

Issues in health services delivery

Improving provider skills

Discussion paper
1

**Strategies for assisting health workers
to modify and improve skills:
Developing quality health care
- a process of change -**



Evidence and Information for Policy
Department of Organization of Health Services Delivery
World Health Organization
Geneva

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Improving provider skills

*Strategies for assisting health workers
to modify and improve skills:
Developing quality health care - a process of change*

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Executive summary

Purpose of paper

This paper is intended for health care personnel and managers who are interested in improving the quality of the health care system by fostering change in the process of care and in the performance of practitioners. It should be of assistance in conceptualizing how to promote change and how to overcome barriers to positive change.

Rationale

In a period of fiscal constraints and health care reforms, people around the world are demanding greater quality in the health care they receive and accountability in the health care system. Evidence for the need to improve quality is widespread. Large variations in patterns of practice are observed that cannot be explained by differences in the needs of the populations served. Studies report high rates of inappropriate care and error during care-giving. We can expect workers in the health care system today to continue to work for twenty or thirty more years. Thus, attention must be paid to how to continue their professional development and assist them in improving the care that they provide. These workers must continuously change their practice behaviour to keep abreast of new developments in the health care field.

Summary of Content

The first section provides an overview of how quality health care may be developed. Although quality control and assurance techniques are not new to health care, only recently have these methods been widely adopted. Quality improvement methods, which involve workers in thinking about what needs to be improved and in experimenting with ways to improve it, seem to be most helpful in fostering behaviour change at the individual worker level. All of these methods are needed for the continuing development of quality in the health care field.

This paper describes strategies for improving the performance of health care workers. Many factors interact to affect the quality of health care. The structure of the health care system, educational opportunities for health practitioners, the administrative system, the pace of change, economic conditions and the technology available may influence the ability of the existing workforce to acquire new skills and implement them in practice. Thus, a comprehensive strategy is needed if the quality of the overall system is to improve, including the development of indicators to measure progress.

Change in performance (practice behaviour) is complex and often is not easily accomplished. The second section describes the stages involved in behaviour change and the kinds of strategies that assist people in changing. Often people are at the pre-contemplative stage; they have not thought of changing or have dismissed the need for change. An interest in the need for change must be created to induce them to contemplate the need for change. Activities and events that encourage reassessment of the environment, raise consciousness and allow self-evaluation are useful.

When people are predisposed to change, they actively seek information on the advantages and disadvantages the change would bring them. They are likely to become more aware of performance problems. To decide to change, the person must feel capable of making the changes required. This can be done often through actively rehearsing the change, and by providing reminders and incentives to change. Furthermore, it requires an environment that will continue to support the changes made.

Planning for change involves identifying incentives and strategies to assist in effecting the change to higher quality care. If the environment continues to support old behaviours, people will revert back to their old behaviour patterns. The person's personal environment, the immediate practice environment, the educational, professional and community environments must all be considered. In addition, the administrative, social and cultural environment and the existing economic and political environment can either foster, or act as deterrents, to change.

The third section focuses on strategies used to assist health care practitioners in changing their behaviour. Strategies aimed at individual workers are described and the evidence for their effectiveness is reviewed. A combination of predisposing, enabling and reinforcing strategies are more likely to positively change practice performance. Strategies useful at the institutional level are also described. Combined strategies that incorporate more elements of the behaviour change model are seen as more likely to succeed. Policies and programmes at regional and national levels that can make positive contributions to practitioner behaviour change are also described.

The final section outlines ways that middle managers can provide leadership in the quality development process and promote positive change in aspects of the health care system for which they have responsibility. It presents examples of how to create a climate for improved health care quality that predisposes workers to think about changing. It suggests involving them as key stakeholders in thinking through and developing opportunities for quality improvement. It describes the steps in planning and implementing change to improve the quality of health care. It highlights the need for partners in developing and supporting change, notably the affected health care practitioners, education and training institutions, professional associations and other key stakeholders. The need to monitor and evaluate the change is stressed. The factors that increase the complexity of changes are described, and finally, the role of the manager as an agent and champion of change is outlined.

1. An overview of the issues

Introduction

Health care workers all over the world are facing difficult challenges. The public's expectation of them continues to rise. Yet as a result of fiscal constraints, often created by worsening economic conditions, they are asked to provide more, higher quality health services with fewer resources. At the same time, the knowledge and skills-base needed to perform effectively in their chosen fields of endeavour continues to grow and change rapidly. Health care personnel will continue in the workforce for many years, while the information that they acquired during their education may rapidly become obsolete. Health care institutions and their managers are also confronted with these realities. The challenge is to continue to maintain or improve the quality of the care provided and maintain, or even expand, the comprehensiveness of health service coverage, while introducing changes in care delivery or service mix necessitated by reduced budgets. Finally, governments at local, regional and national levels are attempting to obtain greater value for the money they spend on health care. Faced with growing expectations of quality, they are being asked to be more accountable for the results of their health care expenditures. Thus, they also have an important role to play in ensuring and improving the quality of health services provided in both the public and private sectors.

This report examines strategies that have been developed to improve quality of care provided by health care personnel. It comments on the evidence of their effectiveness in improving quality and describes where they are most likely to be useful. First, the report examines recent trends in thinking about quality in care, and how it is defined and measured. The contribution of individual health personnel to health care quality is set within the context of the wider health care system and factors that influence its quality. A conceptual model is then developed for examining approaches which attempt to modify health care personnel's behaviour to improve the quality of care that they provide. Three groups of strategies are discussed: strategies that target the provider; those meant to be used by teams or facilities; and those used at the regional or national level to support quality health care. Information is provided on the usefulness of the various strategies and the context in which they have been shown to be useful. Concerns raised about their effectiveness are also reported. The importance of targeting multiple environments of influence and creating ownership of the need for change in health care personnel is emphasized. Finally, the ways in which managers can lead and support improvement in quality of health care is discussed. Managers must lead in developing a climate for quality development; they can assist in the development of ideas and strategies to enable improvement. Permanent change is unlikely unless managers help create the feedback necessary to ensure improved quality and the environmental supports to sustain it.

What is quality health care?

There are many different definitions of quality in health care. The characteristics emphasized vary according to the perspectives of the different stakeholders involved in crafting the definition and in determining how the definition is to be used (Reerink, 1990; Palmer, 1991).

Definitions of quality of care include such characteristics as efficiency, efficacy, effectiveness, equity, accessibility, comprehensiveness, acceptability, timeliness,

appropriateness, continuity, privacy and confidentiality. Other attributes that have been used to describe quality health care include provisions of education for the patient and family about pertinent health issues, inclusion of the patient and family in treatment planning and decision-making, and patient satisfaction. Ensuring safety and support in the care environment, reducing mortality and morbidity and improving the quality of life and functional health status of the patient may also be seen as quality attributes.

Table 1: Dimensions of quality health care

<i>Equity</i>	Services are provided to all people who require them
<i>Accessibility</i>	Ready access to services is provided
<i>Acceptability</i>	Care meets the expectations of the people who use the services
<i>Appropriateness</i>	Required care is provided, and unnecessary or harmful care is avoided
<i>Comprehensiveness</i>	Care provision covers all aspects of disease management from prevention to remediation; psycho-social aspects of care are considered
<i>Effectiveness</i>	Care produces positive change in the health status or quality of life of the patient
<i>Efficiency</i>	High quality care is provided at the lowest possible cost

One of the earliest attempts to examine quality (Donabedian, 1966) led to the development of a conceptual framework that divided health care delivery into three aspects: structure, process and outcome. **Structure** encompasses such features of the setting as the number and types of personnel, the age and type of equipment and other facilities, and aspects of organization such as committee structures. Characteristics, such as comprehensiveness of coverage and safety, can also be seen as related to the structure. **Process** includes the activities involved in providing and receiving care. Process indicators of quality may involve such aspects as timeliness, continuity and patient compliance. **Outcomes** of care involve the effects of health care on the health status of the patient and may include measures of quality of life, functional status and patient satisfaction. The structure of the delivery system (such as its funding level, the types and mix of health care workers, the types of equipment available, and managerial expertise) can play a role in the quality of care delivered. However, a good structure alone does not ensure quality care. Structure is easiest to measure, so many early attempts to improve quality relied heavily on assessing the adequacy of structure to meet the mandates of the organization. The process

Problems in quality can relate to the structure, process or outcomes of care

by which care is delivered is also important, although a good process may not always lead to high quality outcomes. There has been increasing interest in not only examining the structure and the process of care, but also in determining the outcomes of care. Yet outcomes remain the most difficult to measure (Donabedian, 1992).

One definition of quality health care is "doing the right thing to the right person at the right time at the lowest cost." This definition seems most directly linked to the actions of individual health personnel. The definition assumes that health care workers know what treatments are efficacious (that give benefit under ideal conditions) and effective (useful given the realities of routine clinical practice), given a particular patient's condition and circumstances. It suggests that workers can be timely in their intervention(s) so that they are made during the critical period shown for them to be effective. It assumes an awareness of the costs and benefits of the various treatment options available and that the most fiscally prudent intervention will be chosen. Unfortunately, in many cases, information about these issues may be incomplete or lacking. Even when such information exists, it may not yet have filtered down to the provider when he is providing care to the

patient. Thus, this definition can be seen as a useful goal towards which providers and managers of health care should strive, but one which may not always be possible to attain. Information is simply lacking for a wide range of possible treatment options, patients and situations. The more complex the situation, the less likely are definitive answers regarding what represents quality.

Quality of care has also been seen as having three interrelated components (Table 2): **technical care**, which involves using medical knowledge and technology to maximize the benefits of care for the patient while minimizing the risks involved; **interpersonal care**, which involves paying attention to the psychosocial aspects of care, including the patient-provider relationship, the larger social context in which care is provided and the social circumstances with which the patient must cope; thirdly, the **organization of care**, which determines its accessibility, timeliness, the amenities provided and efficiency.

Table 2: Relationship of components of care to quality

Component of care	Type of quality most affected
Technological	Appropriateness Effectiveness
Interpersonal	Acceptability
Organizational	Equity Accessibility Comprehensiveness Efficiency

The Malaysian Ministry of Health has defined quality health care in public hospitals as, "the optimum achievable result for each patient, avoidance of iatrogenic complications, attention to patient and family needs in a manner that is cost effective and reasonably documented" (Hussein, 1990)

Developing agreement among stakeholders regarding the meaning of quality health care is a necessary part of any attempt to measure or manage quality. At the local level, providers may be more concerned with accessibility, satisfaction and effectiveness issues while allocative efficiency may be of greater concern at a regional or national level. Yet local definitions should be compatible with national definitions, even if the emphasis may be somewhat different.

How is quality of care measured?

Clearly the purpose and audience of the evaluation, the attributes seen as important to quality of care, and the sophistication of the information systems available all influence, and often place constraints on, how quality of care is measured in a given setting.

Measurement may be limited to indicators of a few aspects of structure or include a comprehensive range of indicators reflecting structure, process and outcomes of health care. Qualitative methods may be used along with quantitative ones. Measurement may also be continuous, episodic or carried out as a one-time assessment. It may include information taken from a variety of data sources (e.g. patients, health care personnel, visit logs, charts, nursing notes, administrative management information system data, etc.). It can be done by sampling or considering the entire population under study. The speed with which the information can be fed back to providers and managers is often an issue and may help shape the indicators chosen. Timely information is more likely to spur action to address problems with quality. Principles of developing good performance indicators are listed in Table 3.

Table 3: Principles for developing performance indicators

<i>Ownership</i>	Managers and other stakeholders who will make use of the performance information should play a significant role in developing the indicators.
<i>Selectivity</i>	To be meaningful, the focus must be on a small set of critical indicators.
<i>Balance</i>	A single indicator will rarely be sufficient to document even one aspect of the performance of a programme. Rather, a small set of indicators is needed to provide a balanced perspective.
<i>Qualitative</i>	Both qualitative and quantitative indicators are needed to provide a balanced perspective.
<i>Ongoing and periodic</i>	Often, the optimum set of performance indicators includes a number of indicators based on ongoing measurement systems supplemented by periodic studies of performance.
<i>Sample</i>	It is often not necessary to measure everything. However, well-designed samples (both statistical and purposeful) can provide reliable data at significantly reduced administrative cost to the client.
<i>Meaningful</i>	Indicators should be useful to those who produce them, otherwise they are not likely to collect data to create them. Similarly, data collection should not be burdensome.
<i>Outside factors</i>	Programme performance is influenced by outside factors. It is important to take into account such factors when explaining performance indicators
<i>Context</i>	Good reporting requires not only contextual discussion of the environment but also an analysis of the significance of the indicator.
<i>Review and update</i>	Social and economic factors cause indicators to change over time even when the programme remains largely unchanged. Interests change as does our understanding of the programme and its performance. Measures of performance are incomplete unless an appropriate updating strategy is adopted.

Adapted from: Treasury Board of Canada. *Into the 90s: Government Program Evaluation Perspectives*. Office of the Comptroller General, Ottawa, June 1991.

Fairly sophisticated systems have been developed in some hospital settings which provide information reflecting quality, such as the cost of care by case mix groups, the percentage of operations (by type) that result in complications, the average length of stay by case mix group and measures of variation, waiting times for elective surgery, nosocomial infection rates, needle-stick injury rates, and readmission rates within one month by type of prior admission (see Wennberg et al., 1987 and also Blumberg, 1987 for examples of such systems and their problems). Such data may be collected continuously and reported weekly, monthly, quarterly, semi-annually or yearly. The nature of the underlying data and the number of items of information collected influence the reporting period chosen.

Most indicators describe the quality of the process of care rather than its outcomes. When outcomes are included, they tend to be short-term outcomes. It is usually difficult to follow patients beyond the time they attended the health care facilities. The public's demand for improvement in the quality of care has increased the emphasis placed on measuring the outcome in terms of patient and family satisfaction with the care provided.

Evidence for the need to improve quality

Some point out that we have survived without major quality initiatives in health care in the past and question why they are needed now. Is this simply another fad to be endured or are there important issues in health care delivery, aside from patient demands, that make us think quality can, and should be, improved? There is a growing body of evidence that merely providing services does not guarantee their appropriateness.¹

Research reveals examples of inappropriate care, leading most acknowledged experts to conclude that, whatever area of health care is studied, inappropriate care will likely range between 10-30%.ⁱⁱ Persistent variations in the practice patterns of physicians are also found that cannot be explained by underlying variations in the incidence of disease or patient demand (see Andersen and Mooney, 1990, Detsky, 1995). Large variations are seen in the incidence of various surgical procedures (e.g. hysterectomies, and radical mastectomies) from region to region of the same country and in hospitalization rates for various diseases.ⁱⁱⁱ These variations suggest that there is room for improvement in quality. Finally, significant errors occur in practice that may have adverse effects on patient outcomes. For example, a Harvard Medical Practice Study found adverse events in 4% of hospitalizations (Leape, 1994) resulting in significant mortality.

