

CASE STUDY

DEVELOPING A NATIONAL EARLY WARNING SCORE

Early Warning Score (EWS) systems use combinations of vital signs such as blood pressure and temperature to predict whether a patient's condition is likely to deteriorate. The EWS is typically calculated by assigning scores from 1 to 3 to each vital sign, depending on its value. The individual scores are summed to produce the total EWS which drives the clinical response. Higher scores predict that a patient is more ill and therefore require a faster review by more senior staff.

Historically in the UK, a large number of modified Early Warning Scores (EWS) had been developed on an ad-hoc basis by interested clinicians. Most used a similar set of vital signs but none had been validated properly against a large enough dataset to ensure that the sickest patients were being correctly identified. But doing so had been incredibly difficult because vital signs are typically recorded on paper charts, are often incomplete and frequently illegible.

The Learning Clinic developed its VitalPAC system to enable the electronic capture of vital signs, at the bedside, on handheld iPod touches and similar devices. Not only does the system ensure that nurses record a full set of data every time, the system also improves compliance with the frequency of observations. The resultant database, (more than 100 million sets of data by 2015), enabled researchers to link the data to patient outcomes and build a much more powerful EWS to predict deterioration.

The resultant model was adopted by the UK Royal College of Physicians as the National Early Warning Score (NEWS) which was subsequently rolled out across all UK hospitals.

References

Royal College of Physicians. National Early Warning Score (NEWS): Standardising the assessment of acute illness severity in the NHS. Report of a working party. London: RCP, 2012.

UNLEASHING THE POWER OF OBSERVATION

Getting better begins with measurement.

Rapid improvement in any field requires measuring results. Indeed, rigorous measurement of value (outcomes and costs) is perhaps the single most important step in improving healthcare. Wherever we see systematic measurement of results, we see those results improve³⁴.

While the measurement of healthcare's quality and safety is evolving in response to reform, much of healthcare still remains poorly measured or unmeasured³⁵. Such measures as do exist are the more easily-captured or less controversial, being either process measures that describe compliance with practice guidelines, or traditional clinical indicators. Both fall well short of measuring actual outcomes.

This is sometimes called the "streetlight effect", because we shine measurement's light on data that is easy to see rather than on data that would be the most meaningful. But, while this may be useful in the short-term, it is untenable as a long-term strategy. If we fail to capture the outcomes that matter, not only does "value" remain largely unmeasured, we lose our most powerful lever for learning and improvement, and fly blind in deciding how to improve health and redesign care.

To transform healthcare, we need the right measures, and our most important ones will come from data we don't have yet. But we now possess the means to create data that can characterize each person's health, capture the outcomes we seek to promote, measure people's motivations, behaviours and experiences, and the sustainability of their health and functional status. As crucially, we can create measures that describe the treatments and services themselves, so we can learn which ones are capable of achieving the outcomes we want.

Beyond any specific use, healthcare's deluge of data will create a paradigm shift. Like all such shifts, it won't happen overnight, but for organisations ready to embrace it, it will open new landscapes and expose opportunities that were uncommon or even unheard of before. This is the lesson from an older era, as Bill Gates pointed out³⁶, on the importance of measurement:

“We can learn a lot about improving the 21st-century world from an icon of the industrial era: the steam engine. Harnessing steam power required many innovations, [but among] the most important were new ways to measure energy output [and] a micrometer that could gauge tiny distances. Such measuring tools allowed inventors to see if their incremental design changes led to [improvements]. There's a larger lesson here: Without feedback from precise measurement, invention is “doomed to be rare and erratic.” With it, invention becomes “commonplace”.”

Healthcare need no longer “avoid the risks that are the hardest to measure”³⁷. With new data to drive measurement, and feedback loops' powerful analytics to reduce the time needed to learn, healthcare's attitude toward “observation” will shift. By ceasing to be a burden, its power can be exploited. We can catalyze our capacity to learn, unleash our creativity and use this to transform healthcare.