

CLINICAL QUALITY AND PATIENT SAFETY IN CHILD AND ADOLESCENT MENTAL HEALTH

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One may wonder why there is a need to have a chapter on clinical quality and patient safety in child and adolescent mental health. Surely, the very basis of medicine is to provide good clinical care which is safe. As a physician, one of the primary goals of healthcare is encapsulated in the dictum *primum non nocere* (first, do no harm). Yet, as reported in the landmark 1999 book by the Institute of Medicine, “to err is human”, and later, in *Crossing the Quality Chasm* (Committee on Quality in Healthcare in America, 2001), much harm has unwittingly resulted from health interventions either directly through commission or indirectly by omission (Kohn et al, 2000) It was suggested that up to 98,000 people died every year from medical errors in the US. No estimates are available of children being harmed or having died as a result of medical errors. However, many anecdotal accounts certainly point to this occurring in children who form a large proportion of any population. In Singapore, pediatric beds are just over 5% of total hospital beds and at the Institute of Mental Health (IMH), Singapore’s only psychiatric hospital, there are 20 out of a total of about 2000 beds.

It is not that physicians and other healthcare professionals are not aware of the primary purpose of their work; most healthcare professionals actually believe passionately that they are doing good. Unfortunately, harm often results from therapeutic interventions. How is that possible? What has gone wrong? As Donald Berwick (1996), a pediatrician who helped set up the Institute of Healthcare Improvement in the US loves to quote, “every system is perfectly designed to achieve what it was designed to achieve”. Healthcare systems are driven by humans. The physician is the main driver of clinical assessment leading to diagnosis. This is followed by treatment based on that diagnosis, in some situations utilizing special skills led by clinicians, often a physician. These skills can be physical, such as the surgical dexterity needed to excise or correct problematic body parts, or analytic—helping patients understand their problems better and learn effective means of handling them, often the case in mental health—or in developing a systems understanding of the family and therefore helping the family work better, as is the case in child and adolescent mental health. The difficulty lies in the human element; humans are prone to error and errors are inevitable when humans are involved.

One of the problems is that physicians are trained to be perfectionists and may sometimes see themselves as incapable of error (Perper & Cina, 2005). Healthcare systems, because of the way they evolved, were never designed around this fact. For example, let us examine the simple matter of medication. Physicians prescribe many drugs; new medications are regularly developed, some have similar-sounding names and yet no attempt has been made to differentiate them. For example, the name clomipramine (used for obsessive compulsive disorder) is similar to chlorpromazine (used for psychosis). Mistaken prescriptions can easily occur if the prescriber or the pharmacist is not careful. Some medications also look alike and patients and pharmacists can easily confuse them.

This chapter is designed to help professionals working in mental health to understand systems and how to improve them. It will introduce ideas about standardizing care and the use of measures to monitor quality and improve it. As the County of Jonkoping in Sweden frequently articulates to its staff, health professionals essentially have two jobs, one is to do the work they are supposed to do, and the other is to improve it. Jonkoping has one of the best run healthcare

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Dimensions of quality in healthcare

- **Safety:** Reducing harm from care
- **Effectiveness:** Increasing the alignment between scientific evidence and practice, reducing both underuse of effective practices and overuse of ineffective ones
- **Patient-centeredness:** Offering patients and their loved ones more control, choice, self-efficacy, and individualization of care
- **Timeliness:** Reducing delays that are not instrumental, intended, or informative
- **Efficiency:** Reducing waste in all its forms; and,
- **Equity:** Closing racial and socioeconomic gaps in quality, access, and health outcomes.

systems in Sweden and an annual festival celebrating their systems approach to healthcare improvement.

WHAT IS CLINICAL QUALITY?

Quality is often defined as a standard which can be benchmarked or compared across settings. This is a concept used in many industries but has been relatively foreign to healthcare until recently. Medical professionals often do not have such a concept in their thinking because they are taught to see individual patients and not systems. The focus of clinical training is on individual performance, in identifying and treating problems. This is slowly changing but the challenge of this type of thinking is even greater in mental than in physical health. In mental healthcare training, for example, trainees used to be taught to think of individual differences and how these contribute to each patient's unique symptoms in a psychodynamic formulation. Very often a linear etiological framework, which is easy to understand in a medical illness (like bacteria causing infection), cannot be extrapolated to psychiatric disorders, whose causes are many and interacting. This is especially so in child and adolescent mental health conditions and results in practitioners seeing every patient as unique; attempts to standardize treatments and outcomes and their measurement can then be seen as unreasonable. Although every patient is unique, what cannot be measured cannot be compared. Psychiatrists have demonstrated that mental health outcomes are measurable by using self-ratings by patients and their caregivers, by independent observations by clinicians, or using other, more objective, outcomes (e.g., resuming school attendance). Clinical quality in mental health is about finding suitable measures for clinical treatments and outcomes and measuring them while respecting each patient's individuality. These measurements can then be used to improve the system. Quality focuses on system-improvement rather than on humans, who are prone to error, and in not blaming people for the errors that occur.

SYSTEMS THINKING

People can foresee the future only when it coincides with their own wishes, and the most grossly obvious facts can be ignored when they are unwelcome.

– George Orwell, *London Letter*

A system is a set of interdependent elements interacting to achieve a common result/outcome—a set of things that work together to achieve a goal. Quality is the result of successful work within a system producing a good outcome. It is achieved

not by heroic individuals working alone but by individuals working in teams within well designed systems. Physicians cannot do it alone in a system that is made up of teams. Managing quality requires planning and should not be accidental. As Edward Deming, a quality expert who helped design manufacturing systems said “You cannot inspect quality into the product, it is already there”, meaning that quality is not something that inspection will produce. It is something that we must purposefully plan for.

How would you feel driving a car which breaks down once in every 10 drives or 10% of the time? How safe would you feel if you flew in an aircraft that crashed every 100 flights or 1% of the time? Yet we do not realize that unexpected, preventable adverse events in hospitals—not a result of the illness—can occur as often as 30% of the time (Chapman et al, 2014; Classen et al, 2011). The problem is not human error, which is inevitable; not having well designed systems to prevent errors from occurring is the problem. How did the motor vehicle industry and the airline industry overcome human error? By developing a systems approach.

