Quality Actions: Can a Value Score be developed to help prioritize pharmacist clinical services?

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Background

- The number of patients with a need for clinical pharmacist care exceeds the supply of clinical pharmacists so departments and individual pharmacists must make choices about which services to provide and/or which patient needs to address.
- Ideally, such decisions would be made so that the overall quality of patient care is maximized.
- A "Quality Actions" framework for understanding and evaluating the quality of care provided by pharmacists has recently been proposed.[1] Quality Actions are "*the actions needed to achieve a standard of care for specific conditions.*" [1]
- A framework for conceptually and quantitatively assessing the value of individual Quality Actions, and thereby prioritizing among them, has been proposed: the Value Score [1]

Value Score = $\frac{\text{Prevalence of the Condition in the Population} \times \text{Quality Aggregate*}}{\text{Effort Required to Perform}}$

*Quality Aggregate = evidence base, nature of impact, safety implications, cost implications, reliance on pharmacist to perform, and modifiability by a pharmacist.

- This study was designed to evaluate whether the Value Score is a feasible and valid means of characterizing and ranking the relative the value of Quality Actions by hospital pharmacists in general medicine.

Objectives

- To determine the feasibility of quantifying Value Scores for Quality Actions (QAs) performed by clinical pharmacists caring for general medical patients.
- To assess the degree of agreement among pharmacists about the Value Score and its elements, as well as sources of variance.
- If necessary, to identify areas of need for improvement in the Value Score to enhance its potential to aid decision-making about clinical pharmacy services and individual pharmacists' decisions about how to allocate their time given competing clinical priorities.

Methods

A 2-phase approach was used:
Goals: Phase I: to identify a set of QAs commonly performed by general medical pharmacists. Phase II: to quantitatively assess each component of the Value Score for each of the QAs identified in Phase I.
Design: Phase I: Individual telephone interviews. Phase II: Online electronic surveys.
**Population & Sample:** Phase I: A randomly selected convenience sample of 9 general medicine pharmacists representing various hospitals within LMPS. Phase II: All LMPS general medicine clinical pharmacists and residents (N=99).
Data Collection:
Phase I: Interviews were recorded. Phase II: Respondents rated each of the 7 elements of the Value Score for each of the 6 QAs using 10-point scales. The "Evidence" element was the only one where specific information was given, and they were asked to rate the quality of the evidence provided, or base their rating on knowledge they had of other relevant evidence.
Analysis:
Phase I: All the QAs identified by interviewees were assessed for relevance to the Value Score framework (based on them being sufficiently well-defined by respondents), and a convenience set of the 6 most commonly identified candidate QAs was selected for Phase II analysis. Phase II: Individual and collective Quality Aggregates and Value Scores were computed for each QA and ranked. Intraclass correlation coefficients (ICCs) for each independent variable (in total, grouped by QA and grouped by element) were computed. Sensitivity analysis based on varying the weighting of the Quality Aggregate component of the Value Score to ascertain whether changes in rankings resulted. Scenarios were: base-case (equal weighting), Evidence (double weight for Evidence & Impact), and Pragmatic (double-weight for Reliance & Modifiability).

Practice Site

19% 28% Residency / VCH / PHC / FH
14%
39%
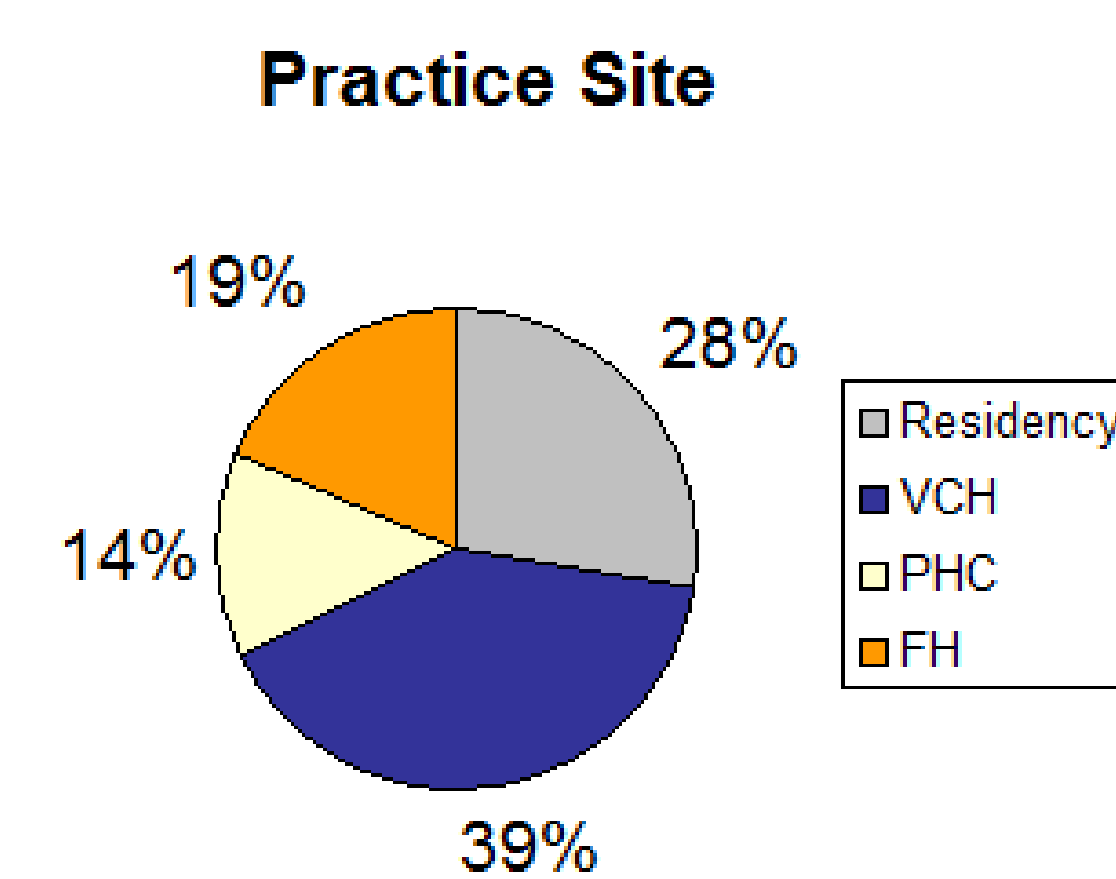
Years of Experience	0-5	27
	5-10	5
	10-20	7
	>20	4
Highest Level of Training	BSc(Pharm)	15
	Residency	23
	PharmD	5

