Living systematic review of diabetes quality improvement interventions

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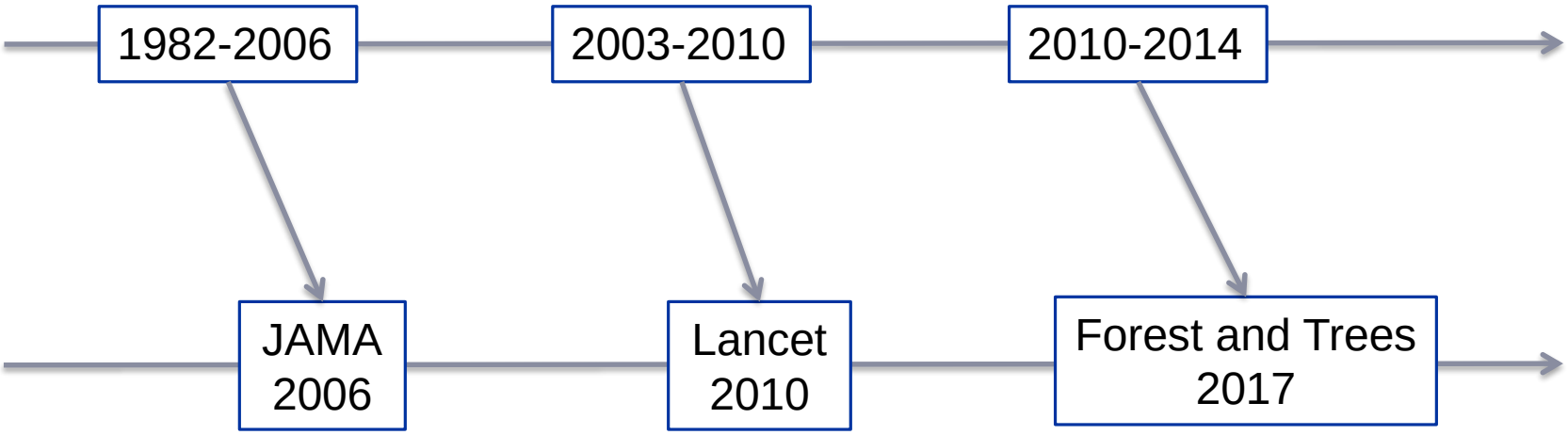
Diabetes QI: a rapidly evolving field



Effects of Quality Improvement Strategies for Type 2 Diabetes on Glycemic Control
A Meta-Regression Analysis

Effectiveness of quality improvement strategies on the management of diabetes: a systematic review and meta-analysis

Seeing the forests *and* the trees—innovative approaches to exploring heterogeneity in systematic reviews of complex interventions to enhance health system decision-making: a protocol

66 included studies

162 included studies

278 included studies

Diabetes QI review inclusion criteria

- **P**: Type 1 or 2 diabetes, outpatient
- **I:** Cochrane's EPOC taxonomy (adapted)
- **C:** 'Usual care' or active intervention
- **O:** Range of process and patient indicators of quality of care
- **D:** RCT, quasi-RCT, controlled BA, crossover trials

EPOC Taxonomy

- Audit and Feedback
- Case management
- Team changes
- Facilitated relay of information
- Clinician education
- Clinician reminders
- Continuous QI
- Financial Incentives
- Patient education*
- Promotion of self-management*
- Patient reminder systems*

Domain	Process measure	Intermediate outcome
Glycemic control		Mean HbA1c
Vascular risk factor management	# pts on ASA, statins, anti hypertensives	Mean LDL Mean SBP Mean DBP
Retinopathy screening	# pts screened	
Foot screening	# pts screened	
Renal function	# pts monitored	
Smoking cessation		# pts quit

What is the best approach to synthesize the evidence?

We know that the QI interventions are effective in improving diabetes QI

For diabetes QI review: 2^{12} intervention combinations=4,096

Options:

