



**Evaluation of an Electronic Patient-Provider Communication Tool to Facilitate Goals of Care Discussions in Elderly Hospitalized Patients: A Pilot Study**

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Keywords:	Critical care, intensive care, Quality of Life, Health services research, Communication
Abstract:	<p>Background: Evaluate the feasibility of an electronic tool (e-tool) to facilitate patient-centered goals of care discussions (PCGCDs).</p> <p>Method: Consecutive hospitalized patients over 79 years old with a length of stay <math>\geq</math> 24 hours and either (i) no documented resuscitation preferences or (ii) requested life-sustaining treatments (LSTs), such as cardiopulmonary resuscitation or mechanical ventilation, in the event of a life-threatening illness (LTI) were eligible for a PCGCD. The intensive care unit physician assistant (PA) coordinated a meeting with each eligible patient and their substitute decision maker (SDM) to review goals of care in the event of an LTI. The PA used the e-tool to facilitate each PCGCD. The goal was to complete <math>\geq</math> 30 interviews. The time required, the proportion of eligible patients interviewed, and the outcomes of the discussions were recorded.</p> <p>Results: From April 1 to August 31, 2019, 37 PCGCDs were completed, representing 9.1% of potentially eligible patients. On average, the PCGCDs required 50.1 minutes (standard deviation 21) to complete. Compared to non-exposed patients, exposed patients were 82% less likely (odds ratio 0.18, 95% confidence interval 0.09, 0.36) to consent to a goals of care treatment plan that included admission to an intensive care unit or cardiopulmonary resuscitation.</p> <p>Interpretation: In this pilot study, we demonstrated an e-tool can facilitate acceptable PCGCDs. We are modifying the e-tool to reduce both patient and provider burden. We will conduct a randomized study to evaluate the modified e-tool's impact on resuscitation treatment</p>

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	decisions compared to structured PCGCDs without the e-tool.

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**Title**

Evaluation of an Electronic Patient-Provider Communication Tool to Facilitate Goals of Care Discussions in Elderly Hospitalized Patients: A Pilot Study

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**Setting**

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**Reprints**

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3 None required  
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6

7  
8 This was an unfunded study.  
9

10 **Conflicts of Interest**  
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12 The authors declare that they do not have any conflicts of interest.  
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14 **Keywords**  
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17 Goals of care; end-of-life; resuscitation preferences; physician orders for life-sustaining  
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19 therapies  
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Confidential

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4 centered goals of care discussions (PCGCDs).  
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8 hours and either (i) no documented resuscitation preferences or (ii) requested life-  
9 sustaining treatments (LSTs), such as cardiopulmonary resuscitation or mechanical  
10 ventilation, in the event of a life-threatening illness (LTI) were eligible for a PCGCD.  
11  
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13 eligible patient and their substitute decision maker (SDM) to review goals of care in the  
14 event of an LTI. The PA used the e-tool to facilitate each PCGCD. The goal was to  
15 complete  $\geq$  30 interviews. The time required, the proportion of eligible patients  
16 interviewed, and the outcomes of the discussions were recorded.  
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19 **Results:** From April 1 to August 31, 2019, 37 PCGCDs were completed, representing  
20 9.1% of potentially eligible patients. On average, the PCGCDs required 50.1 minutes  
21 (standard deviation 21) to complete. Compared to non-exposed patients, exposed  
22 patients were 82% less likely (odds ratio 0.18, 95% confidence interval 0.09, 0.36) to  
23 consent to a goals of care treatment plan that included admission to an intensive care  
24 unit or cardiopulmonary resuscitation.  
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27 **Interpretation:** In this pilot study, we demonstrated an e-tool can facilitate acceptable  
28 PCGCDs. We are modifying the e-tool to reduce both patient and provider burden. We  
29 will conduct a randomized study to evaluate the modified e-tool's impact on  
30 resuscitation treatment decisions compared to structured PCGCDs without the e-tool.  
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## Introduction

Over 75% of hospitalized patients with life-threatening illnesses (LTIs) lack decision making capacity, yet a minority will have communicated their treatment preferences with either their substitute decision makers (SDMs) (1) or healthcare providers (HCPs) (2). As a result, up to 1 in 8 patients with LTIs who die in hospital may have received end-of-life care that was discordant with their goals of care resulting in unnecessary pain, suffering and resource utilization (3–5). Advanced care plans (ACPs) and patient-centered goals of care discussions (PCGCDs) have been advocated to ensure patients' wishes for their future and their current treatment preferences, respectively, are known by both their SDMs and HCPs (6). The public and healthcare community are confused about the differences between ACPs and PCGCDs and their implications for patients' treatment and care plans (7,8). PCGCDs involve patient-HCP conversations that usually occur after an acute illness or health event that typically is serious enough to result in hospitalization. PCGCDs most commonly target hospitalized patients with LTIs or patients at high risk of developing LTIs (9). PCGCDs elicit preferences for current treatment or care plans that are aligned with goals of care. These preferences can then be used to support informed consent for treatment decisions including those relevant to LTIs, such as the use of LSTs or cardiopulmonary resuscitation (CPR) (6).

