
MANAGING QUALITY IN HEALTHCARE

Continous Quality Improvement

*Based on the work of
Donald Berwick MD and Paul Plsek*

Compiled by
THE EDUCATION AND SCIENTIFIC COMMITTEE
OF THE IRISH SOCIETY FOR QUALITY IN HEALTHCARE



Irish
Society for
Quality in Healthcare

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FOREWORD

The Irish Society for Quality in Healthcare is offering this workbook and course as a foundation programme in quality for staff in the Irish health system.

From the outset the Society has favoured a bottom up approach to quality development. In particular we have been active in promoting our members' involvement in education. Up to now we have not had available a suitable vehicle for formal quality training.

Thanks to the hard work of Deirdre Fitzsimons, the Chair of the Education Sub committee of the Irish Society Quality Healthcare and of her committee members, this workbook has been developed. This programme is particularly aimed at members of organisations who are in a position to disseminate the teachings to others within their organisations.

I am sure that you will find it informative, stimulating and entertaining.

Austin Leahy
President

PREFACE

Since I first became interested in the mechanics of quality assurance in healthcare, i.e. identifying problems, planning for improvement, working on the criteria for improvement and measurement of this improvement, I have been conscious of the constraints on health professionals, and managers alike in achieving permanent change and on the barriers to progress when working in small disparate groups. A good idea, and a new innovation can become unstuck because no one individual or professional group can achieve change in isolation from other professionals who may work to a different agenda. Each single individual in a healthcare organisation contributes to the well being of patients either directly or indirectly. The contribution to this well being is enormously enhanced by the combined effort of a team approach. This requires leadership, organisation and sometimes a cultural change in attitudes and resources. Even with all of these it is often not clear how to proceed with a plan for improvement towards a quality health service.

In the early days of this interest in quality in healthcare when the Quality Assurance in Nursing Association (QANA) was founded in the late 1980s, the emphasis was almost exclusively on the development of standards of nursing, some using the *Dynamic Standard Setting System* (DySSSy) developed by The Royal College of Nursing Standards of Care Project 1990, others used *Nursing Audit* while others used *Monitor* by Illsley and Goldstone 1985. While these tools enabled nurses to take control of their own standards in practice, they were limited when these standards touched the boundaries of practice of other health professionals. It is no longer viable for individual professional groups in healthcare to operate in isolation from each other. Continuous Quality Improvement was developed to facilitate the care of patients by a complex and diverse healthcare team. It differs from other systems through its focus on the process of care. It also differs by its reliance on the involvement of every member of the team in whatever position they hold. It can only be successful if those driving change seek the advice of those closest to the patient and closest to the work process under review. This system demands absolute honesty in identifying the facts as they are not as people would like them to be. It is an undertaking not to be embarked on lightly but will give substantial rewards if successful.

The manual will help groups and organisations to clearly identify the causes of poor quality, the costs of poor quality and provides the tools with which to start a project, set up a plan or develop an organisation wide strategy for Continuous Quality improvement.

I hope that students of CQI will get as much pleasure from this training manual as the Education and Scientific committee got from compiling it.

Deirdre Fitzsimons

Vice-President of ISQH and

Chairperson of the Education and Scientific Committee

THE IRISH SOCIETY FOR QUALITY IN HEALTHCARE

The Irish Society for Quality in Healthcare was founded in 1994 by a small group of managers, doctors and nurses and established with its first elected committee in March 1995. At that time, quality activities on the international field were developing rapidly but the Irish contribution was under-developed and under-recognised. It was thought that through establishment of a multi-disciplinary organisation the optimum contribution could be identified and co-ordinated. While supported by the Department of Health and Children and by the Chief Executive Officers of the Health Boards the Society is an independent organisation with its own constitution. It is a non-profit-making organisation run by its members for its members. It has three sub-committees, the Education and Scientific Committee, which produced this document, the Standards Development and Accreditation Committee and the Editorial Committee. These committees report regularly to the Council.

Mission statement of the Irish Society for Quality in Healthcare

“Our aim is to improve the quality of healthcare nationally through partnership with all involved”

Strategies

- To contribute to the development of healthcare standards and outcome measures.
- To develop a database of information on quality in healthcare as a resource for individual and corporate members.
- To work towards the development of internationally agreed methods and systems of accreditation for quality in healthcare.
- To promote all appropriate developments and models for quality of healthcare with particular emphasis on multi-disciplinary approaches.
- To create and maintain a national network of members and to affiliate the Society to appropriate international societies.
- To participate in, encourage member’s participation in, national and international QA activities, in education, training and research with particular reference to quality improvement in health, clinical epidemiology and resource use effectiveness.
- To actively encourage the participation of service users in the promotion of quality improvement.

Members of the Education and Scientific Committee

MICHAEL BOLAND, MICGP, FRCGP is currently Director of the Postgraduate Resource Centre of the Irish College of General Practitioners. He has a practice in Skibbereen, Co. Cork. He is the President Elect of the World Organisation of Family Doctors - the umbrella body for Colleges and Academies of General Practice/Family Medicine representing 150,000 doctors throughout the world. He became a member of the RCGP in 1976, a Fellow in 1985 and delivered the Pickles Lecture in 1991. He was the founding Irish member of the European Academy of Teachers in General Practice and is a core group member of "Equip" – the European Working Party on Quality Assurance. He has represented Ireland on the Council of WONCA – the World Organisation of Family Doctors since 1986, and in 1992 was elected to join the World Executive.

MARIE BRADY, B.SC., UCD, M.SC., (Public Policy Analysis), TCD. Manager, Health Service Development Unit, Institute of Public Administration. Marie Brady has a civil service background, and has been working in the IPA for the past twelve years. She works with a wide range of health sector staff at all levels on development, consultancy and education programmes. She also works with other provider organisations at home and abroad. She has a particular interest in how managers can use performance information to support decision-making. Her current research interest is in the experience of service planning in Irish hospitals.

JOHN BREHONY, Dip. Hospital and Health Services Administration, BA (Hons) Public Management (Health Management). Senior Executive Officer, Eastern Health Board, responsible for staff training and development, equal opportunities and the development of a regional library and information service. Past experience is in community services, hospital administration, finance department EHB – at corporate level and for the Special Hospital Programme. His dissertation for the BA was titled "Quality – giving effect to a fundamental principle in the Irish Health Services".

JOHN GIBBONS, FAMILS, DMLM, CBIOL, MIBIOL, Pathology Manager and Head of Department of Pathology, Blackrock Clinic. He is a member of the Joint Working Group on Pathology Laboratory Accreditation in Ireland and Chairperson of the Pathology Laboratory Accreditation Sub-committee of the Academy of Medical Laboratory Science. Previously Chairperson of a management sub-committee of the AMLS which produced publications on "Model Quality Manual for Clinical Laboratories" and "Guidelines for Writing Standard Operating Procedures". John is currently studying for a MA in Quality Management from the University of Wolverhampton.

DEIRDRE FITZSIMONS, M.Health Mgt, BA (Hons) Mgt, IMI, PHN, FFRCSI, is currently Chairperson of the Education and Scientific Committee which compiled this manual and Vice President ISQH. She is Nursing Advisor, Department of Health and

Children, Nursing Policy Division with specific responsibilities for community nursing services. Past experience is in health visiting in the UK and in public health nursing in the Eastern Health Board. She is a founder member of the Quality Assurance in Nursing Association (QANA), and was the first Irish representative of European Quality Assurance Association (EUROQUAN). She has published "Quality Assurance in Nursing" Briefing Paper 4/92, Institute of Public Administration.

VERENA KEANE, MRCPsych, MMedSc Consultant Psychiatrist, Kildare and West Wicklow Mental Health Services for People with a Learning Disability. Has completed a Diploma in Management for Medical Doctors and is a Registered Systemic Therapist. Was seconded to work part-time with the Disability Management Team, Dr Steevens' Hospital, 1995 - 1997 and to the Department of Health as Director of the National Clinical Audit of the Intellectual Disability Data Base 1996 - 1999.

JOHN SWEENEY, BSc, DQA, is the Quality Advisor for the Irish Society for Quality in Healthcare. Although originally with a background in quality management in the information technology industry, John has several years experience in various areas of developing quality systems in the health service. He has lectured and presented extensively both national and internationally on quality systems development. He is the Irish representative for the EU ExPERT (External Peer Review Techniques) project. He has also been involved in work with the Joint Commission Internationals Task Force on International Standards Development. His experience includes Quality Project Management, Systems Development, Peer Review, Healthcare Accreditation, ISO 9000 in Healthcare, Patient/ Customer focus, Quality and Clinical Auditing.

Introduction to the programmes

This manual is a compilation of a video-based educational series, a leader's guide and a student's workbook that demonstrate how to apply Total Quality Management/Continuous Quality Improvement in healthcare (TQM/CQI). The title of the series is *Managing Medical Quality* and features Donald M. Berwick MD and Paul E. Plsek. The title of this manual has been changed to *Managing Quality in Healthcare* to reflect the fact that it is designed for use by multidisciplinary healthcare teams. The original production was by Quality Visions, Inc., New Jersey, USA.

When seeking permission to reproduce material for this manual the Chairperson received a very warm response from Dr Berwick who had no hesitation in granting his full permission.

How the manual should be used

It is intended that students of quality learn in small groups progressing from the first programme to the last through discussion, reading and the assistance of a trained facilitator. The programmes are intended to be used in the real world by people working in the health service. It is expected that learning will also take place through sharing experiences gained in the various workplaces. During intervals between study sessions students will be asked to identify opportunities for putting to use what they have learned. In this way all the students in the group will gain access to a variety of possible solutions in different healthcare settings.

Students are not advised to try to rush through all the sessions, or indeed to read too far ahead, as the complexity of the sessions increases the further one progresses. Also it is not intended that taking part in this series of training programmes will give students mastery of CQI. For some it will not be necessary to work through all five programmes as they may be asked to participate in a team effort, seeking improvement only in their own area of responsibility. Others, however, will need to cover the full course, if, for example, they have the responsibility for co-ordinating improvement in their organisation. Still others will need to complete the full course as they have management responsibilities in their organisation and must be fully informed of the implications of undertaking a programme of quality improvement. It is strongly recommended that all Chief Executive Officers and Senior Managers take the time to work through all six programmes as the appropriate allocation of resources to the various projects is vital to their success.

It is not possible to state how many group sessions will be required to complete all six programmes. Some of them will require considerable discussion and it is essential that all the techniques are fully understood. The timetable, therefore, will remain fairly flexible as some programmes may take two learning sessions. A vital component of the strategy for bringing about improvement in an organisation is effecting change in its culture. This cultural change can be expected to generate considerable discussion among participants.

Finally, there is a preference for the term “Continuous Quality Improvement” as it reflects clearly the continuous cycle of quality improvement.

Programme One
THE NEED AND THE OPPORTUNITY

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THE NEED AND THE OPPORTUNITY

Introduction

Programme One deals with the principles of Continuous Quality Improvement (CQI). It emphasises the role of top management and compares traditional methods of quality improvement with a new approach to quality management. The programme explores the need for “tensions for change” and identifies areas where a drain on resources could provide an opportunity for improvement. It poses questions on the cost of poor quality and gives examples. It introduces the concept of special cause or common cause of variability in the interpretation of data from a variety of settings. Most importantly, it shifts the focus away from exhorting people to do better and work harder to focusing on the processes of care in order to make improvements.

Learning objectives

The student will understand the need for change in our healthcare system, will understand the limitations of traditional methods of management and of relying on inspection and will understand some of the basic principles of continuous quality improvement.

Key words

tensions for change, continuous quality improvement, process of care

1.1 Definition of quality

One definition of quality is: *Meeting and exceeding the needs and expectations of patients and/or other customers, with a minimum of effort, rework and waste.*¹

Another is: *Fitness for Purpose.*

Others will have different definitions of “quality”. The uniqueness of the first definition is in the use of the term “customer” and the broader implications of this. Some examples of quality outcomes in health care are: reduction of pain, improvement or restoration of function of a limb, prolongation of life where appropriate. Quality of care must include reasonable response to questions, being treated with dignity, courtesy, and not to be kept waiting for an unreasonable period, prompt response to requests, accuracy in record keeping and report writing, legibility and best possible clinical practice.

In CQI the idea is about a “direction” in which to work, such as continually trying to move towards meeting needs.

Important: people’s needs can only be understood by listening to them and discussing with them what they consider to be important. Treating them as partners in care is a good way of finding out.

1.2 Background to change

The philosophy of CQI is grounded in the experience of industry. It is based on the theories of Deming, who played a central role in shaping the Japanese approach to quality and manufacturing, and to his Fourteen Points of Top Management², Ishikawa of the Japanese Union of Scientists and Engineers and J.M.Juran. The Juran Institute and the national healthcare consultant Paul Plsek have translated the Juran method of process improvement into the “diagnostic and remedial journeys” for healthcare delivery. The scientific methods of CQI are built on the premise that reducing inappropriate variation and complexity leads to higher quality and lower costs. CQI has provided the combination of management philosophy and science that, when applied to daily work, has demonstrated dramatic results in companies such as the Ford Motor Company and the Xerox Corporation.³

1.3 The need for change now

CQI is a plausible and effective alternative to current management practices in healthcare. For change to occur there must be an acceptable alternative and an impelling need to change. Another way to describe it is, there must exist "a tension for change". The perceived change will be different for each group. For health professionals significant variation in practice should alert them to the need for the development of evidence of best practice. Low levels of performance can result in low morale and the fear of litigation and consumer dissatisfaction. For budget holders containment of costs would be a high priority. National imperatives for change derive from government strategies, the National Strategy for Health "Shaping a Healthier Future" 1994, identifies equity, quality of service and accountability as key principles

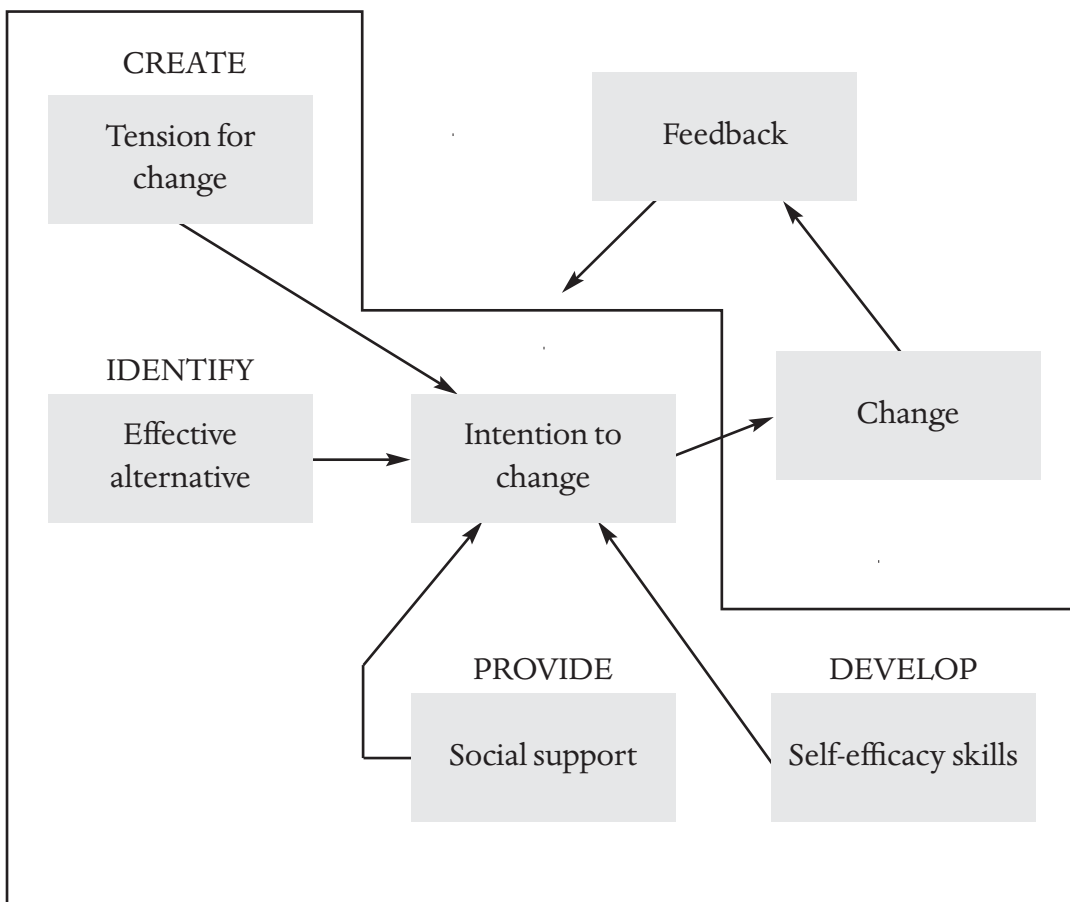
1.4 A model for change

The model for change outlined below has been developed by Professor David Gustafson of the University of Winconsin. According to this, effective change requires seven elements:

- a perceived need for change ("tensions for change")
- recognition of a superior alternative
- support (both "social" support and supportive "processes")
- skills
- a sense of "self efficacy" (i.e. a belief that the person or organisation can use the alternative)
- a plan for change
- feedback
- *an eighth element, and the most important, is top management support.*

Without "tensions for change" a transformation as major as that required for continuous quality improvement is not likely to be implemented successfully in an organisation.

Figure 1.1 Components of Change



1.5 The basic philosophy

Why CQI? There are three reasons. Firstly, CQI is grounded in management strategies and scientific methods designed to prevent the occurrence of quality problems during the process of production, rather than simply to measure them after they occur. Secondly, CQI provides a fundamentally different view of the relationship between quality and cost. CQI in industry has proved that, under stable conditions, true improvements in quality lead to lower cost by reducing waste, rework and unnecessary complexity in the production process. Thirdly, CQI originates from the simple notion of applying scientific logic and methods to the task of controlling and improving quality throughout healthcare organisation.

1.6 Important considerations

CQI is built on the accomplishments of traditional QA programmes. The contributions of Avidis Donabedian, John Williamson and Harold Luft and “hundreds of quality assurance professionals over the past two decades created the foundation for current reforms”.⁵ There are, nevertheless, several important differences between traditional and CQI approaches which the following table shows.

Table 1.0 Comparison: Traditional and CQI Approaches⁶

Issues	Traditional Methods	CQI
Motivation	Mandated, reactive	Self-motivated, pro-active
Customers	Regulators	Many, internal and external
Focus	on Individuals	on processes
Method	Clinical inspect	Process improvement
Process analysis	Idealised	Actual
Use of statistics	Limited	Pervasive
Relationship to cost	Independent	Integrated
Scope	Selected departments	Entire organisation
Impact	Distant	Tangible

The underlying theme of Deming’s “fourteen points” (see Appendix 1) is that top management is responsible for ensuring quality in the organisation. CQI builds on an accountability hierarchy that inverts the organisation chart and requires management to meet the needs of its staff by providing them with the resources, training, education and work environment they need to perform their jobs better. In other words, management assumes responsibility for the quality performance of their staff. However this does not relieve each member of staff from personal responsibility for their own performance.

1.7 Top management’s role in CQI

Top management’s role in CQI should be continuous. It begins with a plan for action that, according to Deming, includes the following:

- top management must discuss and agree on the meaning of the “fourteen points” and on the direction the organisation should take. They must also agree to adopt the new philosophy.
- top management must feel pain and dissatisfaction with past performance and must have the courage to make continuous improvement.

- through seminars, or other means, top management must explain to key people in the organisation why change is necessary and that it will involve everybody. A sufficient number of people in the organisation must understand the principles of CQI or top management will be helpless to invoke change.
- top management must view every activity in the hospital (healthcare organisation) as a process that can be improved.⁷

I. 8 Costs of poor quality

Berwick suggests common drains on resources:

- inspection of final products and services after they are produced or delivered
Example: studying post-operative complications
- inspection of interim products and services because they are not absolutely reliable
Example: Higher level sign-offs for budgeted expenditure
- anything produced and then thrown away
Example: lost laboratory specimens, routine reports that nobody uses, diagnostic tests and therapies that do not improve health status (“inappropriate care”)
- anything done twice or more frequently because it is not correct the first time
- extra complexity (usually because the underlying systems are not reliable)
Examples: after an electrocardiogram is carried out on a patient and before the report reaches the chart, there may be as many as 13 distinct steps, when only four are absolutely necessary
- waiting (another form of scrap)
Example: Operations scheduled to start at 7:00am almost never do. They mostly start between 7.30 and 8.00 am. As a result, many people are forced to wait.
- efforts to redress the grievances of people who were not served well
Examples: Managing complaints, apologising, defending or settling malpractice suits
- efforts to overcome other effects of defects
Examples: Public-relations campaigns to improve the hospital’s “image” in the community; efforts to counsel employees or to restore morale when people are frustrated at work; extra efforts to recruit and train new employees when turnover occurs because of job dissatisfaction
- Others drain on resources are: routine inspection of unreliable results, waste of activities on things that add no value, having to do things twice, too many steps in a process.

Other writers suggest: patient complaints, medical and nursing litigation, rework, waste supplies, untoward incidence reports which are not permanently remedied, flawed objective setting, poor resource management skills, employee turnover,

incomplete medical records, unreadable medical and other healthcare professional records, lack of planning, damaged public image, poor information systems, poor administrative standards, delayed surgical procedures, inferior quality of supplies, excessive overtime, nursing time away from patients, doctors not in tune with management aims, poor strategic vision and inappropriate settings for minor treatment.⁸

Unnecessary waiting by professionals for patients to be processed for surgery, inefficient appointment systems, patients waiting for the same reasons, poor preparation of clinics, results of tests not included in records, time spent investigating complaints of things that should not have happened, professionals giving confusing and contradictory information to patients, are all events common in health services.

1.9 The effects of reliance on setting targets and systems of inspection

Setting targets is an integral part of our way of thinking and can be a powerful motivator to help us to do better. When managed correctly it can produce good results and marked improvements. It is not, however, by itself conducive to developing a culture of continuous quality improvement. Reliance on inspection can also lead to an inspection mentality which focuses on “bad apples”, lays blame on individuals and introduces a cycle of fear. This works as follows: (1) fear is increased, (2) kill the messenger, (3) filtering the information to make it look good, (4) micro-manage (i.e. explain away the statistics, “ we are special”, “we have special problems”) and thus breeding more fear.

Examples of quality failures and problems associated with reliance on inspection

- inspection itself costs money.
- there is acceptance of a certain rate of scrap and rework, i.e. some samples of, for example, blood or urine will go astray and will need to be taken again or they are found to be unacceptable and are thrown away.
- time allocated to inspection may be time wasted if it does not result in permanent change; inspection tends to focus on the extremes at either end of the “bell shaped diagram”, called “outliers” instead of seeking to improve the centre and reduce the “outliers”.
- the threshold for “acceptability” often becomes a ceiling on performance.
- the goal in inspection is to be “stable” not to improve continuously.
- inspection hinders a culture of continuous improvement and the dynamism vital to the process of continuous improvement. Juran calls this

“disconnecting the alarms” on chronic problems.

- an inspection mentality may lead some people to withhold knowledge important to those working with patients or clients; knowledge is power and gives control over those who do not have this knowledge.
- inspection tends to divide knowledge - the people who know the work may be separated from the people who know the results of the work. This causes conflict and the organisation may have trouble getting a complete view of itself as a system. The result is confusion, resentment and the patient/client suffers by reduction of service.

No inspection system is perfect, so some bad products and services will “escape” and hurt the customer. There may be over emphasis on numbers: of visits, of patients seen, of the production quota mentality - instead of improving the flow to allow the system to accommodate more patients.

