Standardisation in healthcare
What is the impact of standardisation on hospital efficiency, cost-savings and patient outcomes?

A summary of recent literature
A report by The Economist Intelligence Unit
Introduction

The process of standardisation is common practice in several industries, ranging from aviation to food handling. Through the creation of a common set of processes or standards that all parties agree to aspire to it promotes consistency and aims to reduce variation. This, in turn, improves efficiency and reduces costs—at least in theory. In the world of healthcare, the World Health Organization (WHO) defines standardisation as “the process of developing, agreeing upon and implementing uniform technical specifications, criteria, methods, processes, designs or practices that can increase compatibility, interoperability, safety, repeatability and quality.”

However, those implementing standardisation in healthcare face many, often unique, challenges. Healthcare is a complex industry that needs to strike a balance between achieving consistency and catering to the variations in individual patient needs; patients, providers and payers typically have differing priorities, which can create tensions when implementing initiatives such as standardisation programmes. We set out to understand the evidence base around standardisation in healthcare and to ask who benefits from its implementation.

Our rapid review focused on the most reliable, high-quality literature from the past five years, with a particular emphasis on controlled studies where they existed. We reviewed evidence for standardisation across four “domains” of healthcare: clinical care; workforce; information and communications technology (ICT); and procurement. The motivation behind this summary of the literature on standardisation in healthcare was to shine some light on where value accrues. Does it accrue in the direction of the patient—through reductions in mortality, say, or improved satisfaction—or does it primarily benefit provider and payer organisations through cost savings or increased efficiency? Described below are three overarching themes that emerged from the literature.

1. Standardisation offers benefits to both patients and providers

Across all four domains in healthcare we looked at—clinical care, workforce, ICT and procurement—standardisation efforts resulted in widespread improvements in outcomes that would be of interest to both healthcare providers and patients. In all instances, direct costs were reduced, and in just over half of the studies covered length of hospital stay was reduced. Patients typically received appropriate care more quickly and reduced their use of healthcare services, suggesting that appropriate, timely care meant they spent less time in hospital. At the other end of the scale, the rates of complications and mortality were only reduced in two and one out of seven studies respectively, and unplanned hospital readmissions were not reduced in any of the studies. However, importantly, there was no worsening of any outcomes (Figure 1).

When dividing outcomes into those that would be of primary interest to patients versus those that would be of most interest to payers and providers, we found a fairly even split, both in terms of how often the outcomes were measured and the degree of improvement in both. On average, between one and two outcomes per standardisation study registered an improvement (Table 1). So, while not a universal panacea, standardisation programmes can improve outcomes for both patients and providers.

This is an executive summary of a longer EIU evidence review for Siemens Healthineers.
**Figure 1:** Number of studies that investigated each outcome, compared against the total aggregate outcome improvement score, calculated for each outcome using a score of +1 for each study that reported an improvement and 0 for no change (no studies reported a worsening of any outcome).

**Table 1. Number of studies, outcomes measured, number of outcomes improved and average number of outcomes improved per study across the four healthcare domains**

<table>
<thead>
<tr>
<th>Domain</th>
<th>Total number of studies</th>
<th>Number of patient outcomes measured</th>
<th>Number of process outcomes measured</th>
<th>Number of outcomes improved</th>
<th>Average number of outcomes improved per study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical care</td>
<td>22</td>
<td>14</td>
<td>16</td>
<td>36</td>
<td>1.6</td>
</tr>
<tr>
<td>Workforce</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>1.2</td>
</tr>
<tr>
<td>IT</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>1.4</td>
</tr>
<tr>
<td>Procurement</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>7</td>
<td>2.3</td>
</tr>
</tbody>
</table>

An example of the successful implementation of a standardisation protocol can be seen in the University of Virginia Health System. Here, an “enhanced recovery after surgery” protocol (ERAS) was piloted successfully in their colorectal surgery department, then adapted and implemented for gynaecological surgery. The protocol aimed to optimise patient experience whilst standardising perioperative care and improving surgical outcomes. It consisted of a range of protocols, including on patient education—such as setting patient goals and expectations around the surgery—a reduction in pre-operative fasting duration, the use of multimodal pain control, and a quick return to normal diet and activity following surgery. It reduced length of stay, postoperative pain and the need for morphine, and increased patient satisfaction. Hospital costs were also significantly decreased. The research team found that key to its successful implementation was a dedicated nurse to oversee the process, though as the process became entrenched such oversight became less important.
2. Replication frustration

There is no shortage of evidence investigating the impact of standardisation in healthcare. However, nearly all of it falls into the domain of clinical care. This is not surprising, since unwarranted variation in clinical practice is a key component of the variation that can be addressed by standardisation, and because clinical guidelines, pathways and checklists are an embedded part of healthcare. Also most evidence is of low to moderate quality; the majority of standardisation studies are observational and descriptive in nature, and high-quality randomised controlled trials are thin on the ground. Studies that investigated workforce, ICT or procurement standardisation tended to be very context-specific or constructed with narrow aims in mind.