While the sole purpose of PCGCDs is not to elicit a 'Code Status', most PCGCDs usually lead to the completion of physician order forms for life-sustaining treatments (POLSTs) (8). Most POLSTs document treatment decisions for CPR and LSTs in the event of a cardiorespiratory arrest or other LTIs. While not considered to be part of a

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3 PCGCD, POLSTs have been shown to result in a high degree of concordance between  
4 end-of-life care and resuscitation level preferences (10,11). The majority of hospitals  
5 support the use of POLSTs. However, most POLSTs do not document the quality or  
6 content of the PCGCDs, bringing into question how *informed* these end-of-life treatment  
7 decisions really are (12). In response, different tools have been developed to facilitate  
8 and standardize PCGCDs (7,8,13–19) Most of these tools are used in the outpatient  
9 setting. Few tools are disease agnostic, and therefore have limited applicability for a  
10 general hospital population. There is little evidence to support the superiority of any one  
11 tool, and even less evidence that any tool is consistently used in routine clinical care.  
12 Outcomes-based research is scant, with mixed results to suggest that these tools  
13 improve patient-relevant and/or healthcare system outcomes such as reduced utilization  
14 of unwanted LSTs at the end-of-life (8). We developed a PCGCD electronic tool (e-tool)  
15 using off-the-shelf software (FilemakerPro® v14,  
16 [https://www.filemaker.com/products/filemaker-pro-advanced/version-  
17 comparison.html#fm14](https://www.filemaker.com/products/filemaker-pro-advanced/version-comparison.html#fm14)). In this pilot study, we evaluated the feasibility of using this e-  
18 tool to standardize PCGCDs in high risk hospitalized patients.

## 40 **Materials and Methods**

### 42 E-tool and PCGCD program development

44 The contents of the e-tool were all derived from validated instruments or  
45 prognostic scoring systems (19–23) (supplement). The e-tool is accessible on a  
46 password-protected tablet computer over an encrypted network.  
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3 Prior to starting the pilot study, the investigators secured support for the program  
4 from all departmental chiefs, the chief of staff, members of the Medical Advisory  
5 Committee and hospital senior leadership.  
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10 An intensive care unit physician assistant (PA) was trained to use the e-tool and  
11 was responsible for carrying out all the PCGCDs during the pilot study. To the best of  
12 our knowledge, this is the first time a PA has led a PCGCD program (24). The decision  
13 to use the PA was based on the following:  
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- 19 1. Connection with the critical care program. It is the position of our critical care  
20 department that all patients at high risk of developing LTIs and with equivocal benefit  
21 from LSTs should have a critical care consult to inform any treatment decisions  
22 documented in the POLSTs.  
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- 28 2. Critical care expertise. PCGCDs require knowledge about the different LST options,  
29 such as CPR, vasopressors and mechanical ventilation, along with the benefits and  
30 risks associated with the use of these LSTs such as post-intensive care unit syndrome  
31 (25), and prognoses regarding LTIs such as in-hospital cardiac arrests (26). Most  
32 physicians identify this lack of expertise as a barrier to conducting PCGCDs (8,27,28).  
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- 38 3. Time and flexibility in daily schedule. PCGCDs require significant time to organize  
39 and complete (29), and the PA had the most flexibility and time to commit to the study.  
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- 44 4. Maintenance and sustainability of the PCGCD program. We felt that the PA-led  
45 PCGCD model would be the most acceptable and clinically- and cost-effective approach  
46 at our institution.  
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51 The PA training occurred in the month preceding the start of the pilot study. An  
52 intensive care unit registered nurse who had been involved in the development and  
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3 initial beta testing of the e-tool was responsible for PA training. All PCGCDs were  
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5 conducted with both the patient and SDM present, where available, to ensure that the  
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7 SDM was aware of the patient's goals of care and informed treatment decisions where  
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9 relevant (28,30). Once completed, the PCGCDs and their outcomes were reviewed  
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11 with an intensivist. After review, the PA dictated a consult note on a standardized  
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13 template that was developed to support the PCGCD (supplement). This report was  
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15 immediately available for review in the patient's electronic medical record by any HCP,  
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17 including the patient's primary care physician. In addition, the PA contacted the  
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19 attending physician to notify them of any recommended changes to the patient's POLST  
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21 form. Over the course of the pilot study, we made several modifications to the tool to  
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23 make it easier to administer and remove questions that were associated with decisional  
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25 conflict (31).  
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### 30 Setting and Patients

