



# JournalWatch

Evidence-based Policy & Practice  
Research Bulletin

## Performance Indicators in Primary Health Care

*This issue of JournalWatch focuses on performance indicators (PIs) in primary health care. Our aim is to:*

- " *define performance indicators*
- " *clarify their purposes*
- " *discuss some issues regarding their use*

*As well as peer-reviewed journal articles, the sources of information for this issue include books, conference presentations, published reports and documents viewed on national and international websites. Although some systematic searches of databases were undertaken, many of the documents and websites were already known to the authors. Search terms included "performance", "indicators", "measurement", "primary care", "general practice" and "family medicine".*

### Summary points

- " A performance indicator is an observation expected to indicate a certain aspect of performance of a system, organisation, contract or an individual as part of a performance measurement system.
- " The purpose of performance indicators is to focus attention towards issues of interest, and highlight areas in need of improvement.
- " Performance frameworks should be considered at both conceptual and technical levels.
- " Use of performance indicators can have beneficial and detrimental effects on behaviour. Unintended consequences include goal displacement, sub-optimisation, short term focus, misrepresentation, and gaming.
- " Selection of indicators and implementing a performance management system should be designed to maximise cost effectiveness of data collection, analysis and communication of results.
- " Performance indicators must be worth measuring, be measurable for diverse populations, be understood by people who need to act, galvanise action, be relevant to policy and practice, reflect results of actions when measured over time, be feasible to collect and report, and comply with national processes of data definition.
- " Performance is a multidimensional concept. No single indicator is sufficient to assess organisational or system performance.
- " Performance indicators can relate to structure, process or outcome. The value of a process measure depends on the strength of evidence linking it with ultimate outcomes.
- " If performance indicators are being used to ensure accountability they should measure aspects of performance over which the organisation has control.

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## Introduction

*... Performance measurement and indicators are useful when there is agreement by all stakeholders on what constitutes 'good' and 'bad' performance, when performance is focused on processes and achievements that are under the control of the organisation and when measures can be found that accurately reflect these processes and achievements.*

## Introduction

The use of performance indicators in health care and other public sectors comes from the growing demand during the 1980s and 1990s for public sector accountability by measuring the performance of government agencies. Governments of industrialised nations felt the need for financial accountability and the measurement of effectiveness of services to ensure the efficient use of public money (Exworthy et al, 2003; Sicotte et al, 1998). Countries such as the United Kingdom, USA and New Zealand have developed health system performance frameworks, which differ conceptually and operationally (Borman & Wilson, 1998; Campbell, Roland, & Buetow, 2000; Smith, 2002). Smith defines performance management in the UK NHS as 'a set of managerial instruments designed to secure optimal performance of the health care system over time in line with policy objectives.' In a paper reviewing performance frameworks in health systems, Arah et al, (2003) identify a gap in the knowledge of how the performance data resulting from these systems are used to stimulate improvement and health care quality.

Jolley (2003, p76) reviewed performance indicators for community health in Australia, and identified that performance indicator information can be used for policy development, resources allocation, making comparisons and choices, improving services, and accountability.

She summed up her review as follows:

*Performance measurement and indicators are useful when there is agreement by all stakeholders on what constitutes 'good' and 'bad' performance, when performance is focused on processes and achievements that are under the control of the organisation and when measures can be found that accurately reflect these processes and achievements (Jolley 2003, p78).*

Business and government increasingly use performance indicators to assess the functioning of systems, organisations and individuals against specific criteria. Performance measurement to raise awareness of existing practice is an important driver of improvement and indicators are one of the tools that have been developed for this purpose (Rhydderch, Elwyn, Marshall, & Grol, 2004). When adequately conceptualised, performance indicators become one of a range of useful tools in both planning and evaluation. When poorly conceptualised and inappropriately used they lead to misleading descriptions of program performance, and an environment of fear rather than of quality improvement (Sheldon, 1998).

Performance frameworks should be considered at both conceptual and technical levels. As technical entities they consist of a set of measures, which need to meet certain criteria to be useful. Conceptually, performance frameworks are associated with a mode of management in which society checks and audits activity to achieve improvement. Their potential impact relates to concepts and ideas about organisational change, the existing professional cultures and the change in the culture that may be produced by the introduction of performance management (Rhydderch et al 2004, Sheldon 1998).

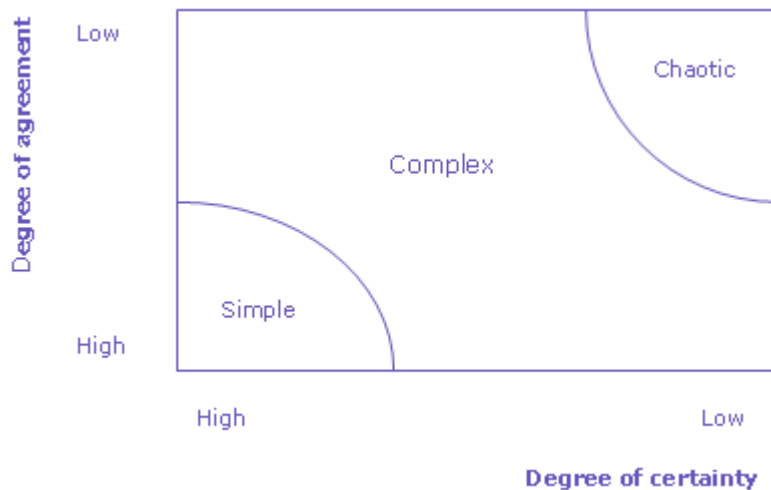
Theories of organisational change in general practice can provide a backdrop to 'inform the design of indicators, critique their construction and evaluate their use' (Rhydderch et al, 2004). Quality improvement in general practice can be described by four major theories: systems, organisational development, complexity and social worlds. These emphasise the role of people, goals, conflict and evolution as drivers for organisational change.

Systems theory exerts the most influence over the use of indicators, with accreditation or measurement against clearly defined standards or specific indicators. Systems theory fits best in situations with a high degree of certainty and agreement about the outcome from an action, where it is appropriate to think in machine terms and reduce variation by adherence to rigid protocols (See Figure 1) (Plsek & Greenhalgh, 2001; Plsek & Wilson, 2001). Systems theory is congruent with standardisation of care, protocol driven decision-making and risk minimisation, suited to stable organisations, and indicators based on concrete content and structures. It is



likened to 'looking through the rear-vision mirror.' As many aspects of health care do not fit neatly into a mechanistic systems concept, the theories of organisation development, social worlds theory and complexity theory should also be taken into account in a strategic framework for quality improvement (Rhydderch et al, 2004).

