Measuring our Impact Through the Use of Clinical Performance Measures

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Primer on the Use of Performance Indicators in Health Care Research and Assessment

A performance indicator (measure) "is a quantitative expression that describes whether, or how often, a process of care or outcome of care occurs." [1]

Performance indicators may be used for the following reasons:

- To inform the development of policy or strategy at various levels of governance (e.g., regional, national, international).[2,3]
- To improve the quality of care provided within a healthcare facility.[2]
- To *quantitatively assess processes and outcomes of an individual practitioner, health care organization, or health care system.*[1,2] *as a means of holding it accountable*[1,4] *or protecting the public safety.*[2]
- To provide information to consumers, to facilitate their choice of healthcare providers.[2]

Process versus Outcome Measures in the Assessment of Quality of Healthcare

To measure the quality of healthcare services provided, either the process by which the healthcare is delivered or the outcome achieved may be assessed. Generally both are useful in assessing performance, but they pose different advantages and disadvantages

"Kaboli 5"

Process Measures	Outcome Measures
Definition: measurements of how well the activities in the system are performed (e.g., percentage of patients receiving an aminoglycoside which is dosed by a pharmacist)	**Definition:** measurements of the results achieved (e.g. percentage of patients that received an aminoglycoside and experienced ototoxicity.
Criteria for selecting measure: The scientific evidence for the measure and the cost-effectiveness of the intervention(s) used[5]	**Criteria for selecting measure:** How well differences in case-mix and other variables are controlled[5]
Advantages: [Rubin et al.] ▪ Identifies which processes were followed and which were not ▪ Involves less risk adjustment (defining the various characteristics of the patients eligible for the intervention) ▪ Measures can usually be collected over a shorter time horizon, compared to outcome measures	**Advantages: [Rubin et al.]** ▪ Of interest to clinicians, administrators, and researchers ▪ Reflect all aspects of care, including those that are difficult to measure (such as technical expertise and operator skill)
Disadvantages:[6] ▪ Requires a strong scientific, evidence-based link between process and outcome (an undertaking that could be very resource-intensive) ▪ Requires updating with each significant advancement in the delivery of care ▪ Patients and non-clinicians tend to favour outcomes measures, possibly because they might not understand the importance of a particular element of care ▪ Tend to focus on a certain part of the process of care, and not measure more comprehensively the wider collection of elements that comprise all critical parts of the process of care	**Disadvantages:** [6] ▪ May be affected by case mix or other variables, method of data collection, or chance ▪ Do not directly measure the quality of healthcare (unlike process measures) ▪ May not provide good insight into how providers of care can improve what they are doing ▪ Requires extensive efforts for risk adjustment ▪ Time horizon for measurement can be very lengthy

Creating a strong clinical performance measure can be a complicated, resource-intensive process; thus, it is usually reserved for areas that meet the following criteria: [5]

- A healthcare problem is of great importance (as determined by contribution to mortality and morbidity, utilization rates, expense);
- opportunities for improvements exist(as determined by evidence of either variable or substandard quality of care); and
- healthcare professionals can control the process (as determined by what actions contribute to changes in quality).

Selection of Process and Outcome Measures

Process and outcome measures to determine the impact of clinically meaningful patient care activities performed by pharmacists have been defined by various research teams, including those led by Kaboli[7] and Bond.[8-11] Certain combinations of these activities have also been evaluated. These studies have included randomized trials (Makowsky[12] and colleagues; Gillespie[13] and colleagues) to assess the impact of pharmacists' interventions on patient outcomes such as readmissions to hospital.

In a 2006 systematic review, Kaboli[7] and colleagues identified 5 categories of patient care activities performed by pharmacists that had a positive impact on patient outcomes: "interacting with the health care team on patient rounds, interviewing patients, reconciling medications, providing patient discharge counseling and follow up". The CSHP 2015 working group assessed each of these specific five activities (the "Kaboli 5") for their practical application in both small and large hospitals nationwide.

Evidence Linking the "Kaboli 5" to Clinically Meaningful Outcomes

In 2009, Gillespie[13] and colleagues conducted a randomized controlled trial in Sweden to evaluate whether pharmacist-led comprehensive pharmaceutical care reduced morbidity among 368 elderly inpatients (80 years or older). According to the defined intervention, ward-based pharmacists conducted a comprehensive interview with each patient, conducted a best possible medication history, performed medication reconciliation on admission, assessed pharmaceutical care provided to the patient (according to the Cipolle[14] method) to identify and resolve drug-therapy problems, recommended interventions during rounds with the interprofessional team, provided discharge patient education, and performed discharge reconciliation, along with a follow-up telephone call to the patient 2 months after discharge. The primary end point was frequency of hospital visits (either to the emergency department or readmission), with study follow-up at 12 months after discharge. Overall, the frequency of postdischarge hospital visits was significantly lower (by 16%) in the intervention group than in the control group (quotient 1.88 versus 2.25, 95% confidence interval [CI] 0.72-0.99). This trial provided some limited extrapolated support for the "Kaboli 5" activities and their potential link to reducing postdischarge hospital visits. Hence, some of the "Kaboli 5" process measures may suggest a link to improvements in patient outcome measures such as postdischarge hospital visits (i.e., a surrogate measure).