One of the biggest issues we face is that we fail to recognize human error and mistakes as a system problem; instead we tend to blame the “culprits” for not being careful enough. If a system allows medications with similar names to be prescribed without some check, errors are bound to occur. Let’s go back to the earlier example of clomipramine and chlorpromazine. A well designed system would warn the prescriber when chlorpromazine is used for obsessive compulsive disorder. This does not mean that it cannot be used but if prescribed the system will give a warning so that errors can be prevented. This type of early warning is called *clinical decision support*. Such support can be in the form of team members who help physicians, such as pharmacists, or automated, using information technology. Today aircrafts rarely crash and motorcars are fairly reliable. How was that achieved? By designing systems around potential mistakes that humans make. The same principles can be applied in medicine and child psychiatry if clinicians can be trained to think about them in the first place.

IMPROVEMENT

Not all change is improvement but all improvement is change

–Anonymous

We would all like to improve and make our work safer and more efficient but we should first examine the motivations for doing so. Sometimes, changes are made to suit one’s schedules without thinking of the impact on patients. For example, a team may schedule family meetings in the morning because it is the most convenient time to get the team together, but it may be very inconvenient for families because of work and school commitments, which may add to family stress.

Improvement is best achieved when there are specific aims which target patients and their care rather than to meet the needs of teams and organizations. We must be clear about *what* we want to accomplish and *how* we will know that improvement has occurred (meaning that results should be measured). Measurement should be used to learn about the system rather than for reward or punishment. Improvement is often accomplished by changing systems rather

than changing processes within systems. Can a car drive faster than its maximum speed? Not likely unless you get a new car with a different engine and a different maximum speed. Can a child psychiatrist see more patients within a period of time if we do not change the way the psychiatrist works? In fact, a traditional child psychiatric consult will take at least one hour and it is limited by the time availability of the physician. To effect real improvement, it may require a change in the way the consultation is conducted, for example by getting another healthcare professional to evaluate and support the consult or automate parts of the consult using information technology and computers.

REDESIGNING SYSTEMS

It is not necessary to change. Survival is not mandatory.

–W. Edwards Deming

To redesign a system, there must be a plan. Hospitals have started to develop governance structures to manage quality assurance and improvement. For example, when Singapore's IMH became the first Joint Commissions accredited psychiatric hospital in Asia in 2005, the process had started by developing a quality framework for measurement and improvement. This was led by a quality council, chaired by its chief executive, who participates in planning and monitoring, quality improvement and patient safety programs. This is done by adopting a broad, systemic, organization-wide approach. For example, the Private Hospitals and Medical Clinics Act (PHMCA) of Singapore requires that hospitals establish quality assurance committees to oversee standards of medical care. Monitoring systems are then put in place to ensure that these standards are adhered to. The Ministry of Health in Singapore has also set up a Health Performance Office in every hospital to monitor and give feedback on clinical quality and safety standards. The IMH Quality Council structure—with taskforces, workgroups and committees—monitors the delivery of all patient care. All serious patient-related incidents or adverse events are investigated using the “root cause analysis” method (Wu et al, 2008) and findings are shared at various forums to promote learning and reduce risks. All this information is privileged under the PHMCA. The system seeks to be fair in that unintentional errors are not blamed on individuals. However, purposeful harm is not—and should not be—protected from disciplinary action.

Structure of a quality council

The council should be led by a member of the senior management of the hospital. It should consist of several committees overseeing different aspects of clinical and operational issues. An example would be having committees to oversee:

- Clinical risk and patient safety: monitoring clinical indicators including infection control and medication safety, adverse events, reviews, patient safety surveys, and walkabouts
- Standards and benchmarking for quality assurance such as accreditation and licensing of the mental health facilities
- Medication and other therapeutic interventions for mental healthcare including adherence to national and international benchmarks
- Operational quality issues such as patient experience and satisfaction as well engagement in care
- Improvement methodologies (e.g., incubating innovation) and their implementation

Root cause analysis

A root cause is a cause that once removed from the system prevents the final undesirable event from recurring. This is an internationally used method to identify systemic causes of errors and adverse events. Its use in patient safety incidents and near misses has been mandated by the Joint Commissions, an accreditation body for healthcare institutions originally from the US. Other countries in Europe and Australia have also adopted this methodology. The method is not a fixed risk analysis formula but a general approach to help identify means to deal with the risk identified.

Good leadership and governance are important to push through important changes in mindsets, from focusing on individual error to focusing on system issues. Change is not easy; early adopters and innovators probably represent about 15% of the personnel in any organization, the rest are reluctant to embrace change. There are many other barriers to changing healthcare systems. One is culture, which focuses on traditions and the belief that the healthcare industry is not the same as other industries such as manufacturing or aeronautical engineering. Another potential barrier is financial. Improving and standardizing care may actually increase costs or reduce individual earnings and hence cause physicians and other professionals to fear losing income.

Having a quality improvement framework is therefore necessary if a healthcare system is to change. Such a system should have five domains:

1. *Detection.* It is necessary to have a system to detect and deal with events that place patients, visitors or staff at risk. Ideally, information derived from this reporting system should not be used for punishment or performance appraisal. In Singapore and other countries, quality assurance processes are privileged, protected from legal liability, so that they focus exclusively on improvement. In addition, a fair and just reporting system encourages transparency, making data collection more reliable and complete. Through these means, reporting of medical errors and near-misses is encouraged. Data can be aggregated, analyzed and reported to various committees where they are used to set targets and priorities for the hospital's quality program. *Monthly safety walkabouts* involving senior management physically visit individual operational units to identify issues of safety. These walkabouts exemplify the commitment of senior management to patient safety and allow them to interact with staff and patients to get first hand feedback. It also aims to foster a non-punitive attitude among staff by encouraging feedback with tangible responses from senior management. For example, senior management visited a child psychiatric inpatient service. They were told that the ceiling lights were too low, allowing some of the taller youths to dismantle the lightbulbs and use them in inappropriate ways. The management speedily approved retrofitting of ceiling lights. Feedback from patients and families and information from surveys can help inform and initiate improvements. In the IMH, a safety climate survey is conducted every two years to ascertain the opinion of staff about safety issues. This is complemented by a patient focus group, which ascertains patients' views about safety issues and identifies gaps in the care process.

2. *Validation of data.* Since a quality improvement program is only as good as the data collected, data validation is important. Data validation is done when:

- A new measure is introduced
- A change has been made to an existing measure
- Data resulting from an existing measure has changed in an unexpected way
- A data source has changed and the subject of the data collection has changed.