Figure 1. The certainty agreement diagram (based on Stacey in Plsek & Greenhalgh 2001)



## What are performance indicators?

A performance indicator is

- " a statistic or other unit of information which reflects, directly or indirectly, the extent to which an anticipated outcome is achieved or the quality of the processes leading to that outcome (National Health Performance Committee, 2002 p75).
- " *an observation expected to indicate a certain aspect of performance*' (Leggat et al, 1998)
- " *a measurement tool, screen or flag that is used to monitor, evaluate and improve the quality of client care, clinical support services and organisational functions that affect client outcomes* (Canadian Council on Health Services Accreditation 1996, cited in Leggat et al, 1998).

The National Health Performance Committee (2002, p8) stated that

- " *In considering the selection or development of relevant health system performance indicators it is important to keep in mind that indicators are just that: an indication of organisational achievement. They are not an exact measure and individual indicators should not be taken to provide a conclusive picture of an agency's or system's achievements. A suite of relevant indicators is usually required and then an interpretation of their results is needed to make sense of the indicators. Performance information does not exist in isolation and is not an end in itself, rather it provides a tool that allows opinions to be formed and decisions made.*

Performance indicators have three properties. They are:

- " evaluative, that is, their purpose is to assess or judge
- " oriented towards results in that they measure progress towards a defined target
- " include a reference point, for comparison to previous performance or as guidance towards another criterion (Berkowitz, 1995, cited in Leggat et al, 1998).

Performance indicators can be applied to a system, an organisation, a contract between parties, or an individual, as part of a performance measurement system. Issues to consider

## Introduction

### What are performance indicators?

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*Performance information does not exist in isolation and is not an end in itself, rather it provides a tool that allows opinions to be formed and decisions made.*



**What are performance indicators?**

*A measure good for one purpose, entity, dimension or audience might be bad for another.*

include the extent to which there is a defined population, the degree of control an entity has over the delivery of care, the logistics of tracking patients, the quality of data systems, and the number of patients available for observation (Eddy, 1998).

A measure good for one purpose, entity, dimension or audience might be bad for another. How good a measure is depends on its purpose, the entity whose quality is being measured, the dimension of quality being measured, the type of measure, and who will use it (Eddy, 1998).

Performance indicators

- " are often expressed as an index, rate or ratio
- " make comparisons possible
- " can be either quantitative or qualitative
- " are monitored at regular intervals
- " can provide information about aspects of structure, process or outcome (Borman & Wilson, 1998).

**Table 1. Definitions and examples of guideline, indicator, review criterion and standards (from Campbell et al, 2002)**

Item	Definition	Example
Guideline	Systematically developed statement to assist practitioner and patient decisions prospectively for specific clinical circumstances.	If a blood pressure reading is raised on one occasion, the patient should be followed up on two further occasions within a specified time.
Indicator	A measurable element of practice performance for which there is evidence or consensus that it can be used to assess the quality and hence change in the quality of care provided.	Numerator: Pts with BP > 160/190 mm having had BP re-measured within 3 months.  Denominator: Pts with BP > 160/190 mm Hg.
Review criterion	Systematically developed statement relating to a single act of medical care, clearly defined so it is possible to say if the element of care occurred or not retrospectively, in order to assess the appropriateness of specific health care decisions, services and outcomes.	If an individual patient's blood pressure was > 160/190 was it re-measured within 3 months?
Standard	Level of compliance with criterion or indicator. Target standard is set prospectively and stipulates a level of care that providers must strive to meet. An achieved standard is measured retrospectively and details whether a care provider met a predetermined standard.	Target: 90% of patients in a practice with a blood pressure of > 160/190 mmHg should have their BP re-measured within 3 months.



## Concepts of performance

Performance in health care has multiple dimensions which are valued differently by consumers, health care providers, health care managers, industry and policy makers. For example, health professionals tend to focus on professional standards, health outcomes and efficiency. Patients often relate quality to an understanding attitude, communication skills and clinical performance. Managers' views are influenced by data on efficiency, patients' satisfaction, accessibility of care and outcomes (Campbell et al, 2002).

Performance can be assessed at the level of an individual practitioner, a practice, an organisation, a program or a whole health system. The quality and safety movement has identified that high performance at an individual level does not necessarily mean a high performing system. Organisational quality measurement systems can be far more powerful in improving care than individually focused measurement (Berwick, James, & Coye, 2003).

### Health system level

Nine dimensions of health system performance are included in the comprehensive framework that Australia endorsed in 2001 (NHPC, 2002) (Table 2). The dimensions are: effective, appropriate, efficient, responsive, accessible, safe, continuous, capable and sustainable. The concept of equity underpins each and every dimension – is it the same for everyone? This three tier framework explicitly recognises that health status and health outcome (the first tier) are influenced by the determinants of health (second tier) and by the performance of the health system in the third tier.

### Organisational level

Organisational performance, an elusive concept, was at one time synonymous with financial performance. In the last decade a more balanced approach to organisational performance has led to the addition of other measures of operational performance. Non-financial or operational performance measures are increasingly important to the competitiveness and sustainability of a business organisation. The balanced scorecard approach incorporates measures from the perspectives of customers, internal business, and innovation and organisational learning as well as finances. It has been widely adopted as it helps managers understand many inter-relationships between these different dimensions of performance. The financial measures tell the results of actions already undertaken, and operational measures drive future financial performance (Kaplan & Norton, 1998).

### *Concepts of performance*

*High performance at an individual level does not necessarily mean a high performing system.*

*The balanced scorecard approach incorporates measures from the perspectives of customers, internal business, and innovation and organisational learning as well as finances*



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There is an old fable about six blind men who encountered an elephant.

"The elephant is a pillar", said the man who touched the leg, "it is like a rope", said the man who touched the tail, "it is like a thick branch of a tree", said the third man who touched the trunk, and so on.

Their interpretations are based on the particular part of the elephant they happen to touch.

Speculating on the whole from too few facts can lead to very large errors in judgment.