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33 Patients were recruited from the Royal Victoria Regional Health Centre, a 339  
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35 bed acute care community hospital located in Ontario starting on April 1, 2019. We  
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37 wanted to complete at least 30 PCGCDs to ensure we had a sufficient sample size to  
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39 estimate the primary outcomes. We decided to enroll hospitalized patients who met the  
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41 following inclusion criteria:  
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- 44 1.  $\geq 79$  years old (9), and
- 45  
46 2. Hospitalized for a period  $\geq 24$  hours but  $\leq 48$  hours, and
- 47  
48 3. POLSTs had either not been completed or had been completed and resuscitation  
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50 treatment decisions were for any of the following: CPR, invasive LSTs, non-invasive  
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3 LSTs (as defined in the POLST form) (supplement). In our hospital, treatment decisions  
4 documented in POLSTs are entered into the patient's electronic medical record.  
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8 4. English speaking, or translator present  
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10 5. Competent patient and/or SDM.  
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12 Patients  $\geq 79$  years old were enrolled because they were easy to identify by  
13 using the electronic medical record and they account for over 50% of all hospital deaths  
14 at our hospital (data from calendar year 2018). In addition, studies suggest that patients  
15  $\geq 75$  years old may not benefit from an ICU admission during a LTI (27,32,33).  
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21 All patients who met the inclusion criteria were reviewed for any of the following  
22 exclusion criteria:  
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26 1. New diagnosis of life-limiting illness on this hospital admission, for example, a new  
27 diagnosis of metastatic cancer, or  
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29 2. Clinically unstable or admitted to a high intensity care unit, or  
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31 3. Hospital discharge planned within the next 24 hours.  
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33 4. PCGCD date falls on a weekend.  
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38 On a daily basis, the PA ran a report using the electronic medical system that  
39 identified all eligible patients. The PA reviewed each patient for evidence of any  
40 exclusion criteria. After this screen, the PA contacted each patient's most responsible  
41 physician (MRP) to inform them of the intent to conduct a PCGCD and secure their  
42 consent. Once secured, the PA approached the patient to seek their consent to  
43 conduct a PCGCD (supplement). If consent was provided, the PA contacted the  
44 patient's SDM to schedule a date and time for the PCGCD that would accommodate  
45 both the patient and SDM being present. If the patient was deemed incompetent, the  
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3 PA contacted the SDM to schedule a PCGCD with them on behalf of the patient. The e-  
4 tool was used to facilitate the PCGCD. Upon completing the PCGCD, the PA reviewed  
5 the hospital's POLST with the patient and/or SDM. For those patients with previously  
6 completed POLSTs, the PA reviewed their treatment decisions. For those patients  
7 and/or SDMs who wanted to change their POLST, the PA helped them complete a new  
8 POLST. For those patients and/or SDMs who had not previously completed a POLST,  
9 the PA explained the rationale and contents of the form and offered to help them to  
10 complete the POLST at that time or any time thereafter by providing them with the PA  
11 pager number that they could contact. The POLST along with the PCGCD consult was  
12 then reviewed with the intensivist. After review, the PA contacted the MRP to provide  
13 them with a summary of the PCGCD and inform them of the recommended changes in  
14 the POLST. The patient's electronic medical record was then updated to reflect the  
15 changes in their POLST.  
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33 Every day, the PA attempted to complete all the eligible PCGCDs. If the PA  
34 could not do so, those patients were not added to the next day's list. Instead, those  
35 patients were not seen and the PA documented that they did not have sufficient time to  
36 conduct the PCGCD consult. This was done to determine the time and human  
37 resources that might be required to sustain such a program model in the future.  
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#### 44 Outcomes

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46 The primary outcomes of the pilot study were as follows:

- 47 1. To determine the proportion of patients who did not consent to a PCGCD
  - 48 2. To determine the proportion of eligible patients with a completed PCGCD
  - 49 3. To determine the time required to complete a PCGCD
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4. To determine the frequency of changes in resuscitation treatment decisions
5. To determine the direction of changes in resuscitation treatment decisions

### Data Collection and Analyses

The password protected e-tool was used to collect data during the PCGCD. The data was not stored on the mobile computer but was transmitted over an encrypted network to a PHIPA-compliant hospital server.

Descriptive statistics were used to summarize the data. Comparative analyses between patients who were exposed and not exposed to the PCGCD were done using logistic regression.

### Research ethics

The Royal Victoria Regional Health Centre Research Ethics Board approved the pilot study on February 11, 2019 (REB#R18-028).

### **Results**

From April 1 to August 31, 2019, there were 763 patients who met the inclusion criteria for a PCGCD. There was a median of 5 patients (IQR 4) per day who met the inclusion criteria (range 1 to 16). After subsequent screening and exclusion of patients whose PCGCD date fell on a weekend (n=282) or who were being discharged home or died on their PCGCD date (n=36), 37 patients completed an e-tool-facilitated PCGCD (9.1% of 408 eligible patients) (Table 1).

**Table 1:** Baseline characteristics of patients completing PCGCDs

Baseline Characteristics	Number (% Total)
Age	86.7 (4.7) <sup>1</sup>
Sex (Female:Male patients)	16:21

Residence	
Community	32 (86.5%)
Long-term care facility	3 (8.1%)
Retirement home	2 (5.4%)
Quality of Life Question 1(21) <sup>2</sup>	
Not answered	14 (37.8%)
Very good	7 (18.9%)
Good	12 (32.4%)
Neither	1 (2.7%)
Poor	2 (5.4%)
Very poor	1 (2.7%) <sup>3</sup>
Quality of Life Question 2	
Not answered	14 (37.8%)
Very satisfied	2 (5.4%)
Satisfied	12 (32.4%)
Neither	2 (5.4%)
Dissatisfied	6 (16.2%)
Very dissatisfied	1 (2.7%) <sup>3</sup>
Clinical frailty score (20)	4.5 (1.8) <sup>1</sup>
Charlson comorbidity index score (34)	4.6 (3.4) <sup>1</sup>
Expected hospital standardized mortality rate (22)	29.8 (14.0) <sup>1</sup>
Admission Diagnoses (22)	

