Appendix 1 (as supplied by the authors)

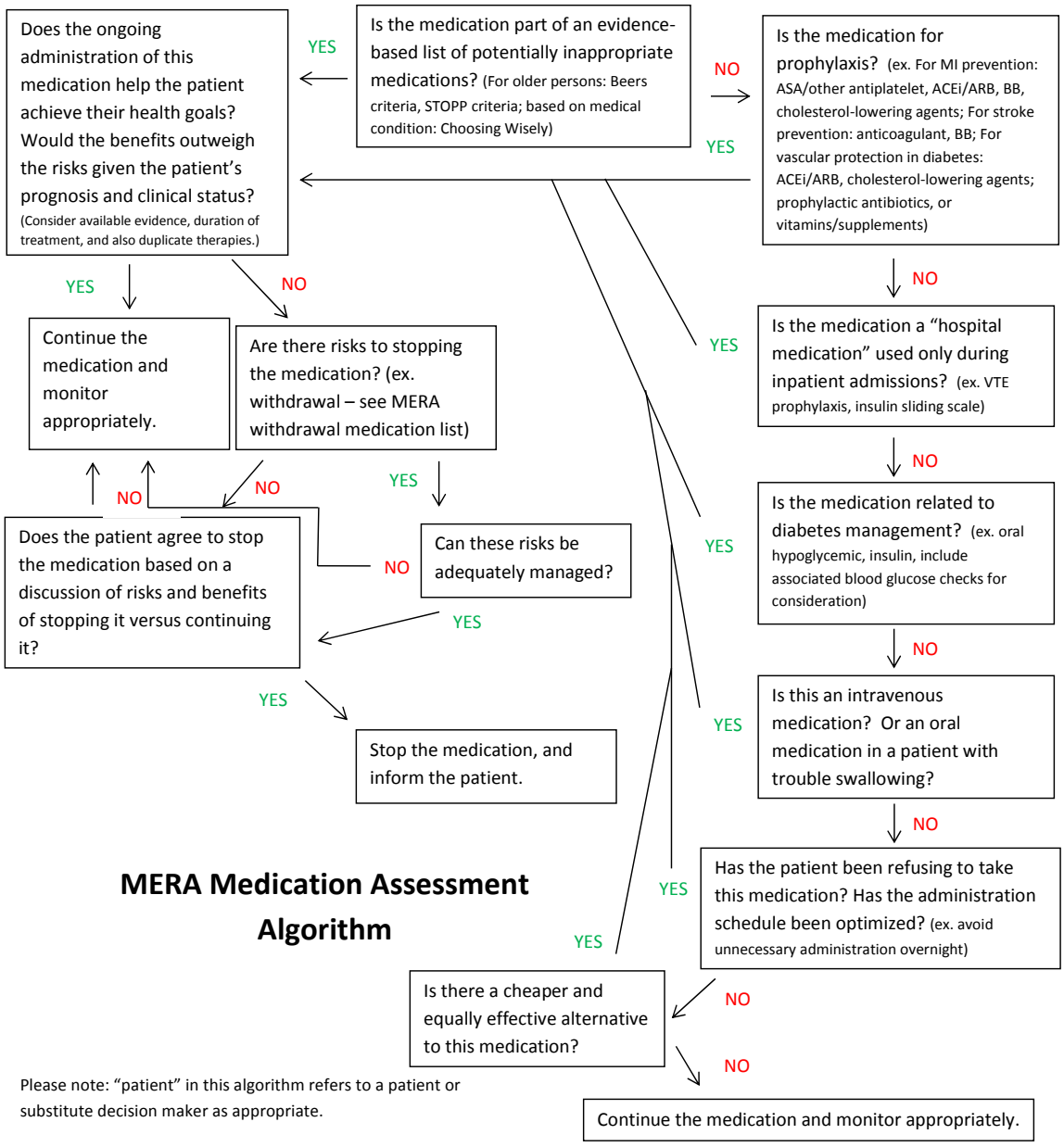
Supplement A. Description of study setting.
The General Internal Medicine service at Toronto General Hospital includes 6 Clinical Teaching Units (CTUs), which are non-geographical teams spread out over multiple wards. Four of these teams include an attending physician, undergraduate and postgraduate medical trainees, a pharmacist, and other allied health care professionals (including, social workers, occupational therapists and physiotherapists). Since the MERA intervention is delivered at the level of the team, we selected two of these four teams randomly to receive the intervention, while two were used for the control patients (to minimize the risk of contamination). Nurses care for patients across teams on the wards, but other team members typically do not, limiting the opportunity for contamination.

