Exploring the Evidence Framework of Pharmacists Regarding Chronic Disease Targets for Hypertension, Dyslipidemia, and Type 2 Diabetes

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Background

- Therapeutic targets inform drug-therapy decisions for 3 main chronic diseases:
  - glycated hemoglobin A1c **(HbA1c)** for type 2 diabetes
  - systolic blood pressure **(SBP)** for hypertension, and
  - low density lipoprotein cholesterol **(LDL-C)** for dyslipidemia
- Discordance exists between Canadian guideline recommendations and the primary literature for the utility of targeting these surrogates on health outcomes
- **OBJECTIVE**: To investigate the evidence framework pharmacists use to guide drug-therapy decisions regarding targeting surrogate outcomes

Methods

- **Design:** British Columbia-wide, online, cross-sectional survey
- **Study population:** ~4,300
  - Hospital pharmacists, Community pharmacists with a BCPhA membership, Pharmacists active in the UBC Pharmacists Clinic, UBC Pharmacy Program educators, 4th Year UBC Entry-to-Practice PharmD students
- **Study dates:** February – March 2019 (5 weeks)
- **Analysis:** descriptive statistics, text tagging, word cloud
  - Sample size, **N = 159** → confidence level of 95%, confidence interval of 7.8%
    - Eg. 74% of respondents ranked the relevance of targeting HbA1c as *'important but not critical'* → 74 +/- 7.8%, CI 67-83%
- **Questionnaire:** 20 questions: MCQ, free text entry, ranking
  - Administered via UBC Qualtrics Survey Tool, estimated time 10-15 minutes
  - Participants were randomized into 1 of 3 question blocks pertaining to the interpretation of evidence for targets outlined in Table 1

Table 1. Overview of Guidelines and Primary Literature Excerpts Included in Survey

Targets	Guideline	Systematic Review (SR)
HbA1c ≤ 7.0% (n=51)	Diabetes Canada 2018: *↓ microvascular and cardiovascular (CV) events in people with **type 2 diabetes**.*	CD010137 Cochrane 2017: *Unclear benefit and the potential harms are unknown.* CONTROL Group Meta-analysis 2017: *↓ microvascular events.*
SBP < 130 mmHg (n=56)	Hypertension Canada 2018: *SBP of < 130 mmHg in people with **diabetes**.*	CD008277 Cochrane 2013: *Minor ↓ in stroke risk and ↑ adverse drug events. Not supported by evidence.*
LDL-C < 2 mmol/L (n=52)	Canadian Cardiovascular Society Guidelines 2016: *↓ CV events and mortality in people with **dyslipidemia**.*	American College of Cardiology/ American Heart Association Task Force 2013: *No evidence.*

Table 2. Demographics of Survey Respondents (N=159)

		n (%)
Site of Practice	Acute, hospital	97 (61)
	Outpatient, community	19 (12)
	UBC, student	19 (12)
Years Practicing	Less than 5 years	45 (28)
	5-10 years	43 (27)
	More than 10 years	71 (45)
Highest Level of Pharmacy Education	4th Year Pharmacy Student	20 (13)
	Bachelor of Science in Pharmacy	40 (25)
	Accredited Canadian Pharmacy Residency	53 (33)
	Doctor of Pharmacy	36 (23)

Response Rate = (159/4300) = **3.7%**

Figure 1. Baseline Rating of Relevance of Surrogate Targets

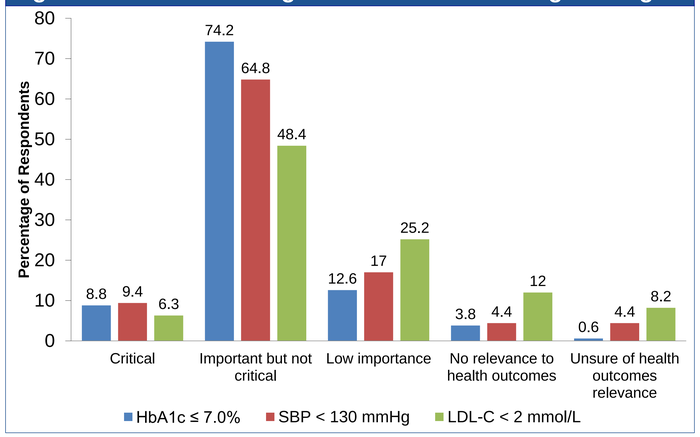


Figure 2. Baseline Responses of Health Outcomes Improved by Targeting Surrogate Markers

