Chapter

18 Addressing barriers for change in clinical practice

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> Change is not made without inconvenience, even from worse to better.
>
> *Richard Hooker, 1554–1600*

Changing established behaviour of any kind is difficult. It is particularly challenging in complex critical healthcare settings because of the varied relationships between a wide range of organisations, professionals, patients, and carers. Barriers to change can take a long time to overcome when discussing guidance for implementation in clinical practice; a clinical guideline can take up to 3–5 years to be fully implemented. One may need to consider the scale of change that can be achieved realistically when seeking to implement behavioural change in intensive care units (ICUs); even small changes require trust-building measures and can have a positive impact, especially if the change involves an action that is repeated often. Certain trust-building factors may help to foster an environment that is conducive to behaviour change. An organisation where there is strong leadership, authentic communication, and transparent governance has a much greater chance for success. No matter how necessary change seems to upper management, the barriers must be authentically acknowledged and not swept under the carpet if a strategic change is to be implemented successfully. The key to successful change is in the planning, messaging, and implementation. However, barriers to changing established practice may prevent or impede progress in all organisations, whatever the culture. The three greatest barriers to organisational change are most often the following:

- inadequate culture-shift planning,
- lack of employee involvement,
- flawed communication and leadership strategies.

Organisations also need a clear system in place to support ongoing measurement, implementation, and assessment, and effective ways to address the normalised deviance. This chapter aims to provide practical advice to intensive care providers and administrators on how to encourage and support healthcare professionals and managers to change their clinical practices.

Complications in critical care

Patient safety and patient-centred care are emerging as key drivers in healthcare reform. Things have changed but often as a by-product of financial reform. Belatedly, safety and quality benchmarks are being integrated into all healthcare organisations' strategic goals. There is

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more focus on patient-centred care, but these are early days. Patients still experience needless harm and often struggle to have their voices heard when evidence-based changes are slow to implement and resistance to change causes turmoil.

The critical care setting is one of the most complex environments in a healthcare facility. Critical care units must manage the intersecting challenges of maintaining a high-tech environment and ensuring staff competency in operating the equipment, providing high-quality care to the facility's sickest patients, and tending to the needs of staff members working in stressful environments [1]. While other hospital units may need to manage one or two challenges at a time, critical care settings must manage them all simultaneously, while remaining focused on the delivery of safe patient care.

Before building initiatives to enhance safety, healthcare managers must understand the extent of patient injuries and events in ICUs. Critically ill patients are at high risk for complications due to the severity of their medical conditions, the complex and invasive nature of critical care treatments and procedures, and the use of potent drugs and technologies that carry risks as well as benefits.

The ICU is an ideal laboratory and target-rich environment to study change and implementation. In addition to complications of care, adverse events and errors – many of which are serious – are major risks in ICUs. The 2005 Critical Care Safety Study, found that adverse events in ICUs occur at a rate of 81 per 1000 patient-days and that serious errors occur at a rate of 150 per 1000 patient-days, supporting the findings of an earlier study indicating that nearly all ICU patients suffer potentially harmful events [2]. The study found that the incidence of adverse events (AEs) was 20.2% (13 led to deaths with 55% of these preventable) and there were 223 serious medical errors in a tertiary ICU. The most common serious AE was medication errors, with a cumulative risk of 100% every three days of ICU stay. The Sentinel Evaluation Study found that AEs were associated with patient:nurse ratios, and cost at least $3857 per event and on average led to one extra day in the ICU. Remarkably, nearly half (45%) of the AEs in the safety study were deemed preventable [3]. Common ICU errors are treatment and procedure errors, especially errors in ordering or carrying out medication orders; errors in reporting or communicating clinical information; and failures to take precautions or follow protocols.

Conceptual framework: a 'whole system' approach

There has been an important re-conceptualisation of clinical risk through emphasising how upstream 'latent factors' enable, condition, or exacerbate the potential for 'active errors' and patient harm. Understanding the characteristics of a safe, resilient, and high-performing system therefore requires research to optimise the relationship between people, tasks, and dynamic environments. The socio-technical approach suggests that adverse incidents can be examined from both an organisational perspective that incorporates the concept of latent conditions and the cascading nature of human error, commencing with management decisions and actions. Some ICU teams are able to recover from errors reliably without leading to patient harm, while others do not learn and repeat the same errors.