1.10 A new set of principles: The essence of CQI

- Get focused on quality. Improvement must be a key objective rather than production quotas.
- An understanding of the process of production is essential. Don't assume that the variations in performance and the rate of defect is caused by an individual.
- A key point is the assumption that the process of production more than people are the “causes of quality”.
- A knowledge of the whole system is vital to an understanding of how it works, it may be necessary to halt the system in order to improve it. The people at the frontline are more likely to know how the system works in microcosm and should be involved in changing the system. They will probably know more than the “boss” about the cause of a defect or may be in a better position to rectify it.
- Be careful and systematic in interpreting variation.

Key points

- Ask the people who do the job and who have information on the process.
- Shift the focus on to the process.
- Assess the process. Check the quality of the process at each point.
- Document.
- Involvement of all those involved at each point.
- Teamwork.
- Gain knowledge of the whole process. No one person is familiar with the total process.

I. II Ground rules when involving those on the front line

- A safe environment must be available for providers of services to talk about and explore defects and variation.
- Providers may need training to master the whole system and contribute usefully.
- Acknowledgement by management that time out is vital for providers to learn and to work on the process and change it.
- The system of reward and recognition must be compatible with the improvement agenda. The system must encourage (continuous) learning, multidisciplinary teamwork and activities that discover and remove causes of flaws in processes.
- Managers must themselves become facilitators of a new process.

Two vital points

- 1 Any process requires active leadership by someone with the authority to make change.
- 2 The focus must continually be on the needs of the people to be served, i.e. “customer- mindedness”. This need not always be the patient/ client directly: whoever is relying on you to supply the service or product is your “customer”. This means that *everyone* in the system is important to changing the system.

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Appendix 1

Requirements for the transformation of organisations to the CQI philosophy.

Deming’s 14 Points

- 1 Create constancy of purpose for service improvements
- 2 Adopt the new philosophy
- 3 Cease dependence on inspection
- 4 End the practice of awarding business on the basis of price
- 5 Improve constantly
- 6 Institute training on the job
- 7 Institute leadership
- 8 Drive out fear
- 9 Break down barriers between departments
- 10 Eliminate slogans, exhortations
- 11 Eliminate work standards, (quotas). Eliminate management by objectives
- 12 Remove barriers to employees
- 13 Institute education
- 14 Transform everyone’s job

Crosby’s 14 Steps

- 1 Management commitment
- 2 Quality improvement team
- 3 Quality measurement
- 4 Cost-of-quality evaluation
- 5 Quality awareness
- 6 Correction action
- 7 Ad hoc committee for zero defects
- 8 Supervise training
- 9 Zero defects day
- 10 Goal setting
- 11 Error-cause removal
- 12 Recognition
- 13 Quality councils
- 14 Do it over again

Four Quality Absolutes

- 1 Quality defined as conformance to requirements, not goodness
- 2 The system for causing quality is prevention, not appraisal
- 3 The performance standard must be zero defects, not “that’s close enough”
- 4 the measurement of quality is the price of nonconformance, not indexes

Juran’s Trilogy

I. Quality Planning

- 1 Determine customers
- 2 Determine customers’ needs
- 3 Develop products for customers
- 4 Develop processes to produce products

II. Quality Control

- 1 Evaluate performance
- 2 Compare performance to goals
- 3 Act on differences

III. Quality Improvement

- 1 Establish infrastructure
- 2 Identify needs for improvement/projects
- 3 Establish project teams
- 4 Provide teams with:
 - resources
 - motivation
 - training

Programme Two
THE PRINCIPLES
OF CONTINUOUS QUALITY IMPROVEMENT

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Programme Two

THE PRINCIPLES OF CONTINUOUS QUALITY IMPROVEMENT

Introduction

The purpose of Programme Two is to introduce the basic vocabulary of CQI and to explain its principles. It builds on principles learnt in Programme One and explores them in greater depth. It identifies the common causes and the special causes of variation in processes and the sources of this variation. It introduces the concept of “real and non-real work”, demonstrates the cost of poor quality, and broadens our understanding of the use of the words “customer and supplier” as meaning those who depend on you to carry out the role / task / service or whatever is required in a particular situation. A key customer is the patient and their relatives but there are many others. This concept is integral to an understanding of “processes”. Finally Programme Two contrasts the new approach to quality management with the old way.

Learning objectives

- The student will understand the basic vocabulary of continuous quality improvement (CQI).
- The student will understand the foundations for the principles of CQI and their connections to the “scientific method” of managing complex systems, using CQI principles the student will be able to comprehend the “new way” of management and contrast this with the “old way” of management.

Key words

processes, customers / clients, variations, continuous improvement, scientific method, view of people, transformation

2. 1 First key concept: Processes

DEFINITION: *A process is a sequence of steps that takes input from suppliers who are arbitrarily defined as being outside the process and produces outputs which benefits some other group called customers, who are also arbitrarily defined as being outside the process.*¹

Another definition is: *a process is the sequence of activities and communication that accomplishes a service for a patient or other customer (for example the admission/ discharge process)*²

CQI requires a reorientation from results management to process management

A process has six basic elements:

1. suppliers - those who give the process what it needs
2. inputs - that which comes from suppliers
3. a sequence of steps/ actions
4. something passed along that sequence and changing as it moves, e.g. patients' specimens, medical records etc.
5. outputs - what is changed during the process
6. customers - those who depend on the process.

Figure 2.1 Elements of a Process*

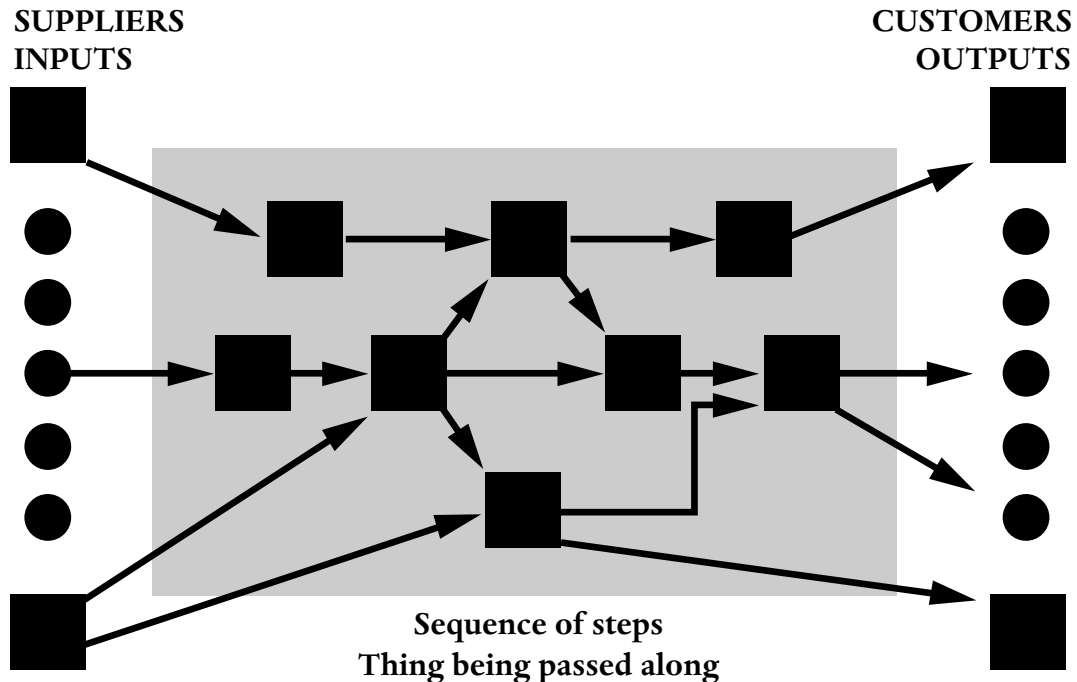
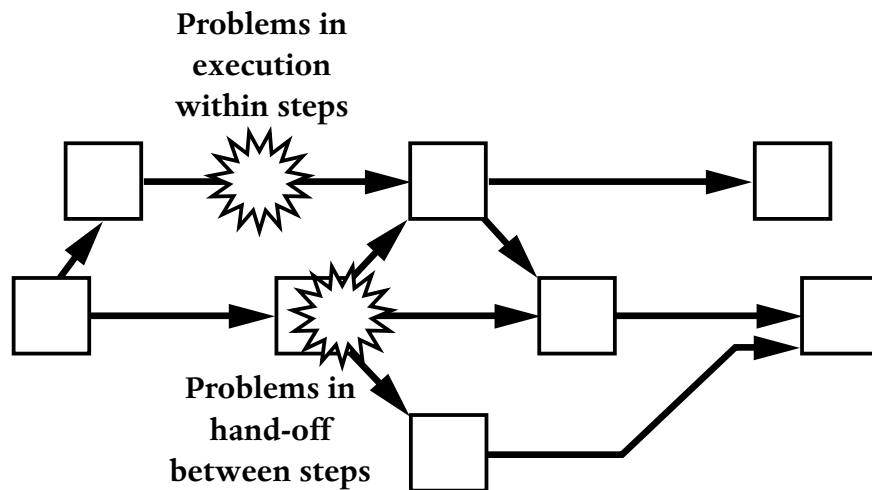


Figure 2.2 What can go wrong in a process



Source: Juran Institute

* A process can be represented by a flowchart.

What is a flowchart? “A graphic representation of the sequence of steps in a process”. Another definition is “a diagram of the sequence of events, activities, tasks, and decisions which transform inputs into outputs in a system or process” (British Deming Association).

Flowcharts are dealt with in much greater detail in Programme Four.

In CQI “process” means the flow of sequences and series of steps in the work that leads to a completed task, e.g. throat culture etc.

Types of processes in health care: patient flow, information flow, material flow (blood, and other specimens), multiple-flow (multiple-flow processes are those in which what is passed along changes from information to materials to people and so forth). Problems can occur in the execution of steps, between steps and within steps. Problems lead to waste.

It is important to concentrate on concrete sequences, not complex systems.

Examples of these processes may include:

- *patient admission*
- *patient referral from a public health nurse to a general practitioner - from a GP to a consultant's out patients department.*
- *attending a Warfarin clinic*
- *ordering a test.*

At this stage it may be useful to identify the following seven elements: What sequence of activities occurs? What is passed along the process and how is it changed? Who depends on the process (i.e. who are the customers)? What

outputs do these customers depend on? What dimensions would they use to describe the “quality” of the output or can they identify the “added value” which occurred along the sequence? What inputs (equipment, rules, procedures, skills, materials, etc.) does this process depend on? Who supplies these inputs to the process?

Other questions which may be asked are:

- *how often and how does this process fail?*
- *does this occur more often within steps in the process or between steps from one customer/supplier to another?*
- *what other elements are involved in the sequence e.g. timeliness, appropriateness?*
- *are the inputs i.e. equipment, protocols, skills, materials up to standard and what may hinder the smooth flow of sequences?*
- *are there outdated regulations or traditions which interfere in this?*
- *are the suppliers reliable, cost effective?*
- *are there opportunities for bulk buying by going into partnership with another healthcare organisation?*

Systems, processes and outcomes

In general terms a system is bigger and more complex than a process. For example, people may refer to the “communication process” or the “patient-care process” both of which are very complex systems.

- Processes often have multiple customers.
- Some processes have never been formally designed but have evolved as the organisation developed.
- Processes can be “customers” or “suppliers” of other processes.
- The output of one step in a process can be the input of the next step in the process.
- Outcome measurement” (patient satisfaction, clinical outcome, health and social gain) is different to “output” measurement (records, reports) of quotas or “things” which can be made as in manufacturing. “Outcome” measurement relates more to clinical outcome following health service intervention. This is only one way of ascertaining patient satisfaction.

Key quality characteristics

There may be a number of “Key Quality Characteristics of a Process” (KQCs) in the outputs/outcomes of a process. Two examples are: (a) if the output of a process is information it must be accurate, timely and understood by the patient/client; (b) in a clinical care process the outcome must be effective in restoring function, comfort, safety, dignity and peace of mind.

Constructive cheating

“Constructive cheating” is a term which describes how the process is carried out in practice as opposed to the way the rule book specifies that it should. People have had to invent new ways to work in order to overcome problems in the way the process was designed to work.

2.2 Second key concept: Real and non-real work

Real work is that which adds value to the process. It is everything we do if everything in the process is perfect, i.e. the minimal number of necessary steps.

Non-real work adds no value and is often done to correct poor work. It is the additional steps we take because everything in the process is not perfect. Non-real work leads to checking and rechecking (appraisal), *internal failure* (that which is not observed) e.g. x-ray retake, repeat samples of blood and *external failure* (that which is observed) e.g. cold food rejected by patients. Processes that create non-real work waste resources, add costs and impact on care.

2.3 The third key concept: The cost of poor quality

Prevention costs are those which arise from actions which are carried out to keep quality from failing in the first place.

Appraisal costs are those arising from inspection of the process to discover failures or to make judgements.

Internal failure costs are those arising from failures before the service (or product) reaches the customer. These include waste as a result of poor materials, scrap, rework, duplication of effort, excess complexity and unwanted variability.

External costs are those associated with litigation, complaint management, loss of reputation etc.

Other costs are those related to inspection which may not change culture or attitudes.

Prevention of defects through careful prior design is a “cost of quality” but is also the cheapest. Using Deming’s terminology, many of the high costs of poor quality are “unknown and unknowable” that is, the costs are there, but there is no known way of measuring them. For example workers’ frustration means that they work below par. If this is continuous it may lead to burnout, higher staff turnover, increase in sick days, increased training and recruitment costs, more time spent dealing with unions because of complaints about management, more time spent on negotiation for work changes in work practices. A belief in the high costs of poor quality may be the catalyst for adopting CQI.

Cost of poor quality: Example, *Late or wrong dietary tray*:

Situation, 200 beds, 80% occupancy, 2 meals/per patient/per day, 5% late trays or wrong diet.

Time associated with late tray: nurse 5 minutes, kitchen 3 people x 5 minutes each, tray carrier 10 minutes. Total staff time = 30 minutes/per late tray.

Calculations: $200 \times 0.8 \times 2 \times 0.05 = 16$ late cold trays per day, $\times 0.5$ hrs/tray per day = 8 hrs per day = 1 FTE employee (more if it happens 7 days a week).

2.4 Fourth key concept: Customers

There are internal (to the organisation) customers and external customers, internal suppliers and external suppliers. All people within the organisation who interact and rely on each other are either customers or suppliers.

- Key customers in a health service are patients and their relatives. By and large, they are not interested in how the system works but in their experiences during contact with the system. In concrete terms this relates to how their questions are answered, how they are treated, the respect shown to them, things that impact on personal comfort and peace of mind. They can only assume that the technical aspects of their care are of the best quality as it is not generally within their competence to judge these things.

Some health professionals find it offensive to refer to "patients" as "customers" as they can relate only to 'patients' who need their services. However, by placing the patient in the position of a customer as the term is generally used in the service industry, opens up new ways of perceiving patients. It suggests that they have rights and the means of redress if not satisfied. Their position is that of exchange (i.e. care and/or treatment) between equals with as clear an understanding of what is exchanged as is possible to provide. It changes the position of the patient from that of a passive recipient of care/treatment to one of sharing responsibility for the expected outcome. They are part of the process albeit a vital part. It is therefore important to know who are the customers, can they be identified? What do they need? How well are their needs met? How can you tell if you are meeting their needs? How can you find this out? To help develop an understanding, some useful questions are: who depends on you? How well are you meeting their needs and expectations? How do you know? (See Appendix I for diagram of customer and supplier interaction).

Key concepts in relation to "customers" are:

- the multiplicity of customers (this concept is at the heart of CQI)
- the multiplicity of needs and conflicts between needs
- accurate information regarding the needs of customers e.g. other professionals and managers

- precision regarding our expectations of others, for example our suppliers, when ordering equipment. Precision regarding specification of supplies is vital.

It is important to remember that managing quality from the customer's point of view requires improving performance of a system not just improving functions one by one.

High cost of customer dissatisfaction: When customer's expectations are not satisfied the supplier generates waste, i.e. non-real work and adds to costs.

2.5 Fifth key concept: Process Variation

Sources of variation are people, machines, materials, methods and measurements

For example: time needed to get results back from the laboratory, number of medical records coded per person per minute, percentage of patients per month that develop post-operative infection.

Process variation may be due to:

- lost charts/laboratory tests
- a new employee not knowing the system
- health professionals or administration "borrowing" a chart (people)
- poor maintenance of equipment (calibration, measurement and machines)
- materials that don't do what they're supposed to leading to inappropriate or/and incorrect use of dressings
- poor methodology of testing
- staff not kept up to date on new tests (method)
- variation in the system of measurement (this is discussed more fully in Programme Four).

The Japanese use the technique of getting deeper and deeper into the real reasons for process failure by asking again and again "why?" This is described as the "the five whys" which investigates root causes by asking repeatedly "why", and thereby gets to the heart of the cause of process failure instead of blaming people.

2.6 Sixth key concept: Understanding special cause and common cause of variation

There are two types of cause of variation:

Special causes of variation are those that come from outside the process and are unusual events, e.g. a major accident with the consequent sudden increase in A&E

patients, power failures etc. Shown diagrammatically, individual data points are unpredictable. A process with both common and special causes is unstable, unpredictable and not in statistical control.

Common causes of variation are those that are built into, and are characteristic of, the process. These occur regularly and produce variations that follow a “mathematical law” i.e. a describable statistical distribution such as the day to day flow of patients in accident and emergency departments. These causes of variation can only be removed by changing the process itself. It is highly likely that people in organisations are working within a common system of causes. Shown diagrammatically, individual data points invariably display a fluctuating pattern. A process with only common causes is stable, predictable and in statistical control.

More detail is available on this in Programme Four.

2.7 Seventh key concept: Continuous improvement using the scientific method

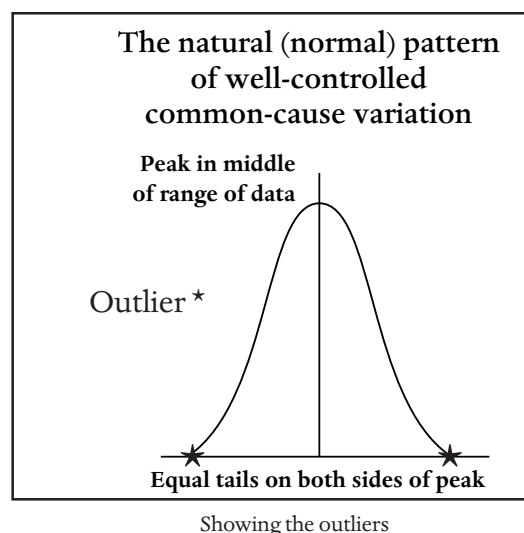
The scientific method consists of reducing inappropriate variation and complexity by the design and redesign of processes. This is done by the collection of appropriate data relating to processes, analysis of that data and making the necessary improvements.

Juran states that we are so used to some work practices that we fail to react to them and they become chronic quality failures. One such in the Irish health system is “block booking” for outpatient departments. The acceptance of late starting of clinics and operations is a chronic failure of quality.

The central concept in continual improvement is removing chronic flaws and improving the average performance of processes, products and services. This is a much more powerful way to achieve excellence in the long run than reacting to special problems or working on “outliers”. A diagram of the Bell shaped curve will show the outlier clearly.

The aim is to achieve fundamental change, including cultural change in

Figure 2.3 Bell shaped curve



the organisation. This means moving from the current mechanistic hierarchical management style to a recognition that all members of the organisation are vital to the organisation and are members of the team. This requires more than lip service to the concept of teamwork and real structural changes to enable teamwork to function with good effect.

(This is discussed in greater detail in Programme Four.)

2. 8 Eighth key concept: A view of people

A basic level of trust in the goodwill and intentions of employees is one of the most important assets in a quality management system. An important view of the employee is that most people try hard to do well most of the time. Look at the “motivators”; why do people work as hard as they do? Is it because of the individual’s need to achieve (intrinsic) or because others try to shape the individual’s behaviour (extrinsic)?

In any organisation there is an underlying prevailing “theory of motivation” that can either help or hinder the search for quality. Modern quality management systems try to build on intrinsic motivation as being more reliable and long lasting. It is important, therefore, to look at the job and ensure that it gives job satisfaction. Everyone in the organisation must be involved.

Managers’ attitudes to workers (workers include everyone, even the managers) is an important component in the success or failure of introducing CQI in to an organisation. Do managers contribute to a mechanistic or an organic system as described by Burns and Stalker or subscribe to McGregor’s theory “X” or theory “Y”?⁵ (Appendix 2). Have they an understanding of what motivates people? Do people in the system get congratulated, how many have the opportunity of experiencing pleasure in teamwork? Are efforts made to build systems that reward people through the “feel good” factor?

2.9 Ninth key concept: Transformation

CQI requires transformation from one management system, that focuses on results, feedback, information and accountability as the dynamic behind improvement of quality, to a different kind of organisation that is focused on a different agenda, which understands that the organisation’s ability to meet the needs of the people who depend on it, depends on the processes within the organisation.

Berwick suggests that there are three basic areas of change implied in :

- learning and using new technical skills (e.g. understanding variation and tampering)
- altering managerial systems and behaviour (e.g. reward systems and investing in training, teamwork and education)
- focusing organisational strategy on “quality” (e.g. trying to lower the costs of poor quality, understanding customers, trying to meet needs and placing process improvement high on the agenda of the organisation).

Movement from the “old way” of management to the “new way of management”

Dimensions along which to measure where you are, your own theories, behaviour and methodology:

Figure 2.4 Mechanistic versus systems management

Old way	New way
Our quality is fine. The world doesn't really understand how good we are (defensive mode).	Quality can and must be improved. Constantly striving to get better, it must become a driving strategic imperative. Which comes first, finance or quality?
Poor quality and defects come from people. (Someone let us down.)	Poor quality and defects come from complex processes (the way work is done).
Measurement, exhortation and incentives ensure quality.	Analysis and understanding of process ensure quality.
Use intuition and the latest technology to address problems.	Collect data and act with knowledge to address problems.
Improvement must occur within functional areas.	Improvement must occur among functional areas as well as within linkages -suppliers and customers.
Customers/ patients are problems.	Customers/ patients are partners.
Suppliers are problems.	Suppliers are partners (long-term relationships are part of good attitudes to customers and suppliers).
Quality costs money (change is impossible).	Quality saves money (change is inevitable).
We don't have time to improve quality.	We don't have time not to improve quality.