The data validation process includes:

- Re-collecting the data
- Comparing the original data with the re-collected data
- Calculating the accuracy of the data
- Taking corrective action for data with less than 90% accuracy, and re-collection of data after the corrective actions have been implemented.

This cycle of identifying root causes, correction and re-collection of data should be done until the desired accuracy level of above 90% is achieved.

- 3. Analysis.** Information from various detection sources is used and analyzed to understand the needs of patients and their families. This includes information from patient focus groups, feedback forms, complaints and compliments received, patient satisfaction surveys, hospital occurrence reports, and various quality committee reports. These are used in the planning of new services and for improvement of existing ones.
- 4. Improvement activities using an improvement toolkit.** These are described later in the chapter.
- 5. Evaluation and dissemination.** Once changes are shown to be effective, dissemination to other units is needed. This requires that projects have been developed to be scalable and planning is originally needed to ensure it.

QUALITY AND SAFETY IN MENTAL HEALTH

Improvement begins with I
–Arnold H. Glasgow

Medical errors in psychiatry had received relatively little attention until an investigative series published in the *Hartford Courant*, a US newspaper. The articles reported that between 1988 and 1998, 142 deaths had occurred in the US during seclusion and restraint in psychiatric facilities (Weiss et al, 1998). Those reports were greeted by the psychiatry profession with the same skepticism and assertions of inevitability that had characterized the reaction of other medical specialties to initial reports of medical errors (Leape et al, 1993). Medical errors are not limited to adults and also occur in children but are generally underreported (Slonim et al, 2003).

Errors can happen anytime during the provision of healthcare and there are many different ways of classifying them, one is to categorize them into diagnostic, treatment, preventive, or other errors (Leape et al, 1993). Usually, errors are not isolated events but the result of ineffective systems, hence it is important to target the root causes and error-proof the systems.

Adverse events

An adverse event is an unintended injury or complication that results in temporary or permanent disability or death, or increased length of stay in hospital that is caused by healthcare management rather than the disease process itself. A *serious reportable event* is an unexpected occurrence, which may involve death,

Types of error

Diagnostic

- Error or delay in diagnosis
- Failure to employ indicated tests
- Use of outmoded tests
- Failure to act on results of monitoring or testing

Treatment

- Error in the performance of an operation, procedure, or test
- Error in administering treatment
- Error in the dose or method of using a drug
- Avoidable delay in treatment or in responding to an abnormal test
- Inappropriate (not indicated) care

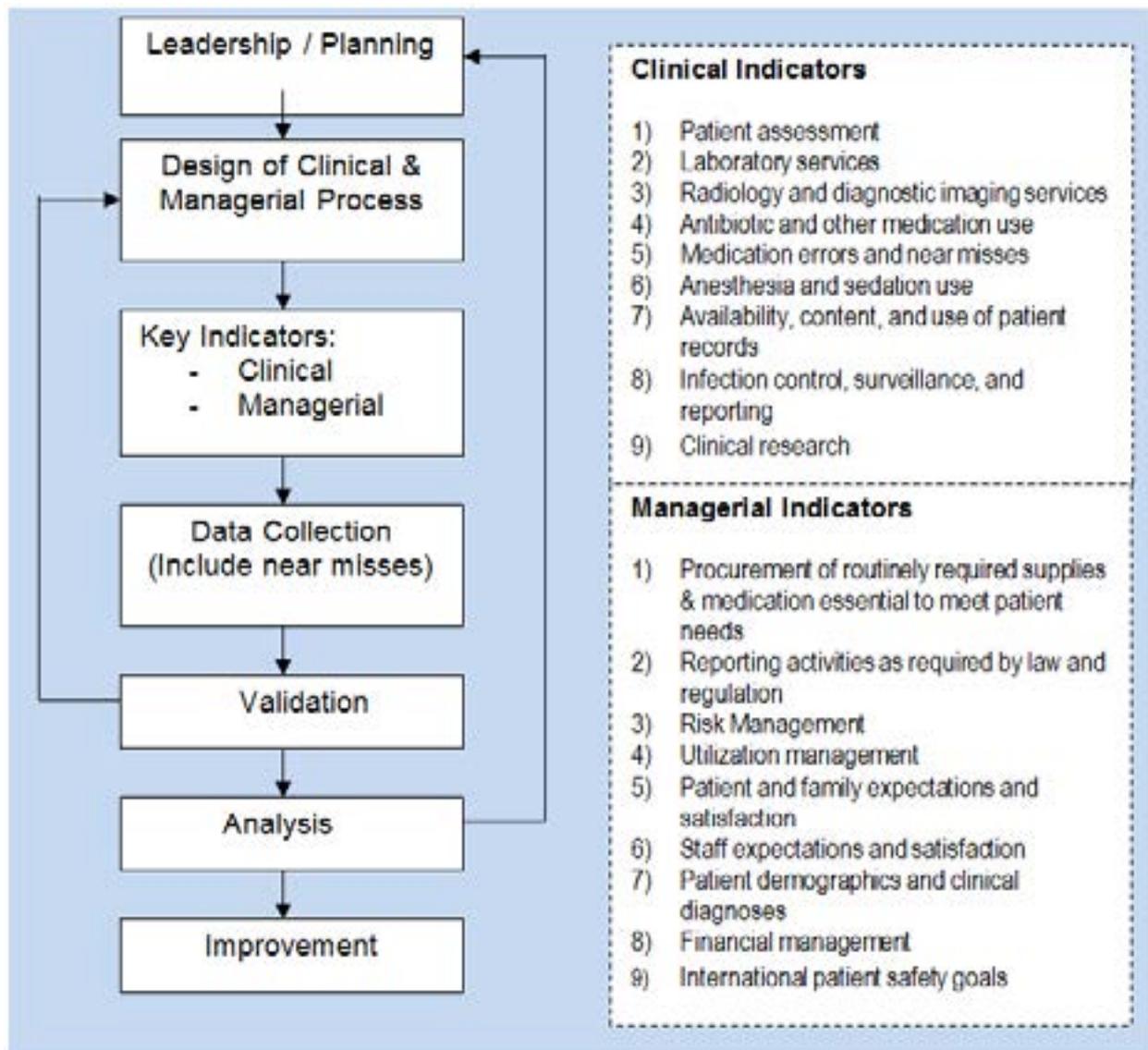
Preventive

- Failure to provide prophylactic treatment
- Inadequate monitoring or follow-up of treatment

