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POLICY COMMENTARY:

**QUALITY ASSURANCE AND EFFECTIVENESS  
IN HEALTH CARE: AN OVERVIEW**

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**POLICY COMMENTARY**  
**QUALITY ASSURANCE AND**  
**EFFECTIVENESS IN HEALTH CARE: AN OVERVIEW**

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**Running Title: Quality and Effectiveness**

## ABSTRACT

Increasing interest in quality assurance and effectiveness in health care has been generated by three major observations: about 20% of care is consistently demonstrated to be inappropriate, variations in practice cannot be explained by patient or facility factors, and decreased utilization as a result of changing economic and regulatory incentives seems to lead to both inappropriate care and appropriate care reductions. This interest has led to at least three changes in the approach to quality assurance. First, there has been a move from measuring practitioner competence to measuring population health outcomes. Second, the use of implicit judgements has declined while the importance of explicit standards (e.g. practice guidelines) and explicit processes in establishing standards has increased. Third, greater efforts have been made to lesson the organizational isolation of quality assurance and to integrate it into everyday activities and across the levels of health-care delivery.

## Introduction

Outside the United States the concept and conduct of quality assurance is still in its early days of development, especially with regard to the focus on health outcomes and effectiveness. It is, therefore, important to:

1. Increase awareness of the potential of quality assurance to bring about improved health-care delivery.
2. Change perceptions of quality assurance from the currently held view of punitive activities based on chart reviews in hospitals to a positive activity assisting in a constant search for improved performance at all levels of the system.[1]

In line with these goals a definition of quality assurance is needed which stresses a comprehensive view of performance improvement -- not just at the level of individuals, but also for agencies, institutions, ministry's of health and, in fact, for the entire system of health-care delivery. Thus I define quality assurance with a stronger emphasis than those who have gone before on the need to respond effectively to identified deficiencies. It is "the measurement of health-care activity, and the outcomes of that activity, in order to identify whether the expected objectives of the activity are being achieved and, when this is not the case, to respond with effective action to reduce the deviations from objectives".<sup>1</sup>

Inherent in the definition are three principle components: measurement of activity, comparison of activity with objectives, and responses to change activity. The measurement of activity has been a long-time preoccupation of health-care systems, but not always with a clear idea of why or to what ends. The comparison of activity to objectives is what may

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<sup>1</sup> Of course, this definition is general enough that it can apply across most evaluative activities; in part such generality is an important message to portray in encouraging more widespread application of quality assurance, even though it decreases somewhat the usefulness of the definition for researching the phenomenon of quality assurance.

be termed "quality assessment" because it gives a picture of how well or how poorly a system, or parts of a system, is doing. This is where much of the present energies are being put. But it is not quality assurance, even though it is an integral part of the process. Quality assurance, at least for the future, demands more. The goals of effectiveness and efficient health-care, however, demand that effective and timely action be taken to improve matters when performance is shown to be poor. These goals demand monitoring of how well we are all doing as part of everyday activities, and that there are response capabilities and actions already built in to the organization and structure of our professional societies, our agencies, our institutions and each national or regional health-care system.

In the remainder of this paper I outline why "effectiveness" is important to quality assurance, describe the main catalysts for this more comprehensive view of quality assurance and, finally, point to some of the specific changes in focus that are the result of this view.

#### The Relationship to Effectiveness

Where does "effectiveness" fit into all of this? A main role for it is in constantly bringing us back to the objectives of health-care delivery. How can we decide whether we are being effective without knowing what our objectives are? Here it is important to make a distinction between secondary and primary objectives of health care. No one can argue that we wish to have services delivered in a technically competent way, to have them readily accessible for everyone, to have them delivered in institutions that are efficiently run or in ways that lead to patient satisfaction.

But these are really secondary objectives, because we can do all of the above but we will still not be achieving our principle objective if we are not improving or at least maintaining the health of our populations. Thus, although the focus of quality assurance can, and in many cases will, be on those secondary objectives the ultimate meaning of effectiveness relates to the health outcomes for individuals and of the population. This is a point made very clearly by William Roper when he was head of the Health Care

Financing Administration in the United States.[2] The future will see an increasing focus on that aspect of effectiveness -- health outcomes -- because it is now well recognized as the gold standard against which performance should be judged. That is not to say that methods to assure quality with regard to the secondary objectives also are not important, but it is to say that our emphasis in the future must be more on the gold standard of health outcomes.