This 'systems approach' draws attention to the wider organisation, management, and culture of healthcare. Research reveals, for example, that threats to safety in the ICU are shaped by inter-departmental relationships, attitudinal differences, and cultures that normalise risk. To date, however, this research has tended to focus on single clinical environment or

organisational settings, i.e. primary or secondary care, operating theatres, or the emergency department. There is little attention to the threats to patient safety that arise when patients cross these settings – for example, when transferred to a general ward from ICU. Elaborating on this view, it is important to understand the barriers and drivers to patient safety as complex and enmeshed 'constellations' of factors found within and between care processes. This includes regulatory pressures, organisational boundaries, impact of perverse financial incentives, the shifting of professional responsibility, and lack of authentic clinician input and buy-in.

The recent safety checklist study by Urbach *et al.*, demonstrates that the manner in which a checklist is implemented and overseen can contribute to the checklist tool's uptake and compliance by clinicians [4]. Genuine engagement by physicians is critical to the adoption of new care models. Ineffective top-down engagement and inauthentic partnering with clinicians can inhibit positive behaviour change and encourages normalised deviance. Introducing a clinical intervention in an environment characterised by a lack of trust may cause clinicians to feel jeopardised professionally and personally, and encourages gaming.

Glasby suggests three prominent factors influence the participation and engagement of providers in change agency, and are also consistent with the 'whole systems' and 'systems thinking' approaches [5]. These include occupational factors related to the particular knowledge, culture, and practice domains of care providers, such as doctors, social workers, and nurses; organisational factors related to routine working patterns, facilities, capacities, and resources of individual agencies; and compatibility and coordinating factors, which relate to how occupational, organisational, and institutional factors align.

These three factors comprise the following:

- *Knowledge*: related to the epistemological differences between groups, e.g., how they make sense of discharge; understand the role of other professionals; and how meanings are articulated.
- *Culture*: related to the shared meanings, attitudes, and values that shape communication, e.g. when knowledge should be shared and with whom; how norms, identities, and trust reinforce boundaries and knowledge hoarding.
- *Organisation*: related to the influence of departmental, regulatory, and institutional factors that shape knowledge sharing, such as socio-legal rules, professional jurisdictions, organisational priorities, and resource constraints.

Organisational culture

The most important factor to consider when initiating change relate to the organisational culture, or how providers 'do things here,' and is increasingly appreciated in understanding why persistent variation in practices continues. We define organisational culture as: the socio-organisational phenomena, in terms of behaviour or attitudes, that emerge from a common way of sense-making, based on shared values, beliefs, assumptions, and norms [6]. Evidence suggests that organisational culture may be relevant for successful and sustained improvement efforts.

The cultural barriers are often hidden in the underlying, (invisible) social constructions and attitudes and therefore difficult to identify and assess. A deeper understanding of the relationship between ICU norms and their underlying cultural barriers may contribute to the development and implementation of effective and sustainable interventions to attenuate adverse care events.

The role of the clinical microsystem

Critical care teams exist within the context of a system. A system is a set of interacting, interrelated, or independent elements that work together in a particular environment to perform the functions that are required to achieve a specific aim. An ICU clinical microsystem is a group of clinicians, nursing staff, and others working together with a shared clinical purpose to provide care for a population of patients [7]. The clinical purpose and its setting define the essential components of the microsystem, which include clinicians, patients, and support staff; information and technology; and specific care processes and behaviours that are required to provide care. The best microsystems evolve over time, as they respond to the needs of their patients and providers, as well as to the external pressures such as regulatory requirements. They often coexist with other microsystems within a larger (macro) organisation, such as a hospital.

The conceptual theory of the clinical microsystem is based on ideas developed by Deming and others. Deming applied systems thinking to organisational development, leadership, and improvement. The seminal idea for the clinical microsystem stems from the work of James Quinn [8]. Quinn's work is based on analysing the world's best-of-the-best service organisations, such as FedEx, Mary Kay Cosmetics, McDonald's, and Nordstrom. Quinn focused on determining what these extraordinary organisations were doing to achieve consistent, high-quality, explosive growth, high margins, and robust consumer loyalty. He found that these leading service organisations organised around, and continually engineered, the front-line relationships that connected the needs of customers with the organisation's core competency. Quinn called this front-line activity that embedded the service delivery process the *smallest replicable unit* or the *minimum replicable unit*. This smallest replicable unit, or the microsystem, is the key to implementing a reliable, effective strategy to provide safe and consistent outcomes.

Nelson and his colleagues have described the essential elements of a microsystem as (1) a core team of healthcare professionals; (2) a defined population they care for; (3) an information environment to support the work of caregivers and patients; and (4) support staff, equipment, and work environment [9]. Linking performance and outcome data to the microsystem model provides a helpful way to identify potential areas for improvement that does not focus on the individual, but instead highlights the system that is producing the processes and outcomes of care.