Other

- Failure of communication
- Equipment failure
- Other system failure

Figure J.8.1 Quality improvement framework

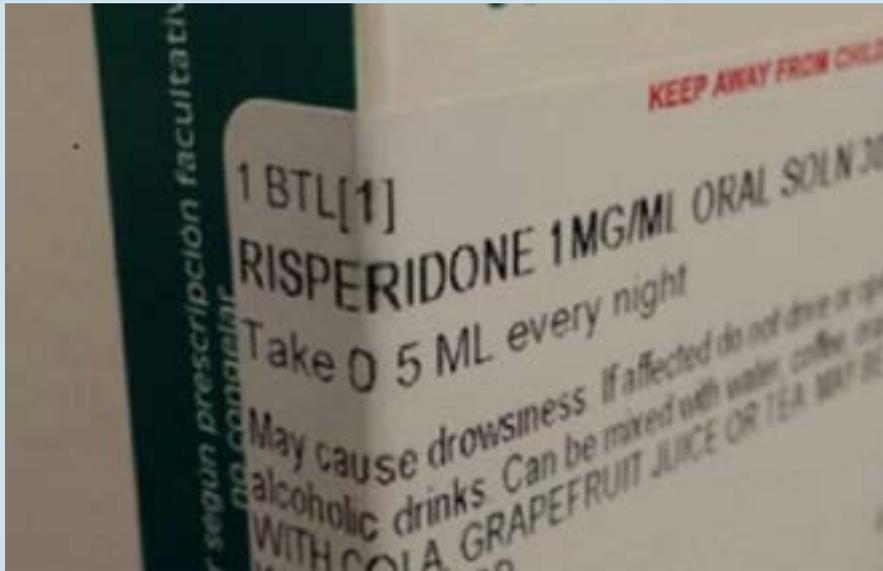


major permanent loss of function, or major injury associated with the treatment, lack of treatment or delay in treatment of the patient's illness or underlying condition. Serious reportable events are also described as *sentinel events*. The US National Quality Forum includes 27 possible causes. Adverse events are usually detected through direct reports as the events occur or in retrospective reviews of medical records. Every serious reportable event should be assessed using the root cause analysis methodology, which focuses on systems-related problems rather than on human error. A separate disciplinary inquiry can be convened where a patient death or clinical incident involves:

- A criminal act or deliberate patient harm
- The use of alcohol or illicit drugs
- A deliberately unsafe act; or
- Unethical professional practice.

Dealing with an error administering medication

A 10 year-old patient in IMH was prescribed 0.5mL of risperidone but was administered a dose 10 times higher by his caregivers in the step-down care facility. A root cause analysis found that this error had occurred because the first digit of the dosage was partially obscured on the medication label and there was a lack of communication of medication information to the caregivers in the care facility. This problem could be mitigated by encouraging staff to be “more careful” in the future. However it was chosen to tackle the circumstances that made the error possible by establishing labeling guidelines and providing medication information via a memo or a copy of the prescription to the step-down care facility. In this instance, embracing systems-thinking helped to move beyond “blaming” and “shaming” to a more effective solution that is likely to prevent the recurrence of the same error.



Most common serious reportable events in mental health settings

Patient death or serious disability associated with patient elopement

- Patient suicide or attempted suicide resulting in serious disability while being cared for in a healthcare facility
- Patient death or serious disability associated with a fall while being cared for in a healthcare facility
- Patient death or serious disability contributed to by the use of restraints
- Patient death or serious disability associated with medication error
- Patient death or serious disability associated with hypoglycemia while the patient is in a healthcare facility
- Stage 3 or 4 pressure ulcers acquired after admissions to a healthcare facility
- Unexpected death as a result of lack of treatment or delay in treatment
- Unexpected death as a result of a medical intervention which would have been prevented otherwise.

Mortality categorization

Category 1: **Expected death**

This includes deaths:

- Due to terminal illness (anticipated by clinicians and family); and/or
- Following cardiac or respiratory arrest before arriving at the hospital; and
- Which occurred despite medical interventions.

Category 2: **Unexpected death which was not reasonably preventable.**

Category 3: **Unexpected death which was possibly preventable, and was:**

- Due to lack of treatment or delay in treatment; or
- Caused by medical intervention.

International patient safety goals

- Goal 1. Identify patients correctly
- Goal 2. Improve effective communications
- Goal 3. Improve the safety of high-alert medications
- Goal 4. Ensure correct-site, correct-procedures, correct-patient surgery
- Goal 5. Reduce the risk of health care-associated infections
- Goal 6. Reduce the risk of patient harm resulting from falls

Near misses are process variations that do not affect an outcome but for which a recurrence carries a significant chance of a serious adverse outcome. Near misses are also worth measuring because they help identify worrying trends and are a form of learning before an actual adverse event occurs.

The international patient safety goals in the Joint Commission International Accreditation Standards for Hospitals addresses some of the most problematic areas in healthcare, which are listed in the box. These goals provide the framework and impetus for hospitals to measure safety in these areas and to make continuous improvements to processes to safeguard the safety of patients.

Mental health services have additional barriers to developing a good quality improvement system due to:

- Stigma
- Mind-body dualism, which makes it hard for quality improvement systems in general hospitals to be applied in a mental health setting as the two systems differ in the way medical practice contrasts from psychiatric practice
- The role of the government in monitoring the work
- Legal and regulatory variations in mental health legislation regulating involuntary treatment
- The fact that multiple sectors are involved (e.g., social services, criminal justice, education, etc.)
- Different diagnostic systems and separate care-delivery structures
- A more heterogeneous work force, greater solo practice, particularly in private practice settings
- Fewer procedures that can be standardized
- Different financing systems or different market structure
- Less developed quality improvement and performance measures
- Less linkage to information technology and innovations.

MEASUREMENT FOR IMPROVEMENT

It is not enough to do your best; you must know what to do, and then do your best.

—W. Edwards Demming

Data are captured in a number of ways. It can be in the form of outputs (such as number of patients seen), or outcomes (such as whether patients are getting better or improving), or in the form of complications (such as medication side effects)

Near miss: mistaking the heart for the head

A patient was due to be started on tricyclic antidepressants. Because of the potential for affecting individuals with a heart block, an ECG was ordered prior to start taking the medication. However, the patient was mistakenly sent to the ECT suite.

