



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

Journal:	<i>BMJ Open</i>
Manuscript ID:	bmjopen-2013-002970
Article Type:	Protocol
Date Submitted by the Author:	28-Mar-2013
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<b>Primary Subject Heading</b>:	Evidence based practice
Secondary Subject Heading:	Health services research
Keywords:	knowledge translation, sustainability, implementation, research utilization, fidelity

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3 1 **Sustainability of knowledge translation interventions in healthcare decision making:**  
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6 2 **protocol for a scoping review**  
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49 20 **Key words:** sustainability, knowledge translation, implementation, research utilization,  
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51 21 fidelity.  
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53 22 **Word Count:** abstract (300), main text (1474)  
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3 **ABSTRACT**  
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5 **Introduction:** Knowledge translation (KT; also known as research utilization,  
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7 translational medicine, and implementation science) is a dynamic and iterative process  
8  
9 that includes synthesis, dissemination, exchange and ethically sound application of  
10  
11 knowledge to improve health. After the implementation of KT interventions, their impact  
12  
13 on relevant outcomes should be monitored. The objectives of this scoping review are to:  
14  
15 1) conduct a systematic search of the literature to identify the impact on health care  
16  
17 outcomes beyond 1 year, or beyond the termination of funding of the initiative of KT  
18  
19 interventions targeting chronic disease management for end-users including patients,  
20  
21 clinicians, public health officials, health services managers and policy makers; 2) identify  
22  
23 factors that influence sustainability of effective KT interventions; 3) identify how  
24  
25 sustained change from KT interventions should be measured; and 4) develop a  
26  
27 framework for assessing sustainability of KT interventions.  
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36 **Methods and Analysis:** Comprehensive searches of relevant electronic databases (e.g.,  
37  
38 Medline, Embase, Cochrane Central Register of Controlled Trials), websites of funding  
39  
40 agencies, and websites of health care provider organizations will be conducted to identify  
41  
42 relevant material. We will include experimental, quasi-experimental, and observational  
43  
44 studies providing information on the sustainability of KT interventions targeting chronic  
45  
46 disease management in adults and focusing on end-users including patients, clinicians,  
47  
48 public health officials, health services managers and policy makers. Two reviewers will  
49  
50 pilot test the screening criteria and data abstraction form. They will then screen all  
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52 citations, full articles, and abstract data in duplicate, independently. The results of the  
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3 45 scoping review will be synthesized descriptively and used to develop a framework to  
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6 46 assess the sustainability of KT interventions.  
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8 47 **Discussion and Dissemination:** Our results will help inform end users (i.e., patients,  
9  
10 48 clinicians, public health officials, health services managers and policy makers) regarding  
11  
12 49 the sustainability of KT interventions. Our dissemination plan includes publications,  
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15 50 presentations, website posting, and a stakeholder meeting.  
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## 51 INTRODUCTION

52 As various knowledge translation (KT; also known as research utilization,  
53 translational medicine, and implementation science) interventions are found to be  
54 effective in research studies, the need to evaluate their sustainability is becoming  
55 increasingly important. In the Knowledge to Action framework proposed by Graham and  
56 others,[1] sustained knowledge use is one of the main components. However, many  
57 implementation studies focus on short-term outcomes relevant to a study situation and do  
58 not address long term outcomes in practice and policy domains. For example, in the  
59 systematic review of interventions to optimize antibiotic use, of 39 studies included only  
60 2 reported follow-up beyond 1 year.[2] Similarly, a systematic review of audit and  
61 feedback found that the follow-up period in studies varied from 3 weeks to 14 months  
62 and reported mixed results with respect to sustained change.[3] A recent systematic  
63 review of sustainability of KT interventions identified 125 articles but few conclusions  
64 could be drawn.[4] Most studies were retrospective and often lacked a definition or  
65 framework for sustainability. The authors synthesized the qualitative information to  
66 identify factors influencing sustainability.