*Concepts of performance*

Table 2. National Health Performance Framework

Health status and outcomes (Tier 1) How healthy are Australians? Is it the same for everyone? Where is the most opportunity for improvement?				
Health conditions	Human function	Life expectancy and wellbeing	Deaths	
Prevalence of disease, disorder, injury or trauma or other health-related states	Alterations to body, structure or function (impairment), activities (activity limitation) and participation (restrictions in participation).	Broad measures of physical, mental, and social wellbeing of individuals and other derived indicators such as Disability Adjusted Life Expectancy (DALE).	Age and/or condition specific mortality rates.	
Determinants of health (Tier 2) Are the factors that determine good health changing for the better? Is it the same for everyone? Where and for whom are these factors changing?				
Environmental factors	Socioeconomic factors	Community capacity	Health behaviours	Person-related factors
Physical, chemical and biological factors such as air, water, food and soil quality resulting from chemical pollution and waste disposal.	Socioeconomic factors such as education, employment, per capita expenditure on health, and average weekly earnings.	Characteristics of communities and families such as population density, age distribution, health literacy, housing, community support services and transport.	Attitudes, beliefs knowledge and behaviours e.g. patterns of eating, physical activity, excess alcohol consumption and smoking.	Genetic-related susceptibility to disease and other factors such as blood pressure, cholesterol levels and body weight.
Health system performance (Tier 3) How well is the health system performing in delivering quality health actions to improve the health of all Australians? Is it the same for everyone?				
Effective		Appropriate		Efficient
Care, intervention or action achieves desired outcome.		Care/intervention/action provided is relevant to the client's needs and based on established standards.		Achieving desired results with most cost effective use of resources.
Responsive		Accessible		Safe
Service provides respect for persons and is client orientated. It includes respect for dignity, confidentiality, participation in choices, promptness, quality of amenities, access to social support networks, and choice of provider.		Ability of people to obtain health care at the right place and right time irrespective of income, physical location and cultural background.		The avoidance or reduction to acceptable limits of actual or potential harm from health care management or the environment in which health care is delivered.
Continuous		Capable		Sustainable
Ability to provide uninterrupted, coordinated care or service across programs, practitioners, organisations and levels over time.		An individual's or service's capacity to provide a health service based on skills and knowledge.		System's or organisation's capacity to provide infrastructure such as workforce, facilities and equipment, and be innovative and respond to emerging needs (research, monitoring).

Source: National Health Performance Committee (2001), National Health Performance Framework Report.

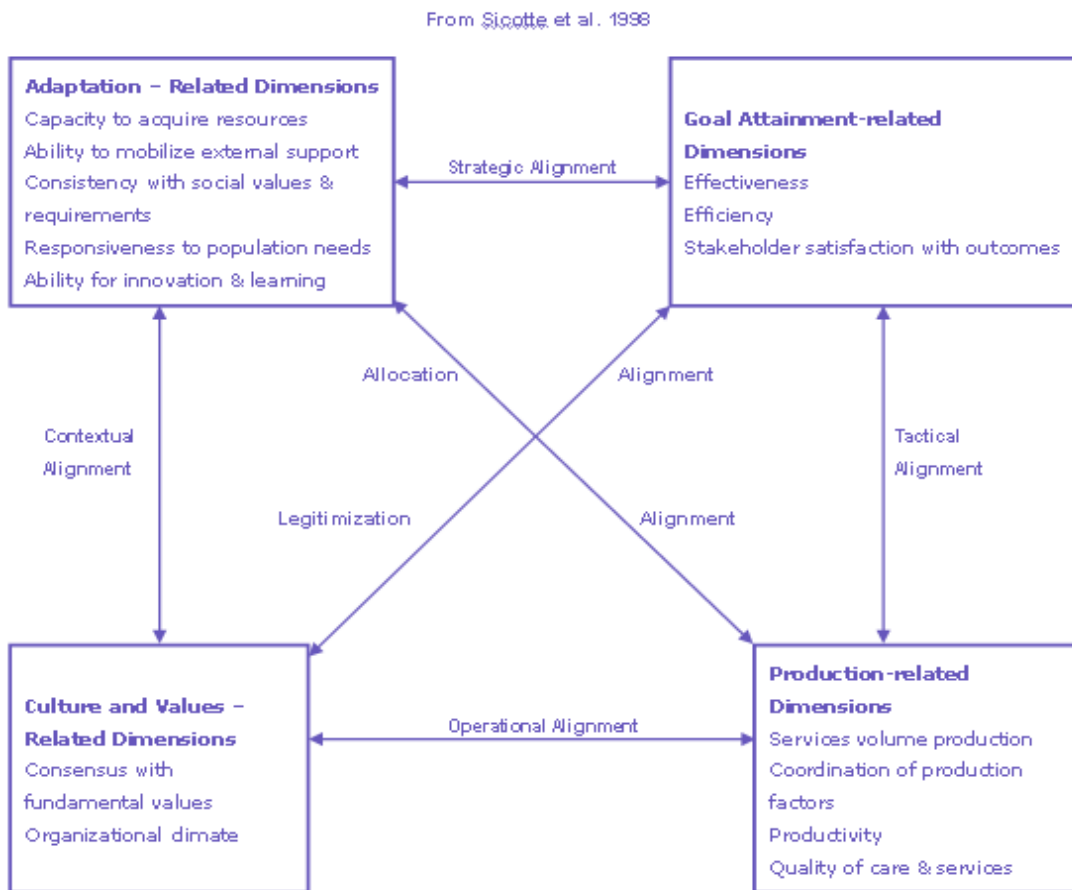


*Concepts of performance*

*Organisational survival depends on good performance in four functions: goal attainment, environmental adaptation, production and culture, and values maintenance.*

To assess the performance of health care organisations requires a conceptual framework based on a comprehensive view of how such organisations function. Sicotte et al (1998) proposed that organisational survival depends on good performance in four functions: goal attainment, environmental adaptation, production and culture, and values maintenance. Essential interchanges take place between each one of these functions and the others. Each function can be broken down into a number of dimensions of performance. Indicators of performance in each of these dimensions could be selected as part of a performance measurement system.

Figure 2. A conceptual framework of health care organisations performance



Leggatt et al (1998) provide a thorough analysis of organisational performance assessment in health care. They identify the need for a comprehensive organisational performance assessment model, which is an integrated framework used to establish a set of performance indicators relevant to the assessment of performance of an identified organisation. The model should be dynamic and offer timely feedback to the organisation so that it can change course to improve performance or remove unnecessary variation. With consistent collection over time, data on a variety of performance indicators can provide a long-term perspective on organisational performance.



## Concepts of performance

*Limit the number of indicators in the model, focussing on what is truly important to improve performance or achieve the strategic directions.*

These authors identified six principles in design and development of organisational performance assessment models: -

- 1 link the model with organisational strategy so that assessment can provide feedback on attainment of strategic goals
- 2 ensure the model provides diversified perspectives on organisational performance
- 3 limit the number of indicators in the model, focusing on what is truly important to improve performance or achieve the strategic directions
- 4 ensure the quality of the data and indicators
- 5 ensure stakeholder input into the development of the model
- 6 deploy the model throughout the organisation to link individual performance with that of the organisation

### Community health organisations, Australia

The Community Health Accreditation and Standards Program (CHASP) is conducted by the Quality Improvement Council (QIC) at La Trobe University. QIC is a national, non-profit organisation which aims to promote and assist health and community services through a continuous quality improvement framework (QIC, 2001). The essential requirements for QIC accreditation come under the areas of:

- " human resource management systems
- " occupational health and safety systems
- " services and programs systems
- " finance and administration systems
- " planning and review procedures.

Accreditation is conducted by a licensed provider of accreditation services, and involves an initial review, the development of and progress towards a quality work plan, and for subsequent reviews, the development of a new quality work plan.