Studies have shown significant errors, inappropriate use of technology and large variation in practice behaviour

Achieving quality: building or inspecting it?

Two different approaches have been taken in monitoring the quality of care with the aim of improving it: quality assurance and quality improvement. Although both rely on performance monitoring, they differ in how indicators of quality are selected, the emphasis that they place on having criteria or standards by which to gauge aspects of the structure, process or outcomes of care, and the way the information obtained is used.

Quality assurance (QA), the older of the approaches, emphasizes meeting or exceeding agreed upon minimum standards of performance which are usually set by an individual or group external to those who are to be assessed. The criteria it uses may be implicit or explicit. When explicit criteria for performance are set, these are usually based on the best available scientific and clinical evidence. Agreement of experts may also be used to set criteria but serious questions have been raised about the validity of this approach because their consensus does not always coincide with the best available medical evidence. This approach is useful when the evidence is conflicting, ambiguous or lacking.

The aim of quality assurance is to make certain that the criteria set are being met. Thus, action on the part of the health professional (to improve performance to reach the level of the standard or criterion) is only demanded when the facility, service or person whose performance is assessed does not meet the minimal standard. Sometimes, failure to meet the standard results in reprimands, close monitoring, fines or other sanctions such as temporary loss of licence to carry out such activities. Usually, some remedial action plan is developed that is agreed upon by the parties and performance is reassessed after a given time period. Because QA emphasizes finding and correcting problems, it can be perceived as a negatively-oriented process. Many health care professionals are unenthusiastic about it as they perceive it as a threat to, rather than as a support for, their work activities.

Quality improvement (QI) represents a paradigm shift away from a major concern with inspection of activities and detection of those care providers (clinics, health care teams, hospitals, etc.) who fail to meet minimal criteria or standards to an emphasis on continuous positive change in performance. The underlying philosophy of QI is that no matter how good care is, it can always be improved. QI assumes that health care providers are concerned about doing a good job and want to do the best job possible. Processes, particularly interfaces between different aspects of the process of care, are often

problematic and, when these are identified, solutions can be found to make care more effective, efficient, humane, and geared to the preferences of patients and their families.

Table 4 presents a comparison of QA and QI.

Table 4: Comparing quality assurance and quality improvement

Characteristic	QA	QI
Philosophy	Poor performance must be detected and remedied	Improvement is always possible
Object of study	People	Processes
Goal	Control error rate	Move to higher level
Types of flaws studied	Special	Common and special
Performance referent	A standard	Capability/need
Source of knowledge	Peers in profession	All staff
Review method	Summative	Formative, analytic
Patient needs	Not assessed	Included
Linkage to structure/organization of health facility	Loose	Tight (part of line management)
Workers involved	Dedicated, specialized staff	All staff
Use of statistics	Limited	Pervasive
Leads to action	Only if deficiency is detected	Always

In practice, there has been a gradual blurring of distinctions over time between these two approaches. QI teams may choose to use external criteria of quality, "benchmarks", to assess their performance and set very specific goals for improvement, thereby moving closer to a QA approach. A team approach is not always used for QI. There is growing recognition that adherence to fairly static minimal standards may not promote a general increase in quality. It simply protects the public from grossly inadequate care. Thus, QA advocates have also moved in the direction of setting moving targets for quality. Advocates of both approaches are quick to say that they are interested in raising the overall quality of health care. Their intent is to improve quality, whether the targets and criteria are internally or externally defined and they use a growing number of methods in attempting to reach these goals. The World Health Organization (WHO) Working Group's definition of quality assurance is "the systematic effort to ensure and improve

There is agreement that quality must be both assured and improved

quality of health care".^{iv} The European Regional Office of WHO has suggested the term, "continuous quality development," to encompass and supplant QI and QA.^v

Factors that influence quality of care

Although this paper will focus on approaches to improving quality of health care delivery that target the modification of the skills, attitudes, knowledge and behaviour of providers of health services, numerous other factors influence the quality of care delivered. The way the health care system is structured, including the number and types of health care personnel available, and how they are deployed and distributed, can all influence the quality of the services delivered. The pace at which change is occurring, the availability of technology needed to deliver quality care, and the expertise and style of health care

resource management available may also influence quality. Entry-level knowledge, skills and understandings of health care workers are affected by the quality of the basic educational system, the links between the health education and health care sectors and the extent to which the educational system promotes continuing learning skills and models multi-disciplinary cooperation. The ability of the existing workforce to acquire new skills may also be limited by the support available through the educational system (e.g. library, courses, distance learning opportunities).

Tools to help health care personnel improve quality

A wide variety of strategies are used in quality assurance or improvement. Some target health care personnel directly while others affect the quality of care delivered by providers more indirectly. Such strategies may target the structure or process of the health care or health education system, either at the local level or at regional/national level, and thus have indirect effects on health care personnel.

Tools that target providers directly include unsolicited mailings of information, academic detailing of new information, use of educational influence, hospital "rounds", development of standards of practice, practice guidelines and care-maps (see glossary), reminder systems built into practice records, computer-based interventions, or peer audit and feedback based on guidelines, and a plethora of other types of formal and informal continuing education opportunities. Self- and peer-assessment of learning needs are often used to help the learner determine what learning needs should be addressed. Each of these tools are examined in greater detail in section IV.

At the local health care delivery level, numerous activities may be used in an effort to enhance quality. They include adopting standards, guidelines and care-maps, forming standing committees to monitor key work activities and giving credentials to professional employees. Quality improvement initiatives may involve job/process re-engineering or cross-training of workers. Management and clinical information systems may be developed. Workers may be given leave to attend continuing education courses. Establishment of criteria for renewal of licence or job appointments may also induce health care personnel to review knowledge/skill needs and increase the likelihood that they will seek ways of continuing their own learning.

At the regional or national level, policies and legislation regarding the health care delivery system or the educational system for health personnel, including continuing education, may be devised to improve quality. New or changed legislation that governs the education of health care personnel, the mandate and operations of the health care system and its institutions, and the scope of practice and regulation of the various health professions can have far-reaching effects on quality of care, including improving the quality of health professionals' knowledge, skills and activities. However, these effects are not likely to be accomplished by such strategies alone. Legislation provides a framework within which change can be promoted and managed. Health care workers should also have access to the tools and resources needed to increase their knowledge and change their behaviour.

The need for a comprehensive strategy

A comprehensive approach to the developing the quality of care is advocated where national or regional policy and legislative initiatives serve to facilitate change and provide impetus for improvements at the more local level. Higher level policies and legislation can provide incentives for health care personnel to keep their knowledge and skills up to date and they can expand opportunities for continuing education. Enhanced data systems and improved monitoring and examination of outcomes at the local level are needed to provide feedback to health care personnel and to inform decision-makers. Patients can also be empowered by providing them with more information on how to use the health care system and what to expect from health care personnel.

A comprehensive strategy requires that the impact on quality of changes introduced in the health care system must be thought through and planned carefully. For example, development of licensing requirements and minimal standards for attainment of a professional licence and/or licence renewal can influence both the educational system that trains workers and workers in the field who wish to be recognized as health workers. The recent legalization and licensing of midwifery as a profession in one Canadian province prompted the development of education programmes for new midwives and for upgrading the skills of existing midwives to meet standards set in the legislation. A new

A comprehensive strategy for continuous quality development requires:

- building mechanisms to support and encourage quality;
- strong management structures
- attention to all levels of the health care system.

policy initiative, such as changing the focus of the health care system (e.g. redirecting money away from tertiary care facilities to health promotion and primary care in the community), will also have ripple effects since some health care workers are likely to be dislocated and will need to develop new, different sets of skills very rapidly. Thus, support to workers to make such changes may also be needed.

A health care system that proposes to engage in total quality management should have mechanisms built into the management structure at all levels which help anticipate the implications of new policies for maintenance and improvement of quality of health personnel in the system. Such initiatives need to be reviewed with the explicit goal of determining the educational and other resource needs of health personnel to deliver quality care given the new circumstances. Information systems that can provide managers and leaders with feedback on whether the initiatives taken are having the desired effects on quality are also very important.

2. Promoting behaviour change to improve quality of practice: a conceptual model

Improved quality of practice is concerned with the performance of health care personnel. Competence (what health personnel know how to do) is not always reflected in practice performance (what they actually do in a given clinical situation). In order to assist health care personnel improve the quality of their practice ways must be found to help them change their practice behaviour or performance. However, changing complex human behaviour is difficult. A promising model for conceptualizing the stages of behaviour change has been described by Prochaska and his colleagues (Prochaska and DiClemente, 1988, 1992). Their studies of how people go about changing poor habits (e.g. overeating, smoking, etc.), can guide thinking about the necessary and sufficient conditions for any complex behaviour change.

Stages of behaviour change

Prochaska's model posits that behaviour change usually occurs gradually as the person moves through five developmental stages of motivational readiness or intention to change. Progress is not always in a direct linear fashion as a person may revert to an earlier stage before entering the next stage. During the **pre-contemplative** stage, the person is unaware of a need for change, or is aware but not considering change, and displays no interest in learning about how to change. In the **contemplative** stage, the person is considering a behaviour change and may actively seek out more information about the advantages and disadvantages of the change. A person in this stage is more aware of performance difficulties but ambivalent about the costs and benefits of current behaviour. Contemplators are much more open to feedback and information about work quality problems and how to change than pre-contemplators. During the **preparation or decision** stage, the person actively makes plans to change and takes some steps towards action (e.g. attempts to gain as much information as possible that will help him/her make the change). During the **action** stage, the person is actively modifying his/her behaviour and the environment in order to make the change. Finally, a **maintenance** stage is reached. The person is quite comfortable in the new behaviour but may still have to guard against reverting to the old behaviour. It helps if the environment is conducive to the change and reinforces the new behaviour. Thus, environmental support for the change remains very important in the maintenance phase. Sustaining behavioural change is very difficult if the environment provides cues that trigger the old behaviour.

Processes to effect change

To help people with change, one must determine which stage they currently are in, use tools/strategies congruent with that stage and assist them in moving on to subsequent stages. Prochaska describes ten basic change processes (Prochaska, 1979) that help move people from one stage to the next. Early on, an interest in changing must be created. Activities and events that support consciousness-raising, environment re-evaluation and exploration of feelings regarding change are needed to predispose the individual to contemplate change. Then the belief that the person can and should change must be developed. Opportunities that enable self-evaluation may move the person from contemplation into actively preparing for change. Factors that provide an impetus to action include enhancing people's confidence in their ability to change, making the

environment conducive to, and accepting of, change, and making people aware that other social changes support their personal change. Action occurs when individuals have the opportunity to learn the new behaviour and (in some cases) find ways to avoid the old behaviour. Maintenance of behaviour change includes the task of restructuring the people's experience or environment so that cues to the old behaviour are infrequent or disappear and positive reinforcement for the new behaviour is ensured.

Table 5: Description of stages of change

Stage	Description	Activities needed to move to next stage
Pre-contemplative	Unaware of need for change; or aware but not considering change	<ul style="list-style-type: none"> - Consciousness raising - Re-evaluation of the environment - Exploration of feelings about changing
Contemplative	Considers behavioural change, seeks out information about personal advantages; may be ambivalent about changing	Self-evaluation
Preparation/decision	Actively makes plans to change, takes steps towards action	Perception of environmental and social supports for change
Action	Actively modulates behaviour; learns new skills; effects changes in environment to support change	<ul style="list-style-type: none"> - Belief in ability to change and commitment to act - Rehearsal of new learning; substitution of new behaviour for old ones - Management of reinforcers to maintain gain - Restructuring of environment and experiences to avoid cues to old behaviour - Creation of environmental supports
Maintenance	Maintains gains made; requires environmental support for change to assist in maintenance	Maintenance of environmental supports for change

This model helps explain why it is much easier to change prescribing behaviour that involves the substitution of one drug for another than it is to change prescribing behaviour that involves counselling a person to behave differently. From the provider's point of view, the first case requires only a small change that he/she is more likely to feel able to achieve. It requires little alteration in behaviour or environmental supports to change from using drug A to drug B. The patient also has little behaviour to change (perhaps only frequency of dose, which may be less or more). For both the provider and the patient, the second scenario involving behaviour change, may take more time, necessitating changes in scheduling of the patient and causing loss of opportunities to generate income.

Change is not usually a linear process | Counselling is thus not only a learned skill. The provider needs to serve as a change agent for the patient and assist him through the stages of change.

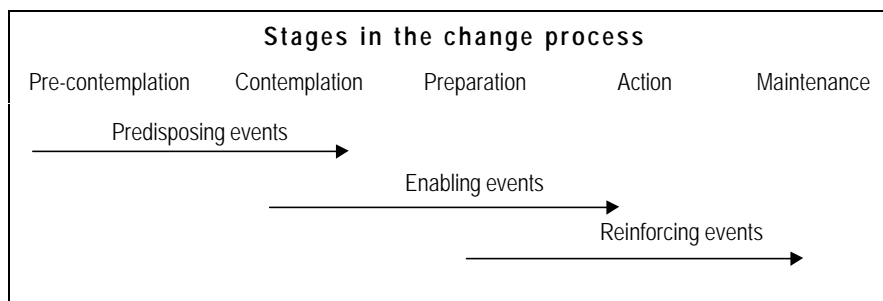
Prochaska's model indicates that ownership of the need to change is important to ensure lasting changes. Thus, if we wish health care personnel to change, we first need to consider ways to interest them in changing. Interventions which aim to improve the quality of health care personnel in the field must pay attention to the extent to which

workers already think they need to change in order to tailor the interventions used to better assist them in changing. It is important to facilitate the change by such means as rehearsal or reminders, and to maintain the change by providing supports in the environments in which the behaviour is to be used. If persons who are just beginning to explore whether a change might be useful for them are confronted with tasks and strategies useful to a later change in the process, they may resist change and take longer to move to progressive stages. Recycling through earlier stages and relapses are to be expected and not condemned.

Developing activities to support the change process

Green and colleagues (1980) have posited the PRECEDE (Predisposing, Reinforcing and Enabling Causes in Educational Diagnosis and Evaluation) model, which suggests that some strategies predispose physicians to behaviour change (such as dissemination of new information). But interventions that best succeed in changing their performance and health care outcomes are those that create an environment for change and also use practice-enabling strategies (various environmental changes that facilitate use of the new behaviour or allow the new skill to be practised) and reinforcing methods (which help maintain the new behaviour). This conceptual schema is quite compatible with Prochaska's model, which suggests that strategies to be used should be tailored to the stage of the change process in which the individual is currently situated.

