The systems approach to medicine: controversy and misconceptions

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ABSTRACT
The ‘systems approach’ to patient safety in healthcare has recently led to questions about its ethics and practical utility. In this viewpoint, we clarify the systems approach by examining two popular misunderstandings of it: (1) the systematisation and standardisation of practice, which reduces actor autonomy; (2) an approach that seeks explanations for success and failure outside of individual people. We argue that both giving people a procedure to follow and blaming the system when things go wrong misconstrue the systems approach.

INTRODUCTION
The ‘systems approach’ to patient safety has recently led to questions about its ethics and practical utility. Recently, Levitt, a retired neurosurgeon, wrote how ‘the medical profession has put its faith in a systems approach to the problem … [a] so-called solution that doesn’t address the problem’.1 These arguments stem in part from misunderstanding the systems approach as (1) equating to standardising practice and reducing individual autonomy (eg, creating more rules, policies and compliance demands)2 and (2) blaming the system rather than holding people accountable.3−5 Neither of these characterisations captures the essence of the systems approach as practised in industries that have used it to increase safety to extremely high levels, such as commercial aviation. Here we briefly explain the systems approach in the broader ways it has been applied elsewhere, and then reflect on the questions of standardisation and accountability it has generated in healthcare.

WHAT IS A SYSTEM AND A SYSTEMS APPROACH?
A system, such as a hospital, is a dynamic and complex whole, interacting as a structured functional unit to achieve goals (eg, treating patients). One system may be nested within another system—for example, a hospital is nested within a larger healthcare system; an intensive care unit exists inside a hospital. The behaviour of a system reflects the linkages and interactions among the components that make up the entire system. All medicine is practised within a system. The behaviour of the components or entities that exist within that system is influenced by the system design and structure, such as the remuneration schemes, time and financial pressures, the accuracy of available information about the patient or the procedure being performed, and much more. These system design factors can help or hinder medical professionals from doing their job. While it is laudable that professionals accept responsibility for their actions, it is unrealistic to believe that their behaviour is not affected by the context in which it occurs. We can have an impact on behaviour by careful design of the structure and incentives of the systems in which it occurs.

Reducing the system approach to following a checklist or standardised procedure trivialises what can be accomplished by careful system design. Checklists, protocols and other devices that aim to streamline and reduce variation play a role in a number of safety-critical fields. The goal of a systems approach, however, is not to reduce human behaviour to rule-following, but to design a system in which individual responsibility and competence can effectively help create desired outcomes. The usefulness of standardised responses depends on the thinking and engineering that went into the system design, as well as on the human ingenuity in selecting and applying and even modifying standard responses. Procedures or checklists per se do not reduce harm. Mistakes in using checklists in aviation, for example, do not directly produce catastrophe because of careful engineering.
and design that preceded operational use. At the same
time, human resilience fills the gap between
work-as-imagined and work-as-done: autonomy is
maintained for a variety of processes (eg, how and
when to configure an airliner for landing—within
certain parameters), and in many situations checklists
are not useful because of time constraints or decision
ambiguity.

Thus, standardisation, or giving people a procedure
to follow, does not constitute a systems approach, and
advice given to hospitals or medical specialties to that
effect should not be taken at face value. Claiming that
a systems approach doesn’t work because standardisa-
tion doesn’t always work is equivalent to prescribing a
treatment of limited efficacy for a particular disease
and then concluding that the disease is untreatable
and that a more powerful and comprehensive treat-
ment regimen would be no more effective.

DOES A SYSTEMS APPROACH CONFLICT WITH
PERSONAL ACCOUNTABILITY?
The systems approach argues that a flawed hospital system, rather than flawed individuals, is responsible
for patient harm.6 Some then invert this, suggesting
that a systems approach entails just blaming the
system, not the individual. This critique seems to be
more prevalent in medicine than in safety-critical
industries that more freely acknowledge and engineer against human fallibility.7

But a systems approach does not eschew individual responsibility and accountability. First, the rate at
which healthcare produces ‘second victims’ compared with other domains shows just how much individual
accountability its practitioners assume.8 Second, in a
system, each component has specific responsibilities to help attain its ultimate goals. While surgeons, for
instance, have and take responsibility for performing surgery safely and effectively, others have responsibil-
ity to ensure that required resources are available. A
New Zealand surgeon, for example, was criminally
prosecuted for a number of deaths to patients in his
practice. What received scant attention was that he was
forced to operate with help from medical students,
because of a lack of available competent assistance.9
Prosecuting the surgeon, who had little control over
the context in which he worked, did not solve the
problem. After all, it would have similarly affected
most people practising surgery in that environment.

Blame is the enemy of safety.10 Emphasising blame and punishment results in hiding errors and eliminates
the possibility of learning from them. So-called ‘just culture’ programmes and systems have been effective
in aviation by encouraging the reporting of errors so
that steps can be taken to reduce them—or their con-
sequences.11 A just culture can also fairly adjudicate
how to respond to undesired practice, particularly
when it is made clear who gets to determine the
response, and if those persons are familiar with the
messy details of practice.12 Such things are consistent
with a systems approach, which, after all, considers
to be reducible through processes, procedures,
training, and system design, including the design of
the incentive structure around practitioners. Similarly,
the management of (in)competence can be seen as a
system issue, by carefully looking at training, selec-
tion, continuing development, and life-long compe-
tency checking. In aviation, individual competence is
taken as a system responsibility—too important to
leave the retaining, refreshing and checking of it to an
individual professional.13 Structures are in place to
oversee and eliminate incompetent practice, instead of
leaving its discovery and management only to individ-
ual moral valence. This can be made more effective in
medicine too so patients can be protected.14 15

Some years ago, Atul Gawande published a reflec-
tion on an emergency tracheotomy he bungled.
Gawande concluded that ‘although the odds were
against me, it wasn’t as if I had no chance of succeed-
ing. Good doctoring is all about making the most of
the hand you’re dealt, and I failed to do so’.3 But,
while good doctoring may be making the most of the
hand one is dealt, the systems approach has always
been about providing a better hand in order to
improve the opportunity to do the right thing. Merely
leaving the hand with which one is dealt and banking
on personal virtue to do the rest is both practically
and ethically irresponsible.

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