### General Practice level

Accreditation, continuous quality improvement, the maintenance of skills and competencies and continuing education are all important in primary health care today. Providers are becoming more accountable both to funders and to those to whom they provide the service. For example, the UK General Medical Council (GMC) states that *you (doctors) must never discriminate unfairly against your patients or colleagues. And you must be prepared to justify your actions to your patients or colleagues* (GMC, 2001).

Although training programs for GPs are mainly concerned with the quality of individual practitioners, quality in general practice is about more than the performance of each GP. Quality of care in general practice is best described in terms of structure, process and outcomes:

- " structure relates to material resources, facilities, equipment and the range of services
- " process relates to what is done in giving and receiving care
- " outcomes relate to the effects of care on the health status of patients and the community (Donabedian, 1988, cited in RACGP, 2000).

The Royal Australian College of General Practitioners (RACGP) produced a set of standards which are used for the accreditation of general practices in Australia (RACGP, 2000). These are currently being revised. The RACGP states that setting standards

*need not, and should not, imply that all practices have to be the same. One of the great strengths of General Practice is its diversity. The key features of General Practice must be guaranteed. These are the provision of 'initial, continuing, comprehensive and coordinated medical care for all individuals, families and communities and which integrates biomedical, psychological, social and*



*environmental understandings of health.' A set of standards for general practices must address each of these key features of general practice (RACGP, 2000).*

The majority of the RACGP standards are concerned with structure and process. These are reviewed and revised every three years, are assessed in practices by peers, and include interviews, observation, and reviews of documents such as medical records, patient feedback, policy and procedure manuals and Health Insurance Commission (HIC) data. There are 15 standards, in five areas:

- 1 Practice standards
- 2 Rights and needs of patients
- 3 Quality assurance and education
- 4 Practice administration
- 5 Physical factors.

Each standard has criteria, or key components of the standard. Each criterion has a number of indicators and key indicators to assist assessment. These very comprehensive standards illustrate the tension between completeness and feasibility of measurement and analysis.

In the UK the General Medical Council (GMC) is responsible for the registration and professional standards of doctors working in Britain (GMC, 2001). All doctors must be registered in order to practise, and the GMC has strong legal powers to maintain standards. From 2005, doctors will have to be registered and hold a licence to practise. Licensed doctors will be required to be revalidated by the GMC every five years to continue to be licensed. The standards expected of doctors are set out in *Good Medical Practice* on the GMC website at <http://www.gmc-uk.org/standards/good.htm>. Overall, essential elements of good medical practice are professional competence, good relationships with patients and colleagues, and observance of professional ethical obligations. Illustrating the multiple dimensions of performance, the standards are under the headings of:

- " good clinical care
- " maintaining good medical practice
- " teaching and training, appraising and assessing
- " relationships with patients
- " dealing with problems in professional practice
- " working with colleagues
- " probity
- " health.

## Performance and quality

While systems and processes influence the likelihood of individuals receiving the care they need they do not guarantee quality care (Campbell et al, 2000).

Campbell et al (2002) differentiate between quality and performance indicators. These authors state that quality indicators imply a decision about the quality of care, whereas performance indicators are 'statistical devices for monitoring care provided to populations without any necessary inference about quality'. Indicators point out where there are possible problems, seen as statistical outliers, which can then be addressed. Indicators can also measure the frequency of an event, and in this instance are activity indicators (Campbell et al, 2002). For example, the prescribing rate for a particular medication is an indicator of prescribing performance that gives no information about the appropriateness of that rate for that population.

### *Concepts of performance*

*Essential elements of good medical practice are professional competence, good relationships with patients and colleagues, and observance of professional ethical obligations.*



## Use of performance indicators

*The purpose of performance indicators is to focus attention towards issues of interest.*

*Performance indicators are being used in New Zealand Independent Practitioner Associations as key components of quality plans.*

## Use of performance indicators

At one level the purpose of performance indicators is to focus attention towards issues of interest, and highlight areas in need of improvement. However, performance indicators cannot be expected to stand alone as information sources. Additional information is required to understand the meaning of the performance indicators and to use them effectively to improve performance. It is one thing to know that something is good or bad, and quite another to know why this is so. (Culver, 1983, cited in Leggatt et al, 1998). Those whose work is being monitored commonly fear that more emphasis will be given to laying blame than to learning and correcting the causes of bad results.

At another level, performance indicators can be used to describe the effect of some intervention, to measure an improvement, or to compare performance of similar entities. At an organisational level, measures can be used to improve organisational effectiveness, ensure accountability, monitor management and foster collaboration (Leggatt et al, 1998).

### PERFORMANCE INDICATORS IN QUALITY IMPROVEMENT IN NEW ZEALAND

At the Independent Practitioner Association Council conference in Rotorua in 2004, delegates presented the way performance indicators are being used in New Zealand Independent Practitioner Associations (IPAs) as key components of quality plans. A suite of targets was negotiated between the IPA and member practices each year, each target worth a varying number of points according to their priority, to a total of 100 points. Practices were paid 10% of total capitation payment depending on their achievement score for the quality targets. An example of a negotiated target was to reduce the proportion of the Maōri population with poor glycaemic control (HbA1c levels above 8%) from 45% to 40%. In another locality of the same IPA the target was to reduce the proportion from 39% to 35%. The IPA actively assists practices to achieve their targets, through regular monitoring and feedback of information to practices, as the aim is to improve quality. The project was successful in reducing the proportion of Maōri with poor glycaemic control even further than the target, and also spread to the non-Maōri population as GPs grew in capacity to provide appropriate care (McArley, 2004).

### STAFF REACTIONS TO DATA FROM PERFORMANCE INDICATORS

In the UK, staff in primary care teams were presented with data on a set of performance indicators relating to their practices. Despite their reservations about data quality and the technical specification of the indicators, most were prompted to reflect on some aspect of their performance. However, lack of time and resources to act on the indicators meant staff placed little importance on their potential to identify and address inequalities in services between practices (Wilkinson et al, 2000).



## Selecting performance indicators

Selecting what to measure is very important, as the choice can lead to considerable intended and unintended consequences.

Performance indicators must:

- " be worth measuring
- " be measurable for diverse populations
- " be understood by people who need to act
- " galvanise action
- " be relevant to policy and practice
- " reflect results of actions when measured over time (attributable)
- " be feasible to collect and report
- " comply with national processes of data definition (NHPC, 2002).

Sets of performance indicators should:

- " cover the spectrum of the health issue (balanced score card)
- " reflect a balance of indicators for all appropriate parts of the framework
- " identify and respond to new and emerging themes
- " be capable of leading change
- " provide feedback on where the system is working well as well as areas for improvement (NHPC, 2002).