Table 6: Stages in the change process and the use of predisposing, enabling and reinforcing events



The importance of environmental factors

Both of these conceptual models are congruent with a recent critique (Umble and Cervero, 1996) of research syntheses in the area of continuing education for health professionals. It criticizes the narrow focus of many meta-analyses and the lack of attention paid to contextual and environmental factors in such reviews. The authors indicate that more recent meta-analyses have attempted to identify some possible causal moderators, but are limited by the lack of mention of such variables in many of the primary papers. They point out that naturalistic studies have shown that continuing education is only one of many information sources that influence practice. ^{vi}

The importance of environmental factors in creating readiness for change and in facilitating behaviour change has been repeatedly described in the literature. Only recently have such factors been taken seriously. Wergin and colleagues (1988) note that other influences on practice, such as hospital policies, facilities and equipment, interact with continuing education content to affect performance. Bayley (1988), summarizing the

conclusion of a continuing education meta-analysis for health professions, indicates that reinforcement in the social environment is needed for achieving the desired behaviour change. A similar conclusion is reached by Waddell (1991)^{vii} in her synthesis of continuing nursing education. Soumerai and colleagues (1989), studying ways of improving drug prescribing behaviour, also conclude that the setting and organization of practice are important influences on the relative efficacy of alternative interventions.

Lomas describes a complex model for the dissemination of new medical information into practice (1993). He notes that the overall practice environment consists of many environments all of which influence whether new behaviour is adopted. He suggests looking for ways to ensure that research (best practice) information flows as freely through the other routes of influence as it does through the educational route. This will significantly enhance the probability of successful implementation through changes in behaviour of the practitioner.

Thus, to promote change in the performance of health care personnel in the field, strategies that focus on the environments in which the workers practice must be considered. They create the context in which the behaviour change (or lack thereof) can be understood. The multiple environments that influence the behaviour of health care personnel are described in Table 7.

Provider behaviour is influenced by the **immediate environment** (e.g. private office, group practice or public facility) and interaction with the patients, staff and co-workers in that environment. Enabling and reinforcing features can be built into this environment as described later in section 4. It is more difficult to influence the **personal environment** of a practitioner, but we must be aware that this also influences behaviour. The **educational environment** consists of the way the educational system is structured with regard to basic, advanced and continuing education. This environment helps to shape the kinds of learning opportunities that are provided. The **professional environment** consists of professional colleagues and associations (including certifying, credentialing and licensing bodies). The professional environment often alerts the provider to new and important developments in the field of practice and tries to promote the profession. It may also assist the provider in changing behaviour by sponsoring continuing education activities. Regulatory bodies may offer incentives and place limits with sanctions on provider behaviour. The **community environment** determines how practitioners are perceived in the wider community; the media, local decision-makers responsible for health and health care, and opinion leaders help shape this environment. The **administrative environment** determines the kinds of rules and regulations that govern aspects such as practitioner behaviour, working conditions, health education and health care facilities. It creates a broad set of incentives and sanctions for providers and makes them accountable for their actions. The administrative environment can be divided into local, regional and national levels, and is created by structures and processes at each of these levels. They are ultimately informed and influenced by the broader culture and by specific policies and legislation. Finally, as the broader **social, cultural, economic and political environment** is likely to have an indirect influence, only policies and legislation directly related to health care personnel will be considered.

Table 7: The multiple environments that influence practitioner behaviour

<i>Immediate environment</i>	Interaction with patients and staff members
<i>Personal environment</i>	People with meaningful relationships with the practitioner; personal preferences and values, etc.
<i>Educational environment</i>	The opportunities for education that exist, the basic education system, higher education system, health care personnel education system and continuing education and other learning opportunities that are available, both formal and informal
<i>Professional environment</i>	Colleagues, professional associations, certifying bodies, licensing or credentialing system and its regulations, etc.
<i>Community environment</i>	How the practitioner (profession) is perceived in the wider local/ regional community, in the media and among opinion leaders and decision-makers in health and health care
<i>Administrative environment</i>	Rules, regulations and laws that govern provider behaviour, working conditions, facilities, health care education programmes, etc.
<i>Sociocultural environment</i>	The traditions and culture of the larger society
<i>Economic environment</i>	The history of, and prevailing economic conditions in, the country, especially as they affect health care personnel
<i>Political environment</i>	The dominant ideologies, political structures, etc. that set limits on types of political actions that are acceptable

3. Strategies for promoting behaviour change

Changing the clinical behaviour of health care personnel regarding specific patient- care decisions and interventions

Individual behaviour change can be facilitated by predisposing conditions and events which help develop an understanding of the need for change and which provide information about different change options.

Predisposing strategies

Common strategies that influence health care personnel to modify their behaviour are described below.

Educational materials. Although useful in alerting health care personnel to new developments in their field, the use of printed materials alone has rarely led to improvements in their performance, according to published trials.^{viii} Educational materials, including professional journals and electronically transmitted information, are better seen as part of a package of learning activities and materials that can assist health care personnel in improving the quality of care they provide.

Conferences. Meetings of various kinds, including short continuing education events, hospital rounds and workshops are also of limited value in improving the quality of care if no explicit effort is made to determine practice needs or to facilitate practice change. Several meta-analyses have evaluated the effectiveness (measured as change of practice behaviour) of individual types of continuing medical education (CME) events (Davis, Thomson et al., 1992 and 1995, and Oxman, Thomson et al., 1995). Many CME events appear to alert health care personnel to the fact that changes are occurring which may be useful to incorporate into their own practice. However, usually such strategies alone are not effective in changing health care personnel behaviour, although knowledge of an area

Educational materials, seminars, hospital rounds and conferences are useful in alerting the health care professional about changes that are occurring

of practice is often improved.^{ix} Such studies note that the addition of other strategies (e.g. written materials relevant to practice problems), is more likely to result in some care behaviour change.

Outreach visits. Outreach visits, which are also known as academic detailing, have been shown to be effective in changing health care personnel's approach to a specific type of patient or clinical problem. The person conducting the outreach visit spends considerable time tailoring the information provided to the specific needs of the individual health care personnel. In some cases the information given may include feedback on the person's performance. Improvements in prescribing behaviour, smoking cessation, preventive services and general practice management have been reported in well-controlled trials using outreach visits. Such visits are quite limited in actual use as they are seen as having large start-up costs and considerable continuing costs. To date, they have only been used in the context of studies. However, it is likely that they are generally effective as a predisposing strategy, especially when enabling strategies accompany the presentation. Drug companies make a large investment in having their drug sales force visit individual health care personnel.^x

Local opinion leaders. Because health care personnel often turn to a respected colleague to ask advice about clinical problems, researchers have tried to identify whom health care personnel in a given community consult and consider credible. Such individuals, known as opinion leaders, are then provided with the latest information and support to incorporate into their practices. The spillover of this strategy to improve the quality of care of others in the community has been assessed in several trials. The observed effects on quality of care are not uniform; they can be substantial or insignificant (Davis, Thomson, Oxman and Haynes, 1995). Rogers (1983) suggests that opinion leaders are effective because they permit colleagues to observe the outcomes of a particular innovation in an atmosphere conducive to its adoption on a community basis.

Practice guidelines should be adopted only after local discussion and consensus has created a sense of ownership of the guidelines and commitment to their use needs to develop

Self-assessment. Tools can assist the individual in reviewing their current practice and identifying learning needs. Self-assessment can be voluntary and informal or structured as compulsory and formal (e.g. as preparatory to, or part of, a career/performance review).^{xi} These strategies have not been shown to lead to significant behavioural changes when used alone. Self-assessment is seen as an important predisposing strategy which may help a person move from the contemplative stage towards action when it is coupled with strategies that enable behaviour change.

Enabling strategies

Predisposing strategies used in conjunction with tools that readily enable health care personnel to change their behaviour, are more likely to have a positive impact on quality of health care. The effectiveness of several types of enabling tools in changing clinicians' practice behaviour has been evaluated.

Practice rehearsal. Providing opportunities to rehearse new skills within the context of a continuing education event has been shown to produce positive results. (Kottke, Brekke, Stolberg & Hughes, 1989)

Clinical guidelines. Clinical guidelines have been defined as "systematically developed statements to assist practitioner decisions about appropriate health care for specific clinical circumstances" (Field & Lohr, 1990). A systematic review by Grimshaw and Russell (1993) of the effectiveness of clinical guidelines in improving the process and outcome of patient care suggests that they improved when explicit guidelines were introduced in the context of rigorous evaluations. All 59 studies reviewed examined the effect of guidelines on the process of care but only 11 included health outcomes. It is interesting to note that a wide range of methods of introducing guidelines (as an intervention or disseminated through publication in journals or through the mail) and providing feedback to providers (implemented as a reminder on charts at the time of consultation or by providing either patient-specific or general feedback on performance) were studied. All but four of the 59 studies detected a significant change in the process of care in the direction proposed by the guidelines, and 9 out of 11 studies found significant improvements in patient outcomes.

A classification scheme for the probability that a guideline will be effective has been developed (Russel and Grimshaw, 1992). It suggests that clinicians' involvement in the guideline development strategy, and using a specific educational intervention as the dissemination strategy, are important to effective use of guidelines. An implementation

strategy that involves patient-specific reminders at the time of consultation also leads to high probability that a guideline will be effective in changing practice behaviour. On the other hand, guidelines that are developed by an external, often national, group and are published in a journal with only a general reminder are unlikely to have an effect.

Clearly the successful introduction of guidelines depends on many factors including the clinical context and the methods used to develop, disseminate and implement them. A sense of ownership of the guidelines by the people asked to implement them improves the chances that they will be adopted. An implementation process that helps clinicians incorporate the guidelines' message into practice also enhances the likelihood of their being followed. Guidelines are generally doomed to failure as a quality improvement strategy when (i) seen as irrelevant to the clinician's practice, (ii) produced by experts who have no understanding of the local situation, and (iii) distributed in an impersonal way with no reminder system or feedback to assist the provider in developing compliance with them.

Care-maps and practice algorithms. The practitioner may also decide to develop or adopt quite stringent guidelines for action regarding the care of a particular kind of patient. Here, little deviation is anticipated and health care personnel who do deviate would be expected to justify such actions. Actions to be taken are usually organized by disease severity, response to treatment to date, etc. and are almost prescriptions for care. Although different in the degree of discretion given to health care personnel, many of the findings regarding the introduction and acceptance of guidelines apply equally well to the effectiveness in the use of care-maps.

Reminders. Reminders to perform a task (such as a pap smear) or avoid an action (for example, when a person is allergic to penicillin), especially when they are given just before the health care person is to see a patient, are often found to produce positive behaviour

Many enabling strategies are based on the use of practice guidelines

change. Often reminder criteria are developed from widely disseminated practice guidelines (Davis et al., 1992; Oxman, et al., 1995).

Patient-mediated interventions. This category describes situations where information is sought directly from the patient (and given to the provider) or information is given directly to the patient who then mentions it to the provider (e.g. educational materials or reminder letter for preventive care mailed to the patient). The former sub-category has produced mixed results in changing provider behaviour, while information given to the patient appears to be useful in changing provider behaviour. (Oxman et al., 1995)

Computer-based clinical decision supports. A recent review of 28 controlled trials (Johnson, Langton, Haynes, and Mathieu: 1994) regarding use of computers to assist in decision-making was fairly positive about the potential of this approach although the evidence is not uniformly positive. The review suggested that computer-generated reminders do enhance the quality of preventive care. Using computerized aid for determining the dose for toxic drugs was also generally favourably evaluated. Information

Patient-mediated strategies rely on patients to suggest new approaches to health care personnel or to remind them to do something

about the cost and likelihood that a test would be abnormal for a patient (given previous test findings) reduced test ordering. Adherence to complicated management programmes increased when computer aids were used. However, use of the computer to assist in diagnosis was less effective.

As this is an evolving technology, it is likely that use of computers for decision support will continue to be developed and improved with time, making them another important type of enabling strategy. A recent study (Pestonik et al., 1996) reported a 30% decrease in adverse events and a 27% decline in mortality after introducing computer-assisted decision support regarding medications. It also report reduced drug costs per patient. However, such computer systems demand considerable development and maintenance costs. Computer-based advice may be quite context-specific and may depend on resources not always available to all health care personnel. Also the health care personnel must first learn how to access the information available on the computer.

Strategies for reinforcing change in behaviour

In order to move health care personnel into the contemplative stage (e.g. by alerting the health care personnel to changes in practice, creating a perceived need for change and ownership of the change), a positive climate for examining practice must be created and the necessary tools provided to help them make the change. Their attempts to change must be positively rewarded and the environment must continue to support the change. Maintenance of behaviour change requires an immediate environment that supports the new behaviour and does not have cues to repeating the old behaviour. Only two types of reinforcing strategy have been studied in detail and are described below. However, many of the enabling strategies also provide reinforcement. Likewise, a host of contextual factors related to other types of environments (professional, community and administrative) can be posited as likely to help reinforce or extinguish new behaviour.

Audit and feedback. This strategy involves the audit of practice charts by another health care person, usually a similar practitioner, with mechanisms to provide feedback on performance to the person audited. Usually the audit criteria are explicit and are agreed upon in advance. The person may receive only general feedback or specific feedback. It may include not only feedback on his/her performance but also information about the mean (and variation) in the group audited (performance relative to others) or information about the expected standard of care (absolute criterion). There is conflicting evidence of the effectiveness of audit procedures with feedback in changing health care personnel behaviour. It is likely to be a function of how soon the feedback is provided, how specific it is, and how it is perceived (helpful versus threatening) by the health care personnel.

Peer Review. Peer review may be seen as a type of audit and feedback mechanism and involves using peers to audit practice. The provider may be asked to complete a questionnaire about the practice beforehand to ensure the right type of peer is chosen. Implicit or explicit criteria can be used. When implicit review criteria are used, the reviewer tends to try to answer one of three questions: Was the care adequate? Could it be improved? or, Was it acceptable? (Brook, McGlynn and McCleary, 1996). The provider may be interviewed about the management of some cases (often selected either randomly or in a preset way, for example, a recent new case of diabetes or a case of acute chest-pain). Again, how the peer review is carried out and the consequences to the provider of the review process could explain the large variation in the likelihood that this method affects practice performance (See McAuley et al., 1990; Brook, 1973).

Multifaceted strategies

Given this overview, it is not surprising to find published support for combining strategies into a multifaceted intervention if behaviour change in an individual's practice is the outcome desired. The WHO Expert Committee on Continuing Education (1990) also stressed that continuing education must be designed to meet the learning needs of health care personnel, involve them in identifying and planning the educational experience and include the development of tools to facilitate learning (for example, a manual to which the learner can later refer). Continuing education must be seen as an important part of the work environment rather than as an add-on, after-hours task that is not rewarded. Thus, they concur with Oxman and colleagues (1995)^{xii} who reviewed over 100 trials of interventions to assist health care professionals deliver services more effectively or efficiently.

Premi and colleagues (1994) have described a grassroots, multifaceted approach to continuing education (CE) for physicians, which involves developing a network of small learning groups that participate in a practice- and problem-based approach to CE. With the help of CE programme staff (university-based), primary care physicians, many of whom may be in solo or partnership practices, organize themselves into learning groups of 5 to 9 people to discuss patient problems encountered in their practices. They stay in their local communities and gather at times and places of their own choosing. They meet twice a month for 90 minutes. Attendance is also rewarded with

Multifaceted strategies are more likely to lead to change in performance

receipt of study credits from their credentialing body.^{xiii} Preliminary evaluation indicates that group members make many practice changes based on these discussions.