Pneumonia	8 (21.6%)
Fracture of femur	7 (18.9%)
Sepsis	4 (10.8%)
Heart failure	3 (8.1%)
Acute renal failure	2 (5.4%)
Unspecified dementia	2 (5.4%)
Other <sup>3</sup>	11 (29.7%) <sup>4</sup>
<b>Most Responsible Physician</b>	
Hospitalist	12 (32.4%)
Internal Medicine	14 (37.8%)
Surgery (all types)	9 (24.3%)
Hematology & Oncology	2 (5.4%) <sup>4</sup>
<b>Values question 4 (19,31)<sup>5</sup></b>	
Not answered	17 (45.9%)
10	7 (18.9%)
8	1 (2.7%)
7	2 (5.4%)
6	1 (2.7%)
5	6 (16.2%)
4	1 (2.7%)
Unsure	2 (5.4%)
<b>Values question 7</b>	
Not answered	

10	3 (8.1%)
9	1 (2.7%)
8	2 (5.4%)
5	2 (5.4%)
4	2 (5.4%)
3	2 (5.4%)
2	2 (5.4%)
1	5 (13.5%)
Unsure	1 (2.7%)
POLST status (Pre-PCGCD) <sup>6</sup>	
Not completed	22 (59.5%)
Invasive & CPR	11 (29.7%)
Invasive & No CPR	1 (2.7%)
Minimally Invasive & No CPR	3 (8.1%)

<sup>1</sup> Mean and standard deviations (sd)

<sup>2</sup> Quality of life question 1 “How would you rate your quality of life in the last 2 weeks prior to admission to hospital?”; question 2 “How satisfied are you with your health in the last 2 weeks prior to admission to hospital?”

<sup>3</sup> Rounding error accounts for total of 99.9%

<sup>4</sup> 11 diagnoses with a frequency of one

<sup>5</sup> Values question 4 “How important is it that I avoid being attached to machines and tubes?”; question 7 “How important is the belief that life should be preserved at all costs?”; Ratings scale from 1 (*Not important*) to 10 (*Very important*) or *Unsure*

<sup>6</sup> POLST classifications include the following: Invasive & CPR; Invasive & No CPR; Minimally Invasive & No CPR; Supportive Care; Comfort Care. If the POLST has not been completed, then treatment for LTIs defaults to Invasive & CPR.

The most common reason for not completing PCGCDs was a lack of time to review, organize and conduct the PCGCD (Table 2).

**Table 2:** Reasons for incomplete PCGCDs

Reason	Number (% Total)
Not enough time to approach patient and/or SDM	288 (39.7%)
Weekend	282 (38.8%)
Planned discharge $\leq$ 24 hours	36 (4.9%)
MRP did not consent	8 (1.1%)
Patient and/or SDM did not consent	4 (0.05%)
Technical issues with e-tool	0 (0%)
Other	59 (8.1%)
Missing	49 (6.7%)

On average, the PCGCD required 50.1 minutes (standard deviation 21 minutes) to complete which does not include eligibility screening, consent, medical record review, subsequent case review with an intensivist and documentation time. The SDMs were available for 36 (97.3%) PCGCDs.



Compared to patients who did not receive a PCGCD, 30 (81%) exposed cases and 511 (70.4%) non-exposed cases consented to a less aggressive resuscitation plan in their post-POLST (Table 3).

**Table 3:** Pre- (within first 48 hours of admission) and post-(at the time of discharge or death) resuscitation level decisions documented in exposed and non-exposed patients' POLSTs.

POLST Resuscitation Status	Exposed (n=37)		Non-exposed (n=726)	
	Number (% total)		Number (% total)	
	Pre	Post	Pre	Post
Not completed <sup>1</sup>	22 (59.4)	11 (29.7)	108 (14.9)	15 (2.1)
Invasive & CPR	11 (29.7)	1 (2.7)	387 (53.3)	8 (1.1)
Invasive & No CPR	1 (2.7)	2 (5.4)	13 (1.8)	327 (45.0)
Minimally Invasive & No CPR	3 (8.1)	1 (2.7)	218 (30.0)	222 (30.6)
Supportive Care	N/A	1 (2.7)	N/A	118 (16.2)
Comfort Care	N/A	21 (56.7)	N/A	36 (4.9)

<sup>1</sup> Default for *Not Completed* POLST is invasive & CPR

Compared to non-exposed patients, exposed patients were 82% less likely (OR 0.18, 95% CI 0.09, 0.36) to choose a goals of care treatment decision on their final POLST that included admission to an intensive care or high dependency unit (Table 4).

**Table 4:** POLST treatment decisions that included preferences for LSTs among exposed (PCGCD<sup>+</sup>) and non-exposed patients (PCGCD<sup>-</sup>).