Six minimal criteria were listed for selecting performance indicators for primary care groups (PCGs) in the UK (McColl et al, 1998). PCGs are accountable to health authorities for providing and commissioning health care for about 100,000 people to meet agreed targets for improving health, health services and value for money. Each performance indicator was to be:

- " attributable to health care
- " sensitive to change
- " based on reliable and valid information
- " precisely defined
- " reflect important clinical areas and
- " include a variety of dimensions of health care (McColl et al, 1999).

The evidence based performance indicators based on these criteria included:

- " aspirin use by patients at high risk of coronary or ischaemic cerebrovascular events
- " control of hypertension
- " advice on stopping smoking or nicotine replacement therapy
- " use of angiotensin converting enzyme inhibitors in those with heart failure
- " lipid lowering drugs for patients with established cardiovascular disease
- " warfarin for stroke prophylaxis in non-valvular atrial fibrillation and
- " influenza vaccination in those aged over 65 years (McColl et al, 1999).

### Selecting performance indicators

*Selecting what to measure is very important, as the choice can lead to considerable intended and unintended consequences.*



### Selecting performance indicators

*Given that the selected measures can set priorities for quality improvement, it is very important to consider evidence of benefit in excess of implementation cost.*

### Single indicators of organisational performance are misleading

*Concentration on one aspect of care may produce perverse incentives to ignore other aspects of performance.*

### Key performance indicators

*KPIs should reflect what is crucial to the success of an organisation.*

The authors noted that such indicators were ALL clinically focused, and did not represent aspects of primary care groups such as consultation skills, the advocacy role of the primary care team members, access to primary care, managing a business, and coordination with local services.

Reflecting local consensus opinion is another criterion that could be essential if performance indicators are to be embraced by clinicians (Scanlon & Tarrant, 1999), though not at the expense of national comparisons. These authors believe it is important that local primary health care providers should be involved in the selection of performance indicators, as 'ownership' is essential. Clinicians can feel that indicators are imposed by academics and managers remote from clinical work (Scanlon & Tarrant, 1999).

Developing and maintaining a measurement infrastructure is a costly process. Given that the selected measures can set priorities for quality improvement, it is very important to consider evidence of benefit in excess of implementation cost. For the Health plan Employer Data and Information Set (HEDIS), the National Council on Quality Assurance (NCQA) in the USA selected mandatory measures that had the greatest potential health benefit for the measurement cost. These included rates of smoking cessation counselling, use of beta-blockers after myocardial infarction, and influenza vaccine among persons aged 65 and older. NCQA excluded a measure used previously (routine cholesterol screening) in favour of the 'better value' cholesterol control in persons with a history of a cardiac event (Sennett, 1998).

## Single indicators of organisational performance are misleading

Although managers are usually dissatisfied with single simple 'key' performance indicators, there is often strong organisational pressure to develop them. This derives from the attempt to manage complex non-linear multiple goal seeking socio-political services as if they were simple, linear, stable single goal seeking industrial production processes (Williams, no date).

No single indicator is sufficient to assess organisational or system performance. Any single performance indicator may be a misleading guide to the overall performance of an organisation as it covers only one dimension of that performance. Concentration on one aspect of care may produce perverse incentives to ignore other aspects of performance (Giuffrida et al, 1999), and may direct activity away from important (non evaluated) areas.

Importantly, a proper balance must be struck between the indicators of performance used to assess efficiency and the indicators used to assess effectiveness, and whether they concern resource management or quality and safety management (Harris, 2002).

## Key performance indicators

Key performance indicators (KPIs) are intended to measure the performance of an organisation in key areas of operation. They relate to the strategic and operational short and long term goals of an organisation. KPIs should reflect what is crucial to the success of an organisation. Managers use KPIs to assist organisations to make the best use of available resources (Zhao, 2002).

Effective KPIs should be able to drive the desired values and behaviours of participating organisations to achieve their common goals. A balanced suite of KPIs should include financial and operational measures, and focus on both process and results. As mutuality is the key to success of partnerships, KPIs for partnerships such as Cooperative Research Centres should highlight mutual understanding through communication, mutual trust, mutual benefits, mutual evaluation and sharing (Zhao, 2002).

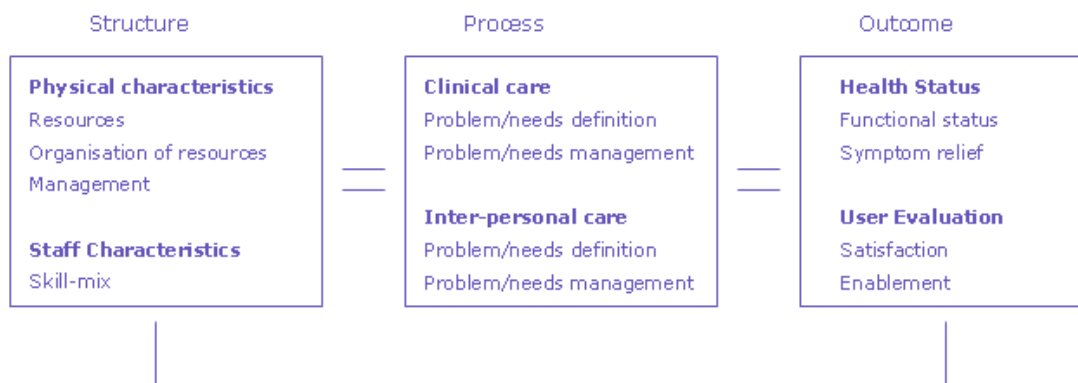


# Types of performance indicator: structure, process or outcome?

Performance indicators can apply to **structure** (eg. resources), **process** (eg. worker performance, workload) or **outcomes** (results) (See Figure 3). Donabedian (1966, cited in Leggatt et al, 1998) suggested that the comprehensive evaluation of performance required a combination of structural, process and outcome indicator.

- “ Structural indicators focus on the organisation’s capacity for effective work.
- “ Process indicators focus on effort or conformity to established practice norms and the processes used in the provision of care (without assessing the effectiveness of these activities).
- “ Outcome indicators focus on the changes produced and the results achieved (See Table 3).

Figure 3. A systems based model for assessing care for individual users (Campbell et al, 2000)



While systems and processes influence the likelihood of individuals receiving the care they need, they do not guarantee quality care (Campbell et al, 2000).

Table 3. Examples of process and outcome indicators

Process indicators	Outcome indicators
Proportion of patients with hypertension being treated	Proportion of patients with hypertension whose blood pressures are controlled to below 140/90 mm Hg (biological measure) Proportion of patients with hypertension who have heart attacks
Number of needles and syringes issued and proportion returned to distribution and disposal programs	Decline in rate of new infections among IV drug users

At project level it is possible and appropriate to collect process information, and sometimes to collect biological information. Process indicators have the advantage of being more sensitive to differences in quality of care, being easy to interpret, and direct measures of quality. For example, the more people without contra-indications who receive a proven therapy, the better.

