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Public reporting of health care performance data: what we know and what we should do

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ABSTRACT

Journalists have recently filed complaints with the Ombudsman calling for the release of the patient mortality and complications rates of named individual surgeons. This is a fraught and complex issue: are the intrinsic benefits of such increased transparency potentially outweighed by evidence of negative practical effects? The potential negative effects of such public reporting include unfair criticism of experienced clinicians working with our sickest patients, potentially misleading information for the public, and the risk of inferring statistically unfounded interpretations due to insufficient data.

However, different forms of public reporting have been associated with improved outcomes internationally, and there is a drive toward greater transparency both for consumers and for clinicians to aid quality improvement. In this summary of the Health Quality & Safety Commission's position paper on the public reporting of health care performance data, we discuss the evidence and make recommendations for the future of transparency in New Zealand health care. These recommendations include that such reporting ought to be at the level of the team, unit, or institution, and that measures should be determined in consultation with consumers, clinicians, providers and professional bodies.

Journalists have recently filed complaints with the Ombudsman after Southern, Canterbury, Capital & Coast, Waikato, and Auckland district health boards (DHBs) responded variably to their requests under the Official Information Act that the patient mortality rates and other complications rates of named surgeons be released—DHBs either refused, or released data at DHB level. The Ombudsman will soon rule on this matter.

This is a fraught and complex issue. New Zealand is upon the difficult road to increased transparency in health care as many countries and jurisdictions before us, such as the UK, Australia and many major US states. Media and the public want to be reassured that our health system is working well, and that doctors have nothing to hide. On the other hand, many clinicians are concerned about important statistical considerations—that the release of raw, insufficient or inadequately risk-adjusted data may mislead the public, or that the potentially higher mortality rates associated with expe-

rienced surgeons who care for our sickest patients may lead to unjustified media criticism of skilled and valued doctors.

How can these tensions be reconciled?

The Health Quality & Safety Commission (the Commission) supports transparency—‘shining the light’—and the appropriate reporting of data to assure and improve the quality and safety of health care. Feedback to the Commission confirms general support in New Zealand for this position, which is widely held in most comparable countries.

However, the balance of the positive and negative practical effects of transparency on quality of health care is not clear in the context of the publication of outcomes data, such as rates of surgical mortality and other complications. In particular, it seems there is an important distinction between reporting information on the performance of individual practitioners and reporting

information on the performance of units, organisations or teams.

The Commission has reviewed the international evidence for such public reporting, and its practical effects. The Commission has also consulted widely in the health sector, solicited responses to a draft version of a position paper for the Ombudsman and alongside the Ministry of Health held a workshop with consumers to inform the evidence base with local practice and local viewpoints.

In this summary of the Commission's position paper, we discuss the evidence and make recommendations for the future of such public reporting in New Zealand health care. The full position paper, evidence review and more extensive list of references is available at <http://www.hqsc.govt.nz/publications-and-resources/publication/2463/>.

The views of New Zealand patients and consumers

The views of patients and consumers are important in determining which outcome measures be reported and how.¹⁻⁴ In New Zealand's publicly funded hospitals, consumers are not usually able to choose individual practitioners, or even teams or hospitals. Consumer workshop participants stated this was all the more reason for complete transparency to drive improvement across the sector.⁵ However, consumers seem to want simple things: trust and confidence in the system; to know that professionals are competent and meet or are above the acceptable standard and that this competence is publicly demonstrated; that the system is reliable and organisations have the right culture of openness and transparency; and that there are visible processes to improve quality.⁵

Information publicly reported should meet consumers' needs.^{4,6} Modest differences in mortality rates are often difficult to relate to—in most operations the rates are low, and difficult to interpret.⁶ Other serious complications, such as infections (notably in the context of joint replacement surgery) are also—and arguably more—important. Strokes may be feared as much

or more than death. Patient-reported outcome measures (PROMs), reflecting individuals' own assessment of their health or well-being, without interpretation by a clinician or anyone else, may be as relevant to many people as mortality.⁷ Patients also value information about the experiences of other patients, including friends or family, for example about whether their pain was controlled, whether they were listened to and whether a nurse came when called.⁸

Thus, even if mortality data are reported, other measures are also needed.