Evidence is mounting that using a multifaceted approach that incorporates a wide range of consciousness-raising, acceptance-gaining interventions (such as printed materials, and workshops), and practice-enabling strategies (such as guidelines and reminders), as well as support for the change that reinforces the behaviour, results in consistent positive change in professional performance. The importance of a local consensus process that builds support for the desired changes is emphasized as this usually accompanies a multifaceted approach. Because of the lack of data in most published studies regarding possible causal explanations, Davis and co-workers call for the use of both qualitative and quantitative research methods as each has shortcomings when applied alone.^{xiv}

Strategies used at the team or local health facility level to improve the quality of practice

Strategies that involve changing the behaviour of groups have undergone less experimental evaluation than strategies targeting the individual. This is probably because the former are more complex and key variables are even more difficult to define and isolate. Yet, the conceptual model developed for individual behaviour change may also provide useful clues to how changing behaviour of a group is facilitated as we continue to deal with individuals who are now part of a complex social network.

Many of the strategies at the health care team or facility level are multifaceted. They often involve consciousness-raising strategies leading to reassessment of the environment and behaviour. They also provide personnel with enabling strategies and reinforce quality improvement.

Quality Improvement teams. The development of quality improvement teams is usually part of a larger strategic planning initiative by the health care facility to improve quality throughout the organization. A climate of trust and need for change is created. Short courses are also offered in general skills (such as work team functioning, team building and leadership, and quality control and improvement), and specific skills (how to move a group towards consensus, how to do a flow chart, etc.). Members of the QI team are taught how to brainstorm and use a wide variety of tools to examine and monitor the quality of the services they provide. Such courses may be offered initially or on a "need to know" basis. They may learn how to find benchmarks (performance standards external to the organization) to which they aspire.

Quality improvement assumes that all employees want to do a good job and improve their performance, and that programmes can always be improved. It works on the premise that processes rather than people can get in the way of quality. It also assumes that team building and team work skills can be found in the organization.

QI techniques include

- Brainstorming
- Checklists
- Flow charts
- Histograms and pareto charts
- Cause-effect or Ishikawa diagrams
- Options matrix

In a typical quality improvement exercise, a team of health care workers thinks about the care and services they provide and brainstorms ideas about what needs to be improved and how to improve it. Often high-volume, high-risk or high-cost services are targeted for evaluation of aspects of their quality. Services in which high variability in volume or outcome is seen (across sites or time periods) may also be targeted. However, the aspects of care to be examined, and how they are examined, are decisions of the team and grow out of their discussions. The relevant information is then gathered and presented to the group, which determines what action(s) they should take on the basis of the information, and then continues to monitor and obtain feedback about how this action has affected quality. This cycle of activity is often called the Plan-Do-Check-Act (PDCA) cycle and is similar to other types of cyclical activity to identify and solve problems.^{xv}

Successful QI teams have clear goals, a collaborative environment in which team members know what to expect and how to accomplish tasks, and effective leadership. They also have external support and recognition from the administration of the organization in which they function. In addition, resources must exist to implement proposed solutions (in fact many solutions may lead to cost savings).

Quality improvement teams, organized and educated as described above, have been reported to make numerous improvements in quality. (Laffel and Blumenthal, 1986; Berwick et al., 1990; Burns, Denton et al., 1992). Up to 250 teams may operate in a large teaching hospital during the course of a year. Teams disband and reassemble with new, shuffled membership after completing their mandate. Teams are usually assigned time-limited tasks so that people do not feel overburdened by committee work. In one hospital, described by Berwick (1990), every employee sits on at least one QI team every two years. Quality control and improvement is part of everyone's job description. Quality improvement teams can continue to include the same individuals across time if the facility is quite small.^{xvi}

Employee suggestion programmes. Employees of a health care facility may be asked to provide suggestions to improve the quality of care or services the organization provides or to assist in lowering cost. For example, one employee of a large Canadian teaching

hospital suggested using a cheaper long distance carrier for the fax machines, saving the hospital many hundreds of dollars per month. Another suggestion involved a strategy for reducing the waiting time for outpatients visiting clinics. There may be a small award (or recognition) for the best suggestion of the month. Reasons are provided why some suggestions are not possible to implement. Again, the climate in which such a programme functions and how it is perceived by the workers may be crucial to its success or failure. If no action is taken on suggestions deemed useful by many, the programme may begin to flounder and fail.

Hospital committees. Hospitals and other health care facilities may have standing committees that are charged with ensuring the quality of care provided in the hospital. Often such committees are mandated by the legislation or regulations that govern the institution or they may be part of the accreditation guidelines the hospital follows. Such committees monitor important aspects of the hospital's functioning (e.g. morbidity/mortality review, infection control, control of professional practice through record review or quality assurance exercises and credentialing of professional staff). Their effectiveness depends on the quality of team skills of committee members and the leadership and climate of the hospital. Usually, little training is provided in skills that would assist the committee members with detecting and resolving problems of quality. This approach sees quality assurance, control and improvement as a specialized staff function rather than as the role of all employees.

Guidelines and care-maps. As mentioned previously, these tools, usually developed by an "expert" group, can be used in health care facilities as well as by individual practitioners. However, it is useful to convene a committee to review and make recommendations as to whether such aids should be used, how they will be employed, and what changes, if any, are needed to adapt them to local conditions. This develops a sense of ownership of these enabling tools and creates a climate in which they are more likely to be accepted. Imposing guidelines or care-maps on employees is unlikely to improve quality unless powerful sanctions exist for not following the care advice they provide.

Even quite simple, non-computerized clinical management information systems can help improve quality if they provide rapid feedback about performance to health care personnel and the personnel involved in their creation.

Management and clinical information systems. The development of management or clinical information systems does not directly improve provider performance. Rather, it is the information that is derived from these systems, which, when fed back to providers, can start them thinking about their performance and how to improve it. Again, it is important to create ownership in such systems and organize the data into useful information for health care personnel.

Utilization management. This involves a programme to plan, organize and control the delivery of health care in a cost-effective manner. Utilization is monitored and reviewed in order to develop and implement standards and policies, and monitor their effects on utilization (This may be part of the function of QI groups or of a standing hospital committee, see above). It requires routine collection of high quality data for analysis and provision of practice guidelines for delivery of specific services. Considerable research as to the cost-effectiveness of alternative service delivery strategies must be done. A

partnership must be created to allow changes in utilization to be made. Utilization management can take place at regional or national level as well as at facility level.

Release time for continuing education. This strategy is used in many facilities to encourage staff to continue to upgrade their skills. As pointed out above, release time alone will not change behaviour. The personnel must perceive the need to learn new skills. The type of course attended must teach the skills required and provide enabling procedures. The extent to which the performance of the new skills is encouraged and reinforced when the worker returns also influences whether or not the release time used for continuing education will affect performance positively.

In-house formal continuing education. At times, some facilities stage their own formal continuing education activities. These activities can be quite successful if they are of high quality, welcomed by the workers and seen as pertinent to their activities and learning needs. Both information transmission and enabling strategies should be used. Rehearsal opportunities are especially important when a new skill is taught. When new learning is enabled and reinforced in the work environment once the continuing education is over, positive transfer to practice is more likely.

On-the-job training. A variety of approaches can be used to help health care personnel gain more skills on the job. These include job rotation or attachment to other departments or organizations to gain new skills through apprenticeship, coaching and/or mentoring, and participation in special project groups, committees or QI teams. It is usually closely linked to teaching the skill sets needed for the job.

Performance review. The process of performance review, accompanied by an interview that focuses on work activities and learning needs, can also provide an impetus to staff learning. Self-assessment and supervisor assessment can result in the development of a self-development plan which includes a range of learning activities.^{xvii}

Outcome measurement. Outcome measures have been defined as "any measurement system used to uncover or identify the health outcome of treatment for patients" (Geigel and Jones, 1990). Outcome indicators should be reliable, clinically valid, measurable, specific and relevant (Katz and Green, 1992). No single outcome measure will satisfy all audiences. Examples of outcomes measured include morbidity, need for further care, mortality, patient satisfaction, functional status and perceived quality of life. Information on such outcomes may be built into the MIS systems of the facility, collected periodically or collected for the purposes of a special project (e.g. the information needs identified by a QI team). Difficulty with tracking patients beyond the facility may inhibit the collection of longer-term information regarding health outcomes. Sometimes, adverse outcomes are considered sentinel events and flagged for immediate review (e.g. the death of an individual who entered the facility with a non-life-threatening condition). Identification of sentinel events can occur without a sophisticated MIS. Care must be taken to ensure that differences in case severity are taken into account in comparing outcomes across people or departments.

Total Quality Management. Total quality management (TQM) of a health care facility has three components: quality planning, quality control and quality improvement (Blumenthal and Scheck, 1995). This management strategy can also be used at other levels of management (regional, national). It may encompass all or most of the other strategies

listed in this section, including good strategic planning, and is facilitated by the availability of high quality information to guide actions in all aspects of the organization's activities. Total quality management helps create a climate which both predisposes workers to engage in behaviour that improves the quality of services and reinforces quality of service delivery. Organizations that create, manage and use high quality information to guide their actions are referred to as a "learning organization".

Approaches to assuring, controlling or improving quality at the regional or national level

Structural approaches to quality control and enhancement consist of policies, legislation and regulations that require a minimum educational standard for different health care personnel, which stipulate who may use various professional titles or who may be involved in performing certain actions.^{xviii} They may also require accreditation or monitoring of health care facilities. In many developed countries, often the large amount of legislation and regulations, does not, however, address the need for quality control through accreditation and monitoring. This makes it difficult to discern the effects of individual initiatives. Regulation of health professions can create problems when one or several groups are given a monopoly in a field of endeavour. Both the perceived positive and negative features of possible structural approaches to practice improvement are discussed below. Such features can serve both predisposing and reinforcing functions within the administrative and professional environments that they help to shape.

Strategies aimed at improving the education of health care personnel

Strategies aimed at improving education of health care personnel

- Legislation to govern institutions that educate health care workers
- Accreditation of educational facilities for health personnel
- Voluntary self-study offered by educational institutions
- Codifying curriculum for health personnel in legislation

Governments are often responsible for the quality of basic education for health personnel. They may be asked to ensure that educational facilities develop the types of health care personnel required to meet human resource needs for national/regional health and that these programmes also help provide the continuing education needed by those in practice. In order to meet such government mandates mechanisms must be developed to gain control over the standards, length and content of training.

Legislation to govern educational institutions for health care personnel. Education of health care personnel usually occurs within a complex educational system mandated by legislation, which may regulate the broad functions and processes of these institutions. It may set out requirements for meeting standards and working towards the achievement of national goals. Legislation can also be used to establish accreditation requirements, and set enrollment targets and course length. It may spell out educational requirements for various types of health care workers. For example, legislation can mandate that some of the training occurs in under-served areas. It may require that priority health problems in

The educational system should prepare workers to meet the requirements of health care jobs and to respond quickly to changes in those requirements over time

the country are made a major focus of the curriculum. It can also be used to create a role in, and responsibility for, continuing education of such workers, at least in part, by these educational institutions.

Accreditation of health education facilities. Accreditation of education facilities usually constrains the availability of health care personnel. It also determines their initial level of competence. When accreditation was first introduced, accreditation standards related mainly to structure (e.g. availability of a library and number of books it contains, composition of the faculty and their qualifications). Since then, there has been a trend towards focusing on the educational process. Most recently, standards may include a focus on learner outcomes. In this case, accreditation can help ensure that educational programmes are relevant to the needs of the health care system. It confirms that workers graduating from these programmes have the competencies and skills expected. Some educational programmes focus on imparting knowledge without paying attention to developing the attitudes and skills needed to perform competently. Here a shift in emphasis to outcome-oriented accreditation standards may be particularly useful through curriculum reform.

Accreditation is a formal process carried out periodically either by the government or delegated by the government to one or more agencies that have an arms-length relationship with government, or it may be carried out by an organization sponsored by health professionals themselves.^{xix} It may be voluntary, voluntary but coupled with financial incentives, or compulsory. The length of time between accreditation visits is often determined by the accreditation team's assessment of the quality of the education programme at the time of each previous accreditation visit. Some concern has been expressed that there can be a lack of follow-up to the accreditation process. The aspects of the organization to be assessed and assessment criteria should be explicit, and the process open and transparent. Often, in well-developed accreditation processes, the visit of the accreditation team is preceded by several weeks or months of self-study and self-assessment. When there is little experience with the accreditation process and an infrastructure needs to be developed, accreditation can be introduced gradually. A period of self-assessment can be used to initiate such activities before peer assessment begins.

Another concern about accreditation is that standards may be adopted from countries with different agendas, which may not reflect the needs of the country which imports them. Thus, standards used to successfully train a largely specialist, tertiary care work force of physicians may not be as useful to a country seeking to develop mainly primary care physicians who see health promotion, disease prevention and primary health care as their main work activities.

Voluntary self-assessment by educational institutions. Since many countries lack experience with accreditation, some schools may be interested in doing their own self-assessment. Experience gained from this may later result in formal accreditation processes, once greater infrastructure capacity is achieved. A "how to do it" guide is provided by Boelen, Bandaranayake, et al. (1992), which sets out guidelines for an institutional assessment of medical education, including the process for self-assessment followed by making changes on the basis of the information gathered. It can easily be adapted to other educational programmes for health care personnel.

Codifying curriculum for health personnel in legislation. This is used in some countries to ensure uniformity across educational programmes. It has been criticized as making the education system too inflexible and relying too much on legislation to determine educational priorities. Yet, others see it as capable of promoting rapid change in a system previously unresponsive to the health care needs of the population to be served.

This strategy must be used cautiously as it can result in rapid rounds of curriculum change that are not warranted by evidence of effectiveness of the curriculum in producing well-educated health care personnel. The turmoil and distrust such rapid alternations in direction create, rarely produce quality results. Setting out rules for the creation (existence) of education facilities, broadly describing their mandate, and creating processes for their regulation and accreditation may be less cumbersome. Basic descriptions of duration, content and kinds of clinical training may also be found in licensing acts for health professionals.

Strategies aimed at facilities which employ health care personnel

Strategies aimed at facilities which employ health care workers

- Legislation to govern hospitals and other health care facilities
- Accreditation of hospitals and other health care facilities
- Inspection of hospitals and facilities
- Creating data systems that monitor hospital (health facility) standards outside an accreditation structure

Legislation to govern hospitals and other health care facilities.^{xx} Many countries have legislation that describes the mandate and mission of various kinds of health facilities (both public and private). Such legislation may also specify administrative structure requirements and mechanisms to ensure that these institutions are accountable to the public and have a role in maintaining and improving the health and well-being of the population. Requirements, such as meeting minimal accreditation standards or meeting guidelines for facility performance, may be included.