We could call for more research—a favoured conclusion of many reviews in healthcare. But as we describe above, the evidence, such as it is, is good enough for us to conclude that successfully implemented standardisation programmes and technologies can and do benefit both patients and providers/payers. More research, including practitioner research, is needed, but we would suggest that it should not be asking the question of whether standardisation is more effective than non-standardisation. Instead, researchers need to focus on the challenges of implementation.

Referred to as “replication frustration”, the struggle of taking results from standardisation trials into clinical practice is not something that has gone unnoticed. There are several factors which can influence success, ranging from attitudes of the workforce and the technologies and instruments a hospital may have at its disposal to cost restrictions. Replication challenges could also be due to study design limitations; trials investigating the impact of standardisation are often highly specific and context-driven, which can make them difficult to replicate. Researchers with any interest in promoting universal understanding of standardisation in healthcare need to follow the WHO’s advice in their High 5s project. Describing the “standard operation procedure” (SOP) with the expectation that it is transferrable to other contexts is not enough—the SOP needs to be accompanied by an implementation guide for local customisation. And one of the key barriers to successful implementation that local customisation needs to address is resistance to change, at the heart of which is often the matter of perception.

3. Perception remains a barrier

Standardisation means different things to different people and has different levels of support among healthcare professionals and management. The word standardisation is a charged one, and so depending on who is asked the question, it will engender different, often emotional responses. A recent survey of different stakeholders in the healthcare sector asked what their perception of standardisation was; the results highlighted a clear problem:

- **Clinicians**: Clinicians were largely unsupportive of standardisation, feeling that it was forced on them. However, they were willing to standardise if the initiatives were evidence-based.

- **Nurses**: Over nine out of ten nurses believed that cost savings were the driving force behind standardisation, and only half thought that patient safety played a role in standardisation. If standardisation had to happen, nurses wanted their voices to be heard.
Management: All hospital managers in the study rated efficiency as the main benefit of standardisation. However, they said they understood clinicians’ concern that standardisation must not negatively impact on quality.

Patients: Seven out of ten patients believed, wrongly, that clinicians were the main supporters of standardisation and that healthcare professionals, rather than management, should therefore be the main drivers behind standardisation. In general, patients demonstrated a mature view of standardisation—agreeing that it was appropriate when it benefited the majority of the population without compromising care.

It would be easy to conclude that the take-home message is that it is just a matter of perception, and that the solution is for management and others to better explain to healthcare professionals what standardisation is and how it benefits patients. But the healthcare professionals are not wrong; managers do focus on improving efficiency as the primary reason for standardisation. And there is nothing wrong with efficiency, particularly when it also helps to improve patient outcomes. The answers to successful implementation lie in the provisos of the clinicians and nurses: that they’ll accept standardisation as long as it is based on evidence, and that their voices are heard in the implementation.

Conclusions and recommendations

Standardisation goes to the heart of the challenge in reforming healthcare: achieving value without compromising patient outcomes. The argument is not about outcomes versus efficiency, since the two are not opposing forces. Our review of the recent literature provides evidence that standardisation works, as exemplified by the ERAS protocol in the Virginia Health System, but only if implemented properly. In order to facilitate this, we suggest the following recommendations:

1. Healthcare professionals respond to the language of evidence, so ensure that an evidence-based process is used to guide the standardisation process, and describe it.
2. Make sure local healthcare professionals are consulted as soon as possible and have the opportunity to take ownership.
3. Focus on implementation and shared learnings. Authors should report not only the standardisation protocol but also the implementation challenges and how they were overcome.
4. Ideally, alongside a description of the standardisation protocol, a local customisation implementation guide should be provided.
5. Future researchers should collect data on a range of outcomes that will be important to all stakeholders, including patients, payers and providers.
6. More and better-quality research is needed around ICT, workforce issues and procurement.
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