Summary of required change

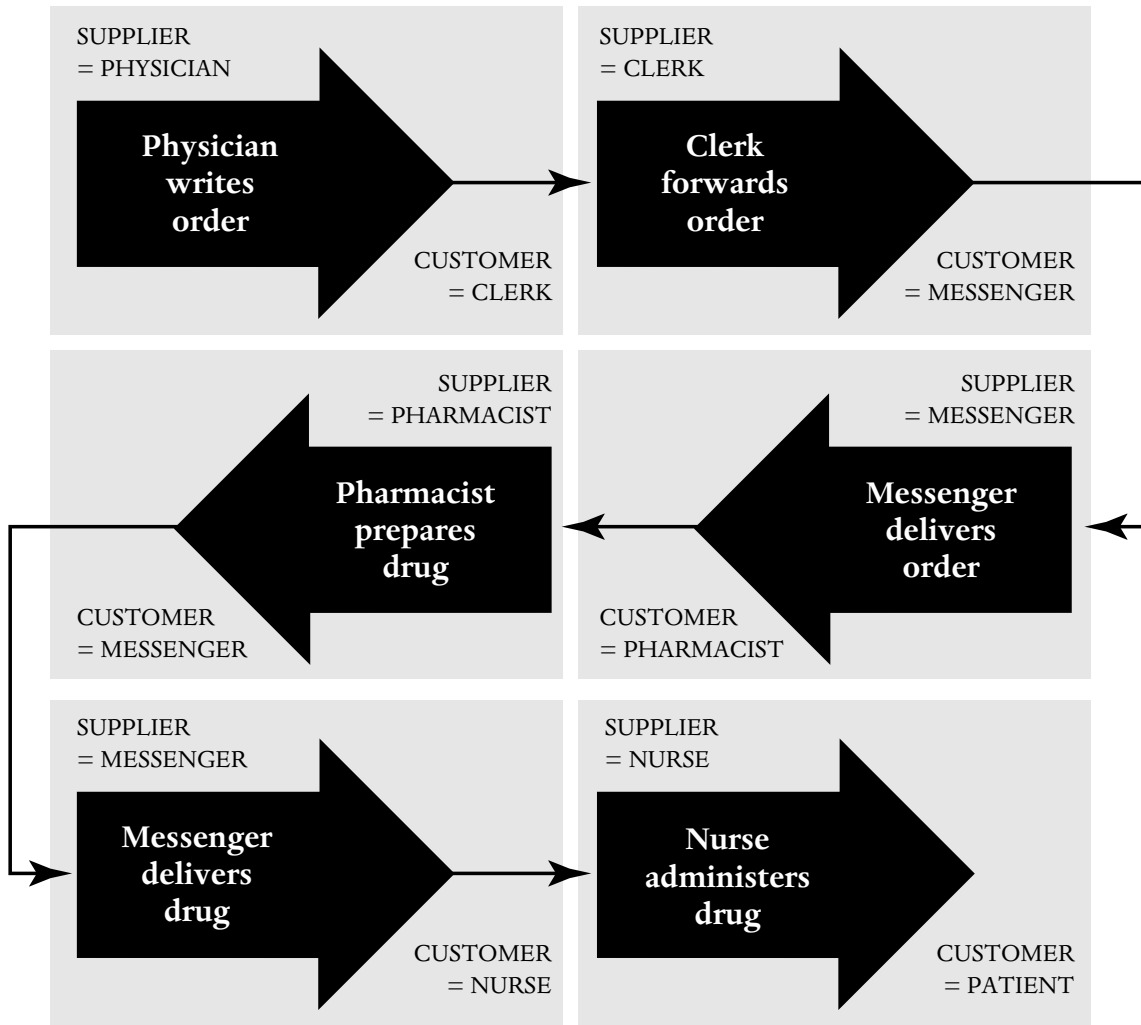
- Process-mindedness
- removing non-real work
- lowering the costs of poor quality
- understanding and focusing on customers
- defining quality as “meeting needs”
- understanding causes of variation
- understanding and reducing “tampering”
- seeking continuous improvement
- involving everyone.

References

- 1 Berwick D. and Plsek P., *Leaders guide to managing medical quality*
- 2 Marszalek-Gaucher, E. & Coffey, J.R. (1991), “Transforming healthcare organisations”, *How to achieve and sustain organisational excellence*, Oxford: Jossey-Bass, Chapter 5, p.9
- 3 Leaders guide op.sit p.12
- 4 Joiner, L. Brian, (1994), *Fourth Generation Management: The New Business Consciousness*, Washington: McGraw – Hill Inc., p.149
- 5 Burns T. & Stalker G.M. (1984), *Organization Development: Behavioural Science Interventions for Organization Improvement*, French W.L & Bell, Jr., C.H. Prentice-Hall International Editions, Chapter 10 p.258 & Chapter 18, p.139

Appendix 1

Figure 2.5 Customer-supplier relationships for medication order



(Marszalek-Gaucher & Coffey 1991, p.88)

The MECHANISTIC form of organisation has the following characteristics:

- A high degree of task specialisation with precise delineation of rights and responsibilities and methods to be used. Role incumbents tend to pursue technical improvements in means in contrast to focusing on the overall ends of the organisation.
- A high degree of reliance on each hierarchical level for task coordination, control and communications, that is each supervisor is responsible for reconciling the activities below him or her.
- A high degree of emphasis on vertical interactions between superiors and subordinates, with subordinate activities mainly governed by these interactions.
- A tendency for the top of the hierarchy to control incoming and outgoing communications and to be conservative in dispensing information within the system.
- An insistence on loyalty to the organisation and to superiors.
- A higher value placed on internal (local) knowledge, skill and experience, in contrast to more general knowledge, skill and experience.
- Implied in the above is a one-to-one leadership style, that is, with most interactions between superior and subordinate occurring in private discussion and an absence or minimal attention to group processes and the informal system. As seen in this form of organisation, the superior - subordinate relationship tends to be a telling-reporting relationship.

In contrast, the ORGANIC system is seen by Burns and Stalker as appropriate to changing conditions and has the following characteristics:

- A continuous reassessment of tasks and assignments through interaction with others and a high value placed on utilising special knowledge and experience that can contribute to the 'real' problems being faced by the organisation.
- A network of authority, control, and communication, stemming more from expertise and commitment to the total task than from the omniscience of the chief executive or the authority of hierarchical roles. Centres of control and communication are frequently *ad hoc*, that is, are located where the knowledge is. Responsibility is viewed as something to be shared rather than narrowly delimited.
- The lead in joint decisions is frequently taken by seniors but it is an essential presumption of the organic system that the lead, i.e., "authority," is taken by whoever shows himself most informed and capable, i.e., the "best authority."

1. Burns T. & Stalker, G.M. (1984), *Organisation Development: Behavioral Science Interventions For Organisation Improvement*, French W.L., & Bell Jr., C.H. Prentice-Hall International Editions, Chapter 18, pp. 258-259.

The location of authority is settled by consensus.

- A tendency for communication to be much more extensive and open in contrast to limited and controlled.
- The encouragement of a communications pattern and style that is lateral and diagonal as well as vertical and that is more of a consultative, information and advice giving nature than of a command or decision relying nature. By *diagonal* reference is being made to Burns and Stalker's notion about communication between people of different rank and across functional groups.
- A greater emphasis on commitment to the organisation's tasks, progress, and growth than on obedience or loyalty.
- A team leadership style with an emphasis on consultation and considerable attention to interpersonal and group processes, including methods of decision making and more frequent decisions by consensus. Perhaps symbolically, meetings are frequently held away from the superior's office, with physical facilities designed to further group dialogue.

According to Douglas McGregor there are two sets of assumptions about how people are motivated to work:²

Theory X

- The average human being has an inherent dislike of work and will avoid it whenever possible.
- Most people must be coerced, controlled, directed, or even threatened with punishment to get them to put forth adequate effort toward the achievement of organisational goals.
- The average human being is lazy, prefers to be directed, wishes to avoid responsibility, has relatively little ambition and wants security above all.

Theory Y

- The expenditure of physical and mental effort in work is as natural as at play or rest .
- Commitment to objectives is a function of the rewards associated with their achievement.
- Human beings will exercise self-direction and self-control in the service of objectives to which they are committed.
- The average individual learns under proper conditions, not only to accept but also to seek responsibility.
- The capacity for imagination, ingenuity and creativity in the solution of organisational problems is widely distributed in the population.
- Under the conditions of modern industrial life the intellectual potentialities of the average human being are only partially utilised.

2. Stoner J. A.F. (1986) *Management* 3rd. Ed. Prentice-Hall International Editions p.96

McGregor also identified some of the characteristics of a well-functioning, effective group as follow:³

- The atmosphere tends to be relaxed, comfortable and informal.
- The group's task is well understood and accepted by the members.
- The members listen well to each other; there is a lot of task-relevant discussion in which most members participate.
- People express both their feelings and ideas.
- Conflict and disagreement are present but are centred around ideas and methods, not personalities and people.
- The group is self-conscious about its own operation.
- Decisions are usually based on consensus, not majority vote.
- When actions are decided upon, clear assignments are made and accepted by the members.

3. McGregor, D. (1984) *Organisation Development: Behavior Science Interventions For Organisation Improvement*, French W.L., & Bell Jr., C.H. Prentice-Hall International Editions, Chapter 10, p. 139

Programme Three
THE QUALITY IMPROVEMENT PROCESS

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THE QUALITY IMPROVEMENT PROCESS

Introduction

Programme Three focuses primarily on the technique of continuous quality improvement. It touches on the environment in which people work, customers, who they are and on the culture of the organisation. It identifies the “five breakthroughs” necessary to achieve change in attitude, change in knowledge, change in results, change in culture and change in organisation. It demonstrates a method for achieving these essential “breakthroughs”. It describes a basic approach to improving the quality of a process or system of processes through the “scientific method”. The programme assists the student to define an improvement opportunity and organise a team, diagnose a problem, decide what to do about it and how to hold the gains. The programme finishes with some exercises for students.

Learning objectives

The student will be able to understand and describe the three elements of the quality improvement process, and will also be able to apply the technique of the quality improvement process to the work situation.

Key word

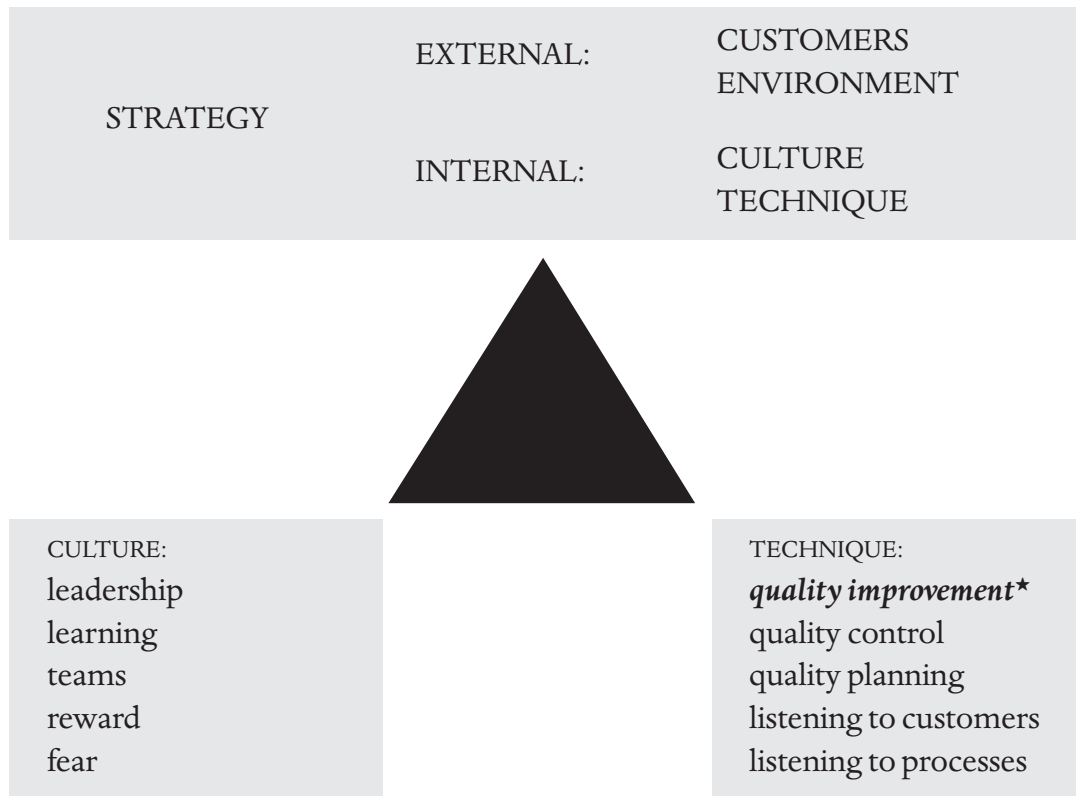
Breakthrough

3.1 The quality improvement process

Berwick points out that the quality improvement process (QIP) is just one form of the general scientific model of learning and problem-solving (see Appendix 1 for another scientific method of problem-solving). He also states that it is not possible through these programmes to try to teach the QIP in enough detail for most students to use it effectively. The goal is familiarity, not mastery of the method.

3.2 An organisational overview

Figure 3.1



Major components of organisational self-assessment are:

Strategy Culture Technique

(Strategy is discussed in detail in Programme Five.)

The technique of quality improvement forms the main focus of this programme

Before the technique of Quality Improvement is discussed it is necessary to refer briefly to those components of strategy, i.e. Customers, Environment and Culture, which are not discussed explicitly in later programmes.

- Customers: These can be internal and external. Internal customers are colleagues with whom one works and who depend on one to provide a service or carry out a task. External customers are patients, relatives, general practitioners, health boards.
- Environment: this is the surroundings in which the main work processes take place and includes colleagues, as well as buildings and other factors which impact on the work itself.

Consideration should be given to the following;

- the environment in which they work, is it conducive to good health, both their own and that of patient's?
- are safety regulations adhered to strictly? Who is responsible for safety regulations and their enforcement?
- has the organisation got a mission statement that is meaningful and known by all who work in the organisation? (See Appendix 1 for the purpose of a mission statement and how to develop one.)
- Culture: for example, type of leadership, learning environment, team work reward systems, climate of fear.

These examples of culture are discussed in greater detail below.

Definition of culture

The beliefs and behaviours of leaders and employees, and the internal systems that reflect those beliefs and support those behaviours.

Leadership versus management

How do leaders show what is important to them? The concept of giving leadership is different from managing people or organisations and is new to some.

WHAT IS LEADERSHIP?	LEADERSHIP	MANAGEMENT
<p>(Hogan 1991)</p> <ul style="list-style-type: none"> ● Leadership can be defined as persuading other people to set aside for a period of time, their individual concerns and to pursue a common goal that is important for the responsibilities and welfare of a group. ● Leadership is persuasion not dominance; individuals who require others to do their bidding because of their power, are not Leaders ● Leadership only occurs when others willingly adopt, for a period of time, the goals of the group as their own. ● Thus Leadership concerns building cohesive end goal oriented teams; ● there is a causal link between Leadership and team performance. 	<ul style="list-style-type: none"> ● Leadership is a social influence process in which the manager's influence is non-coercive ● Leadership is about transformation of the motivation, values and beliefs of Followers as well as the structures of organisations ● Bass (1990) maintains that Leadership is a Transformational influence process – often involving a structuring or restructuring of the situation and the perceptions and expectations of the members. <ul style="list-style-type: none"> ○ any member of the organisation can exhibit leadership ○ it is based on persuasion not coercion 	<ul style="list-style-type: none"> ● Management is an authority relationship between one Manager and at least one subordinate who co-ordinates their activities to produce and sell particular goods and/or services (Rost, 1993) ● the process involves an exchange relationship between Leaders and Followers ● the key function of the Leader is to establish the basic vision ● the key function of the Manager is to Implement it in a way which achieves the stated ends

At this time it is important to be able to describe the trappings and symbols of some so called leaders and say how these may differ from true leadership qualities. Useful indicators of good leadership are the existence of a climate of participation and involvement in decision-making. Other indicators are; employees being kept informed of what's going on in the workplace, efforts are being made to make employees part of the organisation, social functions are organised which include a mix of professions and management, good ideas are valued and acted upon, there are clear indications that employees are valued, and important decisions are made only after consultation has taken place with those concerned, there are no indications of bullying or intimidation.

Learning environment

A satisfactory learning environment should demonstrate a high priority for continuous learning, staff training, education and skills building. A skills audit is vital to ensure that an organisation maintains its vital skills level.

The following questions on 'teamwork' and 'reward systems' could be deployed to assess the cultural environment.

Teamwork

Is the concept of "teamwork" fully understood? How much cross-functional communication takes place in hospitals or in the community? Can this be improved and how? What investment is made in the use of modern telecommunications to improve communication between professionals and between professionals and patients? How do systems of budgeting, supervision, team management, information flow and planning encourage cross-functional work? Are all contributions valued equally? (Further reading on teamwork is referenced)

Reward systems

How do they relate to performance appraisal? How are people promoted? Is there a system for rewarding good work? What role do individual managers have in this? There should be flexibility to allow reward for exceptional work to teams or individuals. There should be sufficient comfort in the culture of the organisation for individuals to be willing to explore change, take risks, and receive reward for making the proper kinds of mistakes and effort.

Involvement

This refers to how employees at all levels are supported in their efforts to help the organisation. Methods can include special teams and task forces, suggestion programmes and information dissemination. What happened to the last good idea put forward by a staff member? What are the odds that it will be captured and used by the organisation?

Fear

Its presence in an organisation obstructs the flow of accurate information, increases the costs of internal “games” and erodes morale and involvement. Ask participants how does it manifests itself in their organisation and how can it be reduced? Many managers underestimate the degree of fear in their organisation.

Measurement

This will be dealt with in greater detail in Programme Four but it may be useful to consider here the number of reports written and received about the service which are not acted upon. On the theory that “what gets measured gets managed” Berwick asks what priority does the organisation seem to attach to “managing quality” compared to other aspects of organisation performance?

3.3 Organising for quality improvement

Berwick suggests a Quality Management Council to guide the organisation-wide improvement effort. This can also be called a steering committee. The council’s task is to

- clarify the mission, values, quality definitions and guiding principles of management
- focus organisational plans on quality
- collect and prioritise opportunities for improvement
- ensure the presence of organisational skill and training in improvement methods
- organise QI teams
- support QI teams
- recognise rewards and celebrate progress toward improvement
- continually improve the organisation’s capability to learn and act as a system
- plan and implement the organisation’s quality strategy.

Question: Who should be on this council? Who should drive it? The above list should be discussed by participants. For example, how often should the council meet? How is progress to be reviewed? Top managers must be on the general council otherwise things go on as before.

CQI is not an add-on programme – it is an entirely new way to manage the organisation.

Figure 3.2 Organising for quality improvement



It may be useful to discuss what systems of QI already exist in the workplace. Some people would be more familiar with audit and the continuous audit cycle. Others view standard setting in certain problem areas as being within their capacity to control. Some are used to pre-set QA tools, such as Qualpacs, Monitor, GRASP, Quasar, to audit and set minimum standards. Still others prefer benchmarking and peer review. All are valid approaches but do not always impact on the larger environment or on the culture of the organisation and none recognises “the customer” as anyone other than a patient.

Functions of the three components of the organisation for quality improvement

Quality Management Council (Steering Committee) selects processes to be improved, provides resources and gives direction.

Project Team analyses the processes, selects improvements and sells the required changes to both management council and the operating departments.

Operational Departments implement change. It is imperative that:

- the project team meets regularly with the management council, identifies road blocks during implementation and brings these up.
- the same information is shared by everyone so that when decisions on priorities need to be made there is a consensus between management and the operating departments. The operating departments in particular should have the same knowledge and information as the management council.

3.4 “The Five Breakthroughs”

Following Juran, Berwick identifies the key resources required for system change to occur as a breakthrough in: *attitude, organisation, knowledge, culture, and results*. These may have already occurred at the workplace or at home and if these breakthroughs were truly successful should provide the student with good examples for further discussion.

Key features of these are:

Breakthrough in attitude

Believing that change is needed and improvement is possible. Often the underlying assumption in healthcare (especially with respect to clinical outcomes) is that we are “about as good at this as we could be”. One symptom of this belief is that healthcare organisations feel satisfied to be “above average”. A breakthrough in attitude might involve attempts to achieve unprecedented results.

Breakthrough in organisation

The key matters here involve getting ready to tackle improvement as a task, that is, “scheduling” improvement and creating opportunities (such as forming teams) for people in various functions to come together to achieve improvements. The latter may require assembling people from different functions and from different levels in the organisation.

Breakthrough in knowledge

The “theory of knowledge” in quality improvement is that progress is most likely to occur when causes and relationships in systems are understood through the gathering and analysis of information and the proper use of statistical thinking. A “break-through in knowledge” allows well-guided remedial efforts to occur. One well-known formulation of this interaction of knowledge and remedy is the PDCA cycle (for further explanation of this FOCUS-PDCA, see appendix 2). A great deal of effective quality management is founded on pervasive PDCA thinking. Knowledge comes from the “Checking” part of the cycle and that part cannot be skipped.

Breakthrough in culture

None of the first three breakthroughs will overcome the inherent tendency of people and organisations to resist change. The culture must, therefore, be consciously considered and constantly worked with. Some guidelines to facilitate “breaking through” the culture of resistance include:

- no surprises
- rewards must align with purpose

- communicate readily, in all directions
- ask people for their ideas
- remember that adults learn best when they talk and practise, not when they listen passively
- information is best used when it is an answer to a previously asked question
- be fair – don't ask one group to do all the changing
- avoid excess baggage, keep the changes as simple as possible.

Breakthrough in results

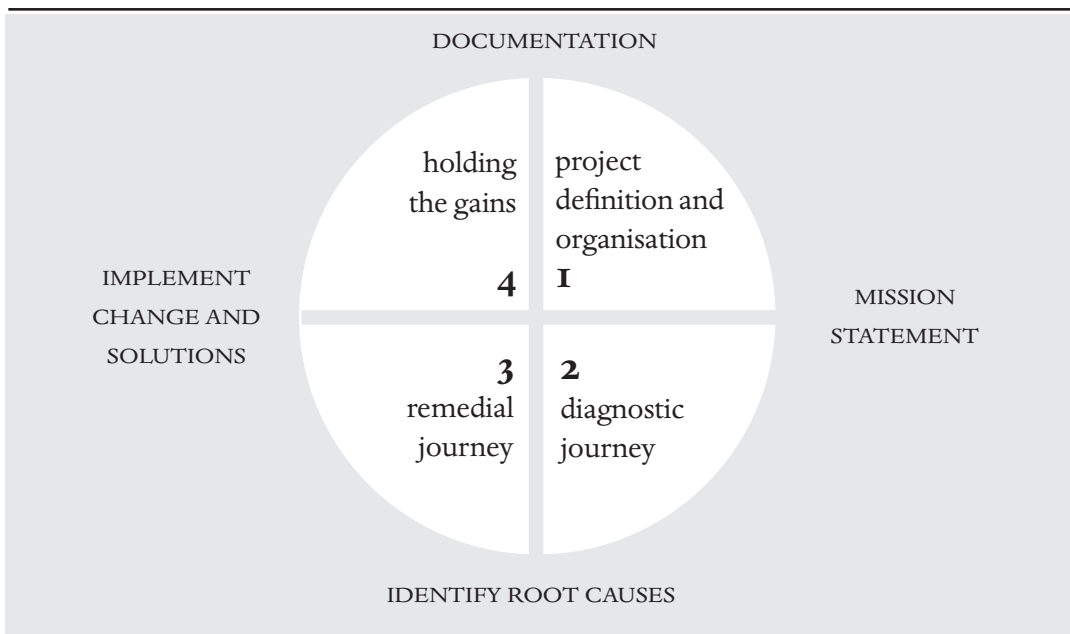
In the end the breakthrough that best sustains a change is that it works. From the start of any CQI effort, it is important to ask, "How will we know if this works?" To assure change, measurement of progress is almost always essential . So is standardising the process for the future, including assuring adequate training for future workers in the process.

3.5 The quality improvement process: A method for achieving the "Breakthroughs"

There are a number of approaches in use. Berwick describes four phases in this programme:

- Phase One: Defining an improvement opportunity and organising a team
- Phase Two: The Diagnostic Journey
- Phase Three: The Remedial Journey
- Phase Four: Holding the gains.

Figure 3.3 Phases of the quality improvement process



3.6 Phase one: Defining an improvement opportunity and organising a team

Steps in the quality improvement process

Project definition and organisation (Quality Management Council):

- List and prioritise problems
- Define project and teams.

Typical selection criteria for a new project

- The problem must be important.
- There is some support for improving the process, for change and improvement.
- The process is repetitive (high frequency and high volume) in “short cycle times” allowing data to be collected easily.
- The current process is organisationally and conceptually stable; (i.e. it’s not being changed at the moment).
- The process is small enough and the improvement opportunity well-defined.
- The improvement project is emotionally appealing and a potentially positive example of success.
- Data should be relatively easy to obtain.
- The project has potential “demonstration” value.

Opportunity or problem statement

A good opportunity or problem statement should specify the symptom to be addressed or the organisational quality to be improved. It should state why the issue is important and to whom. Watch out for a problem statement that is too ambitious offering vague purposes. Good statements suggest measurements which show when improvement is occurring. When writing opportunity statements avoid hidden blaming or solutions in disguise e.g. “Laboratory turnaround times for blood gases are slow due to inadequate equipment” is a statement containing a solution. Good statements suggest measurements that could be used e.g. “Telephone services are inadequate” is too vague. However, “phone calls are lost during transfer between departments” is much more specific. Don’t be over ambitious.