67 Although several definitions of sustainability exist, we have chosen to use the  
68 definition of an intervention being in place more than 1 year after implementation or after  
69 the research or project funding period is complete. Understanding sustainability of KT  
70 interventions requires a framework analogous to post-marketing surveillance, which is  
71 done by the pharmaceutical and medical device industries. As seen in the use of  
72 spironolactone following the publication of the RALES trial,[5] it is important to develop  
73 an understanding of how interventions are being implemented in 'real world' settings

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3 74 over time and to monitor their effectiveness. Similar strategies need to be determined for  
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5 75 assessing sustainability of KT interventions. Once KT interventions are implemented,  
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8 76 their impact on relevant outcomes needs to be monitored, and the intervention itself  
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10  
11 77 should be monitored to determine if its ‘dose’ or ‘formulation’ need to be adapted or  
12  
13 78 replaced in the changing health care environment. Factors that may influence  
14  
15 79 sustainability may include those related to the stakeholders, the social context of care, the  
16  
17 80 organizational context, and public policy.[6] However, these have not been fully  
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19  
20 81 examined through a scoping review. As such, we propose to complete a scoping review  
21  
22 82 to understand the factors that influence sustainability in health care decision making and  
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24  
25 83 to develop a framework for assessing sustainability.  
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## 29 85 **METHODS AND ANALYSIS**

### 30 31 32 86 **Protocol**

33  
34 87 A protocol for our scoping review was compiled using the rigorous methodology  
35  
36 88 proposed by Arksey and O’Malley,[7] and others.[8] The draft protocol was circulated  
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38 89 for feedback from KT experts, systematic review methodologists, and clinicians. It was  
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40  
41 90 modified, as necessary, and is available from the authors upon request.  
42

### 43 44 91 **Eligibility Criteria**

45  
46 92 We will include experimental (randomized controlled trials [RCTs], quasi-RCTs,  
47  
48 93 non-RCTs), quasi-experimental (controlled before after, interrupted time series), and  
49  
50 94 observational (cohort, case control, cross-sectional) studies examining the impact of a KT  
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53 95 intervention targeting chronic disease management in adults after more than 1 year of  
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55 96 implementation or after the termination of research/project funding is described. Studies  
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3 97 in all settings will be considered, including primary and specialist care; acute and long  
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5 98 term care; inpatient and outpatient care; and regional, provincial, national and  
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7  
8 99 international settings. End-users of the KT intervention will include patients, clinicians  
9  
10  
11 100 (from all disciplines), public health officials (including medical officers of health,  
12  
13 101 department chairs and program managers), health care managers and policy makers  
14  
15 102 (including regional, provincial/state and federal), and will look at any clinical or health  
16  
17 103 care system outcomes.

#### 104 **Information Sources**

105 We will conduct a systematic search of the published and difficult to locate or  
106 unpublished (i.e., grey) literature within health. The following electronic databases will  
107 be searched from inception onwards: Medline, Embase, the Cochrane Central Register of  
108 Controlled Trials (CENTRAL), and the Cumulative Index to Nursing and Allied Health  
109 Literature (CINAHL). A search of the grey literature will be conducted using Google,  
110 and relevant discipline-based list serves, including CANMEDLIB and MEDLIB using  
111 guidance from the Canadian Agency for Drugs and Technologies in Health.[9] We will  
112 search the websites of funding agencies, and health care provider organizations from  
113 Canada, the United States, United Kingdom and Australia who have similar health care  
114 systems and or similar challenges related to chronic disease management. References  
115 from included studies and relevant review articles will also be scanned to ensure  
116 literature saturation. Team members will also use their linkages with experts in the field  
117 to identify additional articles.

#### 118 **Search Strategy**

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3 119 The main (MEDLINE) search strategy was developed by an experienced librarian  
4  
5 120 (LP), circulated to the team and revised, as necessary. Search terms included durability,  
6  
7  
8 121 fidelity, sustainability, institutionalization, routinization, longitudinal, and long-term. The  
9  
10 122 search was not limited by language, yet was limited to adults, chronic medical diseases  
11  
12  
13 123 and humans.

14  
15 124 Subsequently, the search strategy was peer reviewed by another experienced  
16  
17 125 librarian using the Peer Review of Electronic Search Strategies (PRESS) Checklist.[10]  
18  
19  
20 126 The final search strategy can be found in Appendix 1, which is available electronically on  
21  
22 127 the journal's website, and was adjusted for the other databases, as necessary. The search  
23  
24  
25 128 strategies for the other databases are available from the authors upon request.

### 26 27 129 **Study Selection**

28  
29 130 The eligibility criteria will be pilot-tested on a random sample of titles and  
30  
31 131 abstracts/full-text articles. Subsequently, two investigators will independently review the  
32  
33 132 retrieved abstracts to identify those that meet the inclusion criteria at the title and abstract  
34  
35 133 level of screening. Assessment of potentially relevant full-text articles will be done by  
36  
37 134 two investigators independently to determine if they meet inclusion criteria.

