

Sustainability of knowledge translation interventions in healthcare decision-making: protocol for a scoping review

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ABSTRACT

Introduction: Knowledge translation (KT also known as research utilisation, translational medicine and implementation science) is a dynamic and iterative process that includes the synthesis, dissemination, exchange and ethically sound application of knowledge to improve health. After the implementation of KT interventions, their impact on relevant outcomes should be monitored. The objectives of this scoping review are to: (1) conduct a systematic search of the literature to identify the impact on healthcare outcomes beyond 1 year, or beyond the termination of funding of the initiative of KT interventions targeting chronic disease management for end-users including patients, clinicians, public health officials, health services managers and policy-makers; (2) identify factors that influence sustainability of effective KT interventions; (3) identify how sustained change from KT interventions should be measured; and (4) develop a framework for assessing sustainability of KT interventions.

Methods and analysis: Comprehensive searches of relevant electronic databases (eg, MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials), websites of funding agencies and websites of healthcare provider organisations will be conducted to identify relevant material. We will include experimental, quasi-experimental and observational studies providing information on the sustainability of KT interventions targeting chronic disease management in adults and focusing on end-users including patients, clinicians, public health officials, health services managers and policy-makers. Two reviewers will pilot-test the screening criteria and data abstraction form. They will then screen all citations, full articles and abstract data in duplicate independently. The results of the scoping review will be synthesised descriptively and used to develop a framework to assess the sustainability of KT interventions.

Discussion and dissemination: Our results will help inform end-users (ie, patients, clinicians, public health officials, health services managers and policy-makers) regarding the sustainability of KT interventions. Our dissemination plan includes publications, presentations, website posting and a stakeholder meeting.

INTRODUCTION

As various knowledge translation (KT also known as research utilisation, translational medicine and implementation science) interventions are found to be effective in research studies, the need to evaluate their sustainability is becoming increasingly important. In the Knowledge to Action framework proposed by Graham *et al*,¹ sustained knowledge use is one of the main components. However, many implementation studies focus on short-term outcomes relevant to a study situation and do not address long-term outcomes in practice and policy domains. For example, in the systematic review of interventions to optimise antibiotic use, of 39 studies included, only 2 reported follow-up beyond 1 year.² Similarly, a systematic review of audit and feedback found that the follow-up period in studies varied from 3 weeks to 14 months and reported mixed results with respect to sustained change.³ A recent systematic review of sustainability of KT interventions identified 125 articles but few conclusions could be drawn.⁴ Most studies were retrospective and often lacked a definition or framework for sustainability. The authors synthesised the qualitative information to identify factors influencing sustainability.

Although several definitions of sustainability exist, we have chosen to use the definition of an intervention being in place more than 1 year after implementation or after the research or project funding period is complete. Understanding the sustainability of KT interventions requires a framework analogous to postmarketing surveillance, which is carried out by the pharmaceutical and medical device industries. As seen in the use of spironolactone following the publication of the RALES trial,⁵ it is important to develop an understanding of how interventions are being implemented in 'real world' settings over time and to monitor

their effectiveness. Similar strategies need to be determined for assessing sustainability of KT interventions. Once KT interventions are implemented, their impact on relevant outcomes needs to be monitored, and the intervention itself should be monitored to determine if its 'dose' or 'formulation' needs to be adapted or replaced in the changing healthcare environment. Factors that may influence sustainability may include those related to the stakeholders, the social context of care, the organisational context and public policy.⁶ However, these have not been fully examined through a scoping review. As such, we propose to complete a scoping review to understand the factors that influence sustainability in healthcare decision-making and to develop a framework for assessing sustainability.

METHODS AND ANALYSIS

Protocol

A protocol for our scoping review was compiled using the rigorous methodology proposed by Arksey and O'Malley,⁷ and others.⁸ The draft protocol was circulated for feedback from KT experts, systematic review methodologists and clinicians. It was modified, as necessary, and is available from the authors upon request.

Eligibility criteria

We will include experimental (randomised controlled trials (RCTs), quasi-RCTs, non-RCTs), quasi-experimental (controlled before after, interrupted time series) and observational (cohort, case control, cross-sectional) studies examining the impact of a KT intervention targeting chronic disease management in adults after more than 1 year of implementation or after the termination of research/project funding is described. Studies in all settings will be considered, including primary and specialist care; acute and long-term care; inpatient and outpatient care; and regional, provincial, national and international settings. End-users of the KT intervention will include patients, clinicians (from all disciplines), public health officials (including medical officers of health, department chairs and programme managers), healthcare managers and policy-makers (including regional, provincial/state and federal), and will look at any clinical or healthcare system outcomes.