Data considerations, appropriateness of measures, and registries

Whatever measures are reported, it is important that the data are accurate, valid and meaningful. Measures should be specific, sensitive, timely, and easy to collect (ideally as part of routine care).⁹ Risk adjustment is necessary to account for case complexity. The benefits should outweigh the costs.¹⁰

Having selected suitable measures of performance and approaches to risk adjustment, the statistical requirements for identifying change over time, differences between individuals, or between one individual and a given standard, are:

1. A sufficiently high rate of the relevant outcome (eg, mortality, stroke or infection) and a high enough case load for adequate statistical power;
2. An understanding of the prior probability of the condition to be identified (eg, poor performance).

However, the typical caseloads of most individual clinicians for many procedures are inadequate to generate enough statistical power to reliably identify potential poorer performers, or to avoid substantial risk of false positives.¹¹

Cardiac surgery is more suitable for this type of reporting than most other specialties. In particular, first-time coronary-artery surgery is relatively common and relatively standardised. Mortality is currently slightly more than 1% (ie, deaths are reasonably common). Good methods of risk adjustment are well established.

However, on an annual basis, UK cardiac surgeons would have to perform three times the number of procedures they typically do to generate enough statistical power to detect a poor performer eight times out of ten.¹¹ The New Zealand situation is essentially similar. (Indeed, it adds perspective to note that as of November 2015, there were only 29 doctors in a vocational scope of cardiothoracic surgery with a current practising certificate on the New Zealand medical register (pers comm, A Cullen, Medical Council of New Zealand, 17 Nov 2015).) Furthermore, the balance between case load and mortality produces much lower statistical power for most other procedures. Lengthier reporting periods (one solution to the problem of insufficient statistical power) may result in long delays in detecting problems, and the process risks losing relevance.¹¹

An alternative solution is to aggregate to the team, unit or hospital level, which increases statistical power without losing immediacy.^{11,12} Even then, some units may be too small. For procedures that carry substantial risk (eg, >1% mortality rates), consideration should be given to amalgamation to ensure that all surgeons operate within groups (“teams”) that collectively have sufficient volumes to provide reliable estimates of outcome.

In hospitals with only one surgeon in a particular field, we strongly recommend aggregation of the “lone” surgeon’s hospital data with that of a major centre. The arrangements should include peer support, clinical audit, professional development, case review, internal quality assurance and so forth. Clinicians should not work in isolation, and collegial relationships can be facilitated by modern means of communication, notably video-conferencing. Inclusion of geographically isolated surgeons into larger teams is also an appropriate way of avoiding unintended disclosure of an individual’s data.

In addition to limitations in monitoring outcome, there is at least some evidence to suggest that volume itself may be a factor in determining outcome.¹³⁻¹⁵

Collection and registries

Clinical registries are structured ongoing collections of personal health data from

all patients in a clinically-defined population. Registries can provide benchmarked, risk-adjusted outcomes, and can be used as the basis of public reporting.¹⁶ They are work-intensive and expensive.^{8,9,16} Currently, New Zealand has a few established clinical registries (including registries to monitor the postoperative infection rates of certain procedures, such as hip and knee arthroplasties), but most data currently available for public reporting are derived from administrative datasets and lack the depth and detail of registry data.

Bridging administrative data collection and clinical data collection is difficult, and attempts to do this have largely failed in the UK NHS.^{17,18} Though there is a strong argument for building more registries, in the long run information technology (IT) systems that capture the required information as part of routine care are needed, and investment in this approach is more prudent. Relevant work by and with the National Health Information Technology Board (NHITB) is ongoing.

Informed consent and the autonomy of patients or consumers

There is no clear legal or ethical consensus on the importance of information about individual surgeons’ performance to informed consent. In the US, case law is evolving with conspicuous differences between states.^{13,19,20} In the UK and Australia, the courts have lately moved away from a standard of disclosure determined by the profession to one determined by what ‘the prudent patient’ would want to know in the given circumstances.²¹ The latter part of this test implies that context is important and the matter needs to be decided on a case-by-case basis, rather than in a universal or general way.

In New Zealand, the Code of Health and Disability Services Consumers’ Rights 1996 (‘the Code’) is the key source of law on informed consent supplemented by other legislation and case law. Informed consent is typically viewed as a continuum and a process of information sharing.²² Under the Code, a patient has the right to be fully informed, but also to effective communication. Thus, the precise information that is

best suited to help any particular patient in making a decision will depend on context.