### 38 39 135 **Data Items and Data Collection Process**

40  
41 136 Two investigators will independently read each article and extract relevant data.  
42  
43 137 The main focus of the studies will be categorized or 'charted'[6] using the following  
44  
45 138 criteria:

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50 139 1. What KT interventions (affecting the various stakeholder groups) targeting chronic  
51  
52 140 medical disease management have been found to have sustained impact beyond 1  
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54  
55 141 year on health care outcomes?



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2  
3 142 2. What is the effect of sustained use of a KT strategy targeting chronic medical disease  
4  
5 143 management on the components of the intervention? How is it adapted over time?  
6  
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8 144 Additional categories may be identified through completion of the search and in  
9  
10 145 consultation with the team members. Study quality is generally not conducted during a  
11  
12 146 scoping review because the aim is to identify gaps in the evidence base and to target areas  
13  
14 147 for future systematic review.[7, 8]  
15  
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### 17 148 **Synthesis**

19  
20 149 The data arising from our data collection process will be summarized  
21  
22 150 quantitatively (using a simple numerical count) and qualitatively (drawing on the  
23  
24 151 descriptive analytical method) using thematic analysis with the N-Vivo software (version  
25  
26 152 10). Through this process, we will be able to identify where gaps exist in the literature, as  
27  
28 153 well as the research area(s) which require a systematic review or primary research. We  
29  
30 154 will use our results to 1) determine factors that influence sustainability of KT  
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32 155 interventions, 2) determine how sustainability of KT interventions should be measured,  
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34 156 and 3) develop a framework for assessing the sustainability of KT interventions.  
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### 41 158 **DISCUSSION AND DISSEMINATION**

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44 159 The results of the proposed scoping review will be used to develop a framework  
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46 160 for assessing sustainability for chronic disease management KT interventions. This  
47  
48 161 framework will advance both the science and practice of KT. Furthermore, it will be of  
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50 162 utility to researchers, funders and those interested in implementing KT interventions  
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52 163 including clinicians, health care managers, and policy makers, amongst others. To our  
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3 164 knowledge, there has been no previous attempt to understand the impact of sustained KT  
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6 165 interventions or the factors that influence sustainability.  
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8 166 We will ensure broad dissemination of our research findings through multiple KT  
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10 167 strategies. These include publications in open-access, peer-reviewed journals, conference  
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12 168 presentations, posting our results on our KT Canada website  
13  
14 169 (<http://ktclearinghouse.ca/ktcanada>), and creating user-friendly executive summaries of  
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16  
17 170 our results. We will also hold a dissemination meeting with our key stakeholders,  
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20 171 including researchers, funders, clinicians, health care managers, and policy makers,  
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22 172 amongst others.  
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3 173 **LIST OF ABBREVIATIONS**  
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5  
6 174 KT knowledge translation  
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8 175 PRESS peer review of electronic search strategies  
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10 176 CENTRAL Cochrane Central Register of Controlled Trials  
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12 177 CINAHL Cumulative Index to Nursing and Allied Health Literature  
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17 179 **AUTHORS' CONTRIBUTIONS**  
18

19  
20 180 ACT helped conceive the study design and helped draft the protocol. EC helped  
21  
22 181 draft the protocol. HA helped draft the protocol. KAM and JMG helped obtain funding  
23  
24 182 for the study, helped conceive the study, and edited the draft protocol. LP developed the  
25  
26 183 search strategy, executed the search strategy, and edited the draft protocol. SES obtained  
27  
28 184 funding for the study, conceived the study, and wrote the protocol. All authors read and  
29  
30 185 approved the final manuscript.  
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36 187 **ACKNOWLEDGEMENTS**  
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38  
39 188 This scoping review was funded by the Canadian Institutes of Health Research  
40  
41 189 through Knowledge Translation Canada. ACT is funded by a Canadian Institutes of  
42  
43 190 Health Research/Drug Safety and Effectiveness Network (CIHR/DSEN) New  
44  
45 191 Investigator Award in Knowledge Synthesis. JMG is funded by a Tier 1 Canada Research  
46  
47 192 Chair in Health Knowledge Transfer and Uptake. SES is funded by a Tier 1 Canada  
48  
49 193 Research Chair in Knowledge Translation.  
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53 194 We thank Becky Skidmore for peer reviewing the literature search.  
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6 197 **COMPETING INTERESTS**  
7

8 198 None declared.  
9

10 199

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12  
13 200 **FUNDING**  
14

15 201 This work was supported by the Canadian Institutes of Health Research grant number  
16

17 202 CRI 88368.  
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22 204 **DATA SHARING**  
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24 205 Unpublished study data, such as the search strategies for the other databases, are  
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27 206 available upon request to the corresponding author.  
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For peer review only

**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>

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- 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.