Had the staff not checked that an ECT had not been ordered—it was an ECG instead—the patient would have undergone a treatment that she did not require with its potential risks. It was noted that both ECG and ECT were consecutive entries in the order menu; a small misplaced tick could have sent the patient for an entirely different procedure.

or adverse events. Data can then be trended and compared. Trending means choosing some parameters and measuring them regularly over time. Comparing (or benchmarking) consists of taking these data and comparing it either with itself in a different period or with other services, locally or internationally.

Data can merely be a collection of facts and figures that have little utility or, if properly used, can be informative. Let's take the example of the number of patients seen in a clinic. One could use this as output data. A simplistic way of interpreting it would be to assume that seeing more patients would indicate that a team is doing well because it has increased output. But how are the patients seen progressing? Have they got better? Are there adverse outcomes and complications? Employing data as an indicator of performance is starting to be used widely in psychiatry or behavioral health. Some commonly used indicators include the rate of falls, suicides, assaults, choking, adverse events, readmissions to hospital (within a specified time frame, usually 30 days), and mortality per hospital days. Some common indicators and their use can be found at the following websites (click on the name to access):

- [The Joint Commission International \(JCI\). International Library of Measures](#)
- [Organization for Economic Co-operation and Development \(OECD\). OECD Health Statistics](#)
- [The Australian Council on Healthcare Standards. Australasian Clinical Indicators Report](#)
- [National Health Service \(England\). Statistics](#)
- [Ministry of Health Singapore. Statistics](#)

For example, the following indicators are used in child and adolescent psychiatry services in Singapore:

- Falls
- Assaults
- Restraints
- Readmission to hospital
- Average length of stay
- Adverse events
- Bed occupancy rate
- Patient functional status as measured by the Global Impression Inventory–Improvement (CGI-I) and the Children's Global Assessment of Functioning Scale (CGAS).

Data collection can be done in a number of ways. Regular and continuous measurement of important indicators specific to psychiatric practice is the best method to obtain accurate data but is often time consuming and burdensome. One way to circumvent that is to introduce these indicators as part of regular practice. This can be done by including relevant rating scales in everyday practice and using technology to input them into systems, automating measurement and analysis. A more traditional form of data collection is via audits to measure outcomes through sampling. Another form of sampling is by using voluntary reports of outcomes. In many hospitals, feedback from patients and families are a useful form of voluntary reporting. A newer approach to identifying adverse events and outcomes is through the use of “trigger” tools that are part of auditing

or electronic medical record systems. These methods are still in development. [Click here](#) to access a tool developed by the Institute for Healthcare Improvement.

Once data are regularly measured and monitored, problems worth addressing can be identified. Problems worth solving are those that:

- Occur frequently
- Result in severe adverse outcomes such as death or disability
- Significantly concern staff and patients.

Cost effectiveness

Clinical trials of mental health interventions often prove efficacy without providing information about real world effectiveness. Analysis of cost effectiveness takes into account the cost of the intervention in relation to the clinical benefit. Quality of life in mental disorders is an important aspect beyond improvement of clinical symptoms. However, most mental health outcome measurement focuses on symptom amelioration without consideration of its impact on functioning. Measurement of the quality of life is therefore necessary. Additionally, with the rapid advances in modern medicine, most people recognize that no healthcare system in the world is able to commit to every intervention available. Needless to say, governments and policy makers are constantly faced with difficult decisions about the allocation of scarce financial resources. Hence, it makes sense to focus on those interventions that will improve individuals' quality of life the most.

Economic evaluation of healthcare interventions is one of the tools that helps guide decision making in this challenging environment. The concept of Quality Adjusted Life Years (QALYs) was originally developed to measure effectiveness or improvement for cost effectiveness analysis (Weinstein & Stason, 1977). This approach takes into account both *quantity* and *quality* of life. The former is expressed in terms of life expectancy or, alternatively, whether the individual is dead or alive. The latter embraces the entire spectrum of an individual's life, not only their health status, and consists of a range of components such as an individual's physical, social, and cognitive wellbeing. Several instruments have been developed to measure QALYs such as:

- EuroQol-5-dimensional (EQ-5D) (EuroQol Group, 1990)
- Health Utilities Index (HUI) (Horsman et al, 2003)
- Rosser Index, Short Form 36 (SF-36), Short Form 12 (SF-12) (Turner-Bowker et al, 2002)
- Sickness Impact Profile (SIP) (de Bruin et al, 1994).