#### Why be Interested in Quality Assurance?

Why do we have such a growth in interest in quality assurance as we move into the 1990s? What observations have generated the desire and the need for the growing number of conferences and publications in the area? If we've survived without major quality assurance initiatives in the past, why do we need them now? I perceive at least three major reasons for this interest.

First, a growing body of evidence that the mere provision of health-care services does not guarantee their appropriateness. Cases of inappropriate care may quite readily be unearthed.[3]

Second, we are finally realising that the demonstrations of variations in practice patterns, that have been around for more than a decade, cannot always be explained by variations in patients' needs for service.[4] In medical care the "physician factor" is increasingly being used to explain such variation[5] -- physicians are uncertain as to whether or with what to intervene and they need more explicit guidance to reduce the variation that comes from this uncertainty.

Third, the exponentially increasing possibilities in health care -- technologically and as we expand into broad concepts of health promotion -- are coming into conflict with a limited fiscal capability. This has led to a decreased tolerance for the provision of marginally useful or, more importantly, useless health care, and an increased need to identify and remove such "surplus" activity to free up the funds for exciting new possibilities.

I would like to give some concrete examples of these three catalysts for increased

quality assurance activity. First, evidence on inappropriate care. Studies on how appropriately certain procedures are used, drugs prescribed or diagnoses made, both in Canada and in the United States, seem to come up with a "magic" figure of about 20% inappropriate care in a remarkably consistent manner. Table 1 presents the results of a Canadian study done in collaboration with Red Cross researchers in 1986/87 on the use of blood products.[6] Using criteria arrived at from the literature, and contributed to by the physicians who were actually prescribing the blood products, as much as 23% of the use of fresh frozen plasma was clearly inappropriate. Across all 5,000 of the charts reviewed in 16 hospitals, 15% of use was clearly inappropriate, and a further 15% was of doubtful benefit. Obviously one objective of quality assurance would be to reduce those percentages.

Variations in practice without any apparent explanation or any differences in health outcomes for those with the lower or higher rate of intervention, speak to the degree of uncertainty about impacts on outcomes and therefore the amount of discretion in the hands of providers. In Table 2 are some examples from work done in the five regions of southern Ontario.[7,8] Fetal distress is diagnosed three times as often in one region over another, 50% more cesarean sections for breech presentation and 66% more coronary artery bypass surgeries are done in one region compared to another. Part of these variations may be due to differential availability of equipment and services. Part may be due to differing judgements of physicians as to when intervention produces better health outcomes. In any case, quality assurance has surely got a role in establishing "which rate is right".

Table 3 presents information relevant to the concern over "surplus" health care services -- the last in the list of catalysts for increased quality assurance. These data are drawn from work done by Siu et al.[9] On the right hand side of the Table are the "magic" figures of about 20% of hospital admissions which are inappropriate -- a measure of the "surplus" care currently being provided.

However, perhaps the most telling point in this Table is that the level of inappropriate use was about the same whether there was cost-sharing (or what some would



TABLE 1

## APPROPRIATENESS OF BLOOD PRODUCT USE IN SIXTEEN ONTARIO HOSPITALS (1987)

|                       | Clearly<br>Inappropriate | Doubtful<br>benefit |
|-----------------------|--------------------------|---------------------|
| Red cells             | 10%                      | 7%                  |
| Fresh frozen plasma   | 23%                      | 15%                 |
| Albumen               | 17%                      | 22%                 |
| All cases (n = 5,000) | 15%                      | 15%                 |

Source: Ali et al., Red Cross, 1988.

TABLE 2

## VARIATIONS IN PROCEDURE RATES ACROSS FIVE S. ONTARIO REGIONS

|                                                                                            | Lowest rate | Highest rate |
|--------------------------------------------------------------------------------------------|-------------|--------------|
| <b>Fetal Distress Diagnosis</b><br>(per 100 deliveries)                                    | 3.6         | 9.4          |
| <b>Cesarean Section Rate</b><br><b>for Breech Presentation</b><br>(per 100 with diagnosis) | 55          | 75           |
| <b>Coronary Artery Bypass Surgery</b><br>(per 100,000 pop'n > 20 years old)                | 45          | 75           |

Sources: Anderson & Lomas, CMAJ, 1985; 132:253  
Anderson & Lomas, Med. Care, 1989; 27:228