Project team

Teams should comprise no more than six to seven people preferably those who actually work in the process. They should include someone who can manage the process and can intervene when necessary. It may also be helpful for a customer and a supplier to be on the team.

3.7 Phase two: The diagnostic journey

The diagnostic journey asks the team to

- analyse symptoms
- formulate theories of causes
- test theories
- identify root causes.

Reminder: Problems can be caused by people, machines, materials, methods, measurement.

Different team members will have different points of view but real data is essential. This phase is intended to allow the team gain knowledge of the process to the improvement wanted; to get at the root cause of the problem. Identifying a remedy must be resisted until full knowledge of the cause is known. Diagrams can be used to illustrate a process and identify where unnecessary steps may be eliminated, duplication reduced and complexity decreased. During the diagnostic journey the use of Convergent and Divergent thinking will help identify root causes. Both are essential in problem-solving and process improvement. Convergent thinking involves making choices and decisions and divergent thinking generates lists and ideas. Both have their place.

3.8 Convergent and divergent thinking

DIVERGENT THINKING	CONVERGENT THINKING
STEP 1. list problems	specific project
2. theories of causes	root causes
3. alternate solution	specific plans
4.	monitor indicators
A balance of both is needed.	

80/20 Rule

Pareto analysis of Causes can also be useful at this time (see Appendix 3, also Programme Four appendices, for more information on Pareto diagram): 80% of the problems are linked to 20% of the causes.

Figure 3.4 Organising for quality improvement

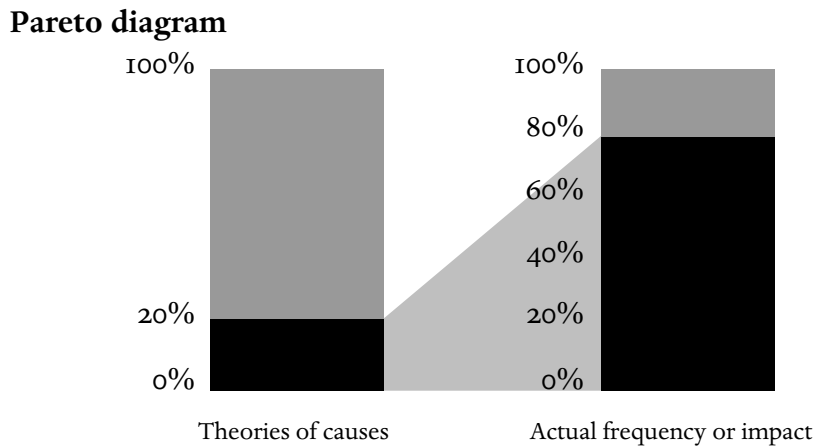
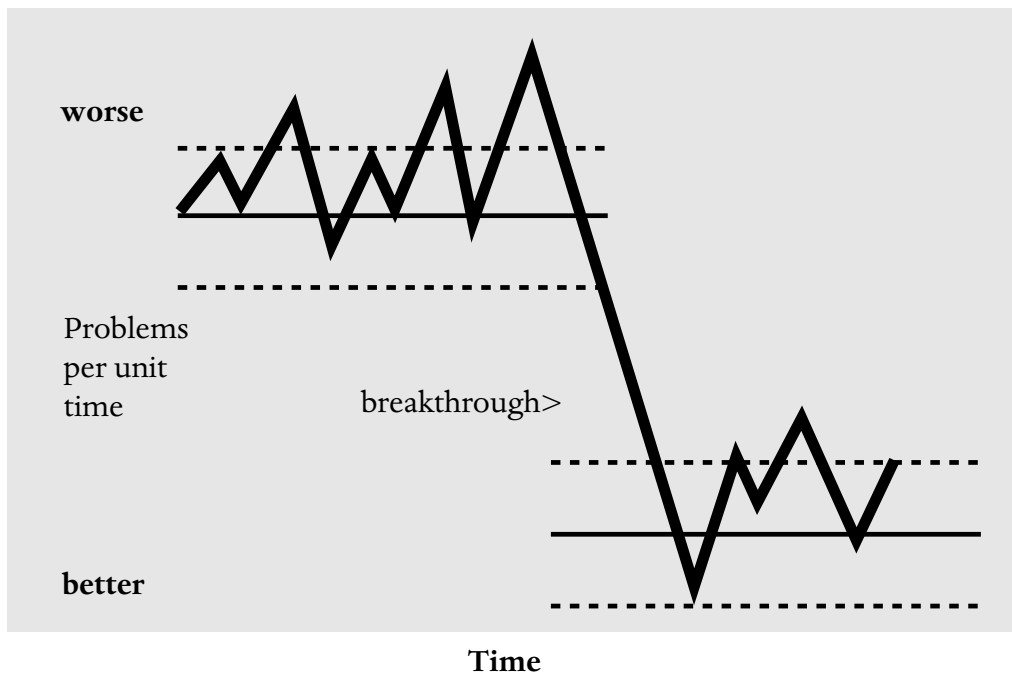


Figure 3.5

Breakthrough



The breakthrough occurs in attitude, culture, organisation, knowledge and results. Six months later maintain and monitor the level of performance in the organisation by celebration, continuous education and by measuring systems.

The following questions should be posed. Does your quality improvement model:

- address the four generic phases of the quality improvement process?
- force the use of data?
- address the five breakthroughs?

- support the principles of CQI?
- allow for projects that address both customer needs and the internal process?
- have some specific value that outweighs its consequential costs?

3.9 Phase three: The remedial journey **(the project team)**

The remedial journey involves the following:

- consideration of an alternative solution
- design of solutions and control
- addressing resistance to change
- implementation of solutions and controls (to reduce participant resistance suggest a one week trial).

In discussing the remedial journey try to establish the value of testing and piloting remedies before they are generalised. This is another version of the PDCA cycle in operation (see Appendix 2).

The remedial journey involves selecting remedies or improvements based initially on knowledge gained in the Diagnostic Journey and testing and improving their worth. This must include helping the organisation to accept the required change. Berwick suggests it is useful to develop a “monitoring system” at the same time as developing a remedial system. It helps to be clear about the exact improvements required, and developing a measurement system is a useful guide to defining objectives. It helps to know by a process of testing that the remedy really works. It helps participants focus on the question of “process ownership” and who is to drive it and ensure that it is viable. Phase Three will identify those who are resisting change and change mechanisms could be usefully employed here.

3.10 Phase four: Holding the gains **(operating teams and project teams)**

Holding the gains involves:

- checking performance
- monitoring control systems.

This phase must ensure that mechanisms are in place so that continuous improvement becomes part of the routine operation of the organisation. This phase is intended to stabilise the new process and its systems.

The important elements are clarity over what needs to be accomplished, clear ownership of the process and its monitors, clear definitions and communications

about the new process and an appreciation of the value of process stability. *All participants must be informed of what's going on.* Each worker must be clear on their particular role and what is expected of them, must know how they are doing and have the ability to regulate the process. Modifications to systems that affect process stability e.g. training, documentation and supervision, must be expected. There must be regular reviews.

3.11 The need for a formal quality improvement process

A formal quality improvement process

- provides for a structure of accountability
- allows the team to be proactive
- provides for cross- functional activities
- allows the use of tools and techniques

The following exercise may be useful in consolidating understanding of the quality improvement process. These statements may be used for the purpose of answering the questions below,

“An effort to reduce the proportion of surgery patients who arrive in the operating room without a completed set of the required pre-operative laboratory tests”

“An effort to reduce long waiting times for routine x-rays”

“An effort to decrease billing errors”

“An effort to reduce post-operative wound infection rates”.

Task

- Write an “opportunity statement” or a “team remit”.

Question

- *Who should serve on a quality improvement team for this project ?*
- *What initial steps in diagnosis would be useful?*
- *What plausible causes might be revealed in the “diagnostic journey”?*
- *How should the team address resistance to change? When ? Where ?*
- *What monitoring system could be used to test a proposed remedy or to monitor the process thereafter?*
- *How should the team organise the handover to the routine operating system?*
- *What advice or information might the team need from the guidance group or quality council?*

The objective of these questions is to generate a summary of the four basic phases of the QIP.

What are the key aspects of the quality improvement process?

Which breakthrough does the team consider to be the most essential?

Which could be the most straight forward to implement?

Further reading

French, W.L. & Bell, C.H. (1984), *Organisational Development: Behavioural science interventions for organisation improvement*, Englewood Cliffs, New Jersey: Prentice-Hall International editions.

Katzenbach J.R., Smith D.K. (1993), *The Discipline of Teams*: Harvard Business Review. March / April.

Appendix 1

Mission statement

A mission statement can be thought of as the first stage of a strategy statement. It is the definition of a firm's strategic mission. A business is defined by its mission. Only a clear definition of the mission of the organisation makes possible clear and realistic business objectives, because the mission defines the purpose of the firm in terms of its enduring sense of its reason for being.

The mission defines the long-term vision of the organisation in terms of what it wants to be and whom it wants to serve. A firm's mission should be clear and concise and distinguish it from any other firm. The mission statement should be backed up with specific objectives and strategies, but these objectives and strategies are far more likely to be acted upon when there is a clear sense of mission informing action.

A good mission statement will contain:

- The purpose of the organisation – a statement of the principal activities of an organisation
- Its principal business aims – its mission as regards the position it aims to achieve in its chosen business
- The key beliefs and values of the company
- Definitions of who are the major stakeholders in the business
- The guiding principles that define the code of conduct that tells employees how to behave.

The following illustration helps to understand a mission:

Three men were working on a building site. All three were doing the same job but when asked what their job was gave very different answers. One answered "Breaking rocks"; another answered "Earning a living"; the third answered "Helping to build a cathedral".

Appendix 2

FOCUS-PDCA

This technique can be used to form direct or indirect patient care teams.

- F — Find an opportunity to improve
- O — Organise a team
- C — Clarify the process of care
- U — Understand the variation in the process
- S — Select a process to improve

Plan, do, check, and act on the selected interventions.

Appendix 3

Pareto analysis

The following extract is useful for a clearer understanding of this principle. “Vilfredo Pareto was an Italian economist who in the early 1900s observed that relatively few people held the majority of the wealth.” Dr Juran pointed out that this principle applies in a wide variety of situations. He also called it the 80/20 rule, since, in his observations and tests, roughly 80% of the problems were typically caused by only 20% of the contributing factors. (Joiner, L.B. (1994) *Fourth Generation Management: The New Business Consciousness*, London: McGraw Hill, p.38).

Programme Four
TOOLS FOR IMPROVING QUALITY

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Programme Four

TOOLS FOR IMPROVING QUALITY

Introduction

Programme Four focuses on the use of tools to describe processes, collect and analyse data through the use of flowcharts, cause-and-effect diagrams, Pareto diagrams and others. It introduces tools for teamwork through the use of brainstorming and multivoting. The student will be provided with opportunities to try these out using simple exercises.

Learning objectives

On completion of Programme Four the student will be familiar with the use of some of the most useful tools used in CQI and will be able to use these to describe processes, collect data and analyses data.

Key words

flowcharts, cause-and-effect, brainstorming and multivoting

4.1 Tools for improving quality

The tools discussed are for use in:

- process description
- team working
- data collection
- data analysis.

4.2 Tools for process description

- process flow chart or “How the work gets done” (see next page for process flow chart)
- cause and effect diagram (see page P4: 7 for cause and effect diagram).

The process flow diagram is the fundamental tool for describing a process and one of the most useful tools of all in quality improvement. Just drawing a process can reveal many important features and suggest promising avenues for further inquiry.

The process should identify

- who/what is part of the process
- what should be monitored.

Process flow chart

Page P4: 5 demonstrates a complex flowchart of a barium-enema showing many places where process failures can occur, several re-work loops etc. The shape of the process has meaning and students should learn basic conventional symbols for use in a flow diagram. Who in the organisation has a view of the entire process?

A flowchart that does not reflect the true process is a hazard to the health of the “quality improvement process” (QIP). Drawing detailed flowcharts can exhaust the QIP team.

A word of caution, there is a risk of getting bogged down in obsessive drawing and redrawing. Avoid excessive detail and revision of flow diagrams.

A chart of symbols is shown below

Figure 4.1

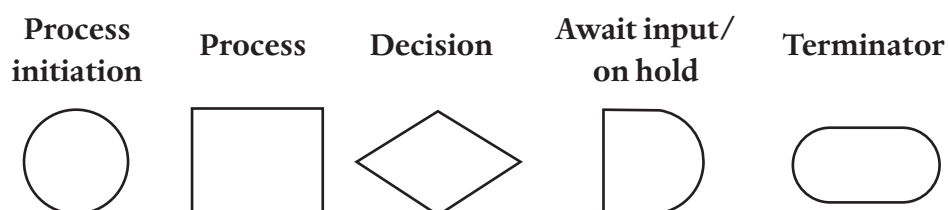
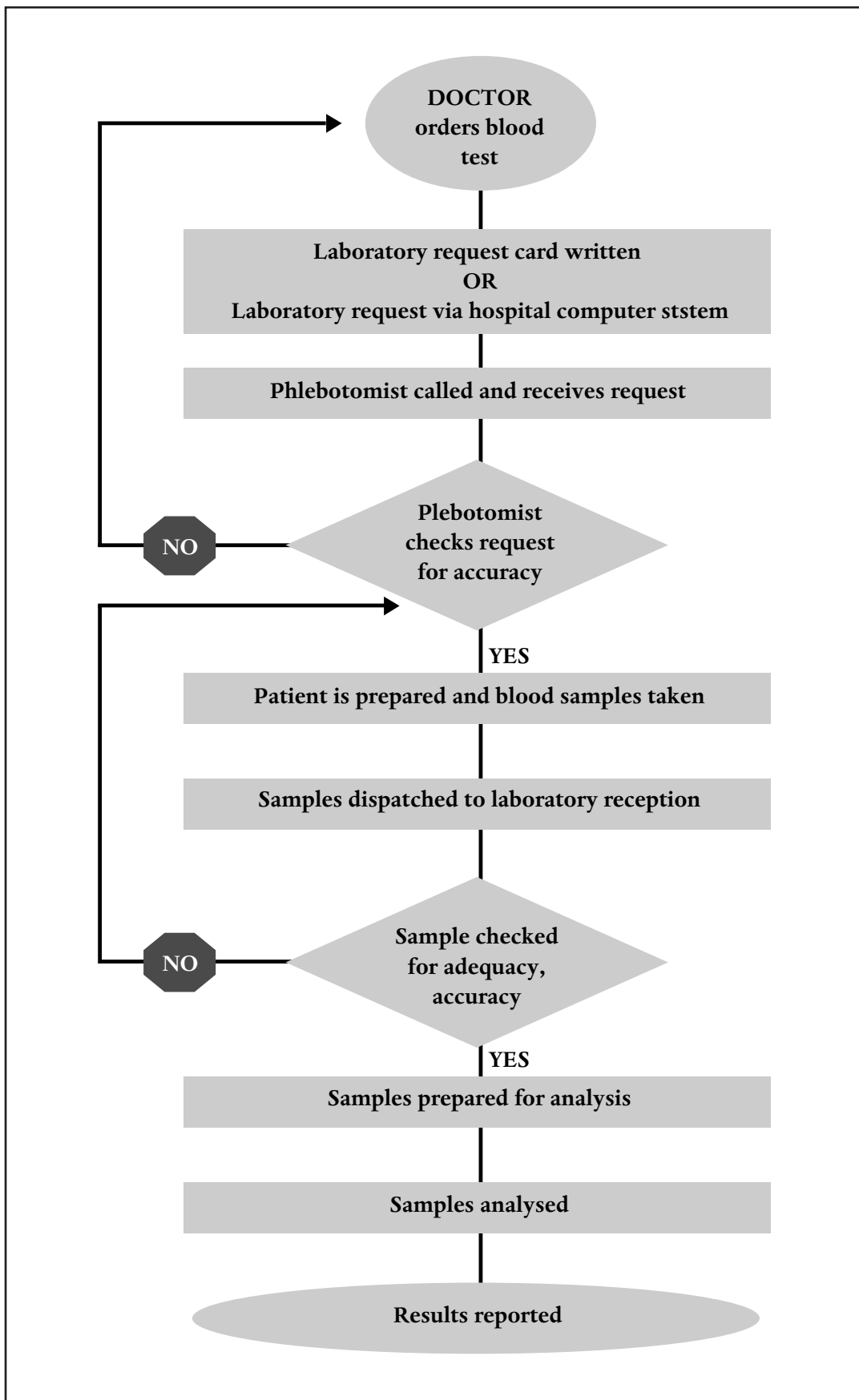


Figure 4.2 'High level' flow chart for ordering blood test



“Tools for QI”

‘The following exercise may be useful’

- Choose a routine and repetitive process that is commonly understood by all.
- Draw a “high-level” flow diagram for that process showing the core steps in the process. Try not to include more than 4-6 steps.
- Pick a single step in the process and try to draw a more detailed diagram of the sequence within that step. To find out more about the process ask the people carrying out the task! Important question: who in the organisation has an understanding of the complete process?
- Complete examples of the following - a re-work loop. Why does re-work occur? Are re-work events recorded or tracked?, an inspection step. Why is it necessary? Are the results of inspection recorded for later analysis?.
- How can the complexity of the diagram be reduced? How many of the steps are absolutely necessary?
- Who uses documents?
- Does waste occur in this process? Where? Why?)
- Which departments are involved in the process?)
- Can non-real work be identified

Berwick warns against excessive detail and revision of flow diagrams during these exercises.

4.3 Other tools for process description

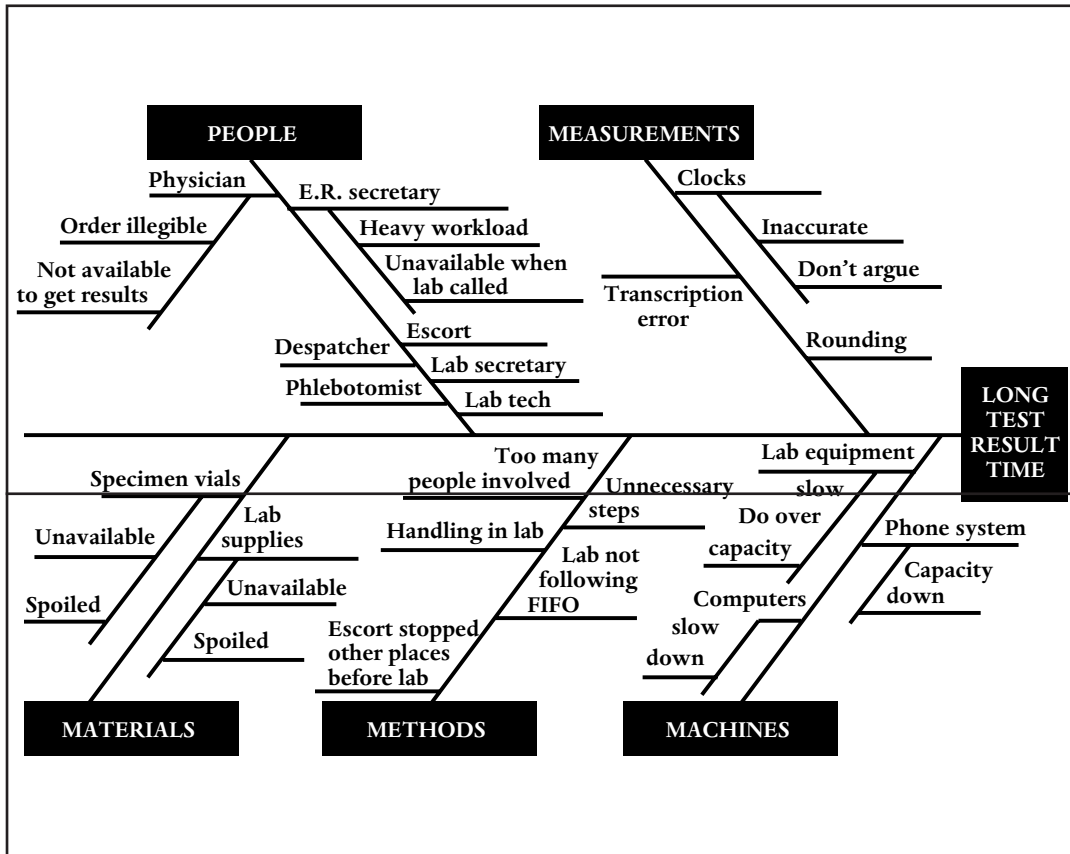
Cause and effect diagrams (Fishbone diagrams; Ishikawa diagrams)

A test result turnaround time using people, equipment, materials, methods and measurements is demonstrated below.

- The cause-and-effect diagram is primarily a brainstorming tool. It is based on opinion and should, therefore, be regarded as a source of ideas, but not of data. Just because something appears on a cause-and-effect diagram does not mean it is true.
- People using a cause-and-effect diagram should not feel excessively bound to observe the standard categories of people, equipment, materials, methods and measurement. People’s own ideas as to the cause and effect should be encouraged.
- The shape of the final diagram and the detail emerging on one branch with perhaps very little on another may suggest lack of knowledge about how the system works in the sparse section or equally the importance of the detailed section.

- Cause-and-effect diagrams can be used to help participants understand a problem.
- It can be helpful to move back and forth between a flow diagram and a cause-and-effect diagram.

Figure 4.3 Cause and effect diagram



4.4 Tools for teamwork: Brainstorming

Often latent ideas and knowledge are lost in the usual informal group processes. Persons who are verbal or self-confident may drown out those who are reserved or unsure, even though the latter may have a lot to offer. Tools for teamwork are designed to help groups get the maximum benefit from the ideas and information of all their members. Following the basic rules for brainstorming listed below, try to generate a list of responses to the following question:

What are some possible root causes when patients' questions don't get answered?

Rules for brainstorming

- 1 Clearly state the purpose – what should people think about?
- 2 Each person takes a turn, expressing one idea at a time.

- 3 No idea is discussed at this stage except for the purpose of clarification and no idea should ever be criticised outright: every idea is a good one.
- 4 Quantity of ideas is what counts.
- 5 It's OK to "pass".
- 6 All ideas should be written down for all to see, in the subscriber's own words.
- 7 Allow time before brainstorming for people to collect their thoughts.
- 8 Critical comments are not allowed - this includes body language.
- 9 All comments should be recorded.
- 10 Discuss possible problems of brainstorming. For example some people find it difficult not to comment on proposals made.

Brainstorming is regarded as "divergent" thinking, as groups try to generate lists of ideas. On the other hand "multivoting" is described as "convergent" thinking.

4.5 Tools for teamwork: Multivoting

Multivoting is a "Convergent" technique to help a group quickly and efficiently establish some preliminary priorities.

Rules of multivoting:

- 1 Generate a list of items.
- 2 Combine similar ideas if everyone agrees.
- 3 Label items "A," "B," "C," and "AA," "BB" etc. on the displayed master list.
- 4 Each person silently chooses one-third or one-fourth of the items.
- 5 Tally the votes and eliminate items with few votes, then repeat if necessary to develop a consensus covering a few important items.

After multivoting arrange items into two or three categories as follows:

- those items receiving nearly unanimous support
- those items receiving little or no support
- those items with partial support.

A general discussion on these should identify those items that the group wishes to work on. Items in the third category should also be discussed and members should be free to defend those about which they feel strongly. This exercise is meant to consolidate opinions but the use of multivoting as a substitute for data gathering can be hazardous.

Generating information: The most common problems are:

- Failure to use existing data
- Errors caused by misunderstanding
- Discovery of the need to capture additional information
- Incomplete data as forms too difficult to complete
- Incomplete or biased data caused by fear.

These can be prevented by : *planning, testing, training and auditing.*

4. 6 Tools for data collection

The quality improvement process uses data collection and analysis to explore the possible causes of problems and to test the results of remedies. A data collection sheet that keeps a count of events can be helpful. Data collection can be more accurate if prior thought is given as to how the data will be analysed later.