There are grounds that there is no ethical obligation to provide patients with clinicians' performance information for informed consent because of imprecision of measurement: the individual surgeon's performance alters depending on the team and institution they operate in,²³ and measures are too late and not accurate enough.^{20,24} Given the practical and statistical limitations discussed above on the reporting and interpreting of surgical results, there is a real risk of misleading or overburdening patients, rather than informing them in a way that would truly assist in making important decisions. A more general assurance that measures are in place to ensure acceptable competence is probably more appropriate in most cases.

Even if data were provided on some selected specialities, as with cardiac surgery in the UK, many patients may have insufficient statistical knowledge to interpret the information correctly—appropriate displays (such as funnel plots, for example) are quite complex, although commentary may assist. The limitation in choice within our public hospitals is also relevant. It is true that patients unable to choose between surgeons may still decline treatment altogether, but it would be unfortunate if misinterpretation of data resulted in patients refusing treatment that would in fact be of value to them.

Importantly, there should be no grounds for this if our health system is operating adequately—all practitioners should be achieving acceptable results. However, this whole debate has presumably been stimulated by anxiety that this might not be true, so perhaps the most useful information for most patients would simply be that adequate processes are in place to ensure the competence of all practitioners (see Accountability below).

Using data to drive improved outcomes and improve quality

To change outcomes, behaviour has to change. Public reporting may change behaviours by patients or providers.

Patients may:

- choose better quality providers and force lower quality providers to improve or leave the “market”;
- gain or lose trust and thus potentially respond with more or less compliance with treatment regimens;
- interpret or access published information differently, potentially leading to increased inequity in outcomes.

Providers (whether individual or institutional) may:

- improve the quality of services;
- cease to provide lower-quality services;
- respond perversely—for example, by reorganising services to reduce exposure to riskier patients, or changing data-recording practices to give the impression of a riskier case mix and thus better relative outcomes.

Changed behaviours by patients or consumers

The evidence is mixed, but suggests consumer decision making is not usually substantially influenced by public reporting on health care quality.^{25,26} Though consumers and the public are in favour of public reporting, in practice they tend not to know about²⁷ or search for the information.²⁸ They sometimes fail to understand it,^{6,29} and/or mistrust the source agencies.³⁰ They make little use of it in actual decisions, partly because choice is not always a feasible option.³⁰⁻³² Indeed, consumer choice of physician has been described as a ‘black box’—in effect, inexplicable.³³ There is, however, some evidence that thoughtful presentation of relevant information may result in choice of better-rated providers.^{12,34} Differential access to such reports, perhaps because of differences in health literacy, may have led to inequities by ethnicity and socioeconomic status in certain jurisdictions.^{9,35} This is not an argument against reporting, but rather one for ensuring that reporting is in appropriate forms and accessible and understandable to all.

Quality improvement and public reporting

Evidence shows public reporting of performance data stimulates quality improvement activity at the provider

level, but not at an individual level.³⁴⁻³⁶ Public reporting is more likely to be associated with changes in health care provider behaviour than with selection of health services providers by patients or families.^{30,31,34,35,37} Improvement after public reporting seems to be driven by reputational concerns: institutions that report publicly rather than internally tend to put more quality improvement projects in place, and tend to improve, regardless of any efforts to game such systems.^{34,37-39}

The New York State Cardiac Surgery Reporting System (NYS CSRS), the longest-running and most-studied such programme in the US, is a clinical registry with a quality improvement focus and a public reporting feature. Hospitals were the unit of reporting until a lawsuit forced reporting by individual surgeon. The NYS CSRS was associated with a 41 percent state-wide fall in in-hospital mortality rates for coronary artery bypass graft (CABG) surgery in three years,^{8,9,15,40} though the causes have been debated.⁴¹⁻⁴³ Other similar state-wide public reporting programmes, particularly in California, have been associated with improved outcomes for cardiac surgery.^{44,45} Over the same period, mortality has steadily improved in many units around the world, in cardiac surgery and in surgery generally, so many factors may be at play.⁴⁶

Public reporting of individual surgeons' outcomes in the UK was stimulated by the paediatric cardiac surgery scandal at Bristol Royal Infirmary and subsequent inquiry.⁴⁷ The Department of Health informed consultants of their intention to publish performance information at the level of consultant teams.¹⁷ The Society for Cardiothoracic Surgery in Great Britain & Ireland (SCTS) responded quickly, having data systems in place.⁴⁸ The Dr Foster organisation published mortality rates for coronary artery surgery by hospital in 2001, and a Freedom of Information Act request in 2005 led to publication of mortality data for coronary artery surgery for all UK surgeons, named individually. Outcomes have clearly improved in the National Health Service (NHS) since then,^{49,50} despite an increasing complexity of case mix, but a causal link has not been established, and, as indicated above, results have also improved in other countries over this time period.