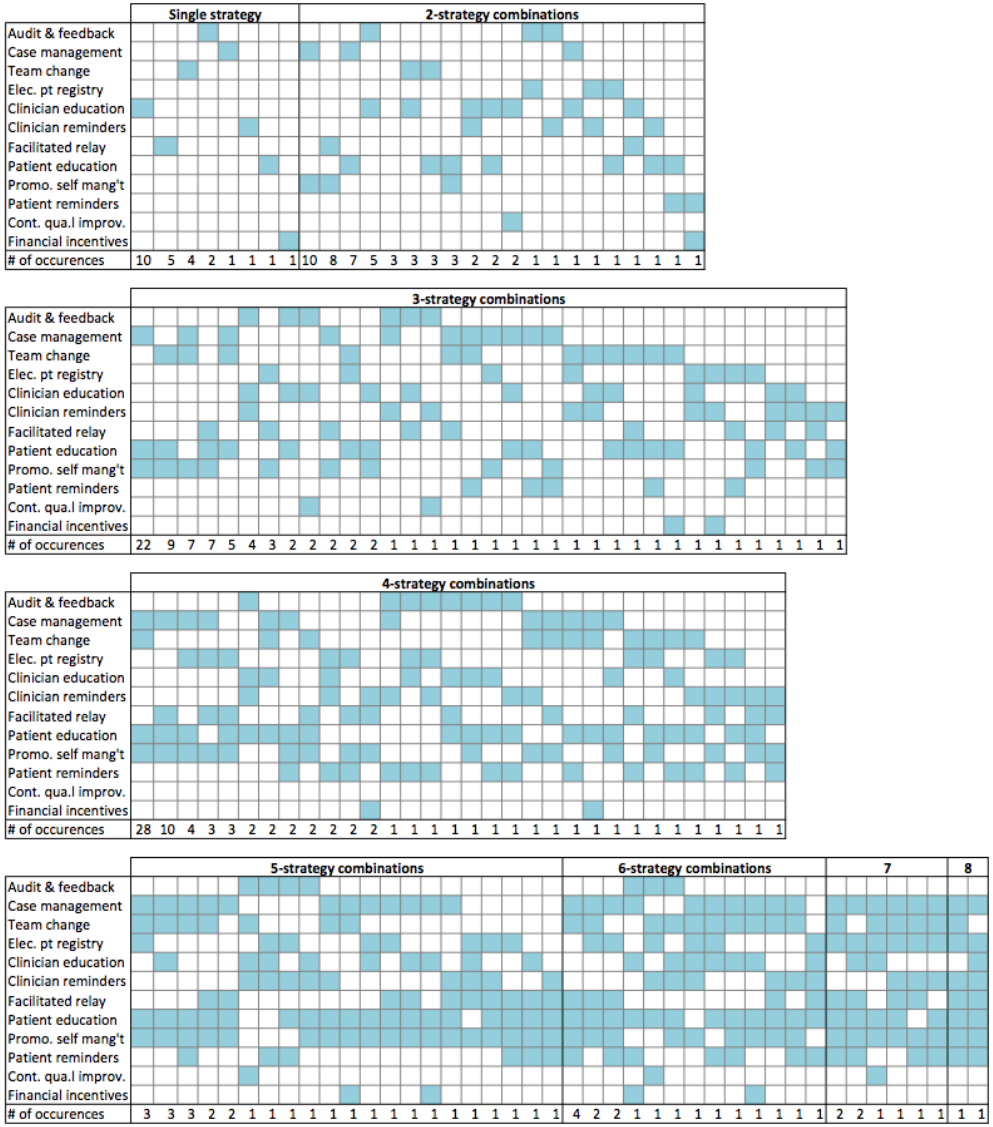
- Single trial, 4,096 arms
- 4,096 independent trials
- Network meta-analysis with 4,096 nodes

Alternative (feasible) approach to capture complexity and inform future directions?

Bayesian multivariate hierarchal meta-regression

Using this statistical approach allows us to:

1) Do multi-arm comparisons rather than pairwise
2) Look at the individual components of these multifaceted, complex interventions in an additive way



Comparison of approaches

Intervention	Traditional meta-analyses	Hierarchical meta-regression
Promotion of self management	-0.57 (-0.71, -0.31) [1]	-0.07 (-0.25, 0.10)
Team changes	-0.57 (-0.71, -0.42) [2]	**-0.33 (-0.48, -0.18)**
Case management	-0.50 (-0.65, -0.36) [3]	-0.09 (-0.27, 0.07)
Patient education	-0.48 (-0.61, -0.34) [4]	-0.16 (-0.31, 0.00)
Facilitated relay	-0.46 (-0.60, -0.33) [5]	-0.17 (-0.33, -0.00)
Electronic patient registry	-0.42 (-0.61, -0.24) [6]	**-0.19 (-0.38, 0.00)**
Patient reminders	-0.39 (-0.65, -0.12) [7]	0.01 (-0.17, 0.18)
Audit and feedback	-0.26 (-0.44, -0.08) [8]	**-0.21 (-0.58, 0.09)**
Clinician education	-0.19 (-0.35, 0.03) [9]	0.03 (-0.24, 0.29)
Clinician reminders	-0.16 (-0.31, -0.02) [10]	0.07 (-0.15, 0.29)

- Effects are smaller due to isolation of individual components
- Rankings are altered
- Fewer effective components

Considerations for transitioning to a LSR

Bayesian multivariate hierarchal meta-regression:

- Primary concern = ensure data analysis are correct, while minimizing statistician time

Questions concerning:

- Can we standardize data extraction forms?
- How can we ensure data is clean as possible before exporting to statistician?

Considerations for transitioning to a LSR

The large scale of our LSR potentially allows for unique considerations/methods:

Screening:

- Search and screen every 3 months

Data Analysis:

- Updated every 6 months, with new evidence flagged until incorporation

Questions?