1841 for the instruction of midwives only. He proposed that the cause was in fact the doctors and medical students, who were routinely moving from the task of dissecting corpses to examining new mothers without first washing their hands. They transferred infections from the corpses to the mothers, and women died as a consequence. The midwives were not engaged in autopsies.

Semmelweis issued a policy of washing hands between autopsy work and examination of patients. The result was the mortality rate in the first clinic dropped by 90%. When the doctors, medical students and midwives washed their hands, the number of deaths from infections went down. What happened next is as interesting as his findings. Despite seemingly compelling evidence that mortality reduced to below 1% from between 10% and 35%, his ideas were rejected. His observations conflicted with the established views at the time. Semmelweis not only failed to convince clinicians enough to change their practices, he angered and offended them. In fact there is today a phrase that has been used to describe his challenge which is named after him: the Semmelweis reflex. This is used as a metaphor for a reflex-like rejection of new knowledge because it contradicts entrenched norms and beliefs. This is not limited to healthcare.

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The desire to constantly improve, innovate and change impacts on patient safety in a number of ways. We need to look at the consequences of the problem of many imaginations. These include the following three problems.

There are too many ideas, guidance and findings.

One problem concerns the sheer volume of material to keep up with. In healthcare we are drowning in new ideas, new guidance and research findings; in a world of two million articles a year which ones do you read, which ones do you trust, which ones do you have time to implement?

There is too much unnecessary variation

A second problem concerns variation between actors. Clinical judgement is used as an excuse for variation: "I'm doing it my way". This variation can be a significant risk to patients. Clinicians sometimes believe that they have a right to autonomy above all else. This means that one surgeon performing a tonsillectomy can carry out the procedure in a very different way from another surgeon doing exactly the same thing, even within the same hospital. It also means that rather than see all doctors and nurses as equal, and feel safe in everyone's hands, patients instead ask, "Who is doing my operation today?". There is an intrinsic desire to reject rules and regulations that clinicians feel may prevent them working differently from others.

This clinical judgement also means that solutions that appear to undermine this judgement are ignored. This is the story of the World Health Organisation (WHO) surgical checklist. A core checklist was designed in 2006 which allowed individual teams to adapt it to fit with their environment. This task was being led by Atul Gawande, a surgeon from the US. His later book The Checklist Manifesto; how to get things right (Gawande 2009) beautifully described the challenges people face in implementing checklists. The checklist was, on the face of it, a list of things to check off prior to surgery. However, it was clearly more than a list. Properly used, the checklist ensures that critical tasks are carried out and that the whole team is adequately prepared for the surgical operation. During the implementation process, in the main, anaesthetists and nurses were largely supportive of the checklist but consultant surgeons were not convinced. There is currently huge variability in use and implementation. For example, implementing parts but not all, missing out a key component of the checklist or – even worse – completing all the checklists prior to the operating session to be put aside so that the team could 'get on with their day without having to worry about it'. Using checklists in healthcare is not a way of life and has become simply an administrative task. This is a classic 'work-as-imagined' versus 'work-as-done' story. The designers, managers, and regulators all believe that the checklist either happens or should happen, but the people at the frontline have used it or not used it in the only way they know how to get the job done.

There are too many local solutions

A third problem concerns the local approach to ideas and solutions. There can be reluctance to adopt or share new ideas or good practice, which prevents the ability to standardise across systems. For example, prescription sheets are different in every single hospital. How amazing would it be if there was one standard sheet to use across the whole of the healthcare system? Standardisation can reduce the wasted time and energy of individuals inventing solutions and creating their own tools rather than adopting and adapting generic tools or solutions developed by others. Dixon Woods and Pronovost (2016) point out the unintended consequences of creating local solutions such as different coloured allergy bands or labelling for drugs. When these are different from one hospital to another, then those that move around (in particular junior doctors) are confused and set up to fail as a result. The visual clues in one hospital that makes them safe can, in another hospital, make them unsafe.

Understanding people, culture and conditions

For us to move forward for the next decade or so, those that set standards, targets, policy and other directives need to make a concerted effort to understand the people, culture and conditions in which frontline workers are situated, and in which work-as-done is done. As Jim Reason says, when you go into a new environment find out everything you possibly can about that environment (Reason, 2015). Equally, frontline staff should also realise that there are some interventions (work-as-imagined) that could make a difference to their world, and enhance their ability to exercise judgement without creating a threat to their autonomy and their ability to innovate.

References

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