Concerns remain over the potential for surgeons to become risk-averse and avoid high-risk patients,⁵¹ or for gaming to occur, with patients scored as higher risk to create the impression of better outcomes, for example, or patients treated non-surgically even when the optimal treatment for the illness is surgery—among other options.⁵² Gaming behaviour has been considered a sign that incentives are strong and a measure is effective in discerning performance,⁵² and if systems of performance measurement are taken seriously, and are designed to have an effect, then approaches to counter gaming ought to be integral to the design.⁵³

Teams versus individuals in determining patient outcomes

There is increasing evidence that outcomes of surgery are less attributable to any single individual than to the multi-disciplinary teams and on the collaborative and institutional context in which surgery is done.²⁰ Failures in teamwork and communication underpin a high proportion of adverse events.^{54,55} Outcomes have been shown to vary by the institution and team in which a surgeon works.²³ This is because many aspects of care other than the surgeon's performance are involved, and outcomes are dependent on the influence of anaesthetists, nurses, intensivists, and many others involved in postoperative care, among other considerations. The importance of "failure to rescue" has become increasingly apparent in recent years.^{38,56,57}

The US Veterans Health Administration has discouraged reporting of surgeon-specific outcomes as they believe that the performance of individuals cannot be separated from that of the institution.⁵⁸ Teamwork and training were shown to reduce both morbidity and mortality in surgery and improve processes.⁵⁸

Enquiries into failures of care at Bristol Royal Infirmary and Stafford Hospital in the UK revealed lack of leadership, teamwork and the ability to work together effectively for the interests of patients as the key failings.^{46,59}

Publishing the results of individual surgeons seems likely to promote individualistic, rather than team-oriented, practices and behaviours. In contrast, publishing by

unit is more likely to drive a culture in which all members of the unit will want to ensure that not only themselves but also all their team members are performing as well as possible. We want good practitioners to have a strong incentive to help their colleagues achieve equally good results, rather than to gain by comparison with those not doing quite so well. Inappropriate variation in practice is a recognised barrier to excellent and cost-effective practice in health care. Variation should reflect differences between individual patients: in fact it often reflects unjustifiable differences in the approaches of individual practitioners. In general, if one practitioner's approach is truly the best, then it should be adopted by all; otherwise, the least expensive approach should be used by all. Reporting by unit should encourage appropriate standardisation and strengthen efforts to monitor, maintain and improve the competence of all practitioners.

If it is team-based medicine that is to be encouraged, it does not seem sensible to publish data based on individual members of the team (M Seddon, personal communication, 6 July 2015).^{12,36} Given that team level reporting is also more likely to achieve meaningful statistical power and allow timelier pick-up of issues^{11,12} the grounds for publication at team or organisation level are compelling.

Accountability

Health care practitioners, providers and regulators, and professional bodies are accountable to the public that services provided are safe and of high quality. The public rightly expects staff to be technically competent, use evidence-informed treatments, work ably within teams, have good communication skills, be caring, and maintain these skills over time.⁵ It is reasonable to expect that the relevant authorities will make the proper checks to ensure that health care professionals remain competent and fit to practice.^{5,60}

Various processes are currently used to attempt to demonstrate doctors' ongoing competence continuously throughout their medical careers. The Council of Medical Colleges, the Medical Council of New Zealand and the Ministry of Health are working to better align and strengthen these processes.

There is room for more visible evidence of participation and of the criteria used to assess acceptable performance. Though there is no legal binding requirement under the Health Practitioners Competence Assurance Act 2003 for health care professionals to raise concerns about a colleague's competence or performance, acting on concerns where there is risk of patient harm is considered an ethical responsibility and "encouraged" by the Medical Council, which provides guidelines to assist decision making. Under the Act, the health care professional's registering authority has a mandatory requirement to provide written notice to the Accident Compensation Corporation, Director-General of Health, and the Health and Disability Commissioner where there is risk of harm to the public.^{61,62}