Accreditation of hospitals and other health care facilities. A process similar to accreditation of educational programmes can be used to monitor and control the activities of hospitals and other health care facilities (Heidemann, 1993). Recent accreditation standards in North American hospitals require evidence that quality assurance and improvement activities are occurring and that these activities are having an impact on the outcomes of care. The ability to alter and raise accreditation standards can be used for rapid introduction of quality concepts for national achievement. Hospital accreditation is widespread in the English-speaking countries of Europe and North America and appears to be spreading in the rest of the Americas (Proceedings of a Pre-ISQUA Meeting, 1995). Preparing and assisting health care personnel in coping with such a change should be part

Accreditation standards can be altered rapidly to allow introduction of new concepts for national achievement

of the planning process for adoption of this approach. Regulations can be written to accompany the laws that govern such facilities to provide for periodic inspection and review.

The many contextual issues in a given country need to be considered in developing accreditation standards for a facility type. A form of self-assessment that mirrors an accreditation process, where individuals are involved in the standard-setting process for their facility in negotiation with an external body (or the government) set up to review their programme, has been suggested as a useful way to begin this process of quality improvement.^{xxi} The infrastructure for accreditation takes time to build. It should be noted that accreditation standards do not generally address how quality can be approved. Thus, they fall more within the quality assurance or control model than within a quality improvement framework.

Inspection of hospitals and facilities. Inspection usually involves some sort of official examination of a facility, often for equipment safety and adequacy of human and technical resources. Standards set are not usually negotiated with the facility and the result of a poor inspection report may result in closure of the facility. Because inspections are not voluntary and the criteria may lack credibility and relevance at the local level by those being inspected, it is often viewed negatively by workers. Accreditation, especially involving multilevel standards and including self-assessment and participation in the process, is usually viewed more positively.

Creating data systems that monitor hospital (health facility) standards outside an accreditation structure. Some countries are developing national or regional standards for hospitals and similar facilities, and indicators of such standards. They are also monitoring such facilities and providing feedback to them. This is done by involving the workers concerned in decisions regarding the indicators to be used but without creating an accreditation structure. France and Malaysia are good examples of countries that have taken this approach. In Malaysia, the approach has a QI component, as hospitals which are outliers, are asked to investigate the reasons for their performance and develop strategies to improve it (Hussein, 1990). It is a hybrid between utilization review and outcomes analysis of indicators such as bed occupancy rates and death due to infection of a surgical wound.

Accreditation generally aims at quality assurance rather than quality improvement

Strategies aimed at controlling the quality of individual health care personnel

Strategies aimed at controlling and improving the quality of individual health care personnel

- Credentialing
- Licensing
- Development of public complaints, resolution and disciplinary processes
- Patient education
- Sharing information across jurisdictions
- Mandatory continuing education
- Mandatory relicensing
- Multifaceted approaches
- Recency of practice criteria
- Certification
- Restriction of licences
- Removal of licences

Credentialing. Criteria, based on education and experience, may be developed to recognize a worker as having the qualifications to belong to a particular group of health care personnel (e.g. midwife, nurse, physician, laboratory technician, etc.). Credentialing can be done by a government agency or an independent body. It can be done for all groups of health care personnel or with each group having a separate process and organization.

Licensing. Although very similar to the credentialing process, licensing usually implies that the criteria for holding a professional title are enshrined in law with a set of accompanying regulations that govern the behaviour of such professionals. Successful completion of an examination and/or course of study approved or accepted by the governing body is required for licensing.^{xxii} Legislation may not only protect the use of the professional title but also define the scope of practice for such individuals and set out

a number of licensed acts which guarantee to people holding the professional title the exclusive right to perform these actions.

In some countries, professional boards or colleges, which regulate health professionals, are created by legislation aimed at protecting the public from harm and at promoting the public's health, safety and welfare. Such bodies both provide and limit professional autonomy. In some situations, they have been seen as a source of rigidity in health human resource planning and allocation (MacLeod, 1994, Safriet, 1994). Conflict of interest may be a problem when close ties exist between professional associations and regulatory bodies and when leaders of the professional association dominate the membership of the licensing boards (Gross, 1984).

Changes are occurring in the laws governing such licensing bodies. Increasingly, separation of powers between professional associations and licensing bodies are clearly described. The legislation defines the scope of practice of each profession more broadly. This allows more opportunities for professionals to assume significant new duties and provides greater flexibility. Fewer acts of health professionals are licenced and often several health professions share the same licensed act. This is intended to overcome some of the disadvantages of licensing: creation of many narrowly-defined, distinct groups of professionals, each with prescribed job duties, who have a monopoly in an area of practice.^{xxiii} Limitations on scope of practice have been cited as a hindrance in deploying

Separation of powers between professional associations and regulatory bodies avoids conflict of interest

health care personnel in the most cost-effective fashion (MacLeod, 1994; Safriet, 1994; Finocchio, Dower, McMahon et al., 1995). Thus, care should be taken to avoid these problems if licensing is chosen as a strategy to control and improve quality.

Licensing bodies usually demand that professionals adhere to a code of ethics and set basic practice standards. In countries where voluntary professional associations are just becoming established, these organizations may carry out such functions. However, they can usually only exhort members to practice competently as they lack legislative authority. Supporting legislation and regulations often provide licensing bodies with powers and systems to monitor, control and improve competence of their membership so as to better protect the public. These may include a process for receiving and handling complaints, a dispute-resolution process, a disciplinary process, recency-of-practice criteria, and other mechanisms described below.

A central licensing process that is overseen by the regional or central government simplifies the problem of determining how many workers of different types currently are available for deployment. This task can be delegated to an external board or college which will be required by regulations to report to the government. Often such bodies collect dues from their membership to defray the cost of self-regulation and require (through regulations) members of the professional group to complete questionnaires sent out periodically to update information on workforce activity. Increasingly, boards consist of public members as well as members of the health professions. This is done to ensure that the mandate of the organization is clearly public protection and that it is accountable to the public. Different groups of health care workers may be covered by the same legislative act, and even by the same board, to make administration of the licensing process easier.

Development of public complaints, dispute resolution and disciplinary processes.

Although many jurisdictions have mechanisms to deal with complaints by members of the public about the behaviour of health care personnel towards them, often public accountability is perceived to be lacking (Cohen, 1980). Factors which create this perception may include conflict of interest among the people who serve on the complaints panel (or as the complaints commissioners), which may be solely comprised of members of the same profession or occupation as the person about whom the complaint is being made. Even if a complaint process exists, members of the public may not be informed about how to complain. If they do complain, they may not be kept informed of the progress of investigations into their complaint, the decision made about the complaint or what action will be taken when a legitimate, serious complaint is judged valid (Finnocchio et al., 1995). Complaints can take several years to be resolved (Cohen & Raines, 1994). Legislation that prevents the disclosure of the available health records to the complainant and their representatives, and has light consequences for the practitioner when the complaint is judged valid, are also cited as reasons why public accountability is questioned.

Care needs to be taken to structure the complaints, dispute-resolution and disciplinary processes so that both health care personnel and the public are satisfied with the way they are handled. Although mechanisms need to be in place that address legitimate concerns of the public about any complaints process, health care personnel must also have trust that the complaints process will be fair and it will provide them with the opportunity to defend their actions before a decision is reached.

Several Canadian provinces are considered leaders in developing complaints mechanisms that avoid some of the identified difficulties. Although the health professions are technically self-regulatory, the licensing colleges are separate from the professional associations and have nearly equal representation from the public and the profession. The overriding mission of the health professional colleges is to protect the public. They regulate entry into practice by examining credentials, setting standards for education and formal examinations and promote continuous improvement among their members (see examples below). They also have mechanisms for receiving and acting on complaints by the public, employers or fellow health care professionals about the practice behaviour of college members. The colleges have investigative powers and may obtain records from both public and private offices and facilities. They use an alternative dispute settlement mechanism (Cohen and Raines, 1994) for complaints that appear to be related to minor solitary lapses in good judgement and decorum, thereby speeding up the process of complaint resolution. A disciplinary function, which includes the right to revoke, suspend or limit the licence of members, is part of each college's mandate.

These colleges communicate frequently with their members through newsletters to provide information on changes in standards of practice, the types of complaints received, how they were handled and the outcome. When serious disciplinary action is taken, the circumstances leading to the complaint and the punitive action taken are described and the name of the person disciplined is published. This serves to motivate health care personnel to ensure and improve quality of practice.

Feedback to health care personnel about changes in standards of practice, practice activities that often result in complaints and the outcomes of disciplinary hearings are an important part of the professional environment that promotes quality improvement.

Patient education. A newer role for boards is to educate patients about what to expect from a health care professional and how to complain when these expectations are not met. This broader mandate aims to raise public awareness of the board's role and confidence that complaints from the public will be heard.

Sharing information across jurisdictions. Because licensing or registration may occur at the regional level and health care personnel who are disciplined in one area may simply set up practice in another jurisdiction, licensing bodies are developing agreements to share

Approaches used by licensing bodies to promote continuing competence of members should be evaluated

information about people whom they have disciplined. Regulations should allow a board to obtain and use such information.

Mandatory continuing education. In some jurisdictions, licensing boards and specialty certifying bodies require mandatory attendance of continuing education courses, usually, for a specified number of hours within a time period of two or three years. These are usually one-day courses, which may do little to change job performance (Phillips, 1994) but it creates a bureaucracy to monitor the continuing education activities of members. Concern is expressed that this strategy simply gives the appearance that something has been done to meet public demands for evidence of continuing professional competence. The learning acquired can be unrelated to the actual needs of the practitioner. Courses may be chosen because of their interesting location rather than their content. Required continuing education activities may be part of a larger package of measures taken in an attempt to promote relevant continuing learning (see below).

Mandatory relicensing. Licensing boards and specialty certifying bodies have also instituted mandatory relicensing programmes. Their aim is to improve the quality of care of practising health professionals. Development of good strategies to relicense health professionals is more difficult than initially thought, as many practitioners decide to practice in fairly narrow areas of specialization and lack broad competence. This makes the type of examination process initially used to license the practitioner less valid. Multiple-choice tests of knowledge do not measure clinical and technical skills. Examination of clinical performance is expensive unless done within or near the setting in which the person is practising. Thus, some boards avoid re-licensing as a strategy. They may use a variety of indicators of competence (see below) as a substitute for formal re-examination.^{xxiv}

Multifaceted approaches. In the Canadian province of Ontario, health profession colleges were told to draft plans (by the end of 1996) to assure and improve the quality of care provided by members. They were also told to indicate the strategies they would use to evaluate the effectiveness of these plans. They have tried to learn from experiences in other jurisdictions. For example, one programme sends questionnaires that allow members to self-assess their practice activities. The survey helps them identify learning needs and develop a plan of action. The college also enables learning by providing information through written materials, workshops and computer web pages, which point to additional resources to assist practitioners with their learning. In addition, the college may initiate a peer audit^{xxv} of the practice in which case the self-assessment questionnaires, learning plans and progress will be reviewed along with practice activities.^{xxvi} Although the onus is placed on the individual to determine and follow through on learning needs, the programme has some "teeth" in that individuals risk a penalty if they do not act. It will be interesting to see whether this approach improves the quality of practice of the

profession. Many groups are pointing to the need for thoughtful evaluation of the effectiveness of such a regulation in protecting the public. (Finnocchio et al., 1995).

Another approach to ensuring provider competence introduced in Great Britain (United Kingdom Central Council for Nursing Midwifery and Health Visiting, 1995) requires all nurses, midwives and health visitors to complete a notification of practice form every three years and when changing areas of practice, in order to remain in the register. They will also need to undertake the equivalent of a minimum of five days of study every three years and maintain a personal professional profile with details of their study activities. They will also be required to undertake a formal "return to practice programme" if they have been out of practice for five years or more. This programme has not yet undergone evaluation.

Recency-of-practice criteria. In some jurisdictions, criteria are set by the licensing or registration body regarding the length of time that a worker can be away from active clinical practice and still be considered safe to treat patients. The cutoff for length of absence from clinical practice may be from two to five years. Health care personnel whose absence from practice exceeds the time set are required by their licensing body to take an approved refresher programme (which may vary considerably in length) to demonstrate that they still have the knowledge and clinical skills to treat patients safely.

Certification. Specialty designation is sometimes certified by a voluntary private sector programme that attests to the competence of individual health professionals. Certification regulates the use of a specific occupational title. It does not create a service monopoly. Private certifying organizations often set stringent entry criteria for certification (that may include an examination) and may require evidence of continuing competence to retain the certification. Some licensing bodies recognize the specialty status gained through certification by such private organizations.

Restriction of licences. Governments may restrict the number and types of licences they issue to health care personnel to practice in an area. This strategy is used when serious maldistribution of human resources has occurred that has not been affected by other, less blunt, strategies that the government has employed to alter the problem.

Removal of licence. Grounds for licence revocation or suspension are usually spelled out in a licensing act. Three general categories are included: personal disability (severe physical or mental illness); legal disability (conviction of a crime, fraud in obtaining the licence, etc.) or unprofessional conduct (such as gross negligence or sexual involvement with a patient).

Other strategies aimed at both health care facilities and workers

Other strategies aimed at both health care facilities and workers

- The right to sue for malpractice
- Changing reward systems
- Initiatives to support better distribution of health personnel and facilities
- Management information systems (MIS)
- Creating structures and processes to facilitate quality improvement

The right to sue for malpractice. Some jurisdictions allow their citizens to sue health care personnel and facilities, either for restricted or all situations, where malpractice is suspected. In the United States, where this right is accompanied by a system that provides for lawyers to be paid out of the proceeds of the suit and only if the complainant wins, frivolous suits are common. However, fewer suits are launched in jurisdictions that do not provide this incentive. No information is available as to whether the right to sue positively influences practice behaviour. Unrestricted malpractice suits may drive up the cost of health care. Also, they may cause personnel to practice defensively rather than using their best clinical judgement. Thus, several countries have instituted a compensation process. This process may be part of a patient's rights or of a complaints resolution process.^{xxvii} Countries with malpractice laws are also beginning to develop laws that give participants in QA and QI activities exemption from subpoena in malpractice lawsuits and the information they gain is considered privileged and not subject to subpoena.

Changing reward systems. Although existing literature provides few examples of approaches that change the reward system for health care personnel, it has been presented as quite a powerful way to alter behaviour. One example is the drop in Caesarean section rates in Quebec, Canada after such procedures were suddenly paid much less than delivering a baby vaginally. The introduction of career ladders may also be seen as an attempt to change reward systems. The recent attempts to decentralize health systems,^{xxviii} to create health care markets and allow purchasing of health care from different facilities are also based on the premise that such an approach will raise the general level of quality. Whether quality is enhanced by these methods is not yet known.