However the value of a process indicator depends on the strength of evidence linking it with ultimate outcomes. If there is no evidence that a indicator of process is linked to outcome, there is little justification for using a process indicator, and outcome indicator may be most appropriate (Arah et al 2003, Mant 2001). Process or administrative indicators can be used as outcome indicators only if there is a direct and accepted causal chain that links input and

## Types of performance measures

*The value of a process indicator depends on the strength of evidence linking it with ultimate outcomes. If there is no evidence that a measure of process is linked to outcome, there is little justification for using a process indicator.*



**Types of performance measures**

*If the expected outcome (such as complication of an intervention) is relatively rare, then outcome indicators will have limited power to detect real differences in quality.*

activities to program results. For example, there is a direct causal link between the process of vaccination and the outcome: immunisation and elimination of disease. The number of completed vaccinations can be used as an indicator of program results.

Outcomes may be related to many complex interrelated factors, and typically result over a period of time. Despite the difficulty of measurement, outcome indicators are important in their own right, and will reflect all aspects of the processes of care, whether measurable or not (such as technical skill). In addition, some outcome data (such as hospital admissions) may be more available in routine information systems than process data. Data collections for information about outcomes may require state or federal level indicators, and resources for a data collection program if information is not available from routinely collected information.

If quality of care is likely to be a substantial determinant of outcome, then outcome indicators (such as mortality following surgery) are likely to be of more value to indicate quality than process indicators. But if the expected outcome (such as complication of an intervention) is relatively rare, then outcome indicators will have limited power to detect real differences in quality (Mant, 2001).

Differences in outcome between health care providers may be due to casemix, the way data were collected, chance or the quality of care. These alternative explanations of variation limit the value of outcome indicators as the sole performance indicators of health care (Mant, 2001).

**Table 4. Examples of performance indicators**

Performance Indicator	Country	Target level in health system	Type of measure	Relation to system function or objective
Percent of children immunised against MMR and diphtheria by age 2 years	UK NHS	National regional local	Process	Disease prevention and health promotion among the young
Emergency admission rate for asthma and diabetes per 100,000 population (age and sex standardised)	UK NHS	National regional local	Outcome	Primary care management of chronic conditions (but see p16)
Life expectancy at age 65 years	OECD	International national	Outcome	Health status improvement
Percent of women aged 50-69 years who are screened for breast cancer	Australia	National regional local	Process, outcome	Disease prevention and control
Number of records with NHI (national health identifier) recorded Denominator: total number of enrolled persons	NZ	Primary Healthcare Organisation	Administrative (process)	Information management
Staff confirm that patients are able to obtain a consultation with a doctor in the practice within two working days (staff interview) RACGP indicator for criterion 1.1.2	Australia	General Practice	Process	Access
Time and nature of contribution by partners	Australia	Cooperative Research Centres	Process	Commitment (inter-organisational partnership)
Frequency of meeting one's expectation about another party's behaviour and/or having confidence in another party	Australia	Cooperative Research Centres	Process	Trust (inter-organisational partnership)



## Examples of indicators

In New Zealand, the *Primary Health Organisation Status Report, April 2004* (MOH, 2004) lists nine clinical performance indicators and five administrative indicators, together with relevant data sources. This suite of indicators is limited in number, and focuses on structural and process measures relating to selected clinical conditions and screening activities, without attempting to include other dimensions of Primary Health Organisation's (PHOs) performance. Each of the 68 PHOs is required to report on these indicators for all people registered with the PHO, by ethnicity, deprivation quintile, gender and age group. Measurement of these indicators depends on effective high quality practice based information systems, together with a unique identifier (the national health identifier (NHI)), and registration of people with a PHO to provide a denominator. In Australia none of these conditions are met, which seriously limits the possibilities of adopting similar indicator sets at present.

The clinical indicators are:

- " childhood immunisations
- " smoking status
- " influenza immunisations for 65+
- " disease coding
  - " diabetes
  - " asthma
  - " ischaemic heart disease
  - " mental health
- " CVD risk recorded
- " cervical smears recorded
- " diabetes patients with micro-albuminuria and on ACE inhibitor
- " breast screening
- " statins for primary and secondary prevention.

The administrative and other indicators are:

- " NHI information
- " ethnicity information
- " access – high need groups
- " access – all enrolees
- " ambulatory sensitive hospitalisations.

### *Examples of indicators*

*Measurement of these indicators depends on effective high quality practice based information systems, together with a unique identifier (the national health identifier (NHI)), and registration of people with a PHO to provide a denominator.*



## Performance indicators and accountability

*If PIs are being used to ensure accountability they should measure aspects of performance for which the organisation can properly be held to account.*

*Admission rates for asthma, diabetes and epilepsy are substantially influenced by factors outside the control of primary care providers.*

## Other problems in using performance indicators

*A performance management framework should be introduced if there is reasonable confidence that it will result in the desired effect at an acceptable cost.*

# Performance indicators and accountability

Collection and analysis of consumer focused information, internal financial and business process performance indicators are needed to meet a range of accountability requirements.

- " Political accountability, the response of the organisation to the externally imposed mandates, can be assessed through regular reporting to funding agencies.
- " Commercial, clinical and patient accountability are concerned with the intrinsic value of the services provided to the clients or patients, and require information on the inputs to the care processes and the outcomes achieved (Leggat et al, 1998)
- " Community accountability reflects the interests of the population served by the organisation.

Indicators can describe performance from two perspectives: (Leggat et al, 1998)

- " dimensions of performance over which the organisation has a direct impact, such as provision of free accessible immunisation services.
- " performance which may be affected by factors beyond the control of the health care system – eg. immunisation rates may be influenced by consumer choice such as the personal decisions of parents and general social context; ambulatory care sensitive admissions are affected by supply and disadvantage as well as performance of primary health care organisations.

If performance indicators are being used to ensure accountability they should measure aspects of performance for which the organisation can properly be held to account. A performance indicator designed to improve a specific outcome should relate only to those factors that are under the control of the staff to whom it is being applied (Giuffrida, Gravelle, & Roland, 1999).

There is a distinction between performance indicators and health outcomes (Giuffrida, Gravelle & Roland, 1999). Adverse health events, such as the admission of asthma patients to hospitals, are a measure of the burden of a health problem in a population, or a health outcome. Such admission rates were suggested as a performance indicator for primary care in the UK (Arah et al 2003). However Giuffrida, Gravelle & Roland (1999) found that admission rates for asthma, diabetes and epilepsy are substantially influenced by factors outside the control of primary care providers, such as characteristics of the population and the supply of secondary care beds. The authors conclude that admission rates should not be used as a measure of the quality of primary care, as proposed by the UK NHS executive, unless these factors are controlled for statistically.