Use of appropriate data on the performance of individual practitioners has a role in assuring standards *within* institutions or units. Techniques, such as variable life-adjusted CUSUM (cumulative sum control chart)⁶³ to monitor outcomes (mortality, infection, and many others) on a case-by-case basis may be useful. The aim should be the early detection of trends, to enable appropriate responses before serious problems become embedded. There is a strong argument for the holistic interpretation of performance within units, with a focus on early intervention to maintain and improve standards rather than on waiting for statistically significant red flags to identify problems after many patients have been harmed. There is evidence that publicly reported surgeon rankings of quality have not correlated with disciplinary rates and complaint rates, and quality measures may not pick up behaviours that lead to discipline.⁶⁴ Breaches of the code of patient rights, and appearances before disciplinary committees should be tracked, and recurrence of these events should lead to careful review.⁶⁰

The Commission's view (see Box)

Increased transparency and openness are among the Commission's core values. Most consumers and clinicians concur. Transparency and openness are best achieved by the public reporting of judiciously chosen,

adequately risk-adjusted measures at the team, unit or organisational level. Reporting at an individual level is likely to be statistically unsound and counterproductive by undermining the teamwork we wish to encourage. Reporting data at the level of the unit (with appropriate amalgamation to deal with small units) would be a much more statistically robust step towards providing the necessary reassurance to the public while contributing to improvement in the quality of our health care services. It could also lead to a meaningful national data set from which risk and benefit could be determined for common procedures, and assist in planning investment in health systems.

Publication needs to be in a manner that is meaningful and understandable to a wide range of people. Context must be explained. Results should be presented in different formats and media to ensure that inequalities are not increased through failure to address differences in health literacy and access to information. Consumers, colleges, professional bodies and employers should work together to select and define outcome and process measures suitable for each specialty group.

Once appropriate measures have been agreed upon, information should be collected in a nationally standardised way. Reporting by DHB should be via their websites and in their Quality Accounts. The Commission already reports many carefully selected measures of the performance of our health care system, such as the Quality and Safety Indicators and the New Zealand Atlas of Healthcare Variation. The new measures should be chosen to complement these and all measures should be kept under review and revised when necessary as part of the quality improvement journey.

Cost is important—money spent on measuring and reporting represents an opportunity cost in relation to other priorities for improving the quality of our health services. An assessment of what data are currently available and of what reporting could be undertaken currently from registries or other data sets should be made. Building more registries may address the medium-term need, but in the long run, IT systems that capture the required information as part of routine care are needed and investment in these may be more cost-effective. The NHITB must be integral to this process.

The Commission supports the direction that the Council of Medical Colleges, the Medical Council of New Zealand and the Ministry of Health are taking in strengthening and aligning processes to demonstrate doctors' ongoing competence. These processes should be made more visible to the public. We suggest that organisations should be asked to attest to the presence of such processes and to their confidence that all practitioners are participating and achieving acceptable standards.

Public reporting is a complex and challenging area that has been brought into focus by a seemingly simple and obvious request—to *know*. There are pitfalls and also opportunities ahead. The Commission supports increased transparency. But we must build, not destroy or divide. If we are to construct windows to facilitate greater transparency we must make the right decisions early on and proceed in a phased, consistent way, as architects and builders might. There is a danger in optics—illusions are easily produced. We need windows that are well made and well placed to shine a clear light to guide us in ensuring that the care of our patients is safe, and that it continues to improve.

Box: An extract from the position paper of the Health Quality and Safety Commission.

- The Commission recommends:
- the public reporting of judiciously chosen, adequately risk-adjusted measures at the team, unit or organisational level rather than the individual level;
 - development of agreed national standards of data collection, relevant definitions and measures across New Zealand, and agreed risk adjustment models to account for case complexity and risk;
 - that publication should include clear explanations of context, and of the limitations and interpretation of the data, in different formats and media to ensure that the information is accessible to people of all levels of health literacy;
 - further evaluation of the cost effectiveness of investment in clinical registries weighed against accelerated investment in IT systems that could capture the same information as part of routine care.
- To these ends the Commission suggests:
- that consumers, colleges, professional bodies and employers together define a simple group of outcome and process measures for each specialty group that will serve to assure safety and drive improvement. These measures should reflect the different needs of the interested parties: we suggest one outcome and process measure each that is consumer-focused, clinician-focused and organisation-focused.
- Further, the Commission supports:
- the work under way to strengthen and align the processes within organisations to demonstrate doctors' ongoing competence: we recommend that these processes are made more transparent and that boards of health care organisations should be asked to attest to their presence, and to their confidence that all practitioners are participating and achieving acceptable standards;
 - increased education and training focused on enhancing teamwork within organisations.

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