The data-collection sheet and checksheet shown below is a demonstration on how to improve the delivery of medication from a hospital pharmacy to a hospital floor. Berwick asks, “Who do you think is completing the data collection forms? What stratifying variables do you think this team wants to focus on now?” Suppose a team plans to collect data on patient requests for pain medication as part of a project to improve pain control. What stratifying variables might be important to record as data? This checksheet is a tool for use in a variety of settings, e.g. outpatient and casualty waiting times and turnaround times.

Figure 4.4 Pharmacy timeliness data/checksheets

Pharmacy Timeliness Study

- Calculate elapsed time upon delivery.
- Use 24-hour notation.
- Use "Notes" section to record anything unusual.
- Questions? Contact Larry Fine x 2222

Date: 6-1-89

Pharm. Loc.: F 2

Patient: M. Howard

Room: C 25

Your Name: VLS

Pick Up: 1421

Entry In Computer: 1437

Left Pharmacy: 1519

Delivery: 1539

Notes: Collier Bldg elevators out of service

Put Completed Forms In Collection Box

Pharmacy Timeliness Study

- Calculate elapsed time upon delivery.
- Use 24-hour notation.
- Use "Notes" section to record anything unusual.
- Questions? Contact Larry Fine x 2222

Date: 6-1-89

Pharm. Loc.: F 2

Your Name: VLS

Elapsed Time (minutes)

	10	20	30	40	50	60	70	80	90	100	110	120
10												
							X					
							X					
							X	X				
							X	X	X			
							X	X	X			
							X	X	X	X		
0	X			X	X	X	X	X	X	X	X	X

Elapsed Time (minutes)

Put Completed Forms In Collection Box

In the “Pharmacy timeliness project” data collection is probably being done by pharmacists as they receive, fill and deliver orders. It is also possible to have the data collection form “follow” the medication, with entries made by various staff members along the way. This latter approach is difficult and requires much more advance discussion, training and preparation.

There are differences in procedures, inputs’ sources, systems, severity of illness, time of day, etc. that might result in different answers to the information question. This should be considered before collecting data . The pharmacy timeliness project team apparently wants to stratify its data according to some patient characteristics – location of the patient, the specific pharmacy unit filling the order, and time of day and date, among other variables. Notice also that the data-collection form will allow the team to divide the “total elapsed time” into components (e.g. pickup to entry to “left pharmacy” and “left pharmacy” to delivery.)

Points to raise in discussions of data collection:

- Data collection can be integrated into routine work if the forms and methods are simple enough. This is the value of a checksheet. But to enlist the help of others in collecting data, a quality improvement team will have to engage in a good deal of open communication, explanation and encouragement, as well as piloting the collection method to make sure it works easily and well.
- It is sometimes possible to use existing data instead of collecting new data. Existing data are cheaper and may have been collected under more realistic conditions but they may also be incomplete and lack information on important stratifying variables. Collecting new data is costly and time-consuming but allows more control over format and completeness.
- Stratifying variables are important to consider before data collection. However, it is possible to get bogged down and to make data collection hopelessly complex by including too many stratifying variables in a data-collection form. The trick is to keep it simple.

Useful stratification categories may include:

- | | | |
|---------------|--------------------|-----------------|
| 1. machines | 4. input sources | 7. age |
| 2. suppliers | 5. severity | 8. time of day |
| 3. procedures | 6. type of illness | 9. day of week. |

Another important type of data collection is surveying people, i.e. patients, customers, suppliers, employees, other organisation’s staff members. Techniques for surveying are beyond the scope of this programme but some members of the group may be experts in surveying and may like to discuss the subject. A good source of reference for this is the Department of Public Health in each Health Board.

4.7 Tools for data analysis

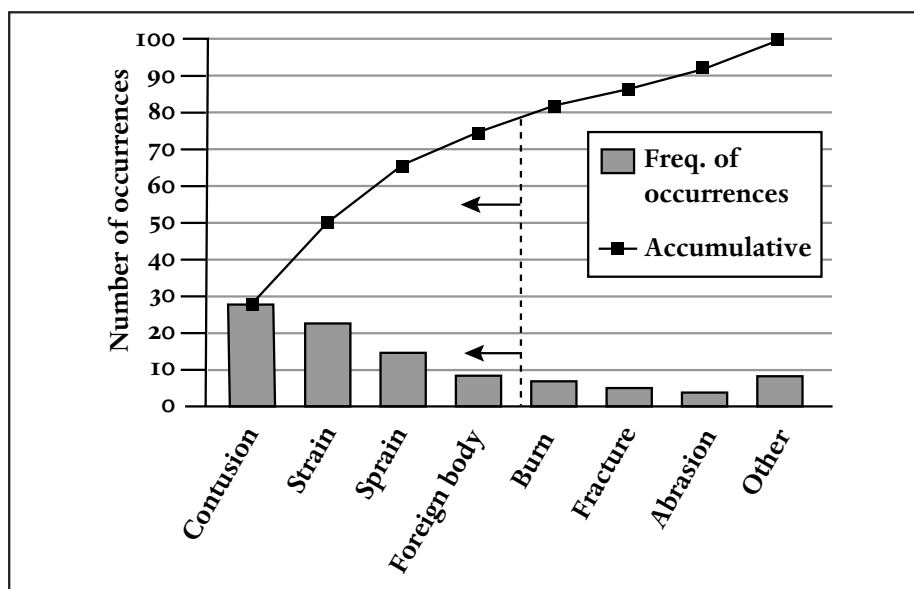
Tools for data analysis are: Pareto diagrams, description statistics, line graphs, histograms, control charts, scatter diagrams and run charts (see below). Pareto charts are explained by late tray analysis. The main teaching point is that such simple displays help reveal the causes of defects and dynamics within processes and offer a lot more than the tabular reports and calculations of averages that often dominate organisational data.

Berwick suggests that students do not get “hung up” on the details of any method but focus instead on how the method can help in the overall improvement effort.

80/20 rule (see pp. P3: 13, 17)

Pareto Diagrams: The Pareto principle asserts that for any effect, a few of the possible causes account for a large majority of the instances of that effect. For example, a small fraction of all possible medical conditions account for the majority of primary-care visits. The chart below shows the frequency of different types of injuries. Three types of injuries - contusions, strains, and sprains - account for the vast majority of incidents. The Pareto Principle and the Pareto diagram are extremely useful and their apparent simplicity should not lead participants to underestimate their usefulness. The prescription data can reveal several different Pareto analyses. Analysis by “number of prescriptions” and “Costs” yields slightly different profiles. The graphic display that participants produce is easier to interpret than the table actually distributed. Juran uses the term “the vital few” to describe the biggest contributors to the effect and “the useful many” to refer to the remainder. (See also Appendix 3 of this programme for another Pareto chart.)

Figure 4.5 **Pareto chart of injuries**



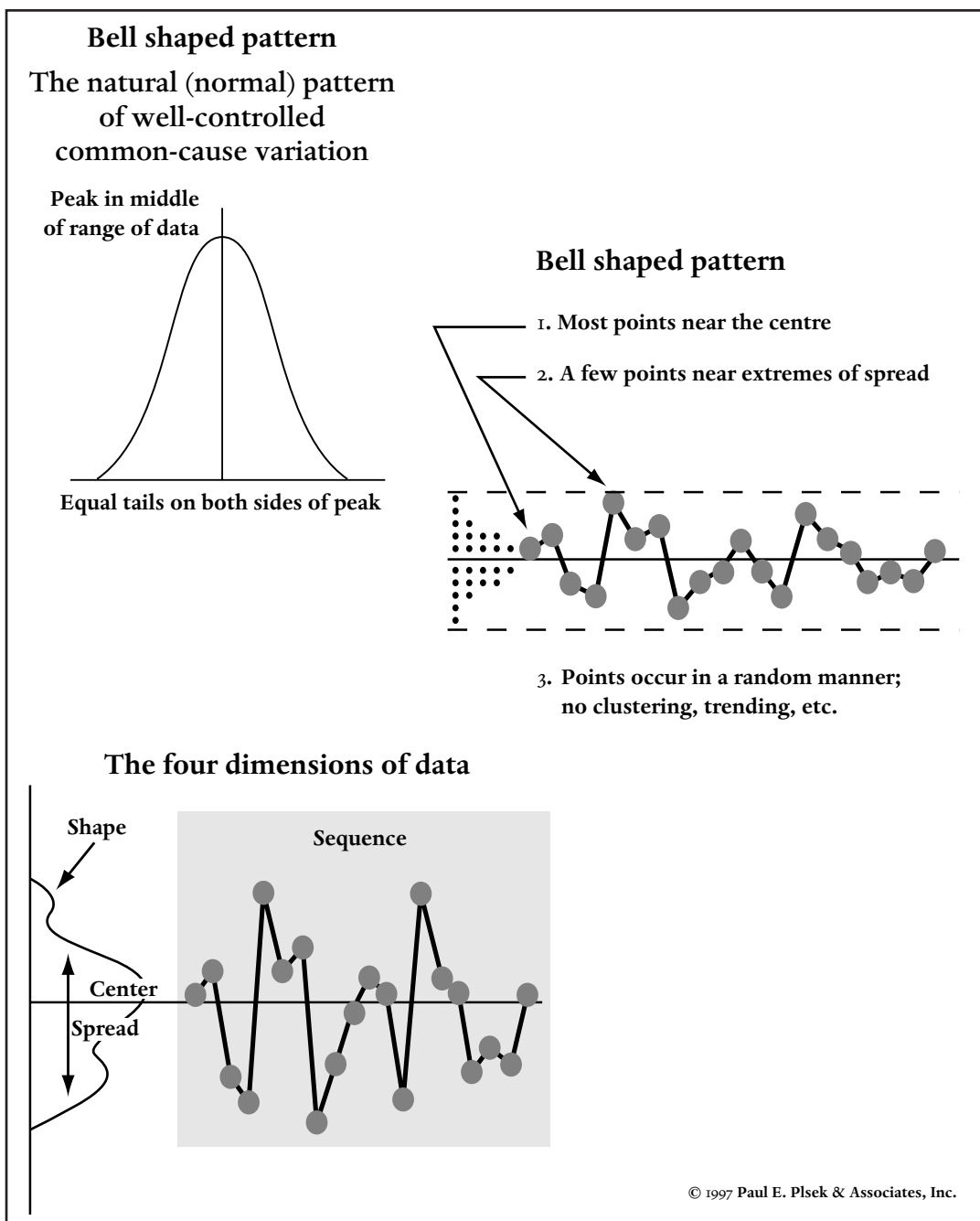
Dimensions of data: centre, spread, shape and sequence

Various forms of analysis help to glean lessons from raw data. It may be helpful to understand four specific “dimensions” of any data set:

- the centre or central tendency
- the spread or variability
- the shape or distribution
- the sequence or time-trend.

All can be useful in revealing causes and relationships.

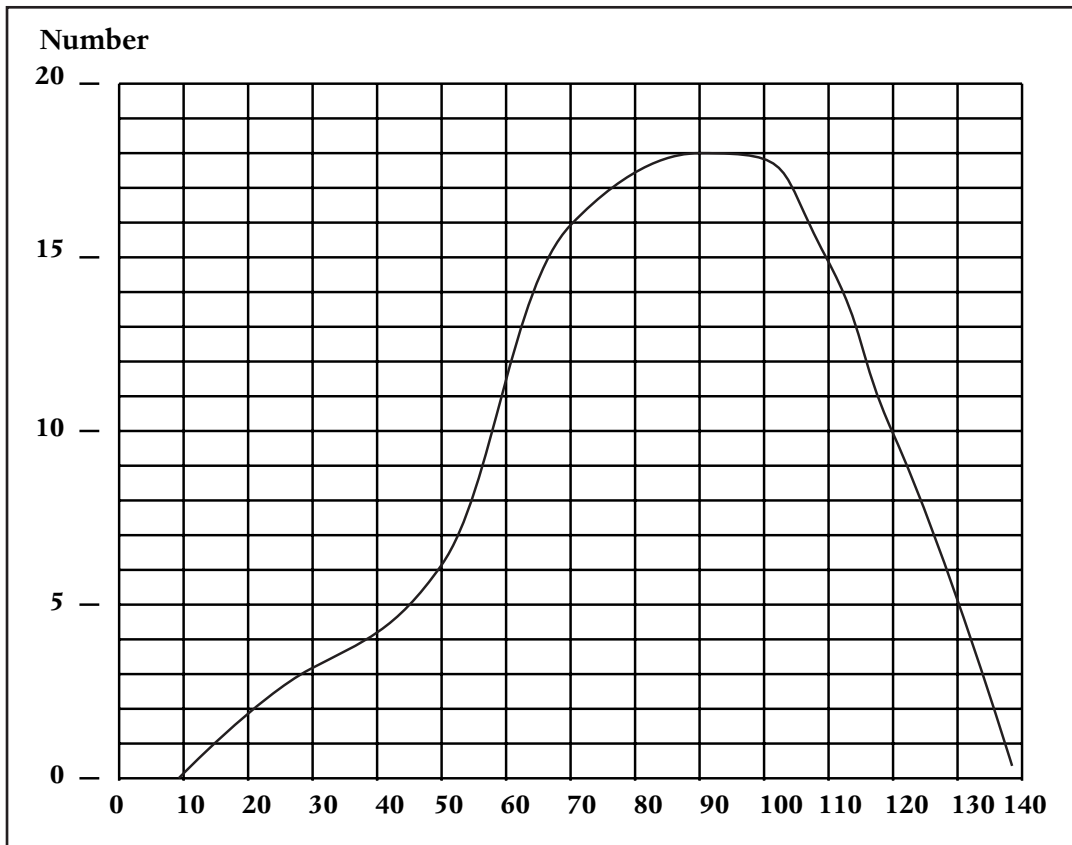
Figure 4.6



Below a data set is shown that was collected by a quality improvement team charged with improving the timeliness with which patients are seen by a physician after they arrive in an emergency room (see below for data from one week's study).

ER first service time*— data from a one-week study			
Monday	Wednesday	Friday	Sunday
35	94	103	124
42	83	107	117
61	87	118	82
63	82	95	78
15	41	92	41
70	45	63	55
84	45	67	62
82	34	63	65
20	55	66	62
50	73	74	83
91	77	91	85
85	119	128	107
97	73	109	103
132	72	74	70
139	91	87	83
87		94	99
103			108
Tuesday	Thursday	Saturday	
102	91	82	
110	107	87	
81	105	32	
70	118	55	
122	96	54	
63	58	91	
92	59	73	
112	70	78	
104	101	61	
60	106	73	
81	93	98	
80	121	118	
113	111	117	
115	72	74	
129	81	90	
92	96	106	
104	107		

Figure 4.7 Bell shaped curve of ER first service time



The four dimensions of this data set should be examined.

A The centre

What is the average first service time for these patients?

The average of the first service time is 84 minutes. However, slightly more of the data points are above the average. The median is 85.

Is it true that most patients have to wait about the average time before they are seen? *Slightly more of the points are above the average than below, i.e. the median is above the average.*

Do approximately equal numbers of patients have to wait more than and less than the average? *No. Slightly more patients wait more than the average.*

B The spread

What is the range of first service times from highest to lowest?

The range is from 10 minutes to 139 minutes. Knowing the range what is now known that wasn't known with just the average? There is no possibility of predicting the length of time a patient may have to wait for first time service.

The range is very broad suggesting unpredictability.

What assumptions and conclusions might a typical manager make if she/he

knew the average and with the range in mind as well? A manager might be very concerned that some patients wait longer than two hours to receive "first service".

C The shape

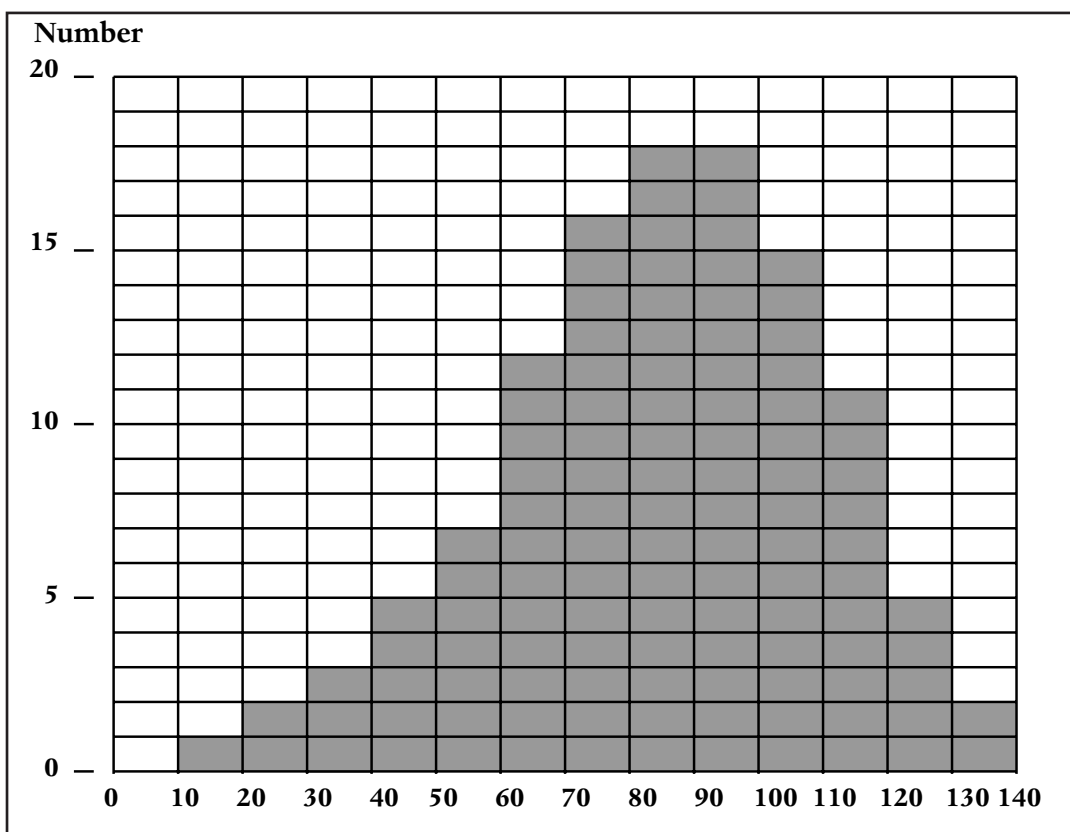
How can the shape of this histogram now be described?

What reasons can be given for the delay?

What theories can be used to test the existing data?

Would it be useful to have a flow chart of the process at this point? Why, or why not?

Figure 4.8 Histogram of ER first service time

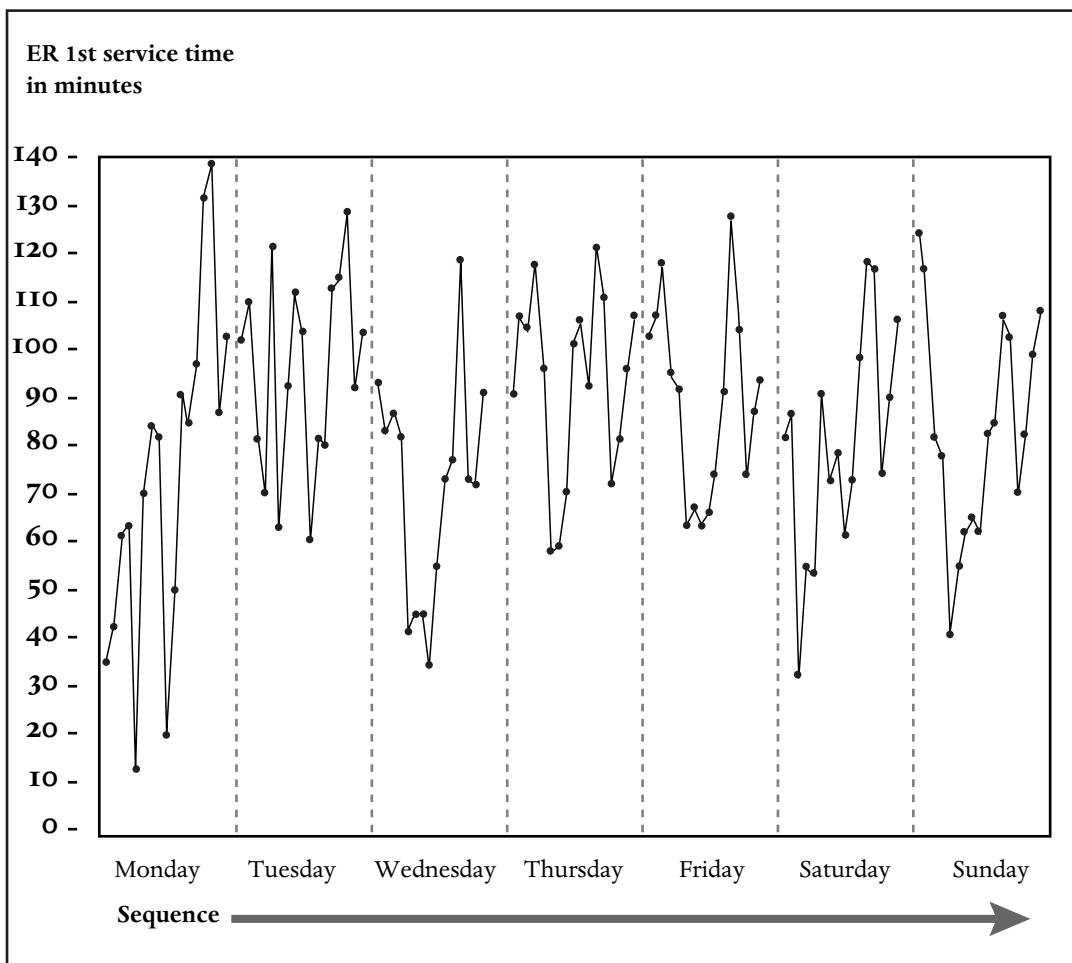


It may be useful to theorise about different types of patients, days of the week, times of the day, physician groups etc. Notice how rich the histogram is as a source of ideas and as a tool for "divergent" thinking. An obvious question to ask is: "Who are those people in the 'upper' distribution?"

D The sequence

Studying the pattern of data over time can reveal a great deal about underlying causes. The following is a line graph of the first-service-time data set.

Figure 4.9 Line graph of ER first service time



What observations/ conclusions can be drawn from this graph?

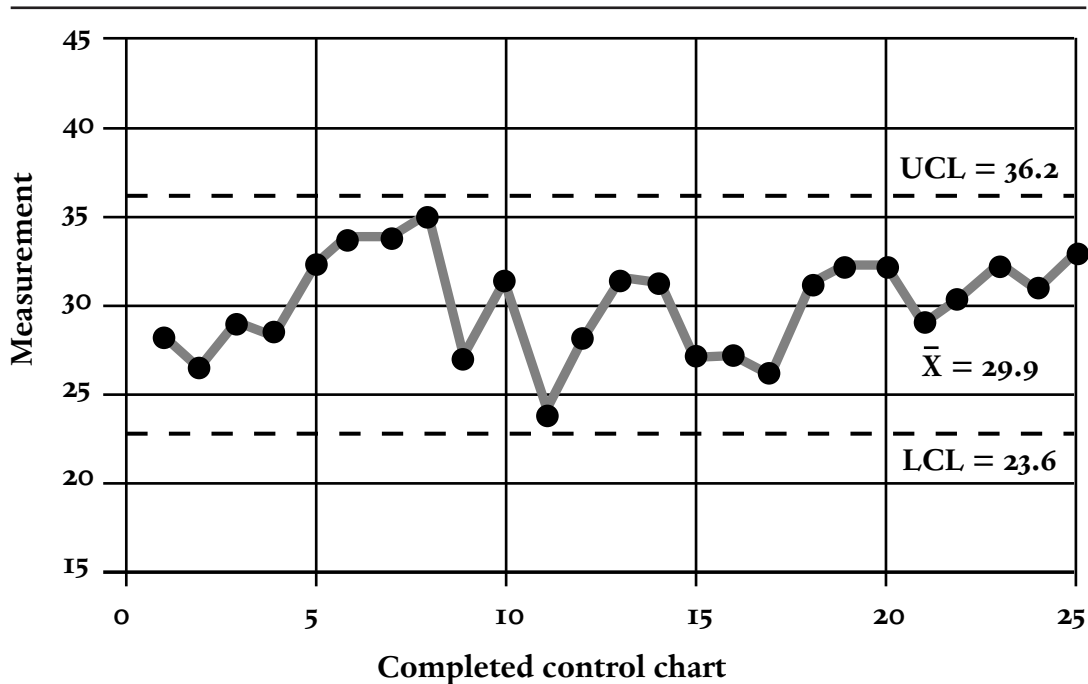
Which possible causes does this pattern support? Does it suggest any new theories not suggested by previous views of the data?