Information sources

We will conduct a systematic search of the published and difficult to locate or unpublished (ie, grey) literature within health. The following electronic databases will be searched from inception onwards: Medline, Embase, the Cochrane Central Register of Controlled Trials (CENTRAL) and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). A search of the grey literature will be conducted using Google, and relevant discipline-based list servers, including CANMEDLIB and MEDLIB, using guidance from the Canadian Agency for Drugs and Technologies in Health.⁹ We will search the websites of funding agencies, and healthcare

provider organisations from Canada, the USA, the UK and Australia who have similar healthcare systems and/or similar challenges related to chronic disease management. References from included studies and relevant review articles will also be scanned to ensure literature saturation. Team members will also use their linkages with experts in the field to identify additional articles.

Search strategy

The main (MEDLINE) search strategy was developed by an experienced librarian, circulated to the team and revised, as necessary. Search terms included durability, fidelity, sustainability, institutionalisation, routinisation, longitudinal and long-term. The search was not limited by language, but was limited to adults, chronic medical diseases and humans.

Subsequently, the search strategy was peer reviewed by another experienced librarian using the Peer Review of Electronic Search Strategies (PRESS) Checklist.¹⁰ The final search strategy can be found in online supplementary appendix 1, which is available electronically on the journal's website, and was adjusted for the other databases, as necessary. The search strategies for the other databases are available from the authors on request.

Study selection

The eligibility criteria will be pilot-tested on a random sample of titles and abstracts/full-text articles. Subsequently, two investigators will independently review the retrieved abstracts to identify those that meet the inclusion criteria at the title and abstract level of screening. Assessment of potentially relevant full-text articles will be performed by two investigators independently to determine if they meet inclusion criteria.

Data items and data collection process

Two investigators will independently read each article and extract relevant data. The main focus of the studies will be categorised or 'charted'⁶ using the following criteria:

1. What KT interventions (affecting the various stakeholder groups) targeting chronic medical disease management have been found to have sustained impact beyond 1 year on healthcare outcomes?
2. What is the effect of sustained use of a KT strategy targeting chronic medical disease management on the components of the intervention? How is it adapted over time?

Additional categories may be identified through completion of the search and in consultation with the team members. Study quality is generally not conducted during a scoping review because the aim is to identify gaps in the evidence base and to target areas for future systematic review.^{7 8}

Synthesis

The data arising from our data collection process will be summarised quantitatively (using a simple numerical

count) and qualitatively (drawing on the descriptive analytical method) using thematic analysis with the N-Vivo software (V.10). Through this process, we will be able to identify where gaps exist in the literature, as well as the research area(s) which require a systematic review or primary research. We will use our results to (1) determine factors that influence sustainability of KT interventions, (2) determine how sustainability of KT interventions should be measured and (3) develop a framework for assessing the sustainability of KT interventions.

DISCUSSION AND DISSEMINATION

The results of the proposed scoping review will be used to develop a framework for assessing sustainability for chronic disease management of KT interventions. This framework will advance both the science and practice of KT. Furthermore, it will be of utility to researchers, funders and those interested in implementing KT interventions including clinicians, healthcare managers and policy-makers, among others. To our knowledge, there has been no previous attempt to understand the impact of sustained KT interventions or the factors that influence sustainability.

We will ensure broad dissemination of our research findings through multiple KT strategies. These include publications in open-access, peer-reviewed journals, conference presentations, posting our results on our KT Canada website (<http://ktclearinghouse.ca/ktcanada>) and creating user-friendly executive summaries of our results. We will also hold a dissemination meeting with our key stakeholders, including researchers, funders, clinicians, healthcare managers and policy-makers, among others.

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Contributors ACT helped conceive the study design and also draft the protocol. EC and HA helped draft the protocol. KAM and JMG helped conceive the study and obtain funding for it, as well as edited the draft protocol. LP developed and executed the search strategy and edited the draft protocol. SES conceived the study, obtained funding for it, and wrote the protocol. All authors read and approved the final manuscript.

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Competing interests None.

Provenance and peer review Not commissioned; internally peer reviewed.

Data sharing statement Unpublished study data, such as the search strategies for the other databases, are available upon request to the corresponding author.