Pharmaceutical care significantly decreased post discharge hospital visits

Of the 5 categories, the working group selected **discharge patient medication education** provided to patients at the time of discharge (i.e., discharge medication counselling) and **medication reconciliation** can serve as practical process measures. The reasons for selecting these 2 categories are summarized in the following sections. The working group identified and documented practical challenges for the other 3 activities that might hinder accurate and consistent nationwide assessment.

Measure 1
Proportion of all admitted inpatients receiving formal documented medication reconciliation at the time of admission

Perform medication reconciliation

Justification:

- Medication reconciliation is one of the objectives of the CHSP 2015 project.
- Accreditation Canada[15] already requires that all hospitals formally submit this measure as a core indicator (according to the preset definitions of Accreditation Canada).
- Medication reconciliation on admission is a core measure for the Safer Healthcare Now![16] campaign. As such, many Canadian institutions have been participating in this activity and submitting data regularly (which means that national data and benchmarks are available).
- The World Health Organization High 5s[17] international patient safety initiative has also selected medication reconciliation on admission as a core process measure with similar definitions.
- Benchmarking data are already available from the Hospital Pharmacy in Canada Report.[18]
- This measure may serve as process indicator and a surrogate for clinically meaningful patient outcomes, given that medication reconciliation on admission was included in the bundled intervention in 2 randomized trials conducted by Makowsky[11] and colleagues and Gillespie[13] and colleagues.
- Formal "getting started" kits are already available from Safer Healthcare Now![16] and the World Health Organization's High 5s[17] international patient safety initiative.

Qualifications:

- Pharmacists must be actively involved in, leading, or playing an influential role in oversight of the process linked to the core measure.

- It should be kept in mind that overall performance may reflect the impact of the interprofessional team rather than the pharmacist alone.

Tracking Performance over Time:

- This measure is already a mandatory Accreditation Canada[15] core indicator (and hospitals must therefore submit results for this measure annually).
- Point-in-time audits are possible, but this measure is now recommended by Accreditation Canada[15] as an ongoing institution-wide measure.

Measure 2
Proportion of all inpatients receiving formal, documented medication education from a pharmacist at the time of discharge (also known as discharge medication counselling)

Justification:

- Accreditation Canada[15] indicates that discharge reconciliation is a priority activity, and this process is linked to patient medication education at discharge.
- This measure is a process indicator and may serve as a surrogate for clinically meaningful patient outcomes, since discharge counselling was included in the bundled intervention in the 2 randomized trials conducted by Makowsky[11] and colleagues and Gillespie[13] and colleagues.

Conduct point-in-time audits to assess performance

Qualifications:

- Pharmacists must be actively involved in, leading, or playing an influential role in oversight of the process.

Tracking Performance over Time:

- Point-in-time audits may be performed (e.g., pick a given day within a selected time period when students will assess performance in a designated clinical area), instead of ongoing institution-wide evaluation of the measure.

- A minimum number of patients is required for the audit, along with additional, predefined parameters.

Practical Challenges with the Other Three "Kaboli 5" Measures Not Selected

This section briefly outlines the practical challenges with the other 3 measures identified by Kaboli[1] and colleagues, which caused them to be classified as less optimal than the selected core measures, described above.

- *Interacting with the healthcare team on patient rounds*
  On its own, the presence of pharmacists on rounds is unlikely to improve patients' outcomes. Rather, pharmacists are more likely to have an important impact by proactively performing patient work-ups to identify and resolve drug therapy problems, by undertaking patient care interventions, and by actively engaging with the interprofessional team to implement patient-specific care plans. This measure may be harder to objectively and consistently measure across many institutions nationwide. In addition, it is subjective and open to interpretation.

- *Interviewing patients*
  The act of interviewing patients is less specifically defined and is open to interpretation. Interviewing can be interpreted as a broad range of activities, from a comprehensive assessment of the pharmaceutical care that a patient is receiving (to identify and resolve drug therapy problems) to a more narrowly defined assessment of the best possible medication history.

- *Providing follow-up after discharge*
  Although the provision of follow-up after discharge is an important and influential measure to be targeted by hospital pharmacists working with inpatients, it was deemed to be least practical for widespread implementation and meaningful measurement at the time of development of this kit. This measure may be considered in the selection of future core measures.

***Note**: Different core measures may be more appropriate in settings where the selected core activities are not routinely carried out. The working group also determined that there is no consensus across Canada on the most appropriate core measures to employ for clinical pharmacy. The core measures listed here, although based on objective assessment of the available literature, should be considered the opinions of this Tool Kit Working Group.*

Benchmarking and Implementing

It is good practice to define benchmarks for performance measures. To that end, information related to benchmarking these measures is currently available from the Hospital Pharmacy in Canada Report. [18]

Useful resources to help with implementation are available from Safer Healthcare Now![16] and World Health Organization High 5s.[17] Refer to Appendix A for a A Case Summary of an organization measuring its performance on this objective.

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