Variables	Resuscitation Preferences for LSTs	Totals
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	Yes <sup>1</sup>	No <sup>2</sup>	
PCGCD <sup>+</sup>	15	22	37
PCGCD <sup>-</sup>	572	154	726
Totals	587	176	763

<sup>1</sup> Includes the following categories in the POLST; Not completed, Invasive & CPR, Invasive & No CPR, Minimally invasive & No CPR.

<sup>2</sup> Includes only supportive or comfort care

While no formal qualitative evaluation was conducted, patients and/or their SDMs were uniformly satisfied with the content of the PCGCD e-tool and found the information easy to understand and helpful in guiding their treatment decisions.

## Discussion

There is general consensus that goals of care discussions between healthcare providers and hospitalized patients at high risk of LTIs are an important, if not essential, part of ensuring care is concordant with patients' wishes (8,35). Unfortunately, many healthcare providers are ill-equipped and/or unable to dedicate the necessary time to ensure these PCGCDs contain all the elements needed for patients and/or their SDMs to make truly informed decisions (12,36,37). As a result, many hospitalized patients receive low-value care at the end-of-life (27,38,39).

We developed a systematic and standardized approach to PCGCDs that included the identification of a high risk hospitalized patient group, their engagement using an e-tool, and communication of the PCGCD outcomes. We only included patients  $\geq 79$  years old as they had been previously targeted in other end-of-life studies (9,19,30), and their outcomes following a LTI requiring LSTs is poor (32,33). Our

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3 hospital admitted over 2 900 patients  $\geq$  79 years old in 2018 for a period  $\geq$  48 hours,  
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5 and these patients accounted for over 50% of all deaths during that 12 month period.  
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7 These patients also accounted for over 500 ICU days and accounted for over 11% of all  
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9 ICU deaths. Averting ICU admissions in this patient population could significantly  
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11 impact unwarranted suffering and health resource utilization.  
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15 The PA required a considerable amount of time to complete the PCGCDs,  
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17 resulting in many eligible patients not being seen. We are currently modifying the e-tool  
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19 to allow the patient and/or SDM to complete specific sections on their own to reduce the  
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21 time required to complete each PCGCD consult. We are still planning to have the PA  
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23 complete the prognostic scores with the patient and/or SDM, along with explaining all  
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25 the POLST treatment options. We feel the complexity of these end-of-life issues and  
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27 treatment decisions must be done with the assistance and expertise of a knowledgeable  
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29 critical care healthcare provider to be truly informed (40).  
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34 The time required to complete goals of care discussions have been reported in  
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36 several studies (16,41,42). A consistent finding is that they all require a significant  
37  
38 amount of time regardless of the approach. In an attempt to ensure that SDMs were  
39  
40 present for PCGCDs, many opportunities were lost as a result of the extra time needed  
41  
42 to contact and schedule PCGCDs. In the future, PCGCDs would be organized by the  
43  
44 patient's nurse who could then self-schedule a meeting between the PA and the patient  
45  
46 and/or SDM.  
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## 49 **Conclusions**

50  
51 In this pilot study, we implemented a PA-led, systematic and standardized e-tool-  
52  
53 facilitated PCGCD program for elderly hospitalized patients. The exposed patients were  
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3 82% less likely than non-exposed patients to choose end-of-life treatment preferences  
4  
5 that included resuscitation with LSTs. The current version of the program was  
6  
7 inefficient, missing over 90% of eligible patients. E-tool modifications are expected to  
8  
9 reduce the time needed to complete PCGCDs, allowing us to scale up the program and  
10  
11 capture more high risk patients. We plan to conduct a randomized clinical study to  
12  
13 determine if the addition of the modified PCGCD e-tool results in different resuscitation  
14  
15 treatment decisions compared to a structured goals of care discussion without the e-  
16  
17 tool.  
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## Supplement

## PCGCD Tool Contents

Section	Attributes	Definition	Reference
Demographics	Medical record number	RVH MRN	
	Date of Birth	DD/MM/YY	
	Date of admission	DD/MM/YY	
	Sex	Male;Female	
	Residence	Community; LTCF; Retirement home; Other hospital; Group home; Mental health hospital; Prison; Boarding room/home; Homeless; other	
	Attending service	Internal Medicine; Hospitalist; Family physician; Hematology/Oncology; Resident (all types); Palliative care; Cardiology; Gastroenterology; Nephrology; Respiriology; Infectious Diseases; Rheumatology; Endocrinology; Gerontology; Critical care; Surgery (all types); Physician assistant; other	
	Ward	2SB-ICU; 3GA; 3GC; 3NB; 3NC; 3SA; 4GB; 4GC; 4NC; 4SB; 4SC; 4SC-SSDU; ER; TCU	
	SDM Relationship	Spouse/partner; Parent; Child; Sibling; Friend; Lawyer; Guardian; Grandparent; other	
	PCGCD consult date	DD/MM/YY	
	Activity Level	Clinical frailty scale: Scale scores 1 to 9; 1 = Very fit and exercise regularly to 9 = Terminally ill with life expectancy < 6 months	Rockwood, K., CMAJ 2005; 173: 489-495 (Reference #20)
	Health Language	Rapid assessment of adult literacy in medicine (REALM): Patients are asked to read the following words aloud and scored on the number of correct pronunciations; <i>allergic, anemia, colitis, fatigue, jaundice, directed, constipation, osteoporosis</i> :	Arozullah AM, Yarnold PR, Bennett CL, Soltysik RC, Wolf MS <i>et al.</i> Development and validation of a short-form, rapid estimate of adult literacy in medicine. Med