Initiatives to support better distribution of health personnel and facilities. Legislative initiatives may also be taken to support greater equity in distribution. One example aimed at improving accessibility of care in a country is to require a period of compulsory service of all new medical graduates in rural or under-served regions. However, when it is tied directly to graduation, it might result in the most inexperienced physicians being asked to do the most challenging jobs. Paying physicians more for services delivered if they practice in a rural area and considerably less (50%) if they choose to settle in an over-supplied urban area has also been tried in Quebec with mixed results, as other considerations besides income influence where physicians choose to practice. In Indonesia, the government requires that physicians register their diplomas to obtain a work permit. Physicians are not allowed to work in hospitals or medical schools until they have completed compulsory service. The law limits the number of hospitals to which physicians can be appointed and they cannot set up private practice unless they have completed the compulsory service (see Public/ Private mix of Human Resources for Health in South-East Asia, 1993.)

Management information systems (MIS). Three types of management information systems are useful : for human resource management; for clinical utilization management and outcome assessment; and for providing population health information. The development of an MIS does not directly improve provider performance. However, human resource MIS can use the information gained through a licensing or credentialing process, including renewal of licence, and create linkages among concerned groups. Thus, it can indirectly help to improve the quality of the system.^{xxix} Clinical utilization and outcome data derived from clinical MIS can be fed back to providers. It can help them establish benchmarks for their performance or explore reasons for less-than-average outcomes. It can get them thinking about their performance and how to improve it. (For example, see Dzuiban and colleagues (1994) for a description of how they used information about their facility's higher-than-state-average mortality rate in cardiac surgery to identify and remedy problems in care.) Population health information can be used to motivate providers to change their practice patterns and reach out more to disadvantaged and underserved groups.

However, management information systems, be they systems-wide or related to one medical condition, should be developed and used with caution. The Cardiac Surgery Reporting System of the New York Department of Health initially recorded the names of surgeons along with information on all cardiac surgery cases and their outcomes. A newspaper successfully sued for the information which was published in the paper. Although the decision to collect data at the level of the surgeon was a good one, it became vulnerable to misuse. Subsequently these data were coded in such a way that the results were confidential and only made available to the individual physicians themselves (Chassin, Hannan and De Buono, 1996).

Creating structures and processes to facilitate quality improvement. Because of the interest in the development and use of clinically relevant practice guidelines among health care practitioners, facilities and educators, in some countries structures have developed to facilitate the creation and sharing of guidelines and gathering of research evidence needed for them.^{xxx} An agency in the United States produces materials which are widely disseminated in the health care education and research communities as well as among practitioners. A multi-country initiative to develop practice guidelines based on high quality evidence (the Cochrane Collaboration) is also under way (Bero and Rennie, 1995; Robinson, 1995; Chalmers and Haynes, 1994).^{xxxi} Such central focal points and clearing houses can avoid duplication of effort.

In many countries, numerous overlapping efforts are under way to raise the quality of health personnel and the care they provide. One country is trying to catalogue and coordinate quality health care initiatives within the country^{xxxii} so as to share experiences for improving quality among relevant people. Another important strategy involves the creation or strengthening of information systems to provide information for utilization review and outcome analysis. Additionally, creating communication links between researchers and health care managers/policy developers, to ensure the research done in the health research community is more closely tied to the policy questions that face managers, is being attempted. The creation of better links between the academic community (which educates entry-level personnel and may provide much of the continuing education for existing personnel) and the clinical settings may be tried.

Summary

Many of the above strategies attempt to assure or control quality or facilitate a climate for quality improvement. They alone usually cannot directly change behaviour. Rather, they provide motivation for change. Incentives for effecting changes are provided as are sanctions for not doing so. As described above, accreditation, regulatory and licensing can be used to ensure standards of care across the health care system. In a mixed economy, they can also be used as tools to ensure that the same standards of accountability for achieving regional/national health policy goals apply in the private and public sectors.

Until recently, creating enabling and reinforcing strategies aimed at changing provider behaviour was not emphasized at the regional/national level. This is gradually changing. Governments are assuming a role in providing enabling strategies and also in serving as potential reinforcers of appropriate behaviour. They provide funds for information systems and for processes that develop, disseminate and update practice guidelines. Coordinating activities across groups and sectors and creating linkages is also receiving greater attention.

4. Creating an environment that supports health care quality: strategies for managers

Organizations and governments must make an explicit management decision to improve quality of health care delivery. Managers need to provide leadership in the change process. They must play a central role in actively promoting quality development and in creating the right climate for enhancing practitioner performance. Managers at all levels of the health care system should serve as catalysts for change. They must help create a vision and help make that vision operational, as well as create environmental supports needed to sustain improvements.

Policy initiatives regarding health care education, delivery systems and workers, described in the previous section, can be used at the regional or national level to help create an environment which supports quality development.

This section is directed primarily towards health care managers at local and regional levels. It draws on information about how people change, described in Section 2, and the experience gained from using the model of behaviour change in the implementation of QI (Deming, 1982; Laffel and Blumenthal 1986; Brassard, 1989), in change management in industry (e.g. The Price-Waterhouse Change Integration Team, 1995; Carr, Hard and Trahan, 1996; Kotter, 1996) and in the health care field (e.g. Berwick, 1989, 1990; Gaucher and Coffee, 1993). Many of the tools and techniques managers need are the strategies used in good management generally. Basic management skills, such as team work, good communication, effective problem-solving and performance monitoring, are stressed. These skills are taught and described in many WHO/United Nations Agencies' publications (e.g. Cassels and Janovsky, 1995; Monekosso, 1994; Pangu and Gaumerais, 1996; Training Manual on Management of Human Resources for Health, 1993; Thorne, Sapirie and Rejeb, 1993). The Pan American Health Organization has also produced materials to teach local health teams how to carry out strategic planning, create work teams and analyse their work environment and performance to improve the quality of work processes (PASCAP/PAHO, 1994).

Creating a climate for improved quality

Quality development needs a sponsor to overcome complacency and inertia. A crucial role for the manager as a leader is to generate an interest in improving quality, to develop a sense of urgency for this and promote these ideas among others. Once senior management is committed to developing quality in the health care system, a broadly representative working group should be selected and convened. This group should be charged with the task of developing a vision of improved quality in health care for the future (delivered by the institution, in the region or by an aspect of the system) (Berwick, 1990; Carr, Hard and Trahan, 1996; Gaucher and Coffee, 1993, PASCAP/PAHO, 1994), including proposing areas where quality needs to be addressed. It may set priorities for quality improvement and oversee development of strategies to enhance quality. Its mandate should also include implementation, monitoring and evaluation of the changes made. (Table 8 shows the steps involved in planning the change and questions that managers must address).

Involve key stakeholders in creating a vision of improved quality in the health care system

There are several advantages in creating a committee of interested parties (e.g. health care administrators, educators, health care providers, community leaders and the public) to examine what changes should be made to improve quality. It has proved to be an excellent way of creating awareness of the need for change and support for improvement in service quality (Gaucher and Coffee, 1993; Batalden and Nolan, 1994). It is also the most effective way of creating commitment and overcoming resistance to change (Beckhard and Pritchard, 1992 p. 79-84; Training Manual on Management of Human Resources, 1993; PASCAP/PAHO, 1994, vol. 1 and 2). The involvement of key people helps develop a climate for change and begins the process of developing local ownership of quality development initiatives (Cassels and Janovsky, 1995 p. 7). The group members should represent constituencies that need to be enrolled as partners in promoting quality (Carr, Hard, and Trahan, 1996, Chapter 3). They must also be good listeners and communicators so they can develop open communication and mutual trust among group members that allows a shared vision to emerge (Senge, 1990; PASCAP/PAHO, 1994) and communicates this vision beyond the confines of the group.

The group should brainstorm about quality improvement possibilities. Individual group members often already have ideas about needed changes. If quality improvement opportunities are not immediately obvious, the group may wish to carefully examine health care processes where complaints have been received, that show large variation, or have high cost, volume or risk associated with them as a starting point. Such issues are often early targets of quality improvement efforts (Berwick, 1989; Gaucher and Coffee, 1993).

All ideas should be examined in the wider arena of the group (PASCAP/PAHO, 1994, vol. 3-5). Suggestions can be elaborated and explored through key informant interviews, talking with affected workers and other needs-assessment activities. Open, respectful communication and consensus-building activities (such as affinity diagrams, multi-voting, and prioritization matrices (Brassard, 1989; Gaucher and Coffee, 1993, Chapter 12) should be used in the group to gain agreement on what needs to change, why this is important, and in what order of priority (Senge, 1990; Carr, Hard and Trahan, 1996).

Priority should be given to low-cost interventions that have broad-based support for the change and good prospects for improvement (Brassard, 1989; Ernst and Young Quality Improvement Consulting Group, 1991; Gaucher and Coffee, 1993; Price Waterhouse Change Integration Team, 1995; Berwick, 1989; Laffel and Blumenthal, 1989). This means identifying a situation where changing the process has excellent potential for improving quality of care delivered. It may also mean choosing to focus at first on low-cost changes that can have a large impact on quality. It is important to identify the root cause of the problem rather than the symptoms. Root causes are likely to be identified by asking a series of "why?" questions. Changes directed at root causes cost less in the long run than changes directed at symptoms (Gaucher and Coffee, 1993, p. 360-362).

Table 8: Steps needed to plan the change process: A guide for managers

Task	Activities	Questions for the managers
Convene group to develop a vision of improved quality, examine quality concerns and make suggestions for improvements. ^{xxxiii}	Create awareness of need for change. Begin to develop partnerships and identify champions of change so that momentum for change will be sustained. Communicate with affected constituencies, explain need for change and build interest in change. Clear, timely communication must continue throughout the change process.	Who will be affected by changes to the health care system? Whom will I need to convince that changes are needed?
Brainstorm quality issues and develop priorities. ^{xxxiv}		How can I: a) involve the group in planning improvements? B) help them overcome their concerns about changing?
Identify possible improvement alternatives (by brainstorming, from other similar settings, literature, experts, review of current processes).	Allow rehearsal of the advantages and disadvantages of possible solutions, discern the changes required.	What expertise can I draw on in finding good solutions for the problems? How can I best use the expertise available? What processes need to change?
Develop change strategy. ^{xxxv}	Think through the strategies needed to predispose, enable and maintain the change. Plan who will provide leadership for the change and who will champion this change. Discern what kinds of enabling (educational) and reinforcing activities are needed and arrange for them to be available. Analyse the incentives and reinforcers that hold the current situation in place, and make appropriate changes.	What is needed to predispose and enable people to make this change? Have we identified champions for this change, created an awareness of the need for the change and interest in changing? Who will be the leader(s) of this change? What kinds of new learning are needed to accomplish the change? By whom? Are new skills required? What local resources do we have to bring about this change? What educational activities are needed? Will they be provided before the change or on a 'just in time' basis? Who will provide them? What incentives and reinforcers can be used to sustain the change? What barriers to change exist? How can they be overcome? What rules or regulations may be supporting the current situation? Are any changes in them required? Are legislative changes needed?
Develop the implementation plan. ^{xxxvi}	Develop the structures and processes needed to promote, enable and sustain change. Make operational plans for implementing the change.	How long do we anticipate each step in the implementation process to take? Have we made all the appropriate arrangements? Do some policy regulations need to be revised to allow this change to proceed? Who will be responsible for the different tasks involved? How much will the change cost?

Once the priority area(s) to improve quality of care are identified, strategies for implementation are developed by the group. The group (or a sub-group of the original group, and people who have specific expertise in the area of concern) should review available information from other centres, examine evidence about what works and discuss its relevance in the particular institution or region. It might invite experts to address the group about the change they are considering, drawing on the expertise in local or regional

educational institutions. The group must carefully consider alternatives available to address the quality issues raised and to come to a consensus about the intervention(s) required to achieve improvement in quality. Attention should be focused on any process that is not working well and needs to be altered. Individuals or groups should not be blamed (Berwick, 1989; Ernst and Young, 1991; The Price Waterhouse Change Integration Team, 1995, Carr, Hard and Trahan, 1996).

Processes, not people, are at the root of quality problems. Processes might need to be changed (or added) to improve quality of performance.

By publicizing and communicating its activities, the group must heighten awareness of the need for change (Kotter, 1996). Its activities should predispose people to consider and become committed to the changes in which they will later participate (Carr, Hard and Trahan, 1996; The Price Waterhouse Change Integration Team, 1995, Training Manual on the Management of Human Resources, 1993, p. 8-9). It should also allay fears about changes by demonstrating the care with which it deliberates what changes should occur and how they should be made. Such a communication strategy will help educate important constituencies and create support for the change among the health practitioners, the public and among professional and educational organizations. Education is necessary not only to explain the need for change and its advantages, but also to reassure the affected health care practitioners that they are capable of making the changes required to perform well using the new approach. It should be clear that they will be provided with tools to assist them (Berwick, 1990; Gaucher and Coffee, 1993).

The group should help identify potential champions for the intended improvements. Champions are individuals or groups who already realize that change is needed. They are interested in changing and can serve as mentors building support for the change and serving as role models during the change. They are willing to take chances, are enthusiastic about the changes planned, and behave in an optimistic and assured manner.

Strategies for change must include enabling activities and must provide for feedback on the results of the change | They probably already think changes are needed and may have begun to try to implement such changes, although their chances of success might be limited by lack of administrative leadership and wider support.

Once a particular quality issue and its improvement strategy are chosen, the implementation plan must be carefully developed and clearly communicated. Table 9 describes the steps involved in managing the change itself. This must be considered in the implementation plan. The manager must provide leadership to ensure that relevant issues are considered. The group must consider what additional work is needed to create a positive climate for the change (to predispose all those who will be involved). The plan must be communicated effectively to gain support. Planning must include the provision of incentives for the change, the enabling strategies and resources required, and how these will be made available. Recognition, positive feedback and rewards for changing must also be considered (Carr, Hard and Trahan, 1996, p. 110) as well as how implementation will be monitored and evaluated.

Partnerships must be developed with educational institutions and professional associations interested in providing enabling activities such as educational materials and events.

Some types of changes in process require that health care workers gain new knowledge and skills. Such change is facilitated by creating the necessary educational opportunities that suit the workers involved and the type of learning to be done. Learning new knowledge and skills can occur on- or off-site in preparation for the change, or on-the-job on a "just in time" basis (as awareness for the need for the new knowledge and skill develops). A train-the-trainer model may be chosen if many workers are involved so that dissemination occurs more rapidly. The educational strategies chosen should depend on the complexity of the new learning required and on local circumstances. The development of partnerships with local or regional education and training facilities should be considered to promote change, which can be beneficial to both the health care institution (region) and the health care education facility. Educational facilities often have the expertise needed to enable people to learn the knowledge and skills required for change. Written materials should be supplied as well, and such material can be used later to refresh workers' memories about aspects of the change. Partnership with educational institutions is also important for other reasons. They need to be aware of, and involved in, the changes that are going on in health care practice in their area, and they have a responsibility to prepare newly-trained health workers for practice .