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3  
4 43 (heart\$ adj infarc\$).mp.  
5 44 (heart adj disease\$).mp.  
6 45 (heart adj attack\$).mp.  
7 46 hypertensi\$.mp.  
8 47 isch?emi\$.mp.  
9 48 (intracranial adj h?emorrhage\$).tw.  
10 49 (myocardial adj infarc\$).mp.  
11 50 stroke\$.tw.  
12 51 thromboembolism.mp.  
13 52 thrombophlebitis.mp.  
14 53 thrombosis.mp.  
15 54 thromboses.mp.  
16 55 (ventricular adj fibrillation).mp.  
17 56 exp Peripheral Vascular Diseases/  
18 57 (peripheral adj vascular).mp.  
19 58 (peripheral adj arterial).mp.  
20 59 exp Carcinoma/  
21 60 exp Neoplasms/  
22 61 carcinoma\$.mp.  
23 62 neoplasm\$.mp.  
24 63 tumor?r\$.mp.  
25 64 cancer\$.mp.  
26 65 exp Osteoporosis/  
27 66 osteoporosis.mp.  
28 67 exp Arthritis/  
29 68 arthritis.mp.  
30 69 osteoarthritis.mp.  
31 70 rheumati\$.mp.  
32 71 exp Asthma/  
33 72 asthma.mp.  
34 73 exp Inflammatory Bowel Diseases/  
35 74 "inflammatory bowel disease?".mp.  
36 75 (ulcer\$ adj colit\$).mp.  
37 76 crohn\$.mp.  
38 77 or/1-76  
39 78 (adoption adj2 longitudinal).tw.  
40 79 (adoption adj2 long-term).tw.  
41 80 (adoption adj2 longterm).tw.  
42 81 (capacity adj building).tw.  
43 82 (continued adj2 effect).tw.  
44 83 (continued adj2 effects).tw.  
45 84 (continued adj2 effectiveness).tw.  
46 85 (continued adj2 impact\$).tw.  
47 86 (continued adj2 intervention\$).tw.  
48 87 (continued adj2 innovation\$).tw.  
49 88 (continued adj2 project\$).tw.  
50 89 (continued adj2 program\$).tw.  
51 90 (continuation adj2 effect).tw.  
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3 91 (continuation adj2 effects).tw.  
4 92 (continuation adj2 effectiveness).tw.  
5 93 (continuation adj2 impact).tw.  
6 94 (continuation adj2 intervention\$).tw.  
7 95 (continuation adj2 innovation\$).tw.  
8 96 (continuation adj2 project\$).tw.  
9 97 (continuation adj2 project\$).tw.  
10 98 (de-adoption adj2 change\$).tw.  
11 99 (de-adoption adj2 intervention\$).tw.  
12 100 (de-adoption adj2 innovation\$).tw.  
13 101 (de-adoption adj2 project\$).tw.  
14 102 (de-adoption adj2 program\$).tw.  
15 103 (discontinuation adj2 intervention\$).tw.  
16 104 (discontinuation adj2 innovation\$).tw.  
17 105 (discontinuation adj2 program\$).tw.  
18 106 (discontinuation adj2 project\$).tw.  
19 107 (discontinuance adj2 intervention\$).tw.  
20 108 (discontinuance adj2 innovation\$).tw.  
21 109 (discontinuance adj2 program\$).tw.  
22 110 (discontinuance adj2 project\$).tw.  
23 111 (durability adj2 benefit\$).tw.  
24 112 (durability adj2 change\$).tw.  
25 113 (durability adj2 effect).tw.  
26 114 (durability adj2 effects).tw.  
27 115 (durability adj2 effectiveness).tw.  
28 116 (durability adj2 intervention\$).tw.  
29 117 (durability adj2 improvement\$).tw.  
30 118 (durability adj2 implement\$).tw.  
31 119 (durability adj2 impact\$).tw.  
32 120 (durability adj2 innovation\$).tw.  
33 121 (durability adj2 longitudinal).tw.  
34 122 (durability adj2 outcome\$).tw.  
35 123 (durability adj2 "over time").tw.  
36 124 (durability adj2 predictor\$).tw.  
37 125 (durability adj2 process\$).tw.  
38 126 (durability adj2 program\$).tw.  
39 127 (durability adj2 project\$).tw.  