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APPENDIX 1: MEDLINE Search Strategy

Database: Ovid MEDLINE(R), Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid OLDMEDLINE(R) <1946 to Present>

- 1 Chronic Disease/
- 2 (chronic adj illness\$).mp.
- 3 (chronic adj condition\$).mp.
- 4 (chronic adj disease\$).mp.
- 5 (longterm adj illness\$).mp.
- 6 (longterm adj condition\$).mp.
- 7 (longterm adj disease\$).mp.
- 8 (long-term adj illness\$).mp.
- 9 (long-term adj condition\$).mp.
- 10 (long-term adj disease\$).mp.
- 11 Diabetes Mellitus/
- 12 Diabetes Mellitus, Type 1/
- 13 Diabetes Mellitus, Type 2/
- 14 Diabetes Complications/
- 15 diabet\$.tw.
- 16 (insulin\$ adj depend\$).mp.
- 17 insulin?depend\$.mp.
- 18 exp Pulmonary Disease, Chronic Obstructive/
- 19 "obstructive lung disease\$".mp.
- 20 "obstructive pulmonary disease\$".mp.
- 21 exp Cardiovascular Diseases/
- 22 exp Cerebrovascular Disorders/
- 23 exp Heart Failure/
- 24 exp Ischemia/
- 25 exp Stroke/
- 26 exp Thrombosis/
- 27 angina.mp.
- 28 atheromata\$.mp.
- 29 arteriosclerosis.mp.
- 30 atherosclerosis.mp.
- 31 (atrial adj fibrillation).mp.
- 32 arrhythmia.mp.
- 33 aneurysm\$.mp.
- 34 (brain\$ adj infarc\$).mp.
- 35 (cardiovascular adj disease?).mp.
- 36 (cardiac adj arrest\$).mp.
- 37 (coronary adj2 disease\$).mp.
- 38 (cerebral adj h?emorrhage).mp.
- 39 cardiomegaly.mp.
- 40 cardiomyopathy.mp.
- 41 embolism\$.mp.
- 42 (heart adj failure).mp.

43 (heart\$ adj infarc\$).mp.
 44 (heart adj disease\$).mp.
 45 (heart adj attack\$).mp.
 46 hypertensi\$.mp.
 47 isch?emi\$.mp.
 48 (intracranial adj h?emorrhage\$).tw.
 49 (myocardial adj infarc\$).mp.
 50 stroke\$.tw.
 51 thromboembolism.mp.
 52 thrombophlebitis.mp.
 53 thrombosis.mp.
 54 thromboses.mp.
 55 (ventricular adj fibrillation).mp.
 56 exp Peripheral Vascular Diseases/
 57 (peripheral adj vascular).mp.
 58 (peripheral adj arterial).mp.
 59 exp Carcinoma/
 60 exp Neoplasms/
 61 carcinoma\$.mp.
 62 neoplasm\$.mp.
 63 tumor?r\$.mp.
 64 cancer\$.mp.
 65 exp Osteoporosis/
 66 osteoporosis.mp.
 67 exp Arthritis/
 68 arthritis.mp.
 69 osteoarthritis.mp.
 70 rheumati\$.mp.
 71 exp Asthma/
 72 asthma.mp.
 73 exp Inflammatory Bowel Diseases/
 74 "inflammatory bowel disease?".mp.
 75 (ulcer\$ adj colit\$).mp.
 76 crohn\$.mp.
 77 or/1-76
 78 (adoption adj2 longitudinal).tw.
 79 (adoption adj2 long-term).tw.
 80 (adoption adj2 longterm).tw.
 81 (capacity adj building).tw.
 82 (continued adj2 effect).tw.
 83 (continued adj2 effects).tw.
 84 (continued adj2 effectiveness).tw.
 85 (continued adj2 impact\$).tw.
 86 (continued adj2 intervention\$).tw.
 87 (continued adj2 innovation\$).tw.
 88 (continued adj2 project\$).tw.
 89 (continued adj2 program\$).tw.
 90 (continuation adj2 effect).tw.