Barriers to change must be anticipated and strategies developed to overcome them. (Carr, Hard and Trahant, 1996, p. 112; The Price Waterhouse Change Integration Team, 1995, Chapter 5, PASCAP/PAHO, 1994, vol. 3-5). The group must examine how the structures and processes that currently inhibit this change can be altered. All of the environments that influence behaviour should be considered. It may be necessary to change policies/regulations to allow for more flexibility or promote the desired changes. The ramifications of the change proposed on the system (groups of providers, institution, group of institutions or the entire health care system) must be carefully examined. Barriers to change may include vested interests opposed to the change, regulations and legislation that inhibit or block the change, or powerful incentives that support the status quo. Cultural, economic or political factors can inhibit change and must also be considered.

A time frame for the implementation of the change strategy must be developed. The costs incurred by the change must be carefully budgeted as well as the recurrent costs of the new process once it is operational. Methods must be established for detecting problems during implementation to allow fine-tuning of the change, and an evaluation strategy agreed.

Implementing and managing the change process

Whatever the change, a system should be set up to monitor the change and to allow for fine-tuning of the new approach. It is important to find out quickly if people feel unprepared after the educational programme and if unforeseen delays occur. The group should meet regularly during implementation to solve implementation problems and fine-tune the change (Carr, Hard, and Trahant, 1996, p. 157-158; Nutter, 1992).

Evaluation of the change and its effect on the quality of care needs to be planned in advance. Indicators of performance relevant to the change should be used. If none are available, they must be developed (Gaucher and Coffee, 1993). Such indicators should be chosen for their relevance, and reliability, with attention to the cost of obtaining the information (The Price Waterhouse Change Integration Team, 1996, Chapter 9). Again,

Table 9: Implementing and managing the change process: a guide for managers

Develop plan to monitor the change process	Set up process for detecting problems with implementation (meetings with key people at regular intervals, indicators of progress, etc.).	How often do I need information to monitor the introduction of this change? How can we develop information to fine-tune this change?
Develop plan to evaluate the impact of the change	Operationally define how to provide feedback on the effects of changes.	What are the most important questions to answer about this change? How will we know if this change is an improvement? What indicators will we use? How often should they be examined?
Implement change	Communicate clearly and simply to increase support for the changes and allay concerns of affected workers. Provide leadership. Obtain feedback and make minor adjustments as necessary.	What can I do to enable and support the change? Do the workers have enough guidance, support, reminders, new knowledge and skills needed to accomplish the change?
Fine-tune change	Monitor change and make further modifications if necessary.	Is this working as planned? Have we forgotten to do something that is impeding change?
Evaluate the change	Determine whether the change occurred as planned; check whether the indicators chosen move in the direction of greater quality.	How well has this intervention worked? What changes in indicators of quality do we see? Are there any unanticipated outcomes of the change?
Consolidate the change	Make changes in policies, regulations, etc. needed to allow the change to continue.	What further steps are needed to sustain the change? Are changes required in policies, procedures, regulations, etc? How can I ensure these changes are made?

partnerships can be built with personnel at educational institutions who have expertise in performance monitoring and indicator development, if little expertise exists locally. Feedback should be obtained as to whether or not the change is accomplishing its goal of improved quality (through improved access, equity, appropriateness, effectiveness, comprehensiveness, acceptability, and/or efficiency). The health practitioners affected should be involved in evaluation planning so that any concerns they have about the change can be addressed during the evaluation. It may be useful to teach them how to interpret indicators that monitor changes so that they can receive adequate feedback about the change (Gaucher and Coffee, 1993, Chapter 12). They must be able to see the rewards of changing.

Kotter's Eight Steps to Create Change*

1. Establish a sense of urgency
2. Create the guiding coalition (form a team of interested parties)
3. Develop a vision and strategy
4. Communicate the vision
5. Empower action (enable change)
6. Generate short-term wins (make positive quality changes that are observed and measured)
7. Consolidate gains and produce more change
8. Institutionalize (sustain) new approaches

*paraphrased from Kotter, 1996

Changes, if successful, must be institutionalized to make sure they last. If the changes is not supported by the governance structures and culture of the organization, it will revert to the old process. The mechanisms and environments that supported the old processes must also be examined to ensure that they have been altered to support the change (see Section 2). Otherwise, the change is unlikely to continue once the group leading the change has been dissolved.

Changes and their complexity

Changes vary in complexity. Simple changes in a work process may involve little new learning on the part of health professionals (see example 1 below). Such changes are fairly easy to accomplish if there is agreement that the change is needed and the proposed solution to the quality problem makes sense.

It is better to start with small changes and achieve success than to attempt complex changes that have less chance of success

Example 1: Non-urgent transfers between hospitals. *The hospitals in a city had regionalized services so that each hospital specialized in certain areas. For the most part this approach was effective and efficient as it reduced duplication and ensured a critical mass of patients needed to operate each facility efficiently. However, patients who needed specialized tests, available only at one of the hospitals, had to be transported from hospital to hospital by ambulance and then returned to their original hospital. Ambulances were sometimes called away from this "non-urgent" transporting activity when emergencies occurred. Then appointments needed to be rescheduled or long delays occurred. Patients were also transported from ward to diagnostic centre and then from diagnostic centre to ward. The use of two "dedicated" ambulances (ambulances assigned specifically to transferring patients between hospitals) was proposed. Patients were only transported by the ambulance staff from "door to door" of each hospital, shortening the time the ambulance staff spent on each transfer. This meant that hospital ward personnel had to take patients to the door at the scheduled pick-up time and receive them when they returned.*

This change was tested for six months to establish whether it improved the efficiency of the system and whether it satisfied patients, ward staff and diagnostic personnel. The staff involved had input into the design of the pilot study, and were aware of its aims. They helped suggest what information should be included in the data sheets that were used to track patients and participated in giving their opinions of the redesigned system. Since the change resulted in fewer delays and cancellations, and increased satisfaction of patients and their families and ambulance and hospital staff, it was adopted.

Similarly, having physicians or nurses substitute a new type of vaccine, which has greater potency than the one currently used, is a small change that may be quite easy to implement once the workers are predisposed to this change. It requires no extensive enabling strategy to produce significant behaviour change because the basic process of care is not changed. No new skills need to be acquired. Only new knowledge (of dosage, handling procedures, efficacy, side effects, etc.) is needed which can likely be acquired by information sessions, and through distribution of written handouts explaining key information. So far, the changes discussed mainly required some reorganization of the process of health personnel's work or simple substitution of an element of their activities.

Managing changes that involve little new learning and skill development is easier than changes that require considerable new knowledge and skills on the part of the worker. Example 2 illustrates that sometimes reminders to the health practitioner to perform specific actions are needed to improve quality.

Example 2: Controlling post-operative infections. *The high rate of infections of wounds after surgery at a regional hospital caught the attention of the hospital committee formed to explore ways of improving the quality of care and services there. They examined the processes involved in controlling infection pre-operatively, during surgery and post-operatively and suggested to the workers involved what they thought was creating the problem. As the workers noted, lapses in maintaining a sterile environment were found in all processes. It was decided to launch a campaign to remind workers to wash their hands thoroughly before dealing with surgical patients and to maintain sterile conditions once their hands were washed. The correct hand washing technique was illustrated on charts. The post-surgery infection rate fell dramatically after these reminders were put into place and was reported weekly to all workers who came in contact with surgical patients.*

The third example is an illustration of a change in process that involved combining the roles of two types of workers into a single care process. Several groups of workers and required them all to undertake new learning. Major changes in the tasks of existing workers were required. The partners did not all agree about the need for change or how the change should occur. One of the key questions was whether both types of workers could perform the new dual role equally well. This became a main evaluation issue.

Different viewpoints should be represented in the evaluation questions posed so that consensus can emerge about longer-term policy in the area.

The change was introduced on a small-scale basis and indicators of performance were selected that would allow careful evaluation of the change. The subsequent evaluation showed that the two types of workers handled their new roles with similar competence and convinced stakeholders that these workers were better able to meet the health care needs of the local villagers.

Consequently, all of the interested parties agreed that the change should be adopted throughout the region, although a little more slowly to accommodate workers with families who found it difficult to be away from home for extended periods. The ramifications of the change for the current training programmes also needed to be thought through carefully since new workers with only one part of the training were no longer needed. Such complex changes usually involve legislative change in the scope of practice of a profession or in the educational requirements for practice.

The fourth example also illustrates a change in process that required legislative changes. In this example a complex change in behaviour for one group of providers (midwives) was proposed. The change had broader ramifications than the level at which it was proposed as all providers of this type of health care could eventually be affected. The change also had an impact on other providers who previously had sole responsibility for this area of practice, even if they were not able to supply all the services needed. There were a number of interested parties, including women's health groups, health professionals' organizations and the like, who had opinions about the proposed change and wanted to be heard. The carefully evaluated project allowed people to examine the idea of an expanded role for midwives without generating a "turf war". It also supplied the information needed to decide whether this practice should be continued and even expanded to other parts of the country.

Example 4: Broadening skills of midwives. *The maternal and child health care committee of a region was concerned about a significant shortfall in practitioners trained to handle complex deliveries in their local community. Women who died at child birth often died from uncontrolled bleeding following a retained placenta or a tear in the vaginal canal. They also noted that more women requested IUDs than there were trained personnel to insert them. Thus, key family planning services were not accessible to a large portion of the population. The maternal death rate, which was high, had not fallen in several years. The midwives identified these issues as problems they could not address.*

The committee thought that the midwives might receive some on-the-job training for upgrading and expanding their skills to include removal of placental material, suturing, prescription of medication to treat eclampsia and pre-eclampsia, haemorrhage and infections, and IUD insertion. The local physicians, although initially reluctant, agreed with this course of action as long as it was evaluated. They were willing to teach these skills to six midwives and to do a pilot study.

To accomplish this change, numerous activities were required. Training was developed for the local midwives, most of it taking place in the region's hospital. Educational packages were developed by the regional university and used to provide distance education. Some on-site education was also done by the local physicians and by the instructors from the regional educational institution. Practice guidelines were developed to help the midwives remember how best to deal with different complications.

The legislation governing midwifery did not include use of these invasive procedures or the prescription of drugs. Permission was sought to amend this legislation to allow the pilot project to proceed.

The group decided to keep track of the number of IUD insertions done by the midwives, deliveries performed by them, how often they used their new skills, the types of complications, and the outcomes for both the mother and baby. A two-year time frame was set to allow implementation and evaluation of these changes.

By the end of two years, all the midwives had been trained and the first group had been practising using their extended skills for 18 months. The second group had been using their extended skills for 14 months. Fewer mothers had severe complications following childbirth. None of the neonatal deaths were attributable to problems that were inappropriately handled at delivery. More women began using the hospital as word spread that the care received there had improved.

Factors that influence the complexity of change are shown in Table 10. As the above examples illustrate, changes that may be contemplated to improve quality will vary in the number of workers affected by the change and whether single type or multiple types of health practitioners are involved. The change may also vary in the amount of new learning required of the workers. Sometimes, only a reordering or slight alteration of their work process must occur (as in the transfer of patients in example 1). Elsewhere, the new learning required is simple and the knowledge or skill can be easily gained (change in vaccine) or the reminder to perform an activity that has already been learned is needed (hand-washing). At other times, complex new knowledge and skills are required (dual-trained field workers; extended-role for midwives). Complexity of change increases when other work activities are affected by the change, and when the change affects the basic and continuing educational systems for workers. The educational system may need to be altered to sustain the change.

The extent to which changes in rules, regulations, or legislation is needed will also vary. Some changes can be made easily because they are simply governed by local policies and procedures while others also require legislative change where laws at the regional or national level govern these practices. Such changes enter into a wider political process. Parties interested in the change (consumer groups, professional associations, etc.), who may have diverse opinions about whether change improves health care quality, may also serve to complicate the process of changes.

Table 10: Factors influencing complexity of changes to improve quality

Factor	Extent of Complexity	
	Low	High
Number of workers	Few	Many
Number of types of health workers involved	One	Many
Extent of new learning	Minor	Major
Extent of change to other activities	Minor	Major
Revision to educational programmes	Few	Many
Number of interested groups	Few	Many
Diversity of objectives of interested groups	Little	Great
Changes in governance required	No	Major
Number of levels of governance involved	One	Many

It is important to examine the change that is being proposed and determine how complex it is. The more complex the change, the longer the planning period needed to introduce the change. It is also beneficial to consult with all interested groups while planning the change so that they will assist in making the change occur according to plan. Parties identified late in the planning process can still be added to the change initiation and management group. Also, any concerns about the change that were not resolved during the planning process should be addressed explicitly in the evaluation of the outcome of the change.

Summary

This section describes how to create an environment in which strategic change is developed and supported. It draws on the previous two sections regarding the factors important to changing performance, and the types of strategies needed to assist practitioners in changing their behaviour, as well as on wider literature regarding planning for, and implementing, change. It describes how managers can be effective leaders in the development of quality health care.

Change requires careful planning and good leadership (Batalden and Nolan, 1994, Kotter, 1996; Juran, 1989; Ernst and Young Quality Improvement Group, 1991). Managers provide leadership by orchestrating the change process. They first get the attention of key people and help them develop ownership of the need for improvement in the quality of the health care system. They then communicate this message, to gain wider acceptance of the need for change. Managers must show continuous commitment and leadership in order to create and maintain the urgency of the need for quality and the momentum for change. Managers must also work through the planning process to ensure that it has included activities and materials that enable change and that the changes are reinforced and sustained by changes in policy or governance if necessary. Safeguards should be in place that will monitor the change process and ensure that the change occurs as planned.

Change requires continuous, committed and active leadership, to succeed

Change can be reinforced when indicators of performance are monitored and provide feedback to the health practitioners involved.

Leaders must also ensure that the numerous tasks required are accomplished (Juran, 1989; Batalden and Nolan, 1994; Carr, Hard and Trahan, 1996, Chapter 6), and that the approach taken to effect the change is culturally sensitive. The concerns of those affected by the change must be anticipated. Plenty of opportunities should be provided to learn and practice the new behaviours required, and learning aids should be used (reminders, memory joggers, such as guidelines, see Section 3). The incentives and rewards for change must be tailored to fit the local culture. Key people who can help champion the change, and may be affected by it, should be involved in its planning, monitoring and evaluation. Valid and reliable performance indicators must be used in evaluating the changes made. The careful use of evaluation can make opinions about the usefulness of the change data-driven rather than value-based, and actions should be based on solid evidence.