# Other problems in using performance indicators

Sheldon (1998) suggests that a performance management framework can be thought of as a health technology with effects on people, organisations and system behaviour. Like all interventions applied to complex systems, the effects are often unexpected and difficult to control, and may even produce net adverse outcomes. Like other health technologies, a performance management framework should be introduced if there is reasonable confidence that it will result in the desired effect at an acceptable cost. Sheldon (1998) found little conclusive evidence about the impact of organisational performance assessment, and recommended that the use of performance indicators should be subjected to some form of health technology assessment. Introducing a new performance management structure may support abstract managerial values at the expense of other cultures of performance evaluation both formal and informal, such as mechanisms built on trust and professionalism that are often organised outside the influence of formal management (Sheldon 1998).



Many authors have identified issues in using performance indicators to manage a health system (Goddard, Mannion, & Smith, 2000). The use and dissemination of performance indicators can have both beneficial and detrimental effects on behaviour. Unintended consequences from the use of performance indicators can be classified under the headings of:

- “ Tunnel vision or goal displacement – focusing on areas to be measured (such as waiting times targets) to the exclusion of other important areas, some of which may not be measurable. Money may be used to ensure targets are met, at considerable opportunity cost. One example of this is the employment of ‘hello nurses’ to greet patients in accident and emergency departments, to ensure the five-minute waiting time target of the NHS Patient Charter is met (Goddard, Mannion & Smith, 2000).
- “ Sub-optimisation – pursuing narrow local objectives, at the expense of broad, organisation-wide objectives. This can happen when personal incentives are not aligned with organisational objectives, for example, if clinical objectives not aligned with financial objectives of the organisation. Sub-optimisation can apply at the health system level. Plsek & Wilson (2001) use the example of setting a single whole system target of patients receiving thrombolytic drugs within 60 minutes of onset of myocardial infarction, instead of individual targets for acute care, primary care and ambulance services, which may be met but the patient may still not be getting the full benefit intended.
- “ Myopia – concentrating on short-term issues, to the exclusion of long-term issues that may not be measurable for several years. A manager on a short-term contract may not be concerned with outcomes that will not become apparent until after the term of the contract.
- “ Misrepresentation – manipulating data to present best possible picture. Financial fraud is an example of this, as is omitting to report unfavourable results.
- “ Gaming – changing behaviour to obtain advantage. Goddard, Mannion & Smith (2000) noted that some NHS chief executives suggested it was relatively easy to ‘extend’ their waiting lists to provide a good argument for a share of extra funding. Another problem relates to any system where the current performance target is based on past performance. Organisations may purposefully underachieve in one year to be able to show steady improvement over time (Goddard, Mannion & Smith, 2000). If annual 2% increases in an efficiency index are expected, organisations starting at a high level may look worse, so managers may underestimate performance to show better performance in the future.

#### Other issues:

- “ If measures are compiled from poor data with many errors and distortions, providers have no confidence in the resulting figures.
- “ As organisations exist in rapidly changing environments, performance measurement models need to be continually reviewed and revised (Leggatt et al, 1998).
- “ Indicators of access measured by rates are difficult to interpret as their effectiveness depends on who receives the intervention. For example, if high rates of surgical insertion of a grommet in children with glue ear are seen as bad practice, some children in need may be denied a cost effective operation. One proposed NHS quality indicator is based on the number of district nurse contacts. A region may decide to target those at greatest need and spend longer with fewer clients, which might be more effective but would look as if the district was performing worse than another area in which every person over 75 was visited regularly for 30 minutes independent of need (Sheldon, 1998).

### *Other problems in using performance indicators*

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*The use and dissemination of performance indicators can have both beneficial and detrimental effects on behaviour.*

*If measures are compiled from poor data with many errors and distortions, providers have no confidence in the resulting figures.*



*Addressing the problems of performance measurement*

*Rigorous piloting and research should be carried out before routine use and full blown implementation of a performance measurement system.*

## Addressing the problems of performance measurement

Sheldon (1998) identified several lessons about performance measurement from international experience:

- " The system for measuring and improving performance should be integrated or coordinated with other parts of the system that are trying to promote quality. Indicators should be developed alongside evidence based clinical practice guidelines or service improvement frameworks.
- " Indicators are more likely to be measurable, interpretable and useful for action at a local than national level, because the underlying processes are more visible and local knowledge can be used. They should be implemented in ways that create trust, for example where participation is voluntary, internal and non-judgmental.
- " Implementation requires sufficient capacity and skills in analysis and communication so that the results of the performance measurement lead to action to improve performance.
- " External quality assessment is expensive, so programs should be designed to maximise cost effectiveness in terms of selection of indicators.
- " Rigorous piloting and research should be carried out before routine use and full blown implementation of a performance measurement system. Sheldon recommended high quality experimental evaluations of quality management initiatives (Sheldon 1998).

A number of strategies can be employed to minimise unintended consequences (Goddard Mannion & Smith, 2000). The first four of these are applicable to a range of situations and address a large number of problems. These are:

- 1 staff involvement in developing and implementing performance measurement
- 2 not using performance indicators rigidly or as the only measure of performance
- 3 trying to measure all objectives, even the highly elusive ones
- 4 regularly reviewing a performance measurement system.

The next three strategies are more applicable when objectives are less well defined and outputs more difficult to measure:

- 5 measuring client satisfaction
- 6 obtaining assistance from experts to interpret the performance indicator scheme
- 7 ensuring careful audit of the data.

The last three strategies address myopia, misrepresentation and gaming. These are:

- 8 fostering long term career options for staff
- 9 minimising the number of indicators
- 10 developing performance indicators that are not related to previous activity.

Arah et al (2003) identified that the government documents his team explored 'detailed so much policy reform as to risk becoming a perpetual-motion machine with a perpetual cycle of high hopes and inflated rhetoric'.



## Recommended Reading

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- Arah O, Klazinga, N., Delnoij, D., Ten Asbroek, A., & Custers, T. (2003). Conceptual frameworks for health systems performance: a quest for effectiveness, quality and improvement. *International Journal for Quality in Health Care.*, 15 (5), 377-398.
- Eddy, D. M. (1998). Performance measurement: Problems and solutions. *Health Affairs*, 17(4), 7.
- Goddard, M., Mannion, R., & Smith, P. (2000). The performance framework: Taking account of economic behaviour. In P. Smith (Ed.), *Reforming markets in health care: an economic perspective*. (pp. 117-137). Buckingham: Open University Press.
- Mant, J. (2001). Process versus outcome indicators in the assessment of quality of health care. *International Journal for Quality in Health Care.*, 13(6), 475-480.
- McColl, A., Roderick, P., Gabbay, J., Smith, H., & Moore, M. (1998). Performance indicators for primary care groups: an evidence based approach. *BMJ*, 317, 1354-1360.
- Sheldon T (1998) Promoting health care quality: what role performance indicators? *Quality in Health Care* 7 (Suppl) S45-S50.
- Smith P. (2002). Performance management in British health care: will it deliver? *Health Affairs*, 21(3), 103.
- Rhydderch M, Elwyn G, Marshall M, Grol R. (2004) Organisational change theory and the use of indicators in general practice. *Quality and Safety in Health Care* 13, 213-217.