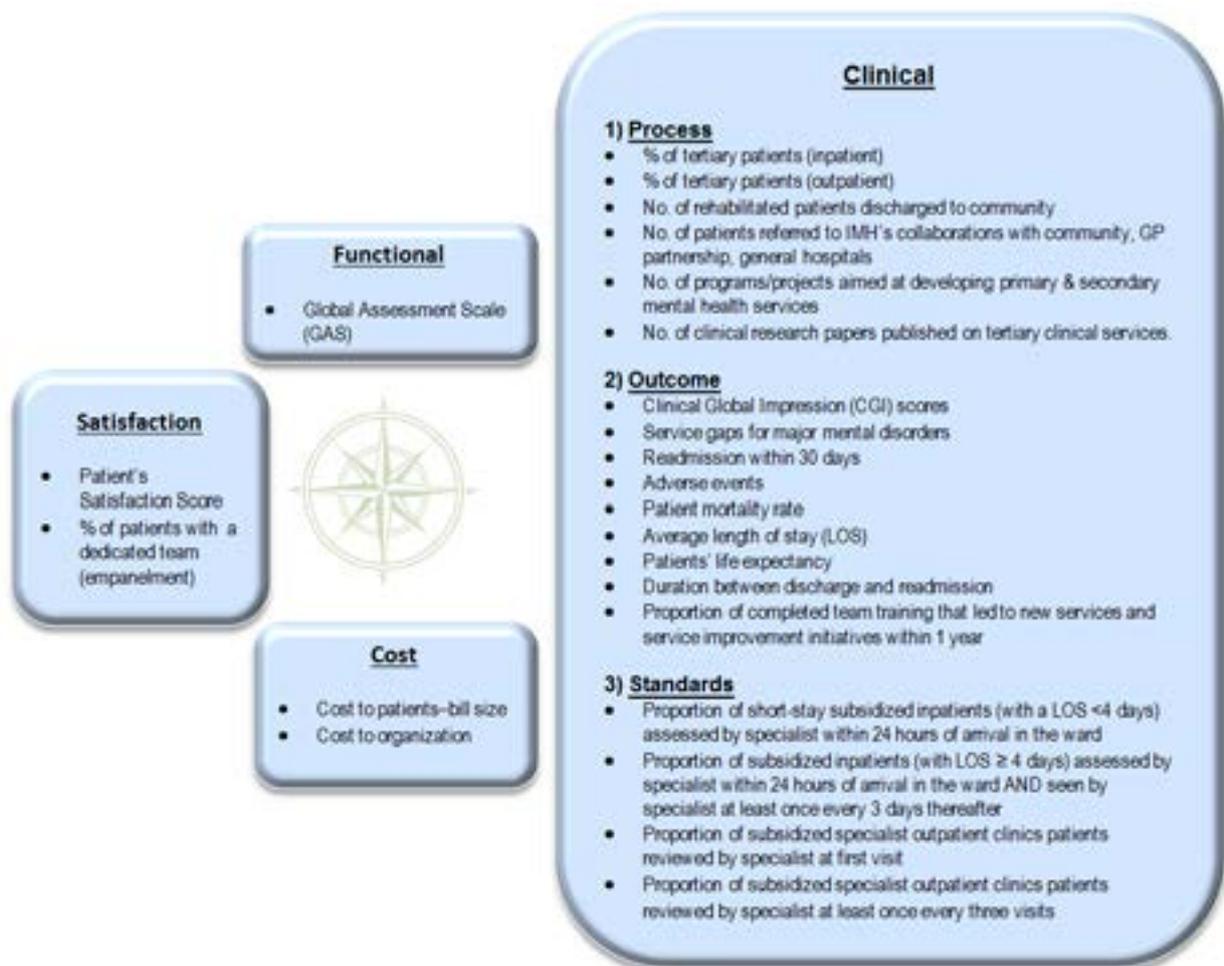
Economic evaluations are now well documented in a range of population and healthcare systems. For example, the use of EQ-5D to assess cost effectiveness in mental health conditions such as depression, psychosis, and severe and complex non-psychotic disorders in adults (Subramaniam et al, 2013); the Self-Reporting Questionnaire 20 items (SRQ20) in adult community mental health services (Harpham et al, 2003); SF-6D and EQ-5D in a study of adults with schizophrenia (McCrone et al, 2009); Youth Outcome Questionnaire 30.1 (Y-OQ-30.1) in children with ADHD, adjustment disorder, bipolar, post-traumatic stress disorder, and psychotic disorders (Dunn et al, 2005); and EQ-5D for severe dyslexia in children (Hakkaart-van Roijen et al, 2011).

While recognizing the usefulness of economic evaluations in allocating scarce resources, it should be emphasized that such measurements are seldom available for mental health populations, especially in children and adolescents. This is surprising given that more than half of mental disorders start in childhood or adolescence and persist through adult life affecting individuals' functioning and productivity over the lifespan (Kim-Cohen et al, 2003). Without adequate mental health services and support, children who suffer from a mental illness are less likely to grow and prosper. Perhaps with the widespread availability of contemporary cost effectiveness analysis, public health systems might pay greater attention to interventions for children and adolescents with mental disorders.

Value

Value is the measurement of outcome balanced against the cost. Value should be defined by what patients need and, in a well-functioning system, it depends mainly on outcomes. As Michael Porter (2010) puts it, value in health care is measured by the outcomes achieved, not the volume of services delivered, and shifting focus from volume to value is a central challenge. Dartmouth Medical School developed the idea of a value compass for healthcare in 1996 (Nelson et

Figure J.8.2 Clinical Value Compass



al, 1996). The Clinical Value Compass is similar to a directional compass that has four points—four aspects of healthcare processes that measure quality:

- North: functional status, risk status, and wellbeing
- South: costs (both direct and indirect)
- East: satisfaction with the care
- West: clinical outcomes.

These four aspects provide a balanced yet comprehensive measure to monitor quality in healthcare.

An example of how the clinical value compass can be used is as follows. Suppose there is a medical treatment for schizophrenia that can eradicate its symptoms completely and the person with the illness becomes fully functional after treatment and without side effects. This would be a great treatment because the outcomes are fantastic. However, if the cost of that treatment is excessively high so that only a few people in the world can afford it, the value may not be great. An excellent outcome at a very high cost is of low value, especially if it means that only very few people can benefit. On the other hand, a reasonably good treatment with slightly poorer outcomes but at very low cost may be of great value. One example of this may be parent training; it has been shown to have good outcomes in reducing behavior problems in children and is not too costly when conducted in a group setting.

Improvement methods

To improve healthcare, it is not enough to have good treatments that work—what we often call evidence-based treatments. These treatments should be applicable in the real world in a safe, affordable, accessible, timely and effective manner. This kind of evidence-based delivery system can be evaluated using improvement methodologies.

One of the basic improvement methodologies is the “Plan-Do-Study-Act” (PDSA) model. The PDSA cycle provides a model for improvement, allowing teams to test changes on a small scale before implementing them on a larger scale or in other services:

- *Plan*. This involves identifying a problem, why practices need to change to solve the problem, how this is to be achieved, how to implement and measure change, and when to start
- *Do*. This is the action phase in which the plan is carried out, data is collected, and observations made.
- *Study*. This phase entails analyzing the data, comparing it with expectations and summarizing findings
- *Act*. Adapting the changes and implementing them. A new cycle would then start.

Recently, *Lean Thinking* has become popular in healthcare improvement. This term was coined by Womack et al (1990; 1996) in their study of Toyota’s Production System; it provides a new way to think about how to organize human activities to deliver more benefits to society and value to individuals by eliminating waste. The aim of Lean Thinking is to create a more efficient enterprise that sustains growth by aligning customer satisfaction with employee satisfaction. Learn more about [Lean Thinking](#) by clicking here.

PDSA, a quality improvement methodology

- **P**lan the improvement
- **D**o the improvement process
- **S**tudy the results
- **A**ct to hold the gain and continue to improve the process.