		Scores represent grade range reading levels; 0 = third grade and below; 1-3 = fourth to sixth grade; 4-6 = seventh to eighth grade; >6 = high school	Care 2007; 45(11):1026-1033.
	Living arrangements	In the month before admission, identify who you live with: Spouse/partner; child; sibling; parent; friend; grand-children; room-mate (not friend); other	
	Occupation	In the last 12 months, describe your occupation: Voluntary retirement; retirement due to disability; retirement due to job loss; full-time employment; part-time employment; casual-time employment; unemployed (no disability); unemployed (disability); volunteer; caregiver; other	
Quality of Life	World Health Organization WHOQOL-BREF	26-item questionnaire developed by WHO validated across diverse geographic/cultural populations: Opening questions include; i) How would you rate your quality of life?, and ii) How satisfied are you with your health? There are 4 domains (environmental, psychological health, social relationships, and physical health) that incorporate the remaining questions - in the pilot study, most patients did not find any value to completing all the questions in the 26-item questionnaire so only the first 2 questions assessing global quality of life were used consistently	Skevington SM., Quality of Life Research 2004; 13: 299-310 (Reference #21)
Values/Goals	Opinions about use of life-sustaining or life-prolonging treatments	8-item questionnaire from ACCEPT (Audit of communication, Care Planning, and Documentation) study: Patients were asked to score each question from 1 to 10 (or unsure) according to the following scale; 1=not important to 10=very important:	You JJ. CMAJ 2014; 9: E679-687 (Reference # 19)

		Many of the questions resulted in decisional conflict (as has also been acknowledged by the authors of the 8-item questionnaire – see reference #31), so only question #4 and question #7 were consistently asked (see Table 1, footnote 5).	
Hospital Mortality Rate	Predictive model of expected hospital mortality	Population-based, Canadian Institute of Health Information predictive model used to estimate expected mortality for hospitalized patients admitted with any of the 72 diagnoses that are responsible for 80% of all hospital deaths: The expected hospital survival was represented as a pictogram that included 100 patient icons along with the following statement; “x out of 100 patients similar to yourself are expected to survive to hospital discharge” CIHI model parameters include: age; sex; length of stay; Charlson comorbidity index; admission from another hospital; admission type; admission location; diagnostic code.	Technical report available at: <a href="https://www.cihi.ca/sites/default/files/document/hsmr-tech-notes_en_0.pdf">https://www.cihi.ca/sites/default/files/document/hsmr-tech-notes_en_0.pdf</a> (Reference #22)
Survival Post-Cardiorespiratory arrest	Predictive model of expected survival to hospital discharge after experiencing in-hospital cardiac arrest	Population-based, National health service (NHS)-derived predictive model based on UK National Cardiac Arrest database: The expected hospital survival for inpatient cardiorespiratory arrest due to both ventricular tachycardia and asystole were represented as pictograms that included 100 patient icons along with the following statement; “x out of 100 patients similar to yourself are expected to survive to hospital discharge”. Both ventricular tachycardia and asystole survival were reviewed to establish a range of survival expectations for the patient. Model parameters include: age; length of stay; diagnosis; ward	Harrison DA., Resuscitation 2014; 85; 993-1000 (Reference #23)

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		location; initial rhythm type at time of cardiac arrest	
Advanced Care Plan	Resuscitation Level details	Review of current resuscitation level designation	
	Resuscitation Level Changes	Document any changes made to Resuscitation Level during ACP consultation	

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3 Standardized PCGCD Dictation Template used by PA  
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6 **ICU Goals of Care Consult**  
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8 **Consult Date:** []  
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10 **Consult Criteria** []  
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12 **Current Resuscitation Status** []  
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15 **Discussed with Competent Patient** []

16 If not, discussed with Substitute Decision Maker []  
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19 **Clinical Frailty Scale** []  
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21 **WHO Quality of Life Questionnaire Scores:**

22 Overall QOL rating []

23 Environment []

24 Psychological Health []

25 Social Relationships []

26 Physical Health []  
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30 **Charlson Comorbidity Score** []  
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32 **Predicted CIHI Hospital Mortality Rate** [] %  
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35 **Predicted Outcomes for Cardiorespiratory Arrest**

36 Survival to hospital discharge between []% and []%

37 Survival to home discharge between []% and []%  
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40 **Values and Goals**

41 []  
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43 **Impression and Plan**

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47 **Changes to Resuscitation Status:**

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51 **MRP Notified:** [] by [] on [] at []  
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53 **Reviewed** with Dr. [] who agrees with details, impression, care plan and resuscitation status  
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**Signed by:** []

**Date** []

**Time** []

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The Royal Victoria Regional Health Centre Resuscitation Level Designation Form (equivalent to Physician order form for Life Sustaining Therapies (POLST)).