40 128 (durability adj2 post-implement\$).tw.  
41 129 (durability adj2 success\$).tw.  
42 130 (fidelity adj2 adoption).tw.  
43 131 (fidelity adj2 barrier\$).tw.  
44 132 (fidelity adj2 challenge\$).tw.  
45 133 (fidelity adj2 change\$).tw.  
46 134 (fidelity adj2 effect).tw.  
47 135 (fidelity adj2 effects).tw.  
48 136 (fidelity adj2 effectiveness).tw.  
49 137 (fidelity adj2 evaluat\$).tw.  
50 138 (fidelity adj2 facilitator\$).tw.  
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3 139 (fidelity adj2 factor\$).tw.  
4 140 (fidelity adj2 impact\$).tw.  
5 141 (fidelity adj2 implement\$).tw.  
6 142 (fidelity adj2 improvement\$).tw.  
7 143 (fidelity adj2 intervention\$).tw.  
8 144 (fidelity adj2 innovation\$).tw.  
9 145 (fidelity adj2 long-term).tw.  
10 146 (fidelity adj2 longterm).tw.  
11 147 (fidelity adj2 longitudinal).tw.  
12 148 (fidelity adj2 "over time").tw.  
13 149 (fidelity adj2 outcome\$).tw.  
14 150 (fidelity adj2 post-implement\$).tw.  
15 151 (fidelity adj2 program\$).tw.  
16 152 (fidelity adj2 project\$).tw.  
17 153 (fidelity adj2 success\$).tw.  
18 154 (institutionali?ation adj2 change\$).tw.  
19 155 (institutionali?ation adj2 effect).tw.  
20 156 (institutionali?ation adj2 effects).tw.  
21 157 (institutionali?ation adj2 effectiveness).tw.  
22 158 (institutionali?ation adj2 facilitator\$).tw.  
23 159 (institutionali?ation adj2 factor\$).tw.  
24 160 (institutionali?ation adj2 improvement\$).tw.  
25 161 (institutionali?ation adj2 impact\$).tw.  
26 162 (institutionali?ation adj2 innovation\$).tw.  
27 163 (institutionali?ation adj2 longitudinal).tw.  
28 164 (institutionali?ation adj2 long-term).tw.  
29 165 (institutionali?ation adj2 longterm).tw.  
30 166 (institutionali?ation adj2 outcome\$).tw.  
31 167 (institutionali?ation adj2 predictor\$).tw.  
32 168 (institutionali?ation adj2 process\$).tw.  
33 169 (institutionali?ation adj2 post-implement\$).tw.  
34 170 (longitudinal adj2 assess\$).tw.  
35 171 (longitudinal adj2 benefit\$).tw.  
36 172 (longitudinal adj2 change\$).tw.  
37 173 (longitudinal adj2 effect).tw.  
38 174 (longitudinal adj2 effects).tw.  
39 175 (longitudinal adj2 effectiveness).tw.  
40 176 (longitudinal adj2 examination?).tw.  
41 177 (longitudinal adj2 evaluat\$).tw.  
42 178 (longitudinal adj2 impact\$).tw.  
43 179 (longitudinal adj2 pattern?).tw.  
44 180 (longitudinal adj2 program\$).tw.  
45 181 (longitudinal adj2 project\$).tw.  
46 182 (longitudinal adj2 success\$).tw.  
47 183 (maintenance adj2 barrier\$).tw.  
48 184 (maintenance adj2 challenge\$).tw.  
49 185 (maintenance adj2 change\$).tw.  
50 186 (maintenance adj2 effect).tw.  
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3 187 (maintenance adj2 effects).tw.  
4 188 (maintenance adj2 effectiveness).tw.  
5 189 (maintenance adj2 fail\$).tw.  
6 190 (maintenance adj2 facilitator\$).tw.  
7 191 (maintenance adj2 factor\$).tw.  
8 192 (maintenance adj2 intervention\$).tw.  
9 193 (maintenance adj2 improvement\$).tw.  
10 194 (maintenance adj2 implement\$).tw.  
11 195 (maintenance adj2 impact\$).tw.  
12 196 (maintenance adj2 innovation\$).tw.  
13 197 (maintenance adj2 long-term).tw.  
14 198 (maintenance adj2 longterm).tw.  