Case example

Johnny is a 10 year old boy with an aggressive streak. He had been diagnosed with severe ADHD and comorbid conduct disorder. Johnny was admitted to hospital for nine days after staff at the children’s home where he was living were unable to contain his angry outbursts. One morning Johnny woke up and decided he wanted to leave the ward. He took his bags, walked to the locked door and began kicking, banging and shouting at the door. Ahmad, another inpatient, was annoyed by Johnny’s behavior and punched Johnny in the face.

Over a 21 month period, the child psychiatric ward had reported 206 patient-related incidents, 50% due to disruptive behaviors, 27% were assaults of staff and others, and 21% self-harm events. The ward had one of the highest assault rates, five times higher than the rest of the hospital. This was thought to be a problem that needed to be solved. A clinical practice improvement team was set up to find ways of reducing disruptive behaviors in the ward by 50% within 6 months. Disruptive behavior was defined as aggression towards self, others, property and the environment, which resulted in injury or significant damage to objects. The team

hypothesized that a reduction in patients’ disruptive behavior would lead to a reduction in assaults and self-harm (hospital quality indicators).

The team used the PDSA cycle to guide its work. A flowchart of progress was constructed to identify key performance gaps. A patient focus group was held to obtain feedback from 15 patients who had witnessed disruptive behaviors. A cause and effect diagram and a Pareto diagram were done with three root causes identified:

1. Inability of patients to regulate their emotions when triggered
2. Lack of staff training in managing disruptive patients
3. Prolonged hospital stays due to lack of community support.

With the root causes identified, the team brainstormed and piloted various interventions. For the 1st identified root cause (patients’ difficulty regulating their emotions):

- Individualized behavioral modification programs were provided for the disruptive children

Figure J.8.3 Cause and Effect Diagram, also known as the fishbone or Ishikawa diagram, named after a Japanese quality expert, Kaoru Ishikawa. It is a method of identifying the root causes of a problem.

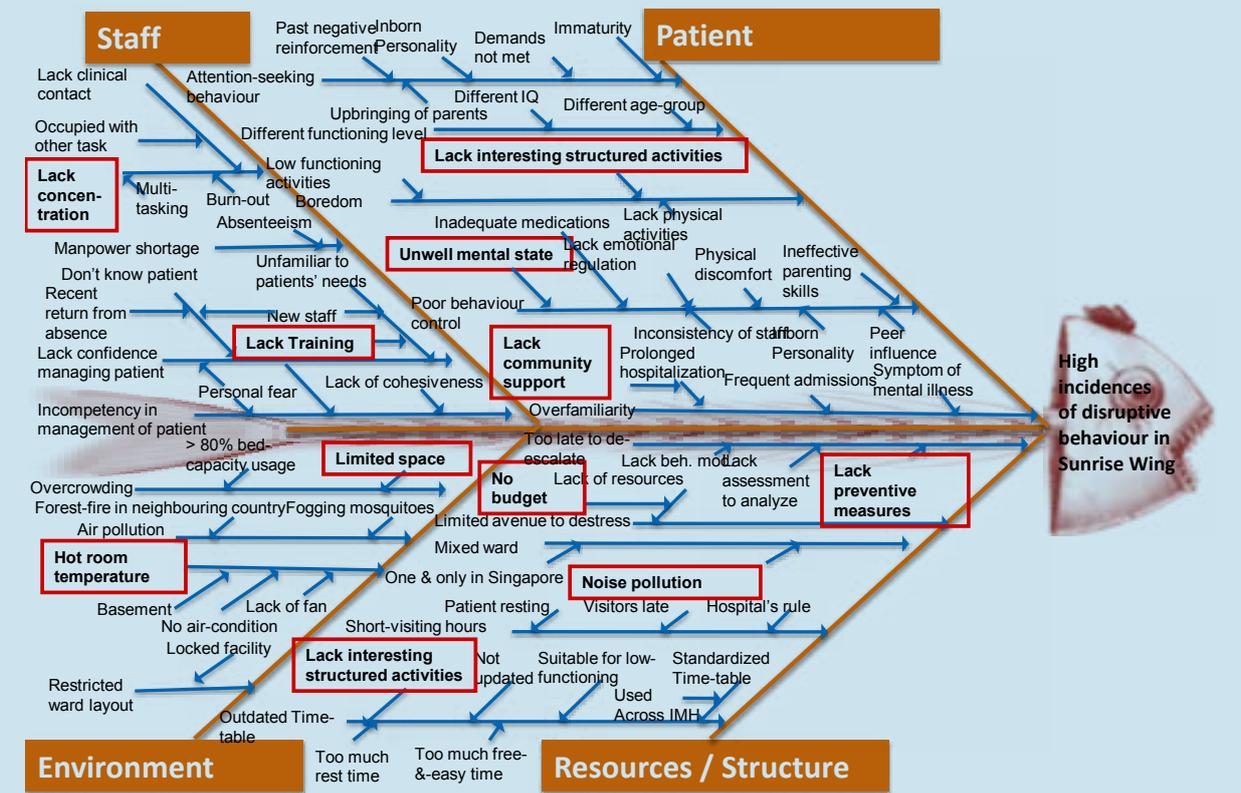
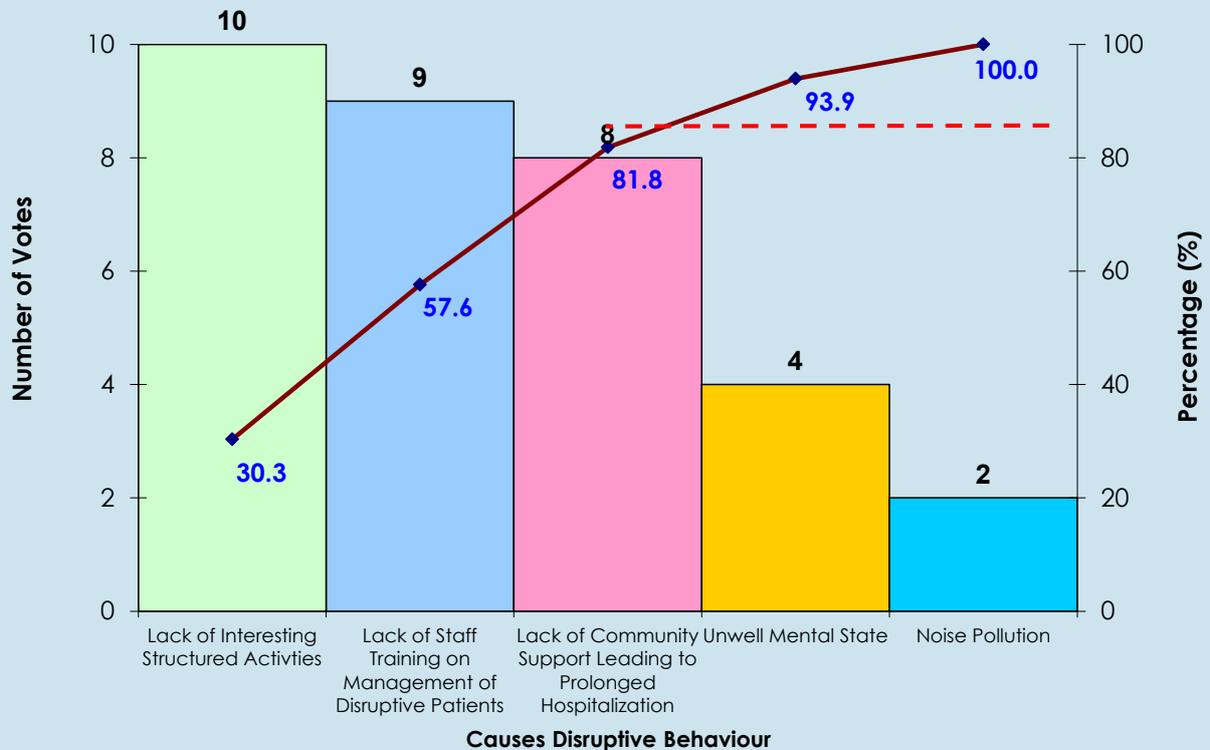