Describe the relationship between this line graph and the histogram (Fig.4.8). Can a histogram be drawn from the line graph? What are the similarities and differences between line graphs and histograms ?

What reservations are there about drawing conclusions from this data? Have enough data been gathered? Could more be done with those data?

The run chart (or line graph) suggests further questions, because it now allows examination of the crucial dimension of time. Why is Monday apparently different from the other days? Why do Tuesday, Thursday and Friday so consistently show long delays in patients being seen. Of course this graph might be even more useful in a control-chart version, allowing a distinction to be made between special and common causes of variation.

Figure 4.11 Example of a control chart showing common causes of variation



Joiner 1994, p. 149

- * UCL = upper control limit
- * LCL = lower control limit

Necessary conditions for achieving control:

- knowing what you are supposed to do
- knowing how you are doing, immediate feedback
- ability to regulate the process.

It is important to avoid changing a process unnecessarily in response to a special cause of variation that does not come from the process itself or treating a random event (from common causes of variation in the process) as if it were a special event. This, Berwick calls “tampering”. It is important to be able to tell the difference between common cause and special cause.

4.8 Scatter diagrams and Association

One more simple data-analysis tool is called the “scatter diagram”, which is merely a display of data along two continuous dimensions. The scatter diagram explores the possible relationship between two variables (Fig. 4.8).

One QI project team was trying to understand variation in the “Turnover time” in a cardiac catheterisation laboratory – that is, the time between the ending of one case and the start of the next. They collected data on two variables possibly

related to turnover time (a) the time it takes to transport a patient from the hospital bed to the catheterisation lab, and (b) the time elapsed after a procedure ends and the next patient's floor is requested to send the patient to the lab.

The scatter diagrams show each of these two variables (on the horizontal axis) relative to the total turnaround time (on the vertical axis). Which variable, transport time or call time, is more closely related to total turnaround time? Does this suggest any next steps?

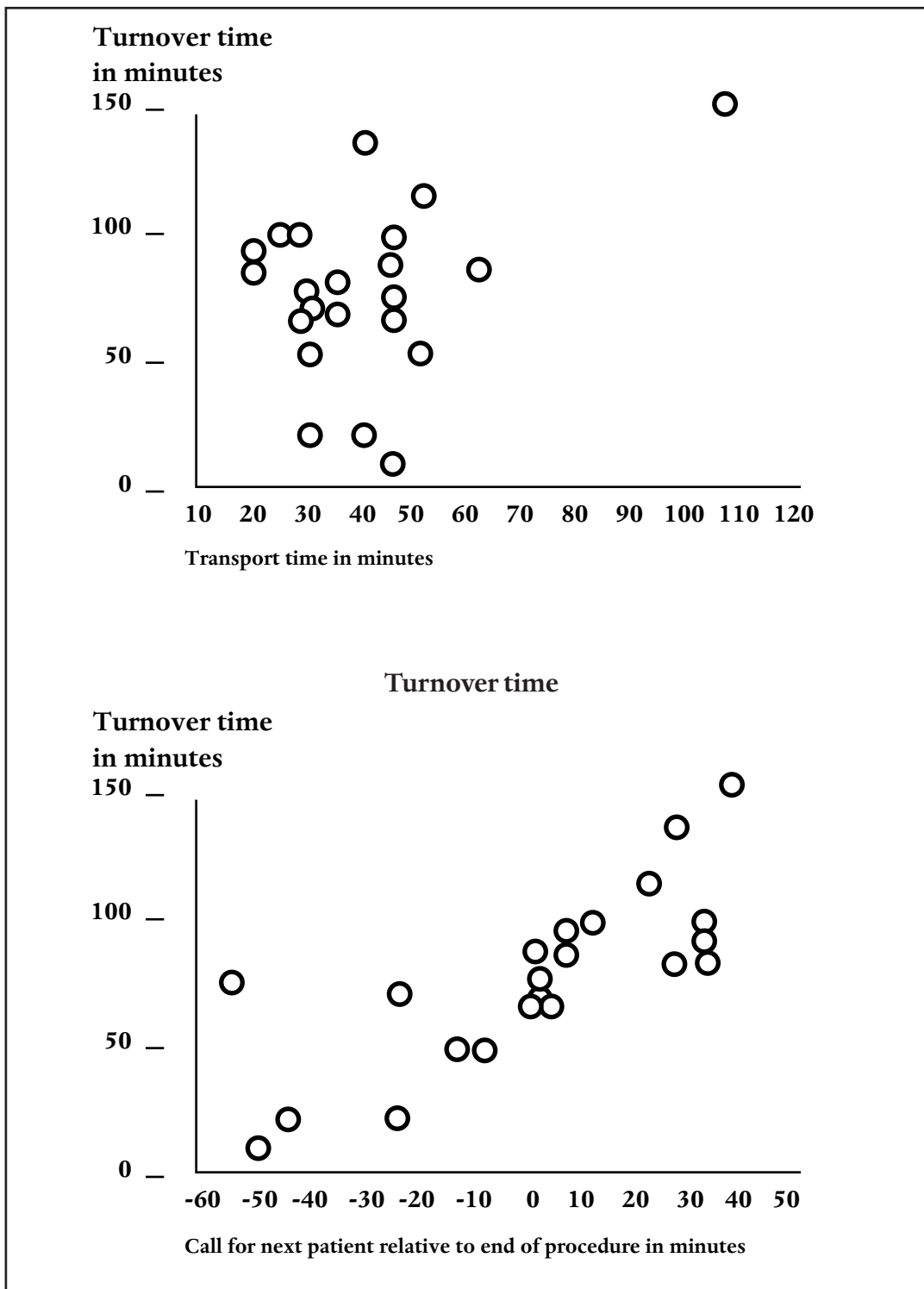
The scatter diagrams suggest a strong relationship between call time and total turnaround time and almost none between transport time and total turnaround time. Some statistically trained participants may suggest calculating "correlation coefficients" to quantify the relationships. This could be done but it is not necessarily more helpful than simply inspecting the data on the scatter diagram. In this sort of "exploratory data analysis" we are after ideas and suggested patterns and are not relying strictly on "statistical significance" to guide our next steps.

For some healthcare professionals this may pose a problem. Doctors are trained to ask about the "statistical significance" of differences and patterns in data. Quality improvement methods require somewhat different sensibilities, since the data for improvement are being used to analyse processes and make predictions, not to make comparative judgements. (In technical terms we are using analytic statistics, not enumerative statistics. The rules are a little different, each useful in its place.)

References

- Marszalek-Gaucher, E. and Coffey, R.J. (1991), *Transforming healthcare organisations: how to achieve and sustain organisational excellence*, San Francisco: Jossey-Bass, Chapter 5, pp. 83-116
- Joiner, B.L. (1994), *Fourth Generation Management – The New Business Consciousness*, London: McGraw - Hill Inc., pps. 147-149 and 259-261

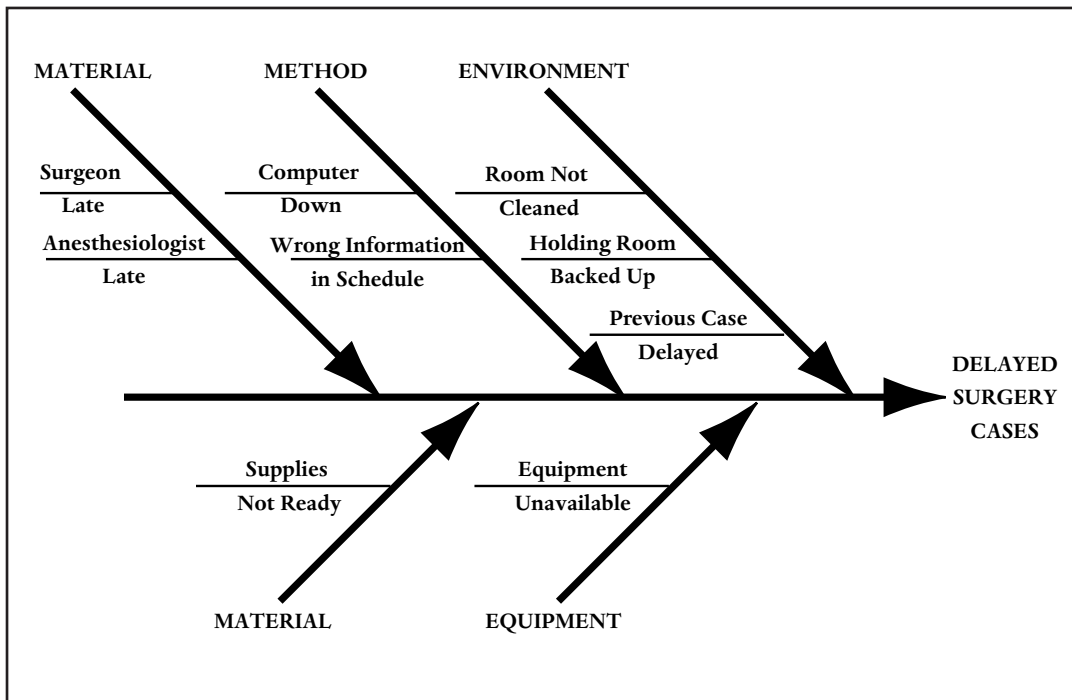
Figure 4.12 Turnover time vs transport time



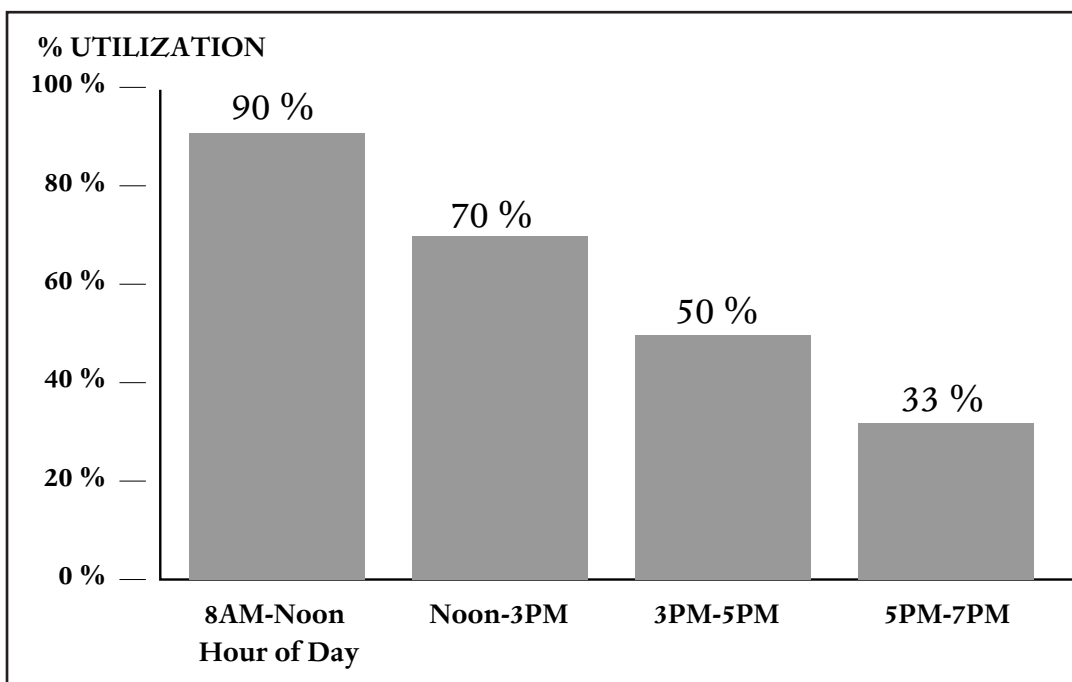
Appendix 1

The following three diagrams are taken from Marszalek-Gaucher, E. and Coffey, R.J. (1991.) *Transforming healthcare organisations: how to achieve and sustain organisational excellence*, San Francisco: Jossey-Bass, Chapter 5, pp. 83-116

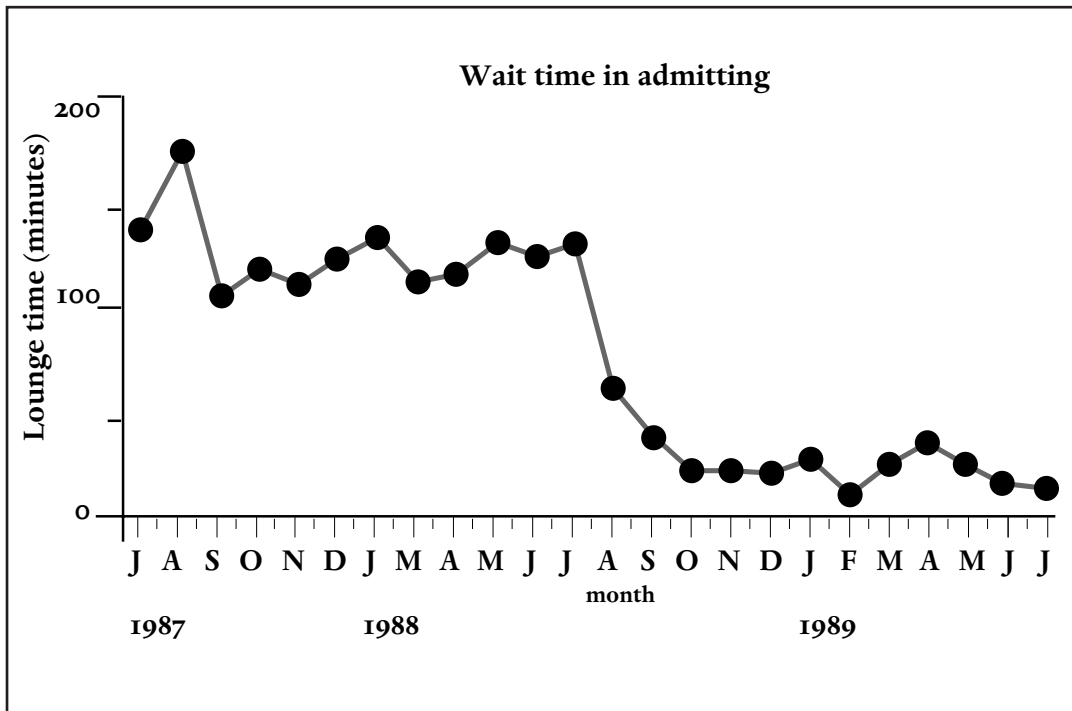
Fishbone diagram of reasons for surgery delays



Histogram of operating room utilization



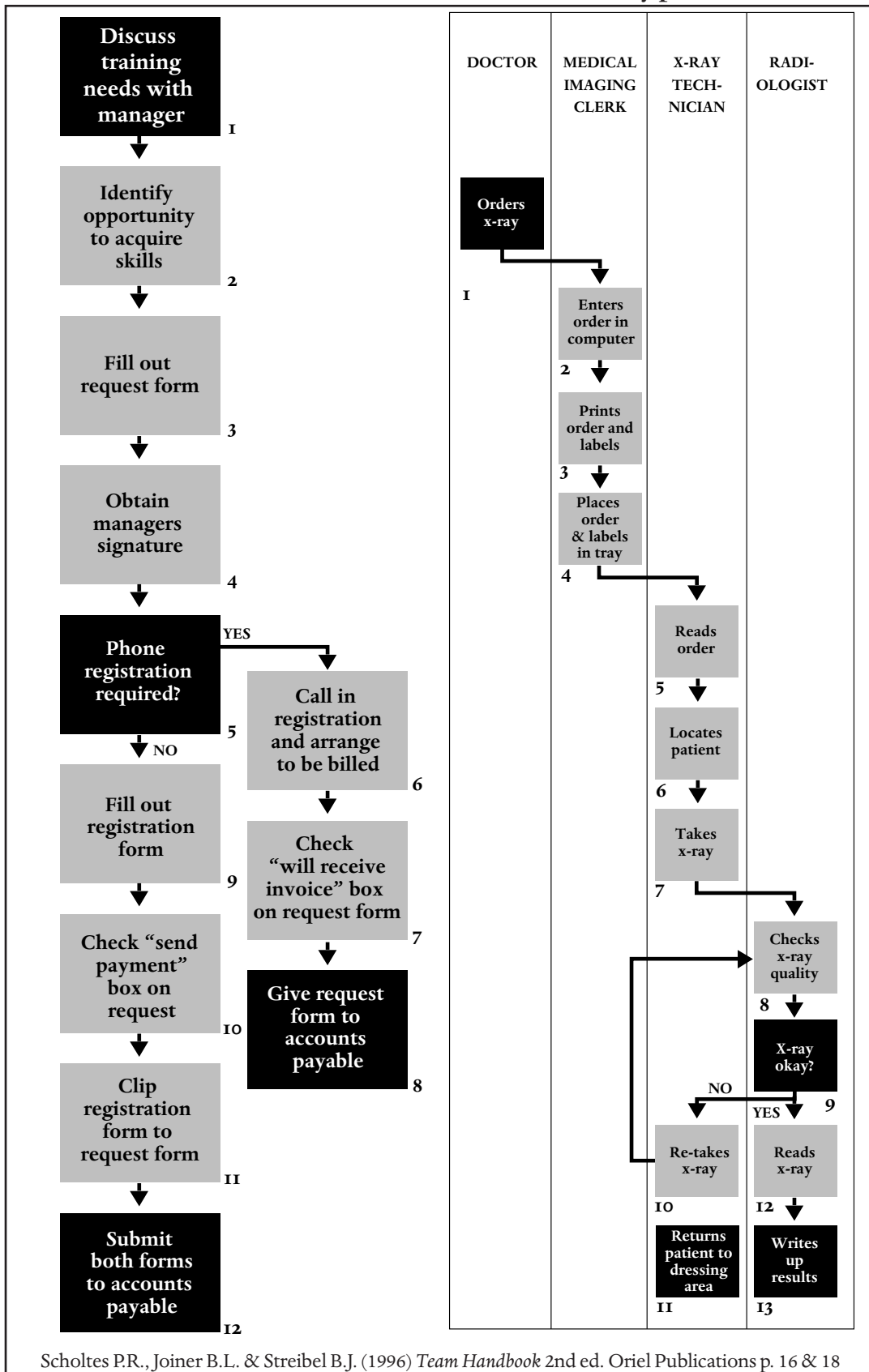
Line chart: Sample run chart of waiting times in admitting



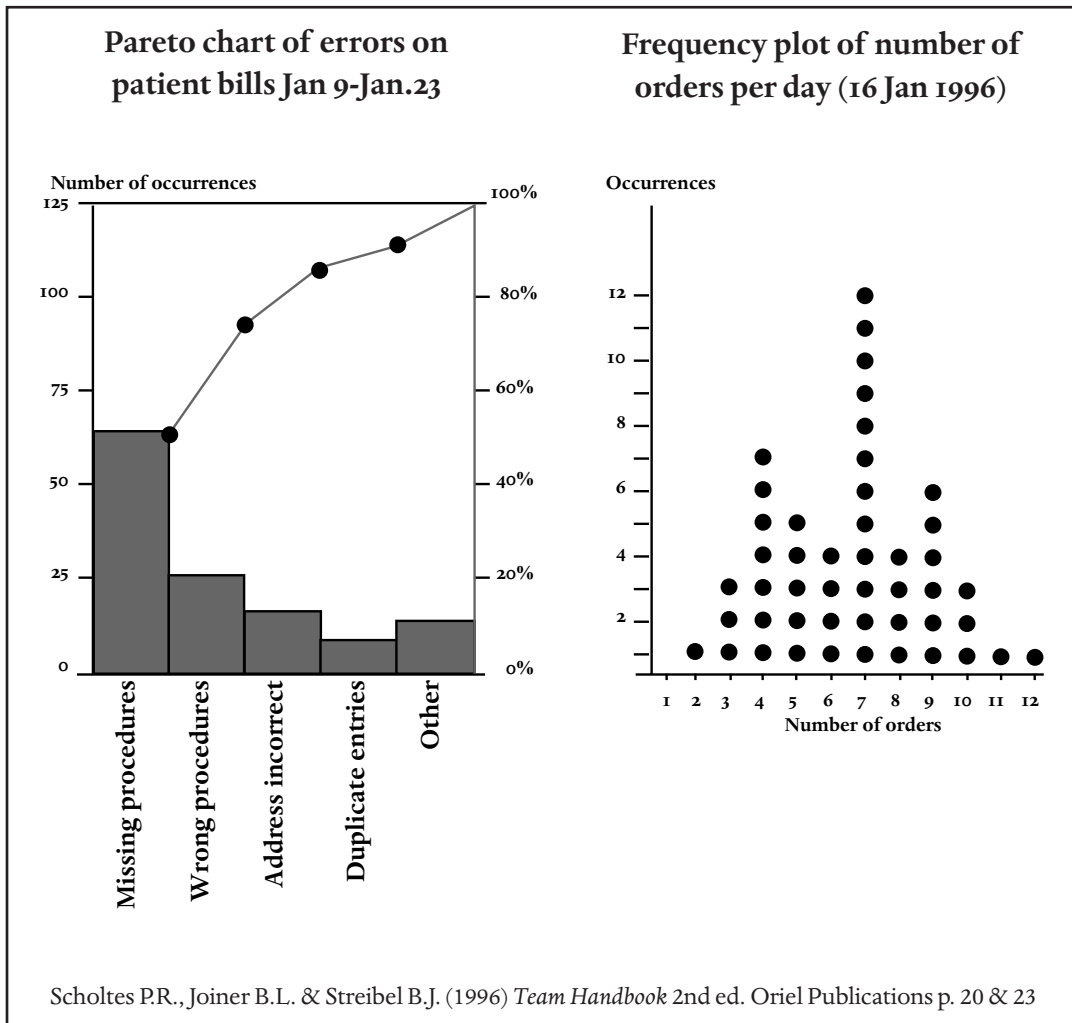
Appendix 2

Detailed flowchart
Training request process

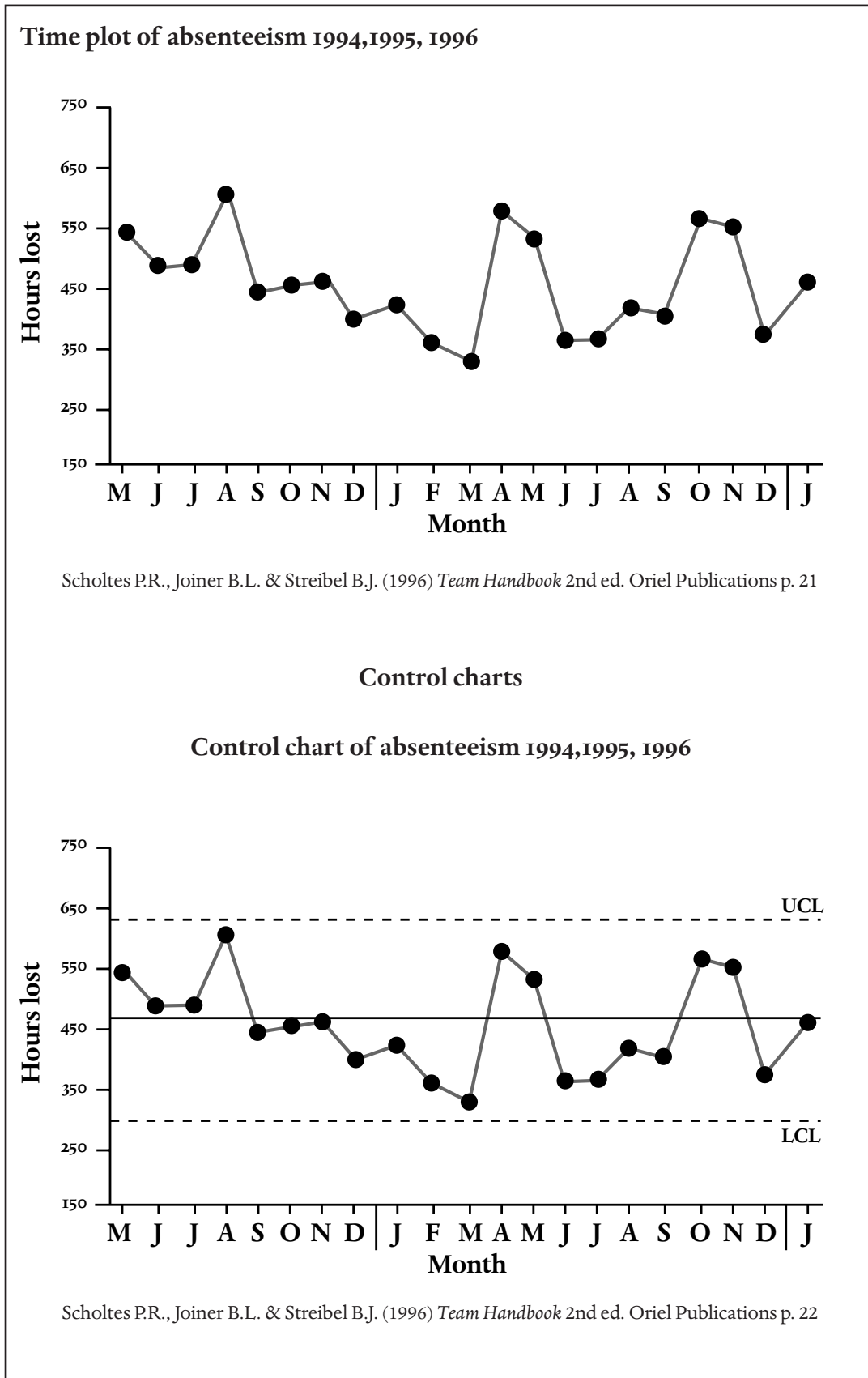
Deployment Flowchart
of X-ray process



Appendix 3 Frequency plots



Appendix 4 Time plots



Appendix 5 Creating a control chart

	Measurements X	Range R
1	28	2
2	26	3
3	29	1
4	28	4
5	32	2
6	34	0
7	34	1
8	35	8
9	27	4
10	31	7
11	24	4
12	28	3
13	31	0
14	31	4
15	27	0
16	27	1
17	26	5
18	31	1
19	32	0
20	32	3
21	29	1
22	30	2
23	32	1
24	31	2
25	33	2