High-performing clinical microsystems research revealed 43 clinical units that were identified using a sampling methodology. Semi-structured interviews were conducted with leaders from each of the microsystems. Additional research built on the Donaldson and Mohr study in which 20 case studies of high-performing microsystems were collected and included on-site interviews with every member of the microsystem and analysis of individual microsystem performance data. The analysis of the interviews suggested that ten dimensions, shown in Table 18.1, were associated with effective and successful microsystems.

Organisational environment

In complex organisational environments, teams do not exist in isolation. The performance of individual teams, as well as the team's attitudes towards patient safety, is a function of the milieu, or the culture, in which the team works. Thus, the effectiveness of any particular team cannot be properly assessed without considering the larger system within which the team functions. In a hospital environment, small teams, such as operating teams, coordinate with other teams within the perioperative microsystem environment that are involved

Table 18.1 Ten dimensions of effective clinical microsystems [1,9]

1.	Leadership
2.	Organisational support of clinicians
3.	Staff focus
4.	Education and training
5.	Interdependence of team members
6.	Patient focus
7.	Community and market focus
8.	Performance results
9.	Process improvement
10.	Information and information technology

in patient care, and these teams are embedded within larger teams that are directly and indirectly involved in patient care. When looking at the effectiveness of teamwork training for patient safety, one must know how training is supported and reinforced by the organisation in which it occurs.

Factors that need to be addressed [10]

- Organisational climate: Does the organisational culture support striving for patient safety? Does it allow for non-punitive reporting of problems and near misses?
- Organisational support: Is time for training provided whereby trainees are temporarily relieved of their regular duties? Is training viewed as more than just a necessary checkmark? Is teamwork training widespread and rewarded across the organisation?
- Extent of training: Does the organisation only train isolated teams? Does the training of trauma teams incorporate the 'wider' team members (e.g., including for example, blood bank, radiology, transport, step-down medical, and surgical wards)?

Tackling change in the ICU

Facilitating change in clinical practice requires an appreciation of barriers at the individual level that may hinder the adoption and implementation of innovation. We have divided the barriers to change in the ICU setting into four sections [11]:

1. understanding barriers to change;
2. identifying barriers to change;
3. overcoming barriers to change;
4. mapping barriers to methods.

Understanding barriers to change

Recognising the barriers to change of clinical practices requires appreciating the heterogeneity and complexity of interventions implicit in improvement science, including rapid-cycle improvement methods, such as Plan–Do–Study–Act (PDSA) cycles that involve iterative cycles of planning, design, evaluation, and refinement of improvement strategies [12].

The Avedis Donabedian structure–process–outcome model provides the fundamental conceptual framework for evaluating the culture, innovation in the delivery, and organisation of healthcare, and is encapsulated in the well-described PDSA cycle of quality improvement [13].

It is widely understood today that the first step towards improving the safety and quality of care is addressing the varying mental models held by care providers and state agencies.

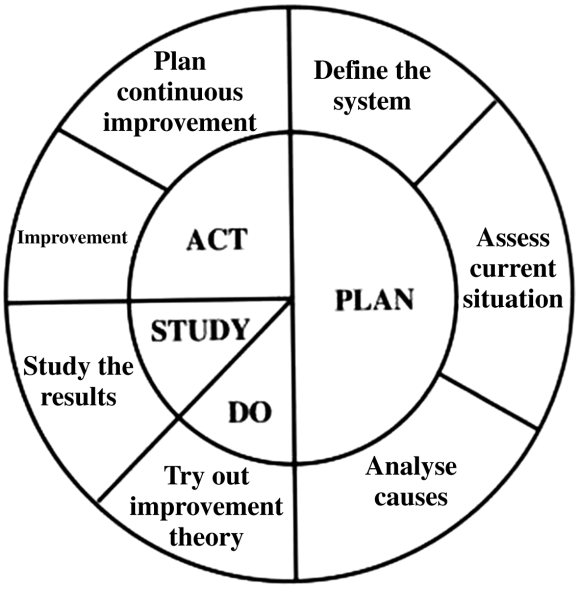

Figure 18.1 The PDSA cycle.

Adapted from [20].