Figure J.8.4 Pareto Diagram is a type of chart whose purpose is to highlight the most important factors that can cause a problem. Individual factors are represented in descending order by bars, and the cumulative total is represented by the line.



- A “cool down corner” was implemented to provide patients with alternative ways of coping with stressors. This was designed to be a special place that promoted de-escalation and regulation of emotions. Patients who were agitated or stressed would be led to this room, under the supervision of nursing or allied health staff. The room contained items that aimed to distract,

soothe and calm patients through sight, sound and visual aids. The goal was to help patients develop practical skills to be used in other settings and after being discharged. The use of the room also enabled staff to de-escalate situations without the need to resort to restraint or seclusion. Unlike seclusion rooms, which are often sterile environments devoid



Figure J.8.5 Cool down room

of any stimulation, this room offers adaptive activities.

For the 2nd identified root cause, members of the team who had experience in managing disruptive patients shared effective strategies with the rest of the staff and selected staff members attended external training in this area.

For the 3rd identified root cause, discussions and case conferences were conducted with step-down agencies

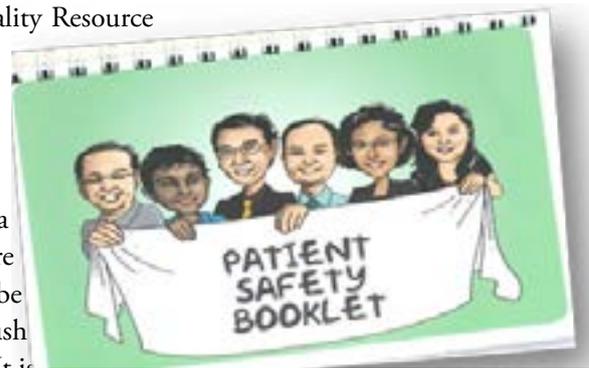
to understand and address their needs, and training was provided for community partners to up-skill them to better manage patients following discharge.

With this multi-pronged approach the ward saw an 80% reduction in disruptive behavior incidents. Besides cost savings, patients, caregivers and staff reported an increase in satisfaction in the hospital stay.

SUSTAINING AND SPREADING IMPROVEMENT

Teams are often set up to temporarily work on a problem and the initial gains obtained are lost when the team disbands. An improvement process that pays no heed to creating conditions for perpetuating changes will be unable to hold the gains as sustainability does not happen automatically after the improvement is made. Instead, sustainability requires systematic planning to make changes the backbone of the process after the project has come to an end. This may involve standardization of processes, documentation of associated policies, procedures and guidelines, measurement and review to ensure changes become incorporated into daily practice, training and education of staff and sharing of measurement and status of initiatives (National Healthcare Group Quality Resource Management Department, 2011).

The success of a project will provide the impetus for wider implementation of the changes at other suitable departments or units. Spreading the changes yields greater returns on initial investment and creates a renewed sense of satisfaction and pride when changes are being adopted elsewhere. A dissemination plan should be developed to share the results of the changes and to push for implementation across suitable departments or units. It is important to recognize that the characteristics of the change, i.e., relative advantage, compatibility, complexity, trialability, and observability (Rogers, 1983), will influence its spread and ability to be adopted.



INNOVATION

Innovation can be defined as “the intentional introduction and application within a role, group, or organization, of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, or wider society” (West, 1990). This definition encompasses the three key components of innovation: novelty or new idea, an application that can be implemented and that is beneficial. In healthcare, the need for innovation is complicated because it needs to be safe and beneficial in ways that are ethically acceptable. Because innovation involves risk, this balance is important. When looking at innovation in healthcare we refer for the most part to biomedical innovation, new treatments and technologies that treat illness better. There is also health systems innovation that target improvements in efficiency and cost reduction resulting in better use of resources (Ellner et al, 2015). These innovations are particularly important in creating better value for patients.

CONCLUSIONS

Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skillful execution; it represents the wise choice of many alternatives.

– William A Osler

Improvement science is new to healthcare largely because healthcare is generally resistant to change. This is the unfortunate effect of the noble tradition of medicine where physicians are taught early that there is a specific way in which to do things that has been handed down for many years. Some of these methods are supported by little evidence. For example, doctors are traditionally taught to take a good history, perform a physical examination and then conduct investigations. With the advent of new technologies, this may not necessarily be the most efficient or cost effective method, yet few studies have explored this. Quality improvement has moved many industries towards achieving perfection by error-proofing systems rather than relying on flawed human approaches. We are not proposing radical change without concern for safety but to study the systems we have today and to improve them.

- Do you have questions?
- Comments?

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