 Royal Victoria Regional Health Centre  <b>RESUSCITATION LEVEL DESIGNATION                  ORDER FORM</b>	PATIENT NAME: _____  DOB: _____  HRN: _____  <div style="text-align: right; font-size: small;">(addressograph)</div>
---	--

Discussed with Patient or Substitute Decision Maker (SDM):  YES  NO

LIFE THREATENING SITUATION		VITAL SIGNS ABSENT	
(CHECK ONLY ONE)	DESCRIPTION	BEGIN CARDIOPULMONARY RESUSCITATION (CPR) AND ATTEMPT RESUSCITATION:	
<b>INVASIVE*</b> <input type="checkbox"/>	Full resuscitative care including intubation and mechanical ventilation, invasive monitoring and advanced pharmacological treatments (inotropes, vasopressors etc.) <i>May be managed in Intensive Care Unit (ICU) or other monitored unit.</i>	<b>YES*</b> <input type="checkbox"/>	<b>NO</b> <input type="checkbox"/>
<b>MINIMALLY INVASIVE</b> <input type="checkbox"/>	May include Non-invasive Positive Pressure Ventilation (NiPPV), (Bi-level Positive Airway Pressure [BiPAP], Continuous Positive Airway Pressure [CPAP]), cardiac pacemakers, and advanced pharmacological therapies (inotropes, vasopressors etc.) No intubation or defibrillation, including implanted cardiac defibrillators. <i>May be managed in ICU or other monitored unit.</i>	<b>NO Allow Natural Death</b>	
<b>SUPPORTIVE</b> <input type="checkbox"/>	Medical treatment including, but not limited to, antibiotics, IV fluid resuscitation, etc. No mechanical ventilation or NiPPV No advanced pharmacological treatments (inotropes, vasopressors etc.) <i>Managed outside ICU</i>	<b>NO Allow Natural Death</b>	
<b>COMFORT</b> <input type="checkbox"/>	Focus is on comprehensive, compassionate, comfort care for patient and family. <i>Managed in hospital outside ICU, Hospice or Home</i>	<b>NO Allow Natural Death</b>	

- Based on discussion with capable patient
- Based on discussion with SDM - Name: \_\_\_\_\_ Relation to Patient: \_\_\_\_\_
- Based on documented previous wishes when unable to discuss with patient and SDM not available
- Based on MRP determination of benefit of treatment (conflict resolution measures in process).

**Patient remains INVASIVE level of RESUSCITATION + CPR until conflicted resolution measures completed**

\*If discussion with patient not possible, previous documented wishes are unknown, and SDM not available, default resuscitation level is RESUSCITATION + CPR if vital signs absent.

Most Responsible Provider (MRP): \_\_\_\_\_ Date: \_\_\_\_\_

Transcribed by: \_\_\_\_\_ Date: \_\_\_\_\_

RVH-1110 10-Mar-2016



### PA Script

Hello, my name is \_\_\_\_\_, and I am a member of the intensive care unit team working with Dr. (CCOT) who is an ICU specialist.

We are here to see you because our hospital requires that we have a clear understanding of your preferences for life sustaining treatments in the event that your condition may deteriorate and are no longer able to communicate these wishes for yourself. Since all life-sustaining treatments are provided in the ICU, it would be most helpful for you if our ICU team has these conversations with you.

We know the benefits of life-sustaining treatments are limited in certain patients, especially in those over the age of 80. This is often poorly understood by patients and their families. We want to make sure you have all the information you need to make the right decision for you.

While we realize this is a difficult topic to discuss, it is essential to make sure that you receive only the medical care that will help you achieve your health goals.

We would like to spend 20-30 minutes speaking with you about your health, along with the goals and values you have for your care, and how these might help influence the treatment choices you might choose for yourself in the event of a life-threatening illness. We would like to schedule a date and time with you and your substitute decision maker to have this discussion. Would this be acceptable to you?

#### **QOL exercise & Frailty Assessment**

I would like to get a better sense of what your life was like before being admitted to hospital, so I am going to ask you some questions that will help me understand this.

#### **Values and Goals**

Now that I have a better idea of what your life was like before this illness, I'd like to get a sense of your goals and values for your health that may influence the decisions you make about

1  
2  
3 medical treatments. I will ask you to rate how important each of the following 8 statements are  
4 to you.

### 5 6 **CIHI prognostic tool**

7  
8 This next section is intended to help you put your current illness into perspective and see if it  
9 matches your own expectations.

10  
11 According to this exercise, in a group of 100 patients similar to yourself, it would be expected  
12 that up to \_\_\_% might die in hospital. Does this surprise you? Have your healthcare providers  
13 discussed this with you previously?  
14  
15

### 16 17 **CRA prognostic tool**

18  
19 Even though we all hope for the best, most of us make plans for the worst so that we are  
20 prepared to deal with these events. We do this every day in our regular lives, such as when we  
21 buy life insurance. Unfortunately, some patients in hospital suffer a life-threatening illness,  
22 such as a cardiac arrest. In these emergency situations, it is always best to know in advance  
23 what treatments, if any, the patient would choose. This exercise will help you better  
24 understand what expectations you should have if you suffered a cardiac arrest and decided to  
25 have an attempt at resuscitation by your healthcare team. By doing this exercise, it would  
26 hopefully provide you with the information you need to make the best treatment decisions for  
27 yourself in this worst case scenario.  
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### 36 37 **Wrap-up**