TABLE 3

**MEASURE OF "SURPLUS" HOSPITAL  
ACTIVITY FROM RAND HEALTH  
INSURANCE STUDY**

|                  | Utilization<br>(free care = 100) | Inappropriate<br>Admissions<br>(%) |
|------------------|----------------------------------|------------------------------------|
| 'Free' care      | 100                              | 24%                                |
| Cost-shared care | 76                               | 22%                                |

Source: Siu et al. NEJM, 1986, 315:1259

call user fees) or not. Even though the amount of service received by those in the cost-shared group was only 76% of that received by the "free care" group, the level of inappropriate care was about the same. This tells us that user fees, or any other measures that lower the utilization of services, do not selectively remove the inappropriate services, but rather lower the amount both of ineffective and effective care.

This is a compelling reason to improve our quality assurance activities. As budget's do get tighter, as access to hospital beds does go down, as incentives are put in place to lower utilization levels, then in the absence of quality assurance such measures may well be removing appropriate and effective services as well as inappropriate and ineffective ones. Remarkably, however, it is possible to lower utilization by as much as 20% without having an impact on effective care -- the magic 20% figure tells us that -- but this is not likely if better systems of quality assurance are absent from the package.

#### The Changing Focus of Quality Assurance

Therefore these three catalysts are moving many decision-makers toward a greater appreciation for the importance of quality assurance. What is emerging are some important changes in focus for our quality assurance activities. At the leading edge of these changes quality assurance is no longer perceived of as a sideline activity, a sinecure before retirement, or a low-level technical task for a branch of administration. It is a fully comprehensive and integrated activity central to the functioning of the health-care system.

In Table 4 I have identified three major changes in focus that are occurring. First, assessing the competence of individual practitioners, although important, is less vital than assessing the outcomes in the population. This may be recognised as the traditional distinction between "process" measures of quality -- is the practitioner technically proficient to perform certain services -- and "outcome" measures -- were those particular services, even when delivered proficiently, of any benefit for a particular individual or target group. This change will require some major reform. For instance, most of Canada's professional licencing bodies restrict their quality assurance activities to assessing the

TABLE 4

## **THE CHANGING FOCUS OF QUALITY ASSURANCE**

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practitioner competence → population outcomes

measuring health outcomes

implicit judgements → explicit processes and standards

making objectives clear

isolated assessment → integrated activity

changing organizational structure  
to facilitate response and action

competence of their individual members. Few assess patient or client outcomes, and none assess the impact of the aggregate activities of their entire professional group on various population health outcomes. How many licencing bodies use the readily available source of administrative data -- hospital discharge or insurance claims data -- to identify areas where additional educational activity or targeted training might improve health outcomes? A practitioner may be competent to administer a flu immunisation, but if most elderly patients are not actually being immunised then more than competence assessment has to be done to improve the use of this proven effective maneuver.

Of course one difficulty in advancing on this front is the paucity of readily available data on health outcomes, or reasonable proxies for health outcomes. Ellwood has proposed an ambitious but feasible plan to improve this situation at the level of the community,[10] others have been creatively using administrative data to proxy health outcomes,[11] while still others have outlined long-range plans for national systems of health statistics relating input and outcome measures.[12] The development of health outcome-based information systems are of central importance to further advancement of quality assurance.

If our focus in the past has been on practitioner competence because that was the only readily measurable dimension of quality, in the future there should be no such excuse if even a few of the current initiatives to measure population health come to fruition. Indeed, evidence of the awareness of the importance of this in Canada can be seen in Quebec, which has already started a routine health-status survey for its population, and in Ontario which is about to embark on one.

The second change in focus could also be termed the democratisation of quality assurance, where democratisation means "making public". The traditional use of implicit judgements by colleagues to assess quality of care is giving way to more formal processes to establish explicit standards and guidelines. The use of "usual and customary practice" as a justification for care decisions has a long history in the health-care professions. Unfortunately, usual and customary practice is not always effective and appropriate

practice, it is rarely spelled out precisely, and it is obviously not written down and available to all who wish to debate or revise it. The objectives upon which the judgement of quality is based are hidden from view, and from public and even collegial scrutiny. The most basic of management principles state that the standards by which we judge performance should be clear, explicit and available for all to see. Health-care professionals are only just beginning to adopt this basic principle of management.