Figure 1: Characteristics of study participants in Phase II (N=43)

Table 1: Rank Order of Quality Action Value Scores

Quality Action	Value Score* Median (IQR)
Medication Reconciliation	38 (27-47)
Warfarin Dosing in Atrial Fibrillation	27 (12-46)
Streamlining Antibiotic Therapy	24 (16-34)
Antimicrobial IV→PO Conversion	18 (13-27)
Vancomycin Dosing	13 (6-24)
Inpatient Hyperglycemia Management	12 (8-18)

*maximum possible Value Score is 500.

Table 2: Rank Order of Intraclass Correlation Coefficients (ICC)* Quality Actions

Quality Action	ICC**
Vancomycin Dosing	**0.762**
Antimicrobial IV→PO Conversion	**0.478**
Inpatient Hyperglycemia Management	**0.455**
Medication Reconciliation	**0.444**
Streamlining Antibiotics	0.324
Warfarin Dosing in Atrial Fibrillation	0.292

Table 3: Rank Order of Intraclass Correlation Coefficients (ICC)* of Value Score Elements

Value Score Element	ICC**
Prevalence	**0.478**
Reliance	**0.445**
Modifiability	**0.439**
Cost Implications	0.213
Effort Required to Perform	0.210
Evidence	0.152
Impact	0.058

**ICC 0.4 - 0.75 = good reliability. ICC > 0.75 = excellent reliability. ICC < 0.4 = poor reliability. All reported ICCs were statistically significant (p<0.001).

Results

Phase I (n=9)
- The 6 QAs shown in Table 1 were identified and selected for Phase II analysis.

Phase II (n=43)
- Participant characteristics: Figure 1.
- Value Score rankings: Table 1.
- Intraclass correlation coefficients (ICC): Tables 2 & 3.
- Sensitivity analysis: All 3 scenarios (base, evidence, pragmatic) produced the same Value Score rankings.
- There was a statistical difference found in the Value Scores between each quality action with the exception between:
  - Warfarin Dosing in AF and Medication Reconciliation, Streamlining Antibiotics, Antibiotic IV-PO Conversion.
  - Inpatient Hyperglycemia Management and Vancomycin Dosing.

Interpretation

- The respondents appeared to be reasonably representative of general medicine pharmacists by level of training, but it is uncertain how representative they were by years of experience.
- Overall, pharmacists are able to assess the elements of the Value Score with sufficient reliability to produce Value Scores that can be used to compare the value of Quality Actions.
- Pharmacists were particularly congruent in their assessment of the Value Scores for Vancomycin Dosing, Antimicrobial IV→PO Conversion, Inpatient Hyperglycemia Management, and Medication Reconciliation, but not for Streamlining Antibiotics or Warfarin Dosing in Atrial Fibrillation.
- Pharmacists are in good agreement about the prevalence, modifiability, and reliance elements of the Value Score, but show poor agreement about effort required to manage, evidence, cost, and impact elements.
  - The Impacts scale we used may require refinement to make the spectrum of impacts more obvious.
  - Whether pharmacists are reflecting real situational differences in effort required to manage deserves further study.
  - The reasons pharmacists do not agree on the evidence and cost implications of the studied QAs may be due to either differing perceptions of the same evidence or cost data, or differences in knowledge about the evidence and costs. This deserves further study.
- The Value Score framework appears to be robust to changes in weighting strategies, at least in terms of rankings of the studied QAs.

Limitations

- Generalizability of our findings is limited by: small sample size used to generate the Phase II QAs list; Inclusion of only commonly-performed QAs; respondents, though in agreement, may not be correct about verifiable parameters such as prevalence, costs, and impacts; and the greater and lesser agreement seen here may be depending on the specific QAs studied rather than generalizable properties of pharmacists or the Value Score framework.

Conclusions

- The Value Score appears to be a feasible and valid means of ranking among commonly-performed Quality Actions identified by general medicine pharmacists.
- Pharmacists have good agreement about several of the Value Score elements, though further study is required to determine whether greater agreement about evidence, costs, impacts and effort can be achieved.
- The Value Score concept has the potential improve decision making about pharmacists clinical activities by making transparent important factors which pharmacists may have more or less agreement about.

References

1. Bruchet N, Loewen P, de Lemos Jane. Improving the quality of clinical pharmacy services : a process to identify and capture high-value "quality actions." Can J Hosp Pharm 2011;64(1):523-30.

UBC | fraserhealth — Better health. Best in health care. | Providence HEALTH CARE — How you want to be treated. | Provincial Health Services Authority — Province-wide solutions. Better health. | Vancouver CoastalHealth — Promoting wellness. Ensuring care.