91 (continuation adj2 effects).tw.
92 (continuation adj2 effectiveness).tw.
93 (continuation adj2 impact).tw.
94 (continuation adj2 intervention\$).tw.
95 (continuation adj2 innovation\$).tw.
96 (continuation adj2 project\$).tw.
97 (continuation adj2 project\$).tw.
98 (de-adoption adj2 change\$).tw.
99 (de-adoption adj2 intervention\$).tw.
100 (de-adoption adj2 innovation\$).tw.
101 (de-adoption adj2 project\$).tw.
102 (de-adoption adj2 program\$).tw.
103 (discontinuation adj2 intervention\$).tw.
104 (discontinuation adj2 innovation\$).tw.
105 (discontinuation adj2 program\$).tw.
106 (discontinuation adj2 project\$).tw.
107 (discontinuance adj2 intervention\$).tw.
108 (discontinuance adj2 innovation\$).tw.
109 (discontinuance adj2 program\$).tw.
110 (discontinuance adj2 project\$).tw.
111 (durability adj2 benefit\$).tw.
112 (durability adj2 change\$).tw.
113 (durability adj2 effect).tw.
114 (durability adj2 effects).tw.
115 (durability adj2 effectiveness).tw.
116 (durability adj2 intervention\$).tw.
117 (durability adj2 improvement\$).tw.
118 (durability adj2 implement\$).tw.
119 (durability adj2 impact\$).tw.
120 (durability adj2 innovation\$).tw.
121 (durability adj2 longitudinal).tw.
122 (durability adj2 outcome\$).tw.
123 (durability adj2 "over time").tw.
124 (durability adj2 predictor\$).tw.
125 (durability adj2 process\$).tw.
126 (durability adj2 program\$).tw.
127 (durability adj2 project\$).tw.
128 (durability adj2 post-implement\$).tw.
129 (durability adj2 success\$).tw.
130 (fidelity adj2 adoption).tw.
131 (fidelity adj2 barrier\$).tw.
132 (fidelity adj2 challenge\$).tw.
133 (fidelity adj2 change\$).tw.
134 (fidelity adj2 effect).tw.
135 (fidelity adj2 effects).tw.
136 (fidelity adj2 effectiveness).tw.
137 (fidelity adj2 evaluat\$).tw.
138 (fidelity adj2 facilitator\$).tw.

139 (fidelity adj2 factor\$).tw.
140 (fidelity adj2 impact\$).tw.
141 (fidelity adj2 implement\$).tw.
142 (fidelity adj2 improvement\$).tw.
143 (fidelity adj2 intervention\$).tw.
144 (fidelity adj2 innovation\$).tw.
145 (fidelity adj2 long-term).tw.
146 (fidelity adj2 longterm).tw.
147 (fidelity adj2 longitudinal).tw.
148 (fidelity adj2 "over time").tw.
149 (fidelity adj2 outcome\$).tw.
150 (fidelity adj2 post-implement\$).tw.
151 (fidelity adj2 program\$).tw.
152 (fidelity adj2 project\$).tw.
153 (fidelity adj2 success\$).tw.
154 (institutionali?ation adj2 change\$).tw.
155 (institutionali?ation adj2 effect).tw.
156 (institutionali?ation adj2 effects).tw.
157 (institutionali?ation adj2 effectiveness).tw.
158 (institutionali?ation adj2 facilitator\$).tw.
159 (institutionali?ation adj2 factor\$).tw.
160 (institutionali?ation adj2 improvement\$).tw.
161 (institutionali?ation adj2 impact\$).tw.
162 (institutionali?ation adj2 innovation\$).tw.
163 (institutionali?ation adj2 longitudinal).tw.
164 (institutionali?ation adj2 long-term).tw.
165 (institutionali?ation adj2 longterm).tw.
166 (institutionali?ation adj2 outcome\$).tw.
167 (institutionali?ation adj2 predictor\$).tw.
168 (institutionali?ation adj2 process\$).tw.
169 (institutionali?ation adj2 post-implement\$).tw.
170 (longitudinal adj2 assess\$).tw.
171 (longitudinal adj2 benefit\$).tw.
172 (longitudinal adj2 change\$).tw.
173 (longitudinal adj2 effect).tw.
174 (longitudinal adj2 effects).tw.
175 (longitudinal adj2 effectiveness).tw.
176 (longitudinal adj2 examination?).tw.
177 (longitudinal adj2 evaluat\$).tw.
178 (longitudinal adj2 impact\$).tw.
179 (longitudinal adj2 pattern?).tw.
180 (longitudinal adj2 program\$).tw.
181 (longitudinal adj2 project\$).tw.
182 (longitudinal adj2 success\$).tw.
183 (maintenance adj2 barrier\$).tw.
184 (maintenance adj2 challenge\$).tw.
185 (maintenance adj2 change\$).tw.
186 (maintenance adj2 effect).tw.