The implementation and evaluation of changes in structure and process are bound together in a recursive learning cycle of continuous quality improvement. As shown in Figure 18.1 the PDSA model builds on the Donabedian framework and provides clinicians with a structured theory–praxis methodology for routinely evaluating performance and answering the following questions:

- What are we trying to accomplish?
- Are we achieving what we claim and how effective and efficient are we?
- From where we are now, what changes can we make that will result in improvement?
- How will we know that we have achieved the change and that it is an improvement?

The PDSA continuous quality improvement cycle is founded on a thorough understanding of the process being evaluated, gained by detailed mapping of the process of interest, selection of appropriate measurement tools, and identification of an acceptable range of variance.

The PDSA consists of a four-stage process:

1. Plan: What is to be changed, in what way, and how is subsequent performance to be measured and recorded?
2. Do: Implement the plan and collect measurement data on process and outcome.
3. Study: Analyse the data and amend the plan to address the results of the analysis. Rework the process map to identify new nodes, connections, and issues.
4. Act: Implement the amended plan and collect the measurements – again.

Building trust for organisational resilience

These approaches generate evidence regarding barriers to improvement and help identify solutions and assess their effectiveness using quick turnaround in time and resources. An improvement-science approach recognises the need for customised, site-specific and context-sensitive solutions based on careful study of current practices and local mental models and careful surfacing and recognition of barriers to improvement.

One must start by assessing which barriers and facilitators of change are present at the individual level, including:

1. lack of awareness and knowledge among practitioners and staff of how current ways of working need to change to align with evidence;
2. motivators, both external and internal, such as financial incentives and personal goals and priorities, respectively, or lack of motivators;
3. personal beliefs, attitudes, and perceptions of change, and the associated risks and benefits of the change;
4. individual skills and capacities to carry out the change in practice;
5. practical barriers, including lack of resources, equipment, or staffing; and
6. the external environment, which can influence the individual's ability to adopt a new intervention, such as financial structuring.

Identifying barriers to change

Conduct a baseline assessment to identify the gap between recommended practice and current ways of working. This baseline assessment of barriers permits tailoring implementation of the innovation. The qualitative data collection methods used to conduct an assessment of barriers include the following:

1. Learn from key individuals with knowledge, authority, and skills to speak to implementation of the innovation.
2. Observe individuals in practice, especially for routine behaviours.
3. Use a questionnaire to explore individuals' knowledge, beliefs, attitudes, and behaviour.
4. Brainstorm informally in small groups to explore solutions to a problem.
5. Conduct a focus group to evaluate current practice and explore new ways of working.

Overcoming barriers to change

This section examines different strategies for overcoming barriers to implementing change in ICU practice. We outline when specific strategies are used, and briefly discuss evidence of their effectiveness.

The strategies include the following:

1. Educational materials (booklets, CD-ROMs, DVDs, etc.) can raise awareness of a new way of working and are effective in changing behaviour when combined with other strategies. Inadequate education regarding evidence-based interventions such as tight glucose control, handwashing, and central line placement in the ICU is another barrier to achieving reliable ICU quality. Education regarding interventions proven to improve quality of care and patient outcomes is vital in the ICU setting. Multidisciplinary education regarding quality management in the ICU setting is vital to achieving glucose control in critically ill patients. Real innovation in practice led by change in clinician behaviour is best achieved by a combination of interactive education and utilisation of locally developed guidelines or protocols, in addition to continuous quality assessment and feedback [14]. Development of integrated education strategies to improve quality control may be more effective when performed collaboratively in an interdisciplinary manner than within disciplines.
2. Informational meetings (conferences, training courses, lectures, etc.) can increase awareness of change. However, informational meetings with interactive participation, like workshops, are more likely to result in behaviour change.

3. Educational outreach visits (or academic detailing) involve trained individuals visiting other individuals in their organisation to offer information and support in adopting new ways of working [14]. Outreach visits are effective in changing certain kinds of behaviour, such as the delivery of preventive services or prescribing behaviour.
4. Opinion leaders can influence their colleagues to adopt an innovation. The use of opinion leaders is an effective way of disseminating information.
5. Audit and feedback, where information is given back to individuals or teams about their practice as a way to monitor and improve practice, is an effective method for changing behaviour [15]. Audit and feedback are particularly effective when staff buy-in and are involved in the process, when feedback is timely, and when combined with financial incentives.
6. Reminder systems and decision-support systems are effective in changing behaviour, especially at the point of decision-making. Decision-support systems are effective for specific decisions, such as delivery of preventative services, and less so for complex decision-making [16].
7. Patient-mediated strategies, which provide information to the general public, are effective in changing the behaviour of practitioners. Such strategies include mass media campaigns, which increase awareness of an innovation among the public and practitioners.