Total = 748

- 1 Assemble the data**
- 2 Calculate \bar{X} , the average.** This becomes the centreline of the common cause highway.
- 3 Calculate the differences (ranges) between adjacent points.**
- 4 Determine the median range, \tilde{R}** (pronounced r-tilda). One way to do this, shown here, is to list the ranges from largest to smallest and find middle of the list. Here there are two centre values, both 2, so $\tilde{R} = 2$. These ranges help us determine the width of the common cause highway.
- 5 Multiply \tilde{R} by 3.14.** This gives the distance from the centreline to the edges of the common cause highway.

Average = $\frac{748}{25} = 29.92 = \bar{X}$

Calculations: $2 \times 3.14 = 6.28$
(Formula: $\tilde{R} \times 3.14$)

6 Calculate control limits. Add the result from Step 5 to \bar{X} , the average, to get the Upper Control Limit (UCL). Subtract to get the Lower Control Limit (LCL).

UCL	LCL
29.92	29.92
+6.28	-6.28
36.20	23.64

(Formula: Control Limits = $\bar{X} \pm 3.14\tilde{R}$)

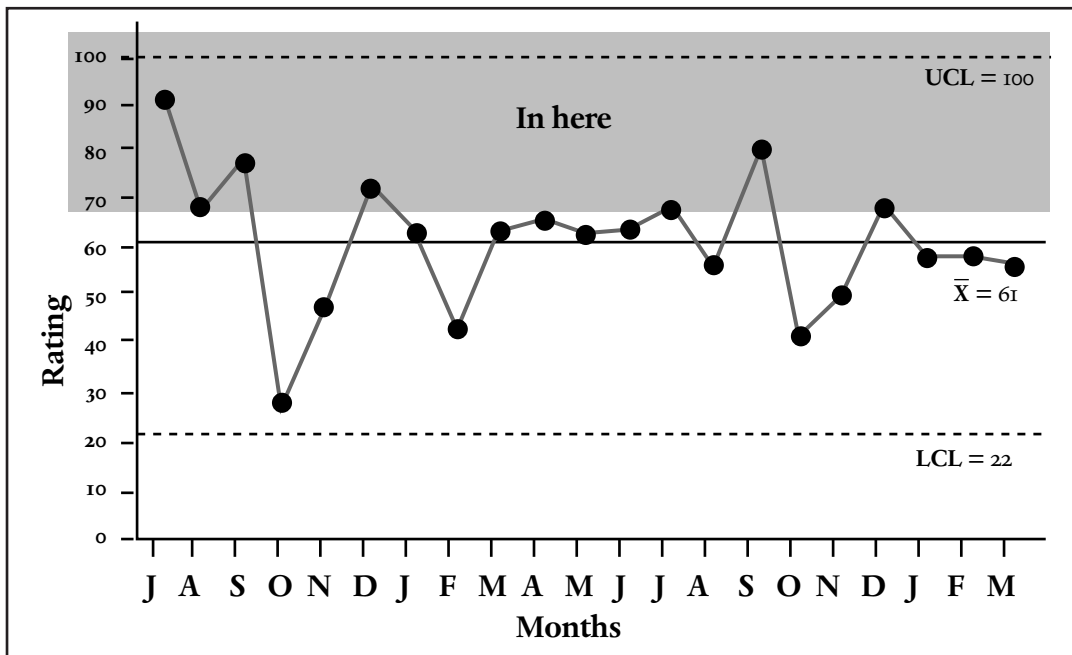
7 Plot the the data in time order and draw a solid centreline at \bar{X} , the average.

8 Draw dashed lines to indicate the edges of the highway (the control limits).

Completed Control Chart

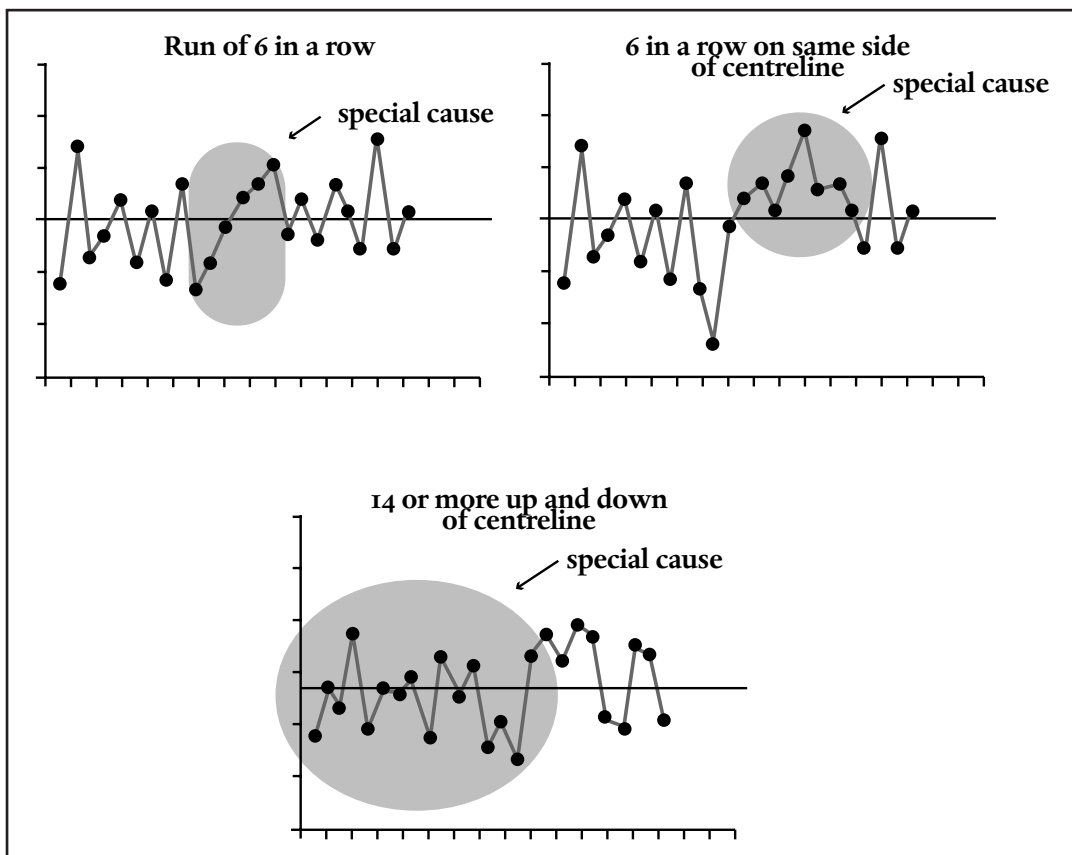
Joiner 1994 p. 148–149

Appendix 6 Control charts
showing preferred position following analysis



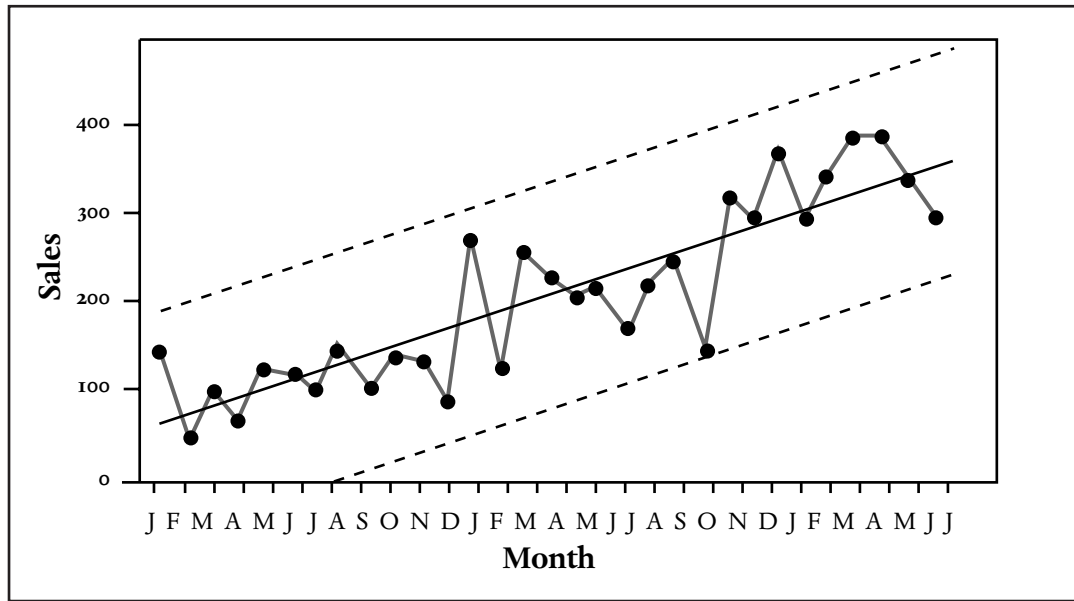
Joiner 1994 p. 151

showing special course of variation



Joiner 1994 p. 260

showing linear control over a period of 2 years, 7 months



Joiner 1994 p. 261

Programme Five
ROADMAP FOR CHANGE – THE FIRST THREE YEARS

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ROADMAP FOR CHANGE – THE FIRST THREE YEARS

Introduction

Programme Five is the longest programme in the series. Some parts of the programme are more relevant to some members of staff than to others. For example, the first segment, “The Driver Model”, is predominantly for front-line staff, while the remaining segments are more suitable for management and senior leaders.

It is important, therefore, to know the level of experience and knowledge of the different members of the group, and to pitch this programme at the appropriate level. It is also important to have a good grasp of the organisation’s plans for quality improvement, as the practical application of the material in this programme will need to be grounded in reality.

Berwick suggests that the programme enables managers and senior leaders to develop an understanding of the implementation of quality management. The programme provides the big picture of the implementation process and repeatedly cautions leaders to think, plan and count the costs before proceeding. The ISQH may at times divert from this approach. It may be preferable to promote a process of incremental development and evolution, rather than a clearly defined starting date of “implementation” throughout the entire organisation. This could be a real “turn off” for some organisations which would otherwise be agreeable to start by introducing the programme in just one of their units.

The programme is broken into five distinct phases, the:

- Driver Model
- Decision phase - Choices and Matters of Style
- Decision phase - Counting the Costs
- Preparation and practice phase
- Expansion phase, integration phase and the work of senior leaders on the quality council.

Learning objectives

Students will understand the strategy required to implement a quality programme.

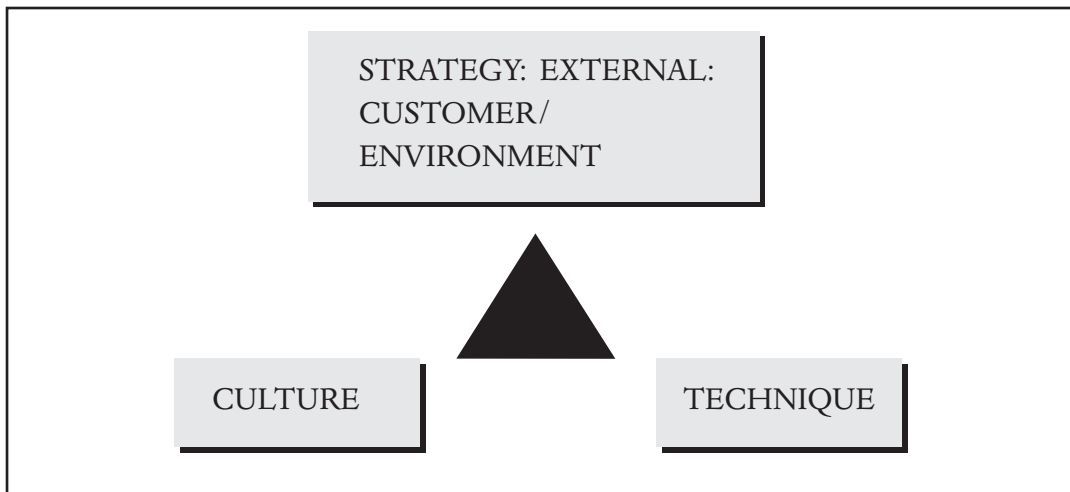
Key words

Driver for Change, Design and Redesign, Counting the Costs, Quality Council

5.1 Roadmap for change

We now consider: “How might an organisation go about making CQI its natural way of doing things?” Let us return to the major parts of the CQI triangle - strategy, technique and culture as developed in Programme Three.

Figure 5.1 Major elements of CQI



Programme Five focuses primarily on the “strategy” part of the triangle. It gives only general directions on how to proceed over the next three years of implementation of CQI. Decisions on detail will have to be made by the leader on the spot.

Planning for Implementation

This programme can be used to guide the detailed work of a group formed to plan or review the organisation’s implementation of quality management, e.g. the ‘Quality Council’ or steering group set up to drive quality improvement programme.

Planning can become an end in itself and three to four months should be sufficient to do a thorough yet practical job. One-and-a-half hours a week should be sufficient time, or three hours every other week. This forces the group to remain focused on the job to be done. However, in this programme, more than the others, time must be allowed for discussion of the various stages as they are reached. Sessions must be planned well in advance.

Berwick states: “The group should have a formal leader who cares deeply about its mission and who feels a personal responsibility to see it through. An added benefit is having a formal facilitator to guide the discussion process and the dynamics in the group. The leader and facilitator should work closely together as partners in planning and guiding the work of the group. In the meetings, the

leader should focus primarily on content while the facilitator focuses on the process”.

The experience of Berwick and his team is that some people who are good at planning and systems thinking appear to have some common characteristics that contribute to success. Awareness of these characteristics may help develop the facilitator’s skills and also keep him/her from feeling frustrated or concerned when things are not going well.

These characteristics include the following. Good planners and systems thinkers understand that:

- * one can never know everything one would like to know in order to be certain
- * Intuition and educated judgement play a part in making a decision
- * Planning and systems thinking are not primarily analytical activities.
- * There are no formulas or algorithms that assure success. Intuition and judgement are needed.
- * Planning and systems thinking are not linear tasks: there are multiple interdependencies.
- * Every decision affects other decisions and something done previously may have to be redone.

It is the nature of the task, not a failure in thinking, that one should be concerned about. One won’t know if the plan is complete until the plan is completed.

The value of the plan is in the dialogue and collective understanding that went into its development, not the plan itself. The people involved will bring with them their own opinions and approaches to issues. There will be disagreements and conflicts. While a facilitator may find it easier to do the planning her/himself everyone’s commitment is not assured when the plan is finished. There is the risk that the finished plan will be rejected out of hand because people were surprised by its content and the demands made upon them.

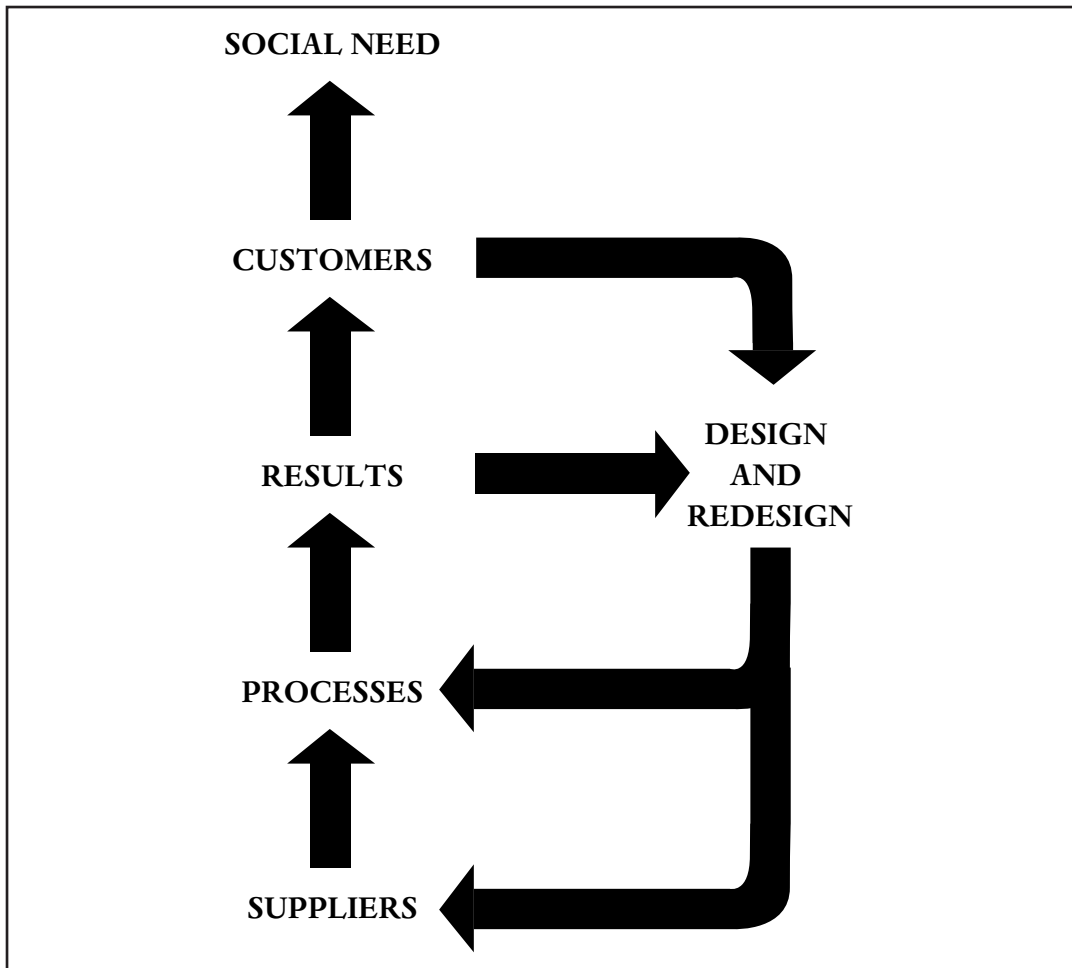
5.2 The driver model

This is about change in the organisation and what drives it. Change may come from internal forces associated with strong leadership and a go-ahead workforce, but the chances are that external pressures will force the organisation to make changes either incrementally or fundamentally. In Ireland, in the context of the management of healthcare, these pressures are coming from :

- The Department of Health and Children (“Shaping a Healthier Future”, 1994)^I
- the need for greater efficiency and effectiveness
- the need for greater accountability

- the mandate to meet the needs of the customer
- patients’ and relatives’ heightened expectations and demands
- the pressure of possible litigation
- the increasing demand from health professionals and managers for information, education and support for improvement initiatives.

Figure 5.2 The driver model



The driver model is the design and redesign of suppliers and processes which lead to desired results (outputs) and which in turn meet the needs of customers and society. Suppliers should be treated as partners with a shared reason for existence who should contribute positively to the organisation’s success. If relationships are poor the organisation should look for other suppliers who will listen to its needs rather than trying to sell it what they have on offer. The ultimate in organisational success occurs when suppliers and processes are perfectly focused on producing outputs that fulfil the underlying needs of the customers and society. If suppliers, processes and outputs are misaligned with customer and societal needs, the result is a form of waste. Misalignment is itself an opportunity for improvement. Improving the efficiency of processes that are fundamentally misaligned with customers’ needs is an unproductive effort.

For a clear understanding of the Driver model it is important to understand the ideas in this segment and that the following question can be answered.

- Who are my customers? Who is depending on me?(There will be many customers.)
- What do each of these customers really need? How do I know what these customers really need? Do I just think I know or do I really know? What real information do I have about this? What methods can be used to gather this information?
- How am I doing at meeting those needs?
- How do I know?
- What is driving me to want to improve?
- What are the reasons for our existence? (This may seem a strange question but, for example, an acute hospital does not exist to provide rehabilitation if these facilities already exist elsewhere, neither does it exist to provide nursing care of the frail but otherwise healthy elderly or chronically disabled.)
- Does the facility or organisation fulfil the reasons why it was set up? Some people may need to go back to the origins of their organisation.
- What processes and suppliers are key to producing your results and fulfilling customers' needs?
- To what extent are these suppliers, processes, and results misaligned with regard to the underlying needs of customers and society?

5.3 The four phases of the journey of implementation

Phase one – Decision

Making an informed choice to begin CQI and beginning to allocate the resources needed to see it through.

Phase two – Preparation and practice

Developing an in-depth knowledge of CQI among the leaders of the organisation and completing 6-12 initial improvement projects.

Phase three – Expansion

Developing knowledge for improvement in a broad cross-section of the organisation and beginning to routinely manage processes using the principles, concepts and methods of CQI.

Phase four – Integration

Completing the linkage between CQI and the organisation's strategic plan and

starting to make it the natural way things are done.

These four phases often overlap. For example, a new project may be started while another one is well on its way. It is important to set a time for completion otherwise a project may drag on. Some organisations may be tempted to skip the first two phases and go directly to expansion and integration. This would be a mistake and can lead to organisational chaos.