38 In summary, this discussion has helped us better understand the goals and values you have for  
39 your health care. We have provided you with realistic expectations about the likelihood of  
40 survival from your current illness and in the event of a cardiac arrest. We realize these are  
41 difficult topics to discuss, but our conversation today should help ensure we have provided you  
42 with the information you need to make informed decisions about your health care. We  
43 encourage you to share this information with your family. It is our hope that this conversation  
44 has been helpful and provided you with the opportunity to consider your treatment options,  
45 along with their benefits and limitations. At this point, we would like to help you complete the  
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hospital's Resuscitation Level Designation Form and ensure that it reflects your wishes for treatment.

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## CONSORT 2010 checklist of information to include when reporting a pilot or feasibility trial\*

Section/Topic	Item No	Checklist item	Reported on page No
<b>Title and abstract</b>			
	1a	Identification as a pilot or feasibility randomised trial in the title	1 (not a RCT)
	1b	Structured summary of pilot trial design, methods, results, and conclusions (for specific guidance see CONSORT abstract extension for pilot trials)	3
<b>Introduction</b>			
Background and objectives	2a	Scientific background and explanation of rationale for future definitive trial, and reasons for randomised pilot trial	4-5
	2b	Specific objectives or research questions for pilot trial	9-10
<b>Methods</b>			
Trial design	3a	Description of pilot trial design (such as parallel, factorial) including allocation ratio	5-10
	3b	Important changes to methods after pilot trial commencement (such as eligibility criteria), with reasons	N/A
Participants	4a	Eligibility criteria for participants	7-8
	4b	Settings and locations where the data were collected	7
	4c	How participants were identified and consented	8-9
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	5-7
Outcomes	6a	Completely defined prespecified assessments or measurements to address each pilot trial objective specified in 2b, including how and when they were assessed	9-10
	6b	Any changes to pilot trial assessments or measurements after the pilot trial commenced, with reasons	N/A
	6c	If applicable, prespecified criteria used to judge whether, or how, to proceed with future definitive trial	N/A
Sample size	7a	Rationale for numbers in the pilot trial	7
	7b	When applicable, explanation of any interim analyses and stopping guidelines	N/A
Randomisation:			
Sequence generation	8a	Method used to generate the random allocation sequence	N/A
	8b	Type of randomisation(s); details of any restriction (such as blocking and block size)	N/A
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	N/A

1	Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	N/A
2	Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	N/A
3		11b	If relevant, description of the similarity of interventions	N/A
4	Statistical methods	12	Methods used to address each pilot trial objective whether qualitative or quantitative	10
5	<b>Results</b>			
6	Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were approached and/or assessed for eligibility, randomly assigned, received intended treatment, and were assessed for each objective	10
7		13b	For each group, losses and exclusions after randomisation, together with reasons	14
8	Recruitment	14a	Dates defining the periods of recruitment and follow-up	10
9		14b	Why the pilot trial ended or was stopped	10
10	Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	10-11
11	Numbers analysed	16	For each objective, number of participants (denominator) included in each analysis. If relevant, these numbers should be by randomised group	15
12	Outcomes and estimation	17	For each objective, results including expressions of uncertainty (such as 95% confidence interval) for any estimates. If relevant, these results should be by randomised group	15
13	Ancillary analyses	18	Results of any other analyses performed that could be used to inform the future definitive trial	N/A
14	Harms	19	All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	14
15		19a	If relevant, other important unintended consequences	N/A
16	<b>Discussion</b>			
17	Limitations	20	Pilot trial limitations, addressing sources of potential bias and remaining uncertainty about feasibility	16-17
18	Generalisability	21	Generalisability (applicability) of pilot trial methods and findings to future definitive trial and other studies	17-18
19	Interpretation	22	Interpretation consistent with pilot trial objectives and findings, balancing potential benefits and harms, and considering other relevant evidence	16-18
20		22a	Implications for progression from pilot to future definitive trial, including any proposed amendments	17-18
21	<b>Other information</b>			
22	Registration	23	Registration number for pilot trial and name of trial registry	N/A
23	Protocol	24	Where the pilot trial protocol can be accessed, if available	N/A
24	Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	N/A
25		26	Ethical approval or approval by research review committee, confirmed with reference number	10



1 Citation: Eldridge SM, Chan CL, Campbell MJ, Bond CM, Hopewell S, Thabane L, et al. CONSORT 2010 statement: extension to randomised pilot and feasibility trials. BMJ. 2016;355.

2 \*We strongly recommend reading this statement in conjunction with the CONSORT 2010, extension to randomised pilot and feasibility trials, Explanation and Elaboration for important  
3 clarifications on all the items. If relevant, we also recommend reading CONSORT extensions for cluster randomised trials, non-inferiority and equivalence trials, non-pharmacological  
4 treatments, herbal interventions, and pragmatic trials. Additional extensions are forthcoming: for those and for up to date references relevant to this checklist, see [www.consort-statement.org](http://www.consort-statement.org).  
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