187 (maintenance adj2 effects).tw.
188 (maintenance adj2 effectiveness).tw.
189 (maintenance adj2 fail\$).tw.
190 (maintenance adj2 facilitator\$).tw.
191 (maintenance adj2 factor\$).tw.
192 (maintenance adj2 intervention\$).tw.
193 (maintenance adj2 improvement\$).tw.
194 (maintenance adj2 implement\$).tw.
195 (maintenance adj2 impact\$).tw.
196 (maintenance adj2 innovation\$).tw.
197 (maintenance adj2 long-term).tw.
198 (maintenance adj2 longterm).tw.
199 (maintenance adj2 longitudinal).tw.
200 (maintenance adj2 outcome\$).tw.
201 (maintenance adj2 "over time").tw.
202 (maintenance adj2 process\$).tw.
203 (maintenance adj2 project\$).tw.
204 (maintenance adj2 post-implement\$).tw.
205 (nonadoption adj2 intervention\$).tw.
206 (nonadoption adj2 innovation\$).tw.
207 (nonadoption adj2 program\$).tw.
208 (nonadoption adj2 project\$).tw.
209 (non-adoption adj2 intervention\$).tw.
210 (non-adoption adj2 innovation\$).tw.
211 (non-adoption adj2 program\$).tw.
212 (non-adoption adj2 project\$).tw.
213 (persistence adj2 implement\$).tw.
214 (persistence adj2 innovation\$).tw.
215 (persistence adj2 program\$).tw.
216 (persistence adj2 project\$).tw.
217 (project adj2 long-term).tw.
218 (project adj2 longterm).tw.
219 (project adj2 "over time").tw.
220 (program\$ adj2 long-term).tw.
221 (program\$ adj2 longterm).tw.
222 (program\$ adj2 "over time").tw.
223 (routini\$ adj2 change\$).tw.
224 (routini\$ adj2 facilitator\$).tw.
225 (routini\$ adj2 factor\$).tw.
226 (routini\$ adj2 improve\$).tw.
227 (routini\$ adj2 intervention\$).tw.
228 (routini\$ adj2 innovation\$).tw.
229 (routini\$ adj2 longitudinal).tw.
230 (routini\$ adj2 long-term).tw.
231 (routini\$ adj2 longterm).tw.
232 (routini\$ adj2 outcome\$).tw.
233 (routini\$ adj2 "over time").tw.
234 (routini\$ adj2 predictor\$).tw.

235 (routini\$ adj2 process\$).tw.
 236 (routini\$ adj2 program\$).tw.
 237 (routini\$ adj2 project\$).tw.
 238 (routini\$ adj2 post-implement\$).tw.
 239 (sustain\$ adj2 adoption).tw.
 240 (sustain\$ adj2 assess\$).tw.
 241 (sustain\$ adj2 barrier\$).tw.
 242 (sustain\$ adj2 benefit\$).tw.
 243 (sustain\$ adj2 change\$).tw.
 244 (sustain\$ adj2 challenge\$).tw.
 245 (sustain\$ adj2 evaluat\$).tw.
 246 (sustain\$ adj2 effect).tw.
 247 (sustain\$ adj2 effects).tw.
 248 (sustain\$ adj2 effectiveness).tw.
 249 (sustain\$ adj2 fail\$).tw.
 250 (sustain\$ adj2 facilitator\$).tw.
 251 (sustain\$ adj2 factor\$).tw.
 252 (sustain\$ adj2 innovation\$).tw.
 253 (sustain\$ adj2 intervention\$).tw.
 254 (sustain\$ adj2 improvement\$).tw.
 255 (sustain\$ adj2 implement\$).tw.
 256 (sustain\$ adj2 impact\$).tw.
 257 (sustain\$ adj2 long-term).tw.
 258 (sustain\$ adj2 longterm).tw.
 259 (sustain\$ adj2 outcome\$).tw.
 260 (sustain\$ adj2 "over time").tw.
 261 (sustain\$ adj2 predictor\$).tw.
 262 (sustain\$ adj2 process\$).tw.
 263 (sustain\$ adj2 project\$).tw.
 264 (sustain\$ adj2 program\$).tw.
 265 (sustain\$ adj2 post-implement\$).tw.
 266 (sustain\$ adj2 success\$).tw.
 267 (sustain\$ adj2 vitality).tw.
 268 sustainability.ti.
 269 or/78-268
 270 adult.mp.
 271 Middle Aged/
 272 age\$.tw.
 273 exp Adult/
 274 or/270-273
 275 77 and 269 and 274
 276 exp Animals/ not (exp Animals/ and Humans/)
 277 275 not 276