Mapping implementation barriers to methods

It is essential to choose the methods to map and evaluate the barriers to implementation carefully. Appreciating what others have done and using a series of carefully guided questions to assist in conducting a baseline assessment of barriers can greatly help in overcoming those barriers to assist with implementation change [17].

Overcoming unseen barriers

Most serious adverse events or industrial disasters do not arise from single point errors, but from many people committing multiple seemingly innocuous errors over time that breach reasonable practice standards. Vaughan describes allowing such process and decision errors to go unattended as 'normalised deviance' [18]. By deviance, we mean organisational behaviours that deviate from normative standards or professional expectations. Outside people see the situation as deviant, whereas inside people get accustomed to it, seeing it as 'routine, rational, and entirely acceptable'. Low handwashing compliance before patient contact, minimal attending oversight of ICU care on weekends, suppressing information about poor care, and the poor handoff communication between ICUs and wards are classic examples of normalised deviance.

Discussion of this sensitive matter using terms such as 'normalised deviance' frequently leads to defensive reactions that halt conversation and require deeper reflection and examination. Ashforth and Anand have described organisational normalised deviance as arising from three mutually reinforcing processes: institutionalisation, rationalisation, and socialisation [19]. During the institutionalisation phase, repetitive practices are enacted without significant thought about the nature of the behaviour. The cause of the behaviour is often external to any one person; instead it emerges from group interaction and socialisation.

A few of these barriers and potential solutions are listed in Table 18.2, which is based on input gathered from healthcare practitioners.

Any of these factors may hold back an organisation, but strong leadership cannot be overemphasised as one of the critical elements for effectively driving change initiatives in

Table 18.2 Barriers to intensive care change and potential solutions

Factors inhibiting change	Potential solutions
Lack of leadership support	Facilitate contact with peers successful in deploying the methodologies.
Resistance or scepticism from staff	Develop stakeholder analysis and use a team-based problem-solving approach.
Hesitancy to invest time and money	Create a business case supported by sound data (i.e. if the project is to focus on reducing infections, document the costs associated with such occurrences including length of stay, supplies, and added labour).
Shortage of internal resources to lead change initiatives	Enlist outside help to drive initial projects or receive training and mentoring in conjunction with projects that produce immediate results.
Waning commitment or flavour-of-the-month syndrome	Implement a solid communication plan that reaches all levels of the organisation, and build momentum through early, visible wins.
Uncertain roles and/or lack of accountability	Adopt management systems and structures that clearly link projects and performance with overall strategies.
This is how we do things here	Addressing actions or care practices that deviate from normative standards or professional society guidelines in a non-accusatory and constructive manner.

intensive care. To increase efficiency and close the chasm between optimal patient care and that which actually exists, leaders must abandon adherence to obsolete management models.

Conclusions

Successful change in intensive care practices will be a function of a willingness to adopt new changes, and challenge dogma and the widespread normalised deviance. Dissatisfaction with the present, a shared vision of the future, and mastery of a core set of process improvement tools are needed. Each of these elements is key and needs to be fully leveraged to bring about change. Change leadership is about tirelessly working on each of these elements. Change leadership is also about ensuring all the people in the ICU and those that oversee the ICU in the organisation understand the changes, believe in its personal and organisational impact; and have the capabilities and confidence to flourish in the necessarily changing intensive care environment.

There are, however, a number of barriers to successful change – both in terms of implementation and equally, if not more importantly, in sustaining it. Why are both kinds of change not more successful? Often, the failures can be traced to a few missing ingredients:

1. A fundamental acceptance or realignment in thinking.
2. Appropriate guidance or knowledge.
3. Clear strategies and tactics for maintaining long-term results.

The upside to past failures is that they usually provide some valuable lessons for the future. For instance, ICUs currently contemplating CLABSI or handwashing initiatives as one aspect of transformation can learn from the experiences of other units, both inside and outside their hospital or healthcare system. While avoiding a 'cookie cutter' approach to change initiatives, such examination can provide useful insights into what worked well, and what gaps may have been overlooked. Successful intensive care improvement initiatives can yield a wide range of benefits that are both qualitative and quantitative, including:

- fewer medical errors;
- increased revenue and improved reimbursement;
- better use of advanced technologies (and faster return on investment);
- better accessibility and capacity for patient flow;

- improved organisational communication;
- better nursing and physician satisfaction;
- better patient satisfaction;
- shorter patient wait times;
- investment in staff expertise.

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