5.4 Phase one - Decision

The goal of the decision phase is to make an informed choice and begin allocating the resources needed to see it through.

There are two major tasks to accomplish:

1. Decide the scope, direction and style of the effort
2. “Count the cost” of the effort so that adequate resources can be assigned.

Scope, direction and style of the effort

Mentors and gurus

Assign members of the team to read about the various schools of thought (Juran, Deming, Crosby, etc.) and to talk to practitioners in the field who have already been down the road to CQI. All then meet together and discuss the strengths, weakness and potential organisational fit of the available approaches. Be wary of using consultants at too early a stage. It may be more prudent to wait until the main leaders in the organisation are sure of how they want to proceed and are clear as to the direction in which they want to go. Consultants usually have their own methods and theories and may confuse.

Clinical and service efforts

Decide how to allocate efforts between improvements that will impact on clinical performance (e.g. lower segment caesarean section rate, improved functional status following heart attack) and those that will impact on customer service (e.g. decrease in waiting time, improved communication with patients or other health-care employees/professionals). A mix of service and clinical issues may be a more challenging way to proceed but may prove to be more rewarding in the long run. The danger of not planning for this in the initial stages is that the leaders may end up tackling only service issues because it is perceived to be too difficult to involve the physicians in clinical efforts.

Building on existing efforts

Take stock of existing efforts to manage quality and improve performance. Make a decision on whether to build on these efforts purposefully or to discontinue them.

Build on the strengths of the organisation.

Style in bringing about change

Is the intention to approach change with lots of organisational fanfare or is it more appropriate to keep it low key until there is something tangible to talk about? Is it the intention to drive change through a “champion” or through focused committees? Is it intended to use formal procedures for change or lay out goals and ideas and let people pursue them in their way? Most importantly, what does past experience show from bringing about change in other areas. Should a radical change of style be tried?

Leadership group

A decision on who will lead the effort must be made at an early stage. Typically, senior personnel of the organisation are chosen. But to assure buy-in from the organisation at large it might be wiser to supplement this group (leadership) with key opinion-leaders (appointed by the leader) who are not necessarily at the top of the organisation’s formal hierarchy.

Decision need to be made on the following;

- * the balance the organisation should strive to achieve between clinical and service improvements -50-50, mostly clinical, mostly service, or 100% of one or the other? The benefits and challenges inherent in each of these options should be clearly understood.
- * Should other quality management and performance improvement efforts in your organisation be built on or should it be discontinued and the resource used elsewhere?
- * Does the group leading the project must have credibility within the organisation? Who would need to be included in a CQI leadership group in order to have people believe that the organisation is serious about improvement?
- * What are the likely resources in time and finance?

Counting the cost

This section deals with the allocation of resources required to implement CQI or progress a specific project to completion. The principle resource required is time - that of managers, clinicians and other staff to serve on committees and teams.

Per project costs

Berwick suggests that, on average, a single improvement project consumes one-third of a full-time equivalent person (FTE). (A seven-person team giving four hours a week for seven months represents the equivalent of 784 person-hours. There are about 2,000 person-hours in a working year. $784/2,000 = 0.39$). This gives an idea of the number of projects which can realistically be planned and on

which people can be released to work. In the initial stages projects may take longer to develop until people feel confident.

Training costs

Training costs will include the cost of acquiring, developing and delivering the training as well as the salaries of the trainees. This expenditure is typically needed for the first three years of the effort but may continue for some time thereafter depending on staff turnover and growth.

CQI co-ordinating staff

Their work entails acquiring training materials, scheduling training, tracking improvement projects, organising customer-oriented market intelligence, compiling measurements, communicating with external agencies etc. Depending on the size of the project, the establishment of 0.5 to 5 FTE would be needed. Experience shows that people working half-time on a project cannot give their full attention to it and some projects may fail because of this. Berwick warns of giving the impression that the person allocated to the project is the one “doing quality” and no one else needs to do anything but their basic jobs. Start small and add staff only when there is a clearly demonstrated need. It is vital to avoid the creation of a QA department.

Improvement facilitators

It is unreasonable to expect everyone in the organisation to go through the training necessary to become a quality improvement “expert”. Therefore, it is useful to develop a cadre of people who have received advanced training in the methods of CQI and are available as a resource to help others. Typically, one FTE of facilitator resource is needed for every 5-7 projects undertaken. An organisation that wishes to launch 12 projects will need one or two additional FTE facilitators at the beginning. Some organisations staff the facilitator pool with a large number of part-time facilitators. To support 12 projects, an organisation might train a group of 10-12 facilitators, each to serve about one day a week (20% of their work time). This has the advantage of spreading out the knowledge, building team-work and reducing the pressure on any one individual. Serving as an improvement facilitator is an excellent form of managerial development.

Senior management time

Senior leaders are the only ones with enough organisational “clout” to overcome the inertia of the status quo. While some tasks of CQI implementation can be done by others, responsibility for actively guiding the effort cannot be fully delegated. *Senior leaders must make time in their busy schedules to serve on the quality council, deepen their own personal knowledge, participate in teaching CQI and sponsor*

improvement efforts. Senior leaders must put a minimum of 2-4 days a month into the project if they expect it to reach the Integration Phase. In the context of the Irish hospital service, senior managers mean chief executive officers, deputy CEOs, programme managers and hospital managers.

Note that the “costs” need not be new costs over and above the organisation’s current resource requirements. The FTEs required to staff and facilitate projects and the finance required to support training can be realised by eliminating something else. But if the organisation is to succeed at implementing CQI it must specify where the resources will come from. Telling employees to “do CQI” in addition to their regular duties and with no increase in resources, is to give the initiative the kiss of death. If the reality is that there are no additional resources available then you must cut back or suspend activity in other areas. This is a hard decision, but it must be made and clearly communicated.

In detail, personnel resources required may work out as follows:

- 10 projects equates to approximately 3.5 FTE of effort (10 projects x 0.35 FTE/projects). This effort will be spread across approximately 70 people (10 teams x 7 people/team) and will probably affect every department in the organisation. What can be sacrificed? Who will cover for these people as they serve on project teams? (They will need about 4 hours a week for 6-8 months.) The six senior leaders each need to carve out about 12-14 (Berwick states about 24-48 days) days a year on their personal calendars to support the effort actively (12 months x 1-2 days a month). What will they cut out?

In total, this organisation is planning a senior leadership team supplying an annual effort of about 5.5 FTE staff and requiring an additional £120k for training and around 18 days of personal effort on the part of each leader.

Cost of resources per project

It will take 5-9 people, 6-8 months, 2-4 hours hrs/week or 260-1250 person hrs/per project 0.13-0.6 FTE/per project, 0.35 FTE/per project (average) (nine programmes x .33).

Infrastructure costs

Quality co-ordinating staff - typically 0.5- 5 FTE

Facilitator - typically 1 FTE for 5-7 projects

This is to get the projects going. In time, it produces its own momentum and should not require so great a proportion of training time.

Senior management time: at least 2-4 days per month

Things for senior managers to do:

- serve on quality council
- deepen personal knowledge
- teach CQI

- sponsor projects.

The decision phase of the implementation effort can take anything from a few months to a year. While it is not recommended to wait until every choice is a certainty, it is advisable not to blindly rush ahead to undertake major projects without discussing the approach and planning and the resources needed.

Again decisions need to be made and questions need to be answered on the following:

- * is there a willingness to proceed despite the costs? Who needs to review these estimates and make the commitment of resources?
- * What can be cut back or eliminated in order to free up the time and resources needed to pursue implemented in order to free up time and resources needed to pursue implementation of CQI. Who would need to review this in order to make the hard choices?
- * how can the senior leader free up 2-4 days a month to devote to this new effort?
- * If your organisation has already begun its CQI implementation efforts, has it been adequately prepared for the time and resources that would be required? Does previous experience of QI efforts compare to the rough estimate given here?

5.5 Phase two: preparation and practice – developing knowledge

The goal of this phase is to develop a depth of knowledge of CQI in the leaders of the organisation and to complete 6-12 initial projects.

Figure 5.3 Training grid needs: Phase two, preparation and practice

	Senior management	Quality Co-ordinator	Team leaders	Team members	Middle managers	All staff
Principles and concepts – customer thinking – process thinking – people as resource etc	■	■	■	JIT* ▲	○ some	○ some
QI process – models – structure etc	▲	■	■	JIT ▲	○ some	○ some
Tools and techniques – flowcharts – data collection – histograms etc	▲	■	■	JIT ▲	○ some	○ some

* Just in time

The Quality Co-ordinator is a designated individual employed full time

Tasks:

- assess staff support needs
- eliminate unnecessary tasks
- project nomination and selection
- team staffing and training
- assess the time needed for projects
- remove roadblocks to change
- implement staff support
- communicate and recognise.

Senior leaders and others can serve as discussion facilitators and provide additional materials that describe the organisation's unique plans and approaches.

Adults learn best when they can immediately apply what they have learned in a work setting. Therefore, team members need to know "just in time": (a) the application and use of the principles and process of CQI and (b) the tools and techniques. Senior managers not only need to know how to use the process and the tools and techniques, they must have sufficient in-depth knowledge to teach the principles and concepts (see figure 5.3). If everyone in the organisation is taught at the same time but the plan is to employ only a limited of people in the initial improvement projects, the remainder will probably have to be retrained when their turn comes to use the techniques.

Berwick also suggests that team members are trained in a "just in time" fashion. In other words, when the time comes in the project to construct a flowchart, team members should be taught about flowcharts.

It may also be appropriate to introduce the concepts of CQI to selected middle managers and medical and other staff at this time. These individuals should be chosen for their potential to serve as opinion leaders and pioneers in the EXPANSION PHASE.

Decisions need to be made on the following;

1. Specifically, who in the organisation should be included among the "core group" that receive initial training and serve as the initial teachers?
2. Reflecting on past experiences, what has worked and what has not worked in the organisation in terms of training? Is it better to recruit teachers from within the organisation or use outside experts? Large groups or small groups? Should examples be taken from within the organisation or from outside? Should learners be given lots of background reading and documentation to reinforce the points or should they be taught the precept "just tell me how to do it?"

It may be timely here to assure sceptics that the technical models (right side of the triangle in figure 5.3) are scientifically grounded, data-based and employ the four basic steps of project definition, diagnosis, remedial efforts and holding the gains.

Preparation and practice – selecting the projects

The goal of this phase is to learn about the implementation of CQI in the unique setting of one's own organisation. The best way to do this is to complete 6-12 improvement projects and then seriously reflect on what you have learned.

The initial projects need not tackle the most pressing problems or deeply entrenched issues. It may be useful, nevertheless, to take on at least one "hard nut to crack".

Good improvement opportunities should meet the following criteria:

- **The process and project are considered important.**
Avoid tackling something so trivial that it fails to maintain people's interest.
- **There is open-minded support for changes and improvements in the process.**
Overcoming the inertia of the status quo and implementing change is hard work. If there is no recognition of the need for change in a process, work to correct this attitude before a project is launched.
- **The process is repetitive** (high frequency, high volume, etc).
The reason for this criterion is twofold. First, high volume processes are more likely to be important. Second, repetitive processes yield data within reasonable time frames. This does not mean that you cannot improve important processes unless they are highly repetitive (e.g. the annual strategic planning process). It is simply that such processes may be best addressed later through techniques of quality planning or other improvement methods.
- **The current process is organisationally and conceptually stable** (unless the project is to plan a new process).
This criterion suggests that it may not be very useful to improve a process that you plan to phase out or radically restructure in the near future. Direct your improvement resources elsewhere, or use the concepts of CQI to help you plan the new process.

These general principles are applicable in any phase of the implementation effort.

List of tasks:

- **project selection**
- **training**
- **assess the level of support needed**
- **physician's role within the group and the possible effect on group dynamics**
- **middle management role**
- **plans to hold the gains.**

Project selection: In selecting initial projects, consider the following additional criteria.

- **Small process or well focused issue**
Organisations that are novices at cqi often discover that an issue they thought they could handle with their limited experience has grown to become incapable of their solution. To avoid this frustration select projects that initially seem small in scope. They will probably turn out to be a good challenge.
- **Emotionally appealing**
Initial projects should attract attention in the organisation, people should be eager to see them succeed.
- **Potential “demonstration” value**
People will immediately see the worth of a project that has been a source of frustration for patients and staff. Fixing it will pay dividends in gaining people’s acceptance and understanding of what it’s all about. For example, a successful initial project to reduce patient waiting time in one clinic can demonstrate that cqi can be helpful in addressing a major source of customer dissatisfaction across the whole organisation.
- **Initial data are relatively easy to obtain**
Data collection is often the most difficult and time-consuming part of an improvement project. Choose projects where good data already exist or are easy to compile in order to increase the odds of success.

The preparation and practice phase should take about a year - a few months of focused learning by the core group and 6-8 months to complete the initial round of projects. It may take a little longer if you decide not to launch all of the projects at once - a useful precaution to avoid being overwhelmed. No matter how much time you spend, at the end of this period the leaders of the effort should stop to reflect on and compile the “lessons learned”.

Some suggestions for project ideas;

- (a) reduction of waiting time in the oncology or other clinic,
- (b) improvement of clinical outcome following coronary bypass surgery,
- (c) reduction of medication errors.

Review the project ideas above and rate each on a 1-3 scale as to its conformance to the CQI criteria. Can the project be modified to make it a better fit? (Usually this means picking a subset of the project or reducing its scope in some other way.)

What will be hardest for the organisation : (a) doing the analysis necessary to come up with specific, supportable recommendations for improvements in the selected project area, or (b) getting the support of everyone needed to implement the recommendations?

How easy is it for the organisation to reflect on and profit from the “lessons learned”?

In the organisation, would it be best to: (a) communicate widely as you begin the CQI effort so everyone will know it is happening, or (b) be quiet and wait until there are concrete results to announce?

5.6 Phase three: Expansion

In this phase there is ongoing project selection, development of business process management, initiation of organisation-wide training, facilitator and team-leader development, and development of CQI support infrastructure.

The goal of this phase is to develop a depth of knowledge in a broad cross-section of the organisation and to begin routinely managing processes using the principles, concepts and methods of CQI.

This is a mature phase which will allow the organisation to organise 30-60 projects annually using 4-20 FTE facilitators. All management are trained in and are applying concepts, process and tools; 70-80% of staff have been exposed to CQI training; 30-50% of physicians and other staff have been involved in teams.

The training needs grid (Figure 5.3) can now be modified to indicate the need for more widespread dissemination of knowledge about CQI in the organisation. All management are trained in and applying concepts, process and tools.

Plans can now be listed as follows:

- projects’ selection system should be in place
- training and staffing plans should be at an advanced stage
- support systems should be in place
- standing teams and other councils should now be able to work on their own.

Figure 5.4 Training needs grid – phase 3: Expansion

	Senior management	Quality Co-ordinator	Team leaders	Team members	Middle managers	All staff
Principles and concepts – customer thinking – process thinking – people as resource etc	■	■	■	■	▲	○
QI process – models – structure etc	■	■	■	■	▲	○
Tools and techniques – flowcharts – data collection – histograms etc	■	■	■	■	▲	○

By now, the core group of senior leaders, CQI staff and facilitators should be well equipped to teach others the entire set of concepts, methods and tools. Project team members can still receive training “just in time”. The need for this will diminish as people begin to serve on their second or third improvement teams. Teams with experienced members may by now function without a facilitator, thereby increasing your project capacity. All middle managers in the organisation should be trained in-house to use the methods and tools of CQI in the daily management of their departments. Finally, all medical staff and employees should be introduced to the organisation’s efforts in CQI. This introduction should be regarded as the acquisition of background information, not skills mastery, and should be sufficient to enable people to participate effectively, with guidance from facilitators in future cross-functional and departmental improvement efforts. The first four programmes should be sufficient for a good overview of CQI and should serve as the basis for an organisation-wide training effort.

Training is just one aspect of the infrastructure that needs to be addressed to support improvement in this phase of the CQI effort. Many organisations will now find that they need to further develop their facilitator pool. Some facilitators will want to leave and go back to their previous work, other staff members may want to become facilitators for a while. At this stage too, the organisation may want to expand the skill sets of the facilitators to encompass the techniques of quality planning, quality control, listening to customers, etc. The triangle introduced in Programme Three provides a guide to this. Upgrading skills to meet the evolving needs of the organisation is a constant challenge. The infrastructure within which the CQI effort is developed should never be allowed to weaken. Senior managers have a major and continuing responsibility in supporting leaders and facilitators.

The expansion phase is also a time when serious thought should be given to aligning cross-functional processes with customer needs. While the initial improvement projects in the preparation phase may have addressed specific issues of misalignment, the formal, senior-leader-driven, project-by-project approach is probably insufficient to keep up with rapidly changing customer needs.

The expansion phase may last a year or two. In the end, the organisation should be supporting 30-60 improvement projects annually, have all managers trained in CQI, have exposed most of the physicians and staff to the basic concepts and have involved them in improvement efforts and key business processes identified and managed with a CQI approach.

Consideration should be given to the following questions:

Who ‘owns’ these processes now?

How are cross-functional, key business processes currently managed in the organisation and how should they be managed in the future?

5.7 Phase four: Integration

The goal of the integration phase is to complete the linkage between CQI and the organisation's strategic plans and begin making CQI the routine way of doing things.

In this final phase, CQI begins to lose its identity. As everyone in the organisation gets involved in quality management, the concepts, methods and tools become "second nature". Quality management becomes interwoven with the organisation's strategic plans. Decisions on new directions come directly from the expressed need of the community and the customers. Neither finance nor technology should be allowed to drive the organisation's decisions. The driver model introduced at the beginning of this manual should be the guide.

Quality in daily work must become a natural part of the organisation's culture. While the members of the organisation may be completing tasks similar to those they have always performed they should now have a new approach. Questions such as: "What people are depending on me?"; "How well am I meeting their needs and expectations?"; "How do I know?"; should be asked frequently by all staff. The organisation should be a happier place in which to work and should run more smoothly than before with much less frustration. This is the vision of CQI.

The Integration Phase will never be completed. It is a "forever" challenge.

Summary

The first three years are made up of (a) the decision to adopt the CQI way, (b) the preparation and practice, (c) the expansion and, finally (d) the total integration of CQI as the routine way work is performed.

5.8 Quality council – preparing to lead

First questions again: Who depends on you?

How well do you meet their needs and expectations?

How do you know?

The first step on the journey toward the implementation of quality management is to prepare. But no one can properly lead without some level of mastery of the topic. Leaders can deepen their knowledge in a variety of ways.

Planning and leading change mean the preparation of leaders to fulfil these roles and their mastery of the underlying theory and practice.

Building awareness

The following organisations offer courses on quality management: Institute of Public Administration, Irish Society for Quality in Healthcare, Excellence Ireland, Office for Health Management.

Discussions in small groups allow people to learn by asking questions appropriate to their area of work.

Reading

There is a great deal of literature available on CQI. A select list of references is given at the end of this manual.

Consultants

Management/ quality consultants have been employed for many different reasons in the field of healthcare. However, experience has shown that it is essential that a clearly defined brief is provided to ensure the best results.

Peer support and networks

These should offer one of the best ways of learning from those who have already been through the mill.

5.9 Quality council – role and work

The quality council is the leadership group that guides the organisation's efforts through the four phases of implementation described above. The council has seven major responsibilities to fulfil.

Self- training

The council must take responsibility for improving its own competence to lead. Position in the organisational hierarchy alone is not sufficient qualification to lead the quality effort. A council that doesn't bother to learn itself, will have no credibility when it asks others to attend training initiatives to learn and practise new skills.

Creating a quality policy

A written quality policy briefs the organisation on quality management as a driving strategy. It contains a statement of the organisation's customer-oriented mission - its reason for existence and the societal needs it intends to fulfil. The policy defines what the organisation means by "quality". It describes what the organisation intends to become - its vision of a "future state". The document also articulates the management principles that the organisation subscribes to, such as

cross-functional collaboration, commitment to learning, and the desirability of change. Finally, it delineates the organisation's technical approach to quality management - the models and structures it will use to assure a reasonable consistency of method and transferability of learning across the organisation.

Creating a quality policy is a tall order and only the senior leaders of the organisation have the credibility to do it. It is a necessary step if the organisation is to exhibit what Deming called "constancy of purpose for improvement". However, it is of vital importance to the success of every quality policy that all front-line staff are given the opportunity of participating in its development.

Elements of a quality policy are: a mission statement, quality definition, model of the future state, model of management principles (an example of a mission statement is shown in Programme Three, Appendix 1).

Technical models are: a quality plan, quality improvement, and a quality control model.

Organising the training plan

The training needs grid introduced earlier in this programme (Figure 5.3 and 5.4) provides a skeletal outline of a training programme. The council must fill in the details and adapt the plan to the pace and needs of the organisation. The council must be the steward of ongoing learning.

Supporting quality improvement projects

The necessary infrastructure for projects was described above. The council is responsible for selecting projects; seeing that they are adequately resourced; developing the pool of facilitators; helping teams remove organisational roadblocks; identifying and establishing ownership for key, cross-functional business processes; stimulating intradepartmental improvements; and redesigning organisational systems (such as that for individual performance appraisal) so that they support rather than hinder improvement efforts.

Reviewing and celebrating quality improvement efforts

The council affirms its interest in improvement by taking the time to hear about the progress and setbacks of the projects it has chartered. These reviews should not be thought of as "critiques". Rather they are opportunities for the council members to coach, encourage and celebrate the efforts of the teams. A review should be carried out in such a way that makes it possible, simultaneously, to celebrate achievements, point out weak areas, give guidance and demonstrate active support. Council members will have to work at it but such empowering behaviour will eventually become second nature and a key force for change in the organisation. Use extrinsic and intrinsic motivators.

Evaluating the overall effort

Like any other investment, CQI should yield a measurable positive return. The quality council should periodically take a critical look at the effort, revising and redirecting as needed. This assumes that the council has already completed the work to establish the goals and measurements needed to conduct the evaluation.

Strategic quality planning

This responsibility of the quality council brings us back to the driver model introduced at the beginning of this programme. It is the council's responsibility to see to it that systems are in place to monitor the external environment, listen constantly to customers and recognise their evolving needs. Further, it is the council's responsibility to ensure that these systems of information gathering are properly connected to the department heads and process owners within the organisation who need to act on the information.

It may be useful to find the answers to the following questions.

1. What is the organisation's current "mission statement"? Does it truly define the reason for its existence and guide day-to-day decision-making?
2. What are the current "management principles"? (Note, these principles may not be formally stated, but they can certainly be inferred from the actions observable within the organisation.) Do these principles aid or undermine CQI?
3. How are improvement projects reviewed in your organisation? Is the tone of the review like a critique or is it more like a celebrating, coaching and supporting session?
4. Does the organisation's current performance appraisal and reward system aid or support the concepts of CQI?
5. If the organisation already has an established quality council, compare its work to the seven responsibilities described above. How might it be improved?

Suggested reading

- Marszalek-Gaucher, E. and Coffey, R.J. (1991), *Transforming healthcare organisations: How to achieve and sustain organizational excellence*, San Francisco: Jossey-Bass
- Al-Assaf A.F. & Schmele J.A. (1993), *The Textbook of Total Quality in Healthcare*, Florida: St. Lucia Press,
- Palmer H.R., Donabedian A. Povar G.J. (1991), *Striving for Quality in Health care: An Inquiry into Policy and Practice*, Ann Arbor, Michigan: Health Administration Press
- Parsley K. & Corrigan P. (1994), *Quality Improvement in Nursing and Healthcare: A practical approach*, London: Chapman and Hall
- Joiner B.L. (1994), *Fourth Generation Management: The New Business Consciousness*, London: McGraw-Hill, Inc.
- Schroeder P. (1994) *Improving Quality and Performance: Concepts, programs, and Techniques*, London: Mosby