Commitment to change must be codified in policy, rules and regulations (governance) so that they are maintained over time (Carr, Hard, and Trahan, 1996, Chapter 7; Roemer, 1991). Too often, change lasts only until a manager is replaced. This occurs when the manager might be a charismatic leader who champions and oversees the change but does not develop the systems to sustain it. Change requires leaders committed to ensuring that improvements in quality are rewarded and maintained. Finally, changes to improve quality may vary considerably in complexity. Their complexity is influenced by several factors: the number and different types of people involved and the extent of new learning they require; the extent to which other practice activities are affected; their demands for a new response from the educational system or governance changes; the number of parties with a stake in the changes planned and the diversity of interests among these parties. It is useful to start with smaller, more manageable changes before attempting a major change. Time-limited projects can be used to test and refine major changes and to allow careful evaluation of their effects on quality.

Glossary

benchmarking: the process of comparing one's performance with the best performers to become the "best of the best". The basis for comparison shifts from within the organization to outside the organization.

care-map or algorithm: a step-by-step procedure for making decisions about the diagnosis and treatment of clinical problems. It is an explicit attempt to direct health care personnel along a preferred management path. It is usually created by the workers involved in using it after consulting literature and experts, or reviewing available practice guidelines.

case mix: classification of patients into categories reflecting differences in their disease type and the severity of their condition. Differences in resource use, length of stay and outcome may be due to differences in case mix in the groups compared. Thus, the more sophisticated studies of utilization and outcome take case mix into account.

certification: process by which a non-governmental agency grants recognition to an individual who has met certain qualifications (Roemer, 1992 p.17).

confidence interval: the distance from the measure of central tendency (mean) that one can predict with known probability (e.g. 95%) in which another observation taken from a sample of the underlying population is likely to fall. Used to examine whether an event is out of the ordinary (an outlier) when examining quality issues.

credentialing: the means of recognizing the qualifications of personnel and authorizing them to practice (Roemer, 1992 p.17).

explicit criteria: Objective criteria, specified in advance, that form the basis for making judgements regarding quality. They can be used by less trained staff to conduct a review, unlike implicit criteria (see below).

flags: indicators that are not used directly to measure quality, but rather, draw attention to areas of patient care that the organization should evaluate further to determine if quality is an issue.

implicit criteria: criteria formed by a respected clinician who uses clinical judgements in evaluating performance. These criteria are not openly stated and available for scrutiny, and thus require highly qualified staff to carry out the review. Early studies often used implicit criteria, but considerable variation in opinions among clinicians performing the evaluation have led to the development of explicit criteria

just-in-time learning: knowledge and skills are provided gradually in the work place at the point(s) in time when workers begin to realize they need them

licensing: government authorization of a person to engage in a health profession or occupation (Roemer, 1992 p.17).

outcome measurement: any measurement system used to uncover or identify the health outcome of treatment for the patient or, at a systems level, to identify the health effects in the population of a health care policy or programme.

outlier: events that have low probability of being caused by chance measurement error and represent a significant deviation from what is expected.

parameters: an expression preferred by some medical associations for what others describe as practice guidelines. It is defined by the American Medical Association as a generic term for acceptable approaches to the prevention, diagnosis, treatment or management of a disease or condition, as determined by the medical profession based on the best medical evidence currently available.

peer review: review of practice conducted by a peer (someone with similar qualification) which historically has often used implicit criteria.

personal professional profile: A record kept by a health care worker about his/her own continuing professional education, professional achievements, learning goals and accomplishments as indicators of expected continuing competence and development in a practice setting.

practice guidelines: systematically developed statements to assist practitioners' and patients' decisions about appropriate care for specific clinical circumstances.

recency-of-practice: a minimal requirement for active practice with patients by which the health care professional or practitioner can be considered to have current knowledge, skills and experience. The requirement for some approved refresher courses is likely in some jurisdictions after leaving active practice for 2-5 years.

registration: official recording of names of persons who have certain qualifications to practise a profession or occupation (Roemer, 1992, p.17).

release time: time given to engage in an educational activity, such as continuing health education.

sentinel events: a category of unacceptable events that raise "flags" of concern about quality (e.g. unexpected death).

standards of quality: authoritative statements of 1) the minimal levels of acceptable performance or results; 2) excellent levels of performance or results, or the range of acceptable performance results. Standards can be based on scientific knowledge and professional consensus. Standards of conduct and ethical standards are based on social consensus.

standards for accreditation: a set of statements by a competent authority about the degree or level of requirement, excellence or attainment in quality or performance.

timeliness: services are completed in a time frame that maximizes health benefit and satisfaction of the patient.

total quality management: a strategic, integrated management system for ensuring quality of health care, including patient satisfaction. It involves identifying potential quality issues and addressing them in a non-judgemental fashion, and supports team building and the use of statistical methods to visualize information and reduce variation. Sometimes used interchangeably with continuous quality improvement although it usually implies a larger, more complex management system.

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Endnotes

- i. Chassin and his colleagues (1986,1987) have been involved in studies of the extent of inappropriate use and its correlates. Interestingly, the proportion of inappropriate care did not rise significantly as utilization increased.
- ii. Winslow et al.. (1988 a & b), Chassin et. al. (1987) and Sui et. al. (1986) in the United States, for example, found considerable inappropriate use of medical and surgical procedures.
- iii. The literature contains many descriptions of unexplained variation. Please see Vayda et al.. (1979, 1982); Roos et al..(1986); Wennberg (1987) and Perrin et al. (1989) for examples.
- iv. The WHO working group also indicated that it considered quality assurance to subsume TQM and QI. See Report of the WHO Working Group on Quality Assurance, Geneva 18-20 May 1994. WHO/SHS/DHS/94.5 Rev 1, page 4.
- v. The European Office of WHO has tried to use the term Continuous Quality Development to describe both QI and QA activities. See Continuous Quality Development: A National Policy. Structural Framework Draft Copenhagen: WHO Regional Office for Europe, August 1995.
- vi. See Geertsma, Parker & Whitbourne (1982); Lockyer, Parboosingh, McDougall & Chugh (1985); and Fox, Mazmanian, Putman (1989) for interesting approaches to studying physician behaviour using qualitative methods.
- vii. Waddell (1991) found that having all participants from the same site was the only explanatory variable among the ones she used that had a positive effect on outcome (nursing performance change) and postulated that environmental support or more focused needs assessment were the likely underlying explanation.
- viii. See Soumerai & Acorn (1984); Baldr (1989) and Haynes, Davis, McKibbon & Tugwell (1984) for examples.
- ix. It is much easier to influence knowledge by such CE events than it is to influence behaviour change. (See Baldr, 1989; Davis et al., 1992, 1994; Oxman et al., 1995).
- x. However, such visits may be effective for changing behaviour that requires little adjustment in routines (such as drug prescribing). It may not be very effective in changing behaviours that require a number of skills and procedural adjustments by the health care personnel and co-workers with whom they need to coordinate their efforts. A nice discussion of these issues is presented in Scheirer (1981).
- xi. The use of self-assessment in the context of a performance review is described in Morden (1996). See the later section on performance appraisal as well.
- xii. This group continues to update their reviews and appears to rotate first authorship.
- xiii. This technique has been popular with community-based primary care physicians in Canada and the number of study groups has expanded quite rapidly. Each group chooses one member to become the facilitator. This person receives special training in facilitation at a workshop organized by CE programme staff. The group's learning activities centre around case material provided by programme staff or drawn from their practices (ensuring relevance). Group members also receive information sheets that critically appraise the relevant literature (allows environmental reappraisal). A commentary on cases, developed by the CE programme in conjunction with both a specialist and a primary care physician, illustrates at least one practical way of applying the material presented to the clinical problem (enablers). Part of the discussion centres on how and when this material could be relevant to their own handling of similar cases (enabling and reinforcing strategies). The group may also seek outside resources (including consultants) to examine the applicability of the material to their practice. Ongoing meetings of the group also serve to reinforce practice behaviour change (See Premi, et al., 1994).
- xiv. The call for qualitative methods along with quantitative ones is an interesting development, as early review articles by this group relied solely on high quality randomized controlled trials (RCTs) for evidence. Almost every review article that has appeared in the last ten years calls for better primary studies that clearly defined the intervention, participants, programme and context to allow more detailed comparison that could help explain reasons for variations in findings within a type of intervention.
- xv. The PDCA cycle is an abbreviated version of most problem-solving activity cycles. The Training Manual on Management of Human Resources for Health, Section I, Part B. (WHO, 1993) provides a good description of an eight step problem-solving cycle (define the problem, gather information, define the objective, generate alternative solutions, judge the alternatives, plan action, take action, evaluate outcomes) and exercises in using it in both clinical and management situations.

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- xvi. The QI approach is similar to the continuing education approach that is advocated by the WHO Expert Committee on Continuing Education (1990). They stress the need to develop multidisciplinary teams who analyse health care problems by a range of methods, and who establish for themselves acceptable performance standards which are not absolute and are revised from time to time. Such teams are to compare their actual performance with these standards and develop explanations for any discrepancy. Educational activities can then be planned to gain needed skills (which can include resource management skills, communication skills, etc.) The impact of the educational intervention can then be assessed and further plans made. The major difference in approach is that QI teams target processes and may not identify learning needs as important to quality improvement in all situations. Preparing to participate in QI requires gaining a new set of skills. These activities may be seen as a particular kind of continuing education experience.
- xvii. Staff performance appraisal interviews must be handled with tact and sensitivity to gain the most from them in terms of commitment to new work activities or to improvement in the way that work is currently performed. For ideas on how such interviews can be done well, see Training Manual on Management of Human Resources for Health: Part B, (1993) Annex 7.
- xviii. Roemer and Montoy-Aguilar (1988), in their description of forms of support to quality assurance, also indicate that legislation and its accompanying regulation are needed to support quality assurance efforts at other levels. Subsequently, Roemer (1992) provided guidelines for legislation affecting health human resource development that give a good description of the types of possible legislation and their purposes.
- xix. In North America, although accreditation of medical schools is not mandatory, in most jurisdictions, in order to obtain a licence to practice, the physician must have graduated from an accredited school.
- xx. A nice background paper on legislation on human resources for health (Roemer, 1991) outlines the many types of legislative initiatives that can be used. Although it covers legislation regarding health care facilities, it also covers other types of legislation.
- xxi. See Applicability of different quality assurance methodologies in developing countries: Proceedings of a pre-ISQUA meeting held in St Johns, Newfoundland. WHO/SHS/DHS/96.2: 9.
- xxii. Private vendors may develop such tests for use. Any examination used should be psychometrically sound and defensible in a court of law. Concern has been expressed that some examinations measure only knowledge and do not measure performance of clinical and technical skills. In some countries, graduation from designated schools confers licence to practice directly.
- xxiii. A review of the experience in the United States in regulating health professionals is found in an article by Gaumer, 1984.
- xxiv. Another problem is created when boards find deficiencies in practice among members. The nature of the problem must be carefully assessed and a plan developed to remedy incompetent performance. Experience regarding what works in this area is quite limited (Norman, Davis et al., 1993). Such deficiencies can be spotted through a relicensing process, a complaints/discipline mechanism or through peer review of practice.
- xxv. The College of Physicians and Surgeons of Ontario has pioneered a peer assessment programme which audits the office practice of 300-400 physicians per year. Publicity around the kinds of difficulties found in the practices of those who were audited is credited with improving the charting behaviour of physicians. A description of the programme is found in McAuley RG, et.al.:1990.
- xxvi. This new programme was outlined for members of the College of Psychologists of Ontario in: *Q&A: Quality Improvement Program in 1997*. Toronto, The College of Psychologists of Ontario. April, 1996.
- xxvii. New Zealand has a Health and Disability Commissioner and a local advocacy service. People are encouraged to complain directly to the person or organization giving them the service, with the help of an advocate if they feel uncomfortable. Serious complaints are sent on to the Commission. The public is given ten rights under the Code of Health and Disability Services Consumers' Rights which are printed in a brief leaflet describing the service, "Your Rights when Receiving Health or Disability Service". The information is also available on this web site: www.knowledge-basket.co.nz/hdc
- xxviii. A discussion of issues to be considered when planning to decentralize a health care system is found in K. Janovsky (Ed.), 1995.
- xxix. In a WHO project to develop a Nursing/Midwifery Management Information system (NMIS) funded by the Kellogg Foundation, the creation of linkages and mechanisms for collaboration and coordination among the various health providers, ministries, training institutions and professional associations was one of the key features of the project. See Nursing/Midwifery Management System Project, Interim Report, May 1996.

- xxx Forward, In: *Using Clinical Guidelines to Evaluate Quality of Care: Vol 1, Issues*. U.S. Department of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research AHCPR Pub. No. 95-0045, describes the objectives of the legislation that established the Agency for Health Care Policy and Research as follows: "To arrange for the development and periodic review and updating of 1. Clinically relevant guidelines that may be used by physicians, educators, and health practitioners to assist in determining how diseases, disorders, and other health conditions can be most effectively prevented, diagnosed, treated and managed clinically and 2. standards of quality, performance measures, and medical review criteria through which health care providers and other appropriate entities may assess or review the provision of health care and ensure the quality of such care."
- xxxii The Cochrane group of collaborators are also using e-mail to communicate among sites and groups that are evaluating the quality of evidence regarding a particular aspect of care. For example, the site in Canada can be reached by e-mail at Cochrane@fhs.csu.mcmaster.ca.
- xxxiii For example, see the report by Harrigan (1993) regarding quality initiatives in Canada that were sponsored by the Canadian Government.
- xxxiiii Good communication skills and group skills are needed by all group members if the group is to work effectively together. A training course may be needed if people are inexperienced in group work. Such a course is outlined in Pangu and Gaumerais, 1996. The PASCAP/PAHO, 1994 series also has many exercises to teach group skills. It also helps orient groups to possible areas of concern regarding quality and how they might be tackled.
- xxxv The 1994 PASCAP/PAHO series discusses ways to create awareness of quality problems in health and how to form teams to tackle them (VOL 1). It also describes stages in team development and how to foster positive teams (VOL 2). It gives many useful strategies to help teams understand the nature of quality problems (VOL 3).
- xxxvi The group engages in problem-solving activities. Many materials are available to help people learn how to participate in such problem-solving teams. For example, Thorne, Sapirie and Rejeb, 1993 illustrates problem-solving principles using planning for, and evaluating, maternal and child health activities. Problem-solving is described in more generic terms in *the Training Manual on Management Of Human Resources For Health, Section I, Part B*, 1993. The PASCAP/PAHO 1994 series also has useful materials for development of problem-solving teams. Exercises to teach and rehearse teamwork skills are also part of the programme to strengthen health management (Cassels and Janovsky, 1995).
- xxxvii Planning to implement change requires the same type of planning as is needed to implement a health programme. Many excellent resources exist. For example, see Monkeosso, 1994 p.33-47. PASCAP/PAHO, 1994 (Vol. 5) deals with planning to transform work processes to improve quality. It contains many valuable suggestions. Some suggestions may differ because representatives of all interested parties are not always involved in the initial planning teams. The PASCAP/PAHO materials indicate that social actors (interested parties) must be convinced of the usefulness of the change before implementation if it is to succeed.