15 199 (maintenance adj2 longitudinal).tw.  
16 200 (maintenance adj2 outcome\$).tw.  
17 201 (maintenance adj2 "over time").tw.  
18 202 (maintenance adj2 process\$).tw.  
19 203 (maintenance adj2 project\$).tw.  
20 204 (maintenance adj2 post-implement\$).tw.  
21 205 (nonadoption adj2 intervention\$).tw.  
22 206 (nonadoption adj2 innovation\$).tw.  
23 207 (nonadoption adj2 program\$).tw.  
24 208 (nonadoption adj2 project\$).tw.  
25 209 (non-adoption adj2 intervention\$).tw.  
26 210 (non-adoption adj2 innovation\$).tw.  
27 211 (non-adoption adj2 program\$).tw.  
28 212 (non-adoption adj2 project\$).tw.  
29 213 (persistence adj2 implement\$).tw.  
30 214 (persistence adj2 innovation\$).tw.  
31 215 (persistence adj2 program\$).tw.  
32 216 (persistence adj2 project\$).tw.  
33 217 (project adj2 long-term).tw.  
34 218 (project adj2 longterm).tw.  
35 219 (project adj2 "over time").tw.  
36 220 (program\$ adj2 long-term).tw.  
37 221 (program\$ adj2 longterm).tw.  
38 222 (program\$ adj2 "over time").tw.  
39 223 (routini\$ adj2 change\$).tw.  
40 224 (routini\$ adj2 facilitator\$).tw.  
41 225 (routini\$ adj2 factor\$).tw.  
42 226 (routini\$ adj2 improve\$).tw.  
43 227 (routini\$ adj2 intervention\$).tw.  
44 228 (routini\$ adj2 innovation\$).tw.  
45 229 (routini\$ adj2 longitudinal).tw.  
46 230 (routini\$ adj2 long-term).tw.  
47 231 (routini\$ adj2 longterm).tw.  
48 232 (routini\$ adj2 outcome\$).tw.  
49 233 (routini\$ adj2 "over time").tw.  
50 234 (routini\$ adj2 predictor\$).tw.  
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3 235 (routini\$ adj2 process\$).tw.  
4 236 (routini\$ adj2 program\$).tw.  
5 237 (routini\$ adj2 project\$).tw.  
6 238 (routini\$ adj2 post-implement\$).tw.  
7 239 (sustain\$ adj2 adoption).tw.  
8 240 (sustain\$ adj2 assess\$).tw.  
9 241 (sustain\$ adj2 barrier\$).tw.  
10 242 (sustain\$ adj2 benefit\$).tw.  
11 243 (sustain\$ adj2 change\$).tw.  
12 244 (sustain\$ adj2 challenge\$).tw.  
13 245 (sustain\$ adj2 evaluat\$).tw.  
14 246 (sustain\$ adj2 effect).tw.  
15 247 (sustain\$ adj2 effects).tw.  
16 248 (sustain\$ adj2 effectiveness).tw.  
17 249 (sustain\$ adj2 fail\$).tw.  
18 250 (sustain\$ adj2 facilitator\$).tw.  
19 251 (sustain\$ adj2 factor\$).tw.  
20 252 (sustain\$ adj2 innovation\$).tw.  
21 253 (sustain\$ adj2 intervention\$).tw.  
22 254 (sustain\$ adj2 improvement\$).tw.  
23 255 (sustain\$ adj2 implement\$).tw.  
24 256 (sustain\$ adj2 impact\$).tw.  
25 257 (sustain\$ adj2 long-term).tw.  
26 258 (sustain\$ adj2 longterm).tw.  
27 259 (sustain\$ adj2 outcome\$).tw.  
28 260 (sustain\$ adj2 "over time").tw.  
29 261 (sustain\$ adj2 predictor\$).tw.  
30 262 (sustain\$ adj2 process\$).tw.  
31 263 (sustain\$ adj2 project\$).tw.  
32 264 (sustain\$ adj2 program\$).tw.  
33 265 (sustain\$ adj2 post-implement\$).tw.  
34 266 (sustain\$ adj2 success\$).tw.  
35 267 (sustain\$ adj2 vitality).tw.  
36 268 sustainability.ti.  
37 269 or/78-268  
38 270 adult.mp.  
39 271 Middle Aged/  
40 272 age\$.tw.  
41 273 exp Adult/  
42 274 or/270-273  
43 275 77 and 269 and 274  
44 276 exp Animals/ not (exp Animals/ and Humans/)  
45 277 275 not 276  
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