The entire service comprises 75 physical inpatient beds, although actual patient numbers may often exceed this number. Individual teams are responsible for between 15-25 patients, and admit and discharge approximately 1-4 patients per day.

Supplement B. Medication Recommendations and the MERA Algorithm.
Three pharmacists involved in this project (RW, SP and KB) assembled a table of medication-related recommendations from the STOPP guidelines[8], Beers criteria[6], Choosing Wisely[29], and Choosing Wisely Canada[30]. This table was organized with each medication or class in a row, and each guideline in a column, to allow the reader to rapidly review all recommendations for any given medication. An additional column was added for "MERA guidelines", which included recommendations based on common practice for patients with a limited life expectancy that were not covered in the other guidelines (expressed in the algorithm below; e.g. discontinuing oral hypoglycemic agents and medications taken only for prevention such as ACE inhibitor for vascular protection in diabetes or prophylactic antibiotics, optimizing medication route and schedule (changing intravenous medications to oral medications, or stopping oral medications in patients having trouble swallowing, minimizing number of administration times, adjusting timing of medications to allow uninterrupted sleep)).Where appropriate, the algorithm also included recommendations to wean some medications rather than stop them abruptly (e.g. benzodiazepines). The full document is over 47 pages long but we provide a sample:

Medication/Class	STOPP	Beers	Choosing Wisely	Choosing Wisely Canada	MERA
Proton Pump Inhibitors	Do not use for uncomplicated peptic ulcer disease or erosive peptic oesophagitis at full therapeutic dosage for > 8 weeks (dose reduction or earlier discontinuation indicated)	--	Don't maintain long term Proton Pump Inhibitor (PPI) therapy for gastrointestinal symptoms without an attempt to stop/reduce PPI at least once per year in most patients.	For pharmacological treatment of patients with gastroesophageal reflux disease (GERD), long-term acid suppression therapy (proton pump inhibitors or histamine2 receptor antagonists) should be titrated to the lowest effective dose	--

				needed to achieve therapeutic goals. OR Don't prescribe medications for stress ulcer prophylaxis to medical inpatients unless at high risk for GI complications.	



Appendix to: Whitty R, Porter S, Battu K, et al. A pilot study of a MEdication RAtionalization (MERA) intervention. *CMAJ Open* 2018. doi: 10.9778/cmajo.20170134.

Supplement C. The Beliefs about Medications Questionnaire.
The Beliefs about Medications Questionnaire (BMQ) produces numerical scores for four different domains of perception about medication use. Note that higher scores indicate negative beliefs for only three out of four domains).

- Specific Necessity- a scale of 5-25 where high scores indicate stronger beliefs in the necessity and efficacy of medications prescribed for the patient; a previous report found that a general medical population had a mean score of ~20 in this domain[31].
- Specific Concerns- a scale of 5-25 where higher scores indicate higher concern about potential adverse effects of medications prescribed for the patient.
- General Overuse- a scale of 3-15 where high scores indicate strong beliefs that medications are overused by doctors.
- General Harm- a scale of 4-20 where high scores indicate strong beliefs that medications are "harmful, "addictive" and/or "poisons".

Supplement D. Explanation and justification of pilot endpoints.

For feasibility, we aimed to enrol 50 patients over a 6-month period, achieve an enrolment rate of >50%, and keep MERA meetings with the medicine teams less than 30 minutes in duration. For acceptability, we aimed to have >75% of the CTU team members agree that the MERA meetings were a good use of time on a post-study survey administered at the end of the team members' rotation on the CTU (Appendix F), and a similarly high rate of satisfaction among patients and SDMs with the MERA experience. Our co-primary outcomes were the enrolment rate and the acceptability of the MERA intervention to patients/SDMs. To determine effect, we measured the number of recommendations made, and the proportion that resulted in prescription changes initially, at discharge, and 3 months following discharge using the Ontario Drug Benefit database (when available). We compared these results to medication changes made to 51 consecutive patients who met eligibility criteria on two CTUs that were not part of the MERA pilot (control group). We also calculated the direct medication costs of the medications stopped by the MERA team during the inpatient admission and follow-up periods. Cost per unit was obtained from the ODB Formulary 42nd edition, and this was used to calculate cost savings during the inpatient admission by calculating the daily medication cost from the date of the MERA meeting until the date of discharge (or of transfer or death as applicable). Of the 122 medications that remained discontinued at the time of discharge, cost data was available from the Ontario Drug Benefit (ODB) program for 50 of them, and we used this to calculate the costs saved during the hospital admission to be $161.09, or $0.02 per patient-day. Of the 13 medications added, 6 were stopped prior to discharge. Cost data was available from ODB for the remaining 7 medications, and we used this to calculate costs added during the hospital