## References

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- Arah, O., Klazinga, N., Delnoij, D., Ten Asbroek, A., & Custers, T. (2003). Conceptual frameworks for health systems performance: a quest for effectiveness, quality and improvement. *International Journal for Quality in Health Care.*, 15 (5), 377-398.
- Berwick, D., James, B., & Coye, M. (2003). Connections between quality measurement and improvement. *Medical Care*, 41(1 Supplement), I30-I38.
- Borman, B., & Wilson, N. (1998). *Outcomes, indicators, and community health status*. Retrieved 5 July 2004, 2004, from [http://www.moh.govt.nz/moh.nsf/Files/outcomesindicatorsCommunityHealthStatus/\\$file/outcomesindicatorsCommunityHealthStatus.pdf](http://www.moh.govt.nz/moh.nsf/Files/outcomesindicatorsCommunityHealthStatus/$file/outcomesindicatorsCommunityHealthStatus.pdf)
- Campbell, S., Braspenning, J., Hutchinson, A., & Marshall, M. (2002). Research methods used in developing and applying quality indicators in primary care. *Quality and Safety in Health Care*, 11(4), 358-364.
- Campbell, S., Roland, M., & Buetow, S. (2000). Defining quality of care. *Social Science & Medicine*, 51, 1611-1625.
- Eddy, D. M. (1998). Performance measurement: Problems and solutions. *Health Affairs*, 17(4), 7.
- Exworthy, M., Wilkinson, E., McColl, A., Moore, M., Roderick, P., Smith, H., et al. (2003). The role of performance indicators in changing the autonomy of the general practice profession in the UK. *Social Science & Medicine*, 56, 1493-1504.
- Giuffrida, A., Gravelle, H., & Roland, M. (1999). Measuring quality of care with routine data: avoiding confusion between performance indicators and health outcomes. *BMJ*, 319(7202), 94-98.
- GMC. (2001). *Protecting patients, guiding doctors*. Retrieved 5 July 2004, 2004, from <http://www.gmc-uk.org/index.htm>
- Goddard, M., Mannion, R., & Smith, P. (2000). The performance framework: Taking account of economic behaviour. In P. Smith (Ed.), *Reforming markets in health care: an economic perspective*. (pp. 117-137). Buckingham: Open University Press.
- Harris, M. (2002). *Managing Health Services: concepts and practice*. Sydney: MacLennan & Petty Pty Ltd.
- Jolley, G. (2003). *If only numbers count: performance indicators for community health*. Adelaide: South Australian Community Health Research Centre.
- Kaplan, R., & Norton, D. (1998). The Balanced Scorecard - Measures that drive Performance. In P. Drucker (Ed.), *Harvard Business Review on Measuring Corporate Performance*. (pp. 123-146).



- Leggat, S., Narine, L., Lemieux-Charles, L., Barnsley, J., Baker, G., Sicotte, C., et al. (1998). A review of organizational performance assessment in health care. *Health Services Management Research*, 11, 3-23.
- Mant, J. (2001). Process versus outcome indicators in the assessment of quality of health care. *International Journal for Quality in Health Care*, 13(6), 475-480.
- McArley, D. (2004). *Diabetes: improving outcomes in the Western Bay of Plenty and Taranaki*. Paper presented at the IPAC Conference 2004: Advancing the primary care strategy, Rotorua.
- McColl, A., Roderick, P., Gabbay, J., Smith, H., & Moore, M. (1998). Performance indicators for primary care groups: an evidence based approach. *BMJ*, 317, 1354-1360.
- McColl, A., Roderick, P., Gabbay, J., Smith, H., & Moore, M. (1999). Performance indicators for primary care groups. Authors' reply. *BMJ*, 318, 804-805.
- MOH. (2004). *PHO Clinical Performance Indicators Status Report, April 2004*. Retrieved 5 July 2004, 2004, from [http://www.moh.govt.nz/moh.nsf/0/5C76857F2D013D70CC256DDD007F1DE9/\\$File/PHOCPiStatusreportApr04.doc](http://www.moh.govt.nz/moh.nsf/0/5C76857F2D013D70CC256DDD007F1DE9/$File/PHOCPiStatusreportApr04.doc)
- NHPC. (2002). *National Report on Health Sector Performance Indicators 2001*. Brisbane: Queensland Health.
- Plsek, P., & Greenhalgh, T. (2001). The challenge of complexity in health care. *BMJ*, 323, 625- 628.
- Plsek, P., & Wilson, T. (2001). Complexity, leadership and management in healthcare organisations. *BMJ*, 323, 747-749.
- QIC. (2001). *Quality Improvement Council*. Retrieved 5 July 2004, from <http://www.latrobe.edu.au/qic/index.htm>
- RACGP. (2000). *Standards for General Practices* (2 ed.). Melbourne: RACGP.
- Rhydderch, M., Elwyn, G., Marshall, M., & Grol, R. (2004). Organisational change theory and the use of indicators in general practice. *Quality and Safety in Health Care*, 13, 213-217.
- Scanlon, T., & Tarrant, P. (1999). Performance indicators for primary care groups. Local consensus opinion must be reflected. *BMJ*, 318, 803-804.
- Sennett, C. (1998). Moving ahead, measure by measure. *Health Affairs*, 17(4), 36.
- Sheldon, T. (1998). Promoting health care quality: what role performance indicators? *Quality in Health Care*, 7 (Suppl), S45-S50.
- Sicotte, C., Champagne, F., Contandriopoulos, A., Barnsley, J., Beland, F., Leggat, S., et al. (1998). A conceptual framework for the analysis of health care organizations' performance. *Health Services Management Research*, 11, 24-48.
- Smith, P. (2002). Performance management in British health care: will it deliver? *Health Affairs*, 21(3), 103.
- Wilkinson, E., McColl, A., Exworthy, M., Roderick, P., Smith, H., Moore, M., et al. (2000). Reactions to the use of evidence-based performance indicators in primary care: a qualitative study. *Quality in Health Care*, 9, 166-174.
- Williams, B. (no date). *Performance measurement and the search for meaning*. Retrieved 23 April, 2004, from <http://users.actrix.co.nz/bobwill/pi.doc>
- Zhao, F. (2002). *Performance measures for inter-organisational partnerships*. Retrieved 27 April 2004, from <http://www.cmqr.rmit.edu.au/publications/fzicit02.pdf>

## JournalWatch - Scope & Purpose

With the aim to inform primary health care policy and practice in Australia, this research bulletin summarises examples of key recent research findings identified by the author. Feedback and suggestions for *JournalWatch* are welcomed by the:

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