This move toward explicit performance criteria, based largely on the primary objective of improved health, is exemplified in the increasing focus not only on various practice guideline programs, but also on their sponsorship, their methods and the use to which they are being put.[13,14] This recognises the importance of not only making the objectives of care, and the performance to meet those objectives, explicit, but also the need for the formal programmes which produce practice guidelines to be explicitly incorporated into management models for quality assurance. Recall from the definition of quality assurance that the second component -- quality assessment -- was the comparison of actual performance to the objectives of care. Practice guidelines are becoming the explicit embodiment of those objectives.

The third change in focus is from quality assurance as isolated to quality assurance as an integrated activity. Berwick has written and spoken extensively on the need to integrate quality assurance activities into the everyday delivery of care, and not to treat it as an exercise that is separate from or only tangentially related to the delivery of care.<sup>[1]</sup> Unless this occurs quality assurance will continue to be perceived as a punitive exercise with which no one really wants to be associated. The lessons of industry are coming to play a role in health care as we realise that the key to better quality care, to borrow Berwick's terms, is the model of striving for continuous improvement rather than the identification of "bad apples". Health-care delivery has to be re-organized to provide incentives to search for areas where quality can be improved and to facilitate action and responses when potential improvements are identified.

## Conclusions

Achieving this change is obviously not an easy task. It raises difficult issues in implementation which will require identification of the potential barriers to such re-organization and possible solutions. Integration is not only needed within institutions, but also within and among professional groups, community agencies, and the system itself at local, regional, and national levels. Actors from all the different perspectives of the health-care system -- overall planning, institutions and the community -- have a significant role to play in quality assurance; we are not talking about just chart reviews in hospitals. Quality assurance activities from each of these perspectives should not proceed in isolation one from the other. Far from it, there should be ever increasing orientation toward this larger integration across levels of the system.

Patients care about their health outcome; the fact that the outcome may be achieved with care from numerous professional categories, working in many settings, at different levels of the health-care system, interests them less than whether the integrated care they receive from all the parties at all the levels produces the results they want. When quality assurance is based on this patient view of the world, rather than our current subdivisions and denominations, it will have come close to the end of its evolution.



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## REFERENCES

1. Berwick, D. Continuous improvement as an ideal in health care. *N Engl J Med* 320:53-6; 1989.
2. Roper, W., Winkenwerder, W., Hackbarth, G., Krakauer, H. Effectiveness in health care. An initiative to evaluate and improve medical practice. *N Engl J Med* 319:1197-202; 1988.
3. Brook, R., Lohr, K. Efficacy, effectiveness, variations, and quality: boundary-crossing research. *Med Care* 23:710-22; 1985.
4. Wennberg, J. Dealing with medical practice variations: a proposal for action. *Health Affairs* 3:6-32; 1984.
5. Goyert, G., Bottoms, S., Treadwell, M., Nehra, P. The physician factor in cesarean birth rates. *N Engl J Med* 320:706-9; 1989.
6. Ali, A., Blajchman, M. Quality assurance in the use of blood products. Report of study: Stage II (adult patients). Hamilton: Canadian Red Cross Blood Transfusion Service, 1988.
7. Anderson, G., Lomas, J. Explaining variations in cesarean section rates: patients, facilities or policies? *Can Med Assoc J* 132:253-9; 1985.
8. Anderson, G., Lomas, J. Regionalization of coronary artery bypass surgery: Effects on access. *Med Care* 27:288-96; 1989.
9. Siu, A., Sonnenberg, F., Manning, W., et al. Inappropriate use of hospitals in a randomized trial of health insurance plans. *N Engl J Med* 315:1259-66; 1986.
10. Ellwood, P. Shattuck lecture - Outcomes management. A technology of patient experience. *N Engl J Med* 318:1549-56; 1988.
11. Roos, N., Wennberg, J., Malenka, D., et al. Mortality and reoperation after open and transurethral resection of the prostate for benign prostatic hyperplasia. *N Engl J Med* 320:1120-4; 1989.
12. Wolfson, M. A system of health statistics. Toward a new conceptual framework for integrating health data. CIAR Population Health Working Paper No. 1, Toronto: Canadian Institute for Advanced Research, 1989.
13. Lomas, J., Anderson, G., Domnick-Pierre, K., Vayda, E., Enkin, M., Hannah, W. Do practice guidelines guide practice? The effect of a consensus statement on the practice of physicians. *N Engl J Med* 321:1306-11; 1989.
14. Physician Payment Review Commission. Annual report to congress. Washington, D.C.: Physician Payment Review Commission, 219-30, 1988.

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