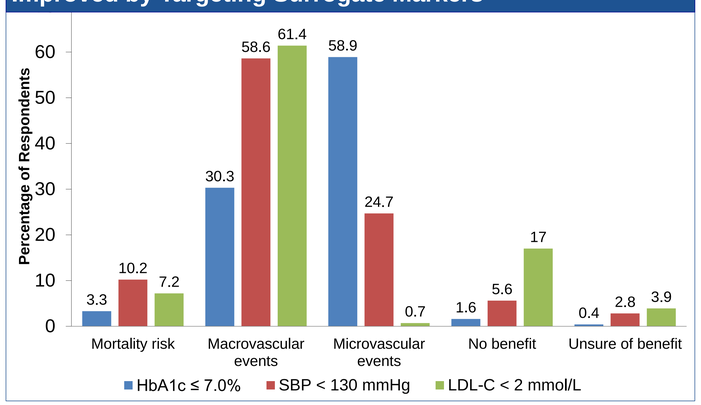
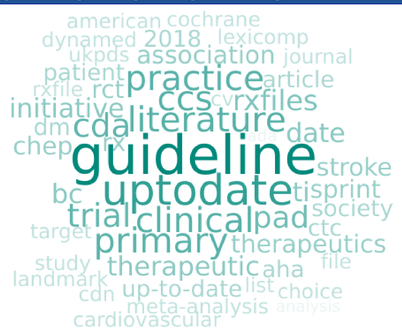
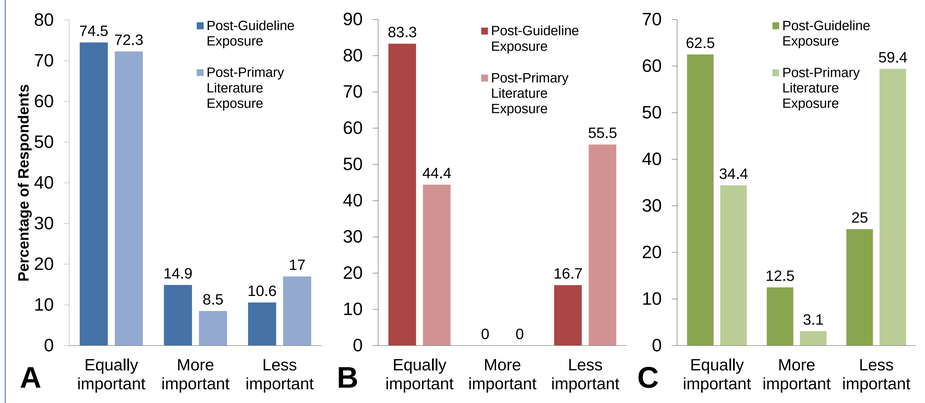


Figure 3. Text Entry Responses of the Source(s) of Information Pharmacists Use to Guide Drug-Therapy Decisions Regarding Targeting Surrogate Markers (Q12)



N=159. For interpretation, the size of the word represents the frequency with which it was reported as an answer to the free text entry question.

Figure 4. Post-Exposure Change in Rating of Relevance* for: A) HbA1c (n=47), B) SBP (n=36), and C) LDL-C (n=32)

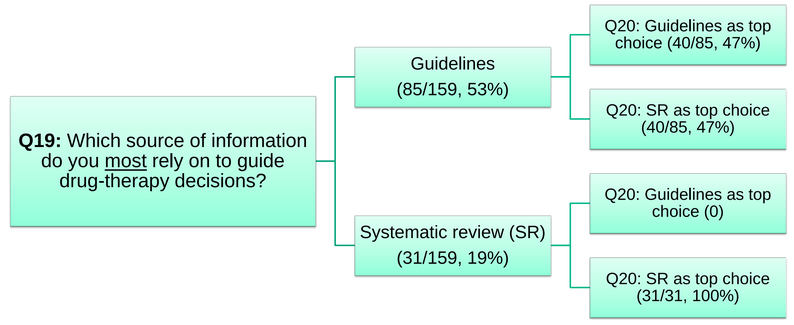


*Change in baseline responses of *critical* or *important but not critical.*

Table 3. Top 4 Sources of Drug Information That Should Guide Drug-Therapy Decisions Involving Targeting Surrogate Markers (Q20)

1. Systematic evidence review
2. Clinical practice guideline
3. Tertiary resources
4. Clinical practice experience

Figure 5. Comparison of Drug Information Sources Most Used in Practice (Q19) versus Ranking of Sources That Should Guide Drug-Therapy Decisions (Q20)



Conclusions

- The **baseline evidence framework** pharmacist's use for targeting surrogate markers is largely based on guidelines; of the 3 targets, HbA1c carries the most importance and LDL-C the least
- For **health outcomes**, pharmacists quote microvascular benefits to support the importance of HbA1c targets whereas macrovascular benefits support SBP and LDL-C targets
- Overall, the baseline rating of relevance of surrogate targets did not change after exposure to guidelines but did change after exposure to primary literature
- For each target, there was a group of pharmacists who did not change their baseline rating despite reviewing the primary literature; the rating for targeting HbA1c was the most persistent
- More pharmacists rely on guidelines than SRs to guide drug-therapy decisions (53% vs 19%), but almost half of those who rely on guidelines indicated that they should instead use SRs

Limitations

- Low response rate (3.7%) and risk of non-response bias
- Low representation from community pharmacists
- Narrow selection (only principal inclusions) of systematic reviews

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