Making cars and making health care: a critical review

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ABSTRACT

- The uncritical adoption of production-line manufacturing practices (such as "lean thinking") into work design processes in hospitals creates a fundamental tension between the production of health care and protection of the patient.
- There is scant evidence that re-engineering health care services in line with industrial models increases their efficiency. Indeed, reducing the richness of health care practice to impoverished snippets of work may add to the problems of hospital misadventure and inefficiency rather than solve them.

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In the *Harvard Business Review*, Spear reviews horrific data on medical errors in hospitals in the United States. He argues that although health care professionals are well trained and caring, if they are not "completely clear about the tasks that must be done, exactly who should be doing them, and just how they should be performed, the potential for error will always be high".[1] Industry leaders such as the Toyota car company have demonstrated how the contributions of many different specialists can be melded by managers to produce a capable, reliable, collective effort. When the same principles are applied to health care, the bold (and largely unchallenged) argument is made that not only are short-term gains immediately apparent, but that these are sustainable in the long term, with increased profits and additional lives saved through the prevention of errors.

The most recent work model made successful by Toyota and applied to health care is "lean thinking". This highly stylised and simplistic recipe for successful production forms a "narrow managerial rationality"[2] that has been accepted somewhat uncritically, without due consideration or debate, in an environment that is experiencing real difficulties in providing the quality of care demanded by patients and staff.

We argue that this well intentioned response to the crisis in hospital errors[1] may inadvertently add to hospital misadventure by splintering professional practice through work redesign and process re-engineering. We contend that the incessant restraint and redirection of professional health care practice to predetermined components of care adds to the dominance of a managerial culture of care and fosters ambiguity and apathy — aspects of workplace culture that are unlikely to increase patient safety.

Factory production and health care

Application of industrial models of factory production to the management of health care services is not new. The well known components of "Taylorism" — the scientific management of labour through time and motion studies, the standardisation of tools and implements, and task allocation — have been employed in health care for some time.[3-6] Likewise, the mass production, consumption and standardisation of health services characteristic of "Fordism" have been identified in the delivery of health care in the US.[4]

Despite debates on the interpretation of the evolution of Taylorism and Fordism,[7] it is clear that by the early 1980s a new system of management involving "just in time" (JIT) principles and lean thinking was gaining favour. JIT production involves a particular pattern of sequences and stages, with careful attention paid to coordination and timing.[8] JIT principles require that parts arrive just in time to be used in the production process, avoiding the accumulation of a large stock inventory that sits waiting to be used. Multiskilling of the workforce is necessary so that labour can be readily deployed to a number of sources. To identify system failures and bottlenecks in production, a Total Quality Management process is required, with quality-control circles of workers and managers who work closely with each other in a non-traditional "flat" management structure.

Lean thinking, developed by the Toyota Production System and popularised in management discourse by the work of Womack and Jones,[9] is a management strategy that draws on JIT principles. This process identifies the steps in a procedure, distinguishes the "value-added" steps from the "non-value-added" steps, and eliminates waste.[10] Lean thinking is gaining rapid popularity for use in Western acute health care delivery services. In the US, it is supported by the influential Institute for Healthcare Improvement, which claims that

> [A]doption of lean management strategies — while not a simple task — can help health care organizations improve processes and outcomes, reduce cost, and increase satisfaction among patients, providers and staff.[10]

In the United Kingdom, the National Health Service Modernisation Agency is introducing clinical systems improvement methods that include lean thinking principles.[11]

Quantity as quality, and the splintering of professional practice

One of the most enduring aspects of industrial process engineering models applied to health care, including lean thinking, has been a narrow focus on the meaning of the word "quality", which is recognised as a reduction of adverse events in cost-neutral contexts. While this may work well in manufacturing, the complexity of the human condition means that, when considering health delivery, there is a fundamental tension between production and protection of the patient[12] — and, we may add, professional models of care. While the Gramscian notion of quality as art or beauty[13] may also be unattainable, ideas on excellence of care, autonomy in practice and patient focus seem to be hidden or deemed less valuable in the overall production of health care that stresses speed and efficiency.

The continued equating of quantity with quality and the redesign of work processes leads to continued fragmentation of health care work, loss of autonomy for the health professions, and a potential increase in hospital misadventure. The very act of breaking up an episode of care into a number of steps that may, or may not, add value to the overall process allows for parts to become lost. Of particular concern is the appraising of value so that perceived non-valuable aspects of care can be discounted.

For example, consider the case of an inpatient scheduled for surgery. The patient fasts and is physically prepared, forms are

completed, and the patient is taken to the operating theatre (often by a ward assistant) and then returned after the anaesthetic and surgical procedure. In this fairly streamlined and now standard process, a number of health care workers are involved: ward assistant, nurses, trolley porters, surgeons, anaesthetists and associated operating-room staff. The comorbidities of the patient, the status of which is often difficult to assess during the transitional phases, may or may not be considered during this process. As Spear notes, the potential for ambiguity is huge, and responsibility for care becomes blurred, thus increasing the potential for hospital errors.[1]

The time that the health professional has with the patient, and the time spent communicating with the next health professional in the chain (often a significant part of the overall cost of a distinct episode of care) is now rationed to that which is deemed essential. This hinders professionals' ability to establish a significant therapeutic relationship with the patient. Concerns that may arise with the patient that are not easily quantified, and consequently not documented, may also be lost. Ultimately, additional time can be spent sorting out interdisciplinary conflicts and managing what has become a highly fragmented process.[14] Moreover, it establishes a climate of what Hofstadter has termed "unreflective instrumentalism",[15] by reducing the complexity of health care and the capacity for the high level of analysis and reflection necessary for health care professionals to provide a satisfying service.

Re-engineering and the potential for harm

The reasons given for process redesign in health care have been to improve efficiency and reduce error, yet there are few long-term studies to validate this direction. Poor data make it difficult to assess the long-term effectiveness of such organisation-wide interventions in the UK.[16] A major Australian study reported that whether hospitals restructured or stayed the same, they operated with similar efficiency throughout the study period,[17] challenging the notion that restructuring produces cost savings. One of the largest international studies concluded that engineering health care services in line with industrial models has caused high levels of burnout, dissatisfaction and intention to leave in the nursing profession.[18] In contrast, enhanced teamwork, collaboration and improved communication have been shown to increase the quality of health care.[19]

Conclusion

Despite few studies assessing the long-term effectiveness of hospital process redesign based on industrial organisation models, lean thinking has been applied, largely uncritically, to the hospital sector. Reducing the richness of professional health care practice to impoverished snippets of work that are valued by time, cost and spurious notions of quality may indeed add to the problems of hospital misadventure and patient management, rather than solve them.

An alternative solution may be to involve hospital managers in providing programs and conditions that facilitate communication and collaboration between health professionals and patients in order to promote, rather than constrain, safe professional practice.[19] As Spear comments, "Health care professionals are typically intelligent, well-trained people who have chosen careers expressly to cure and comfort".[1] All they need is the opportunity to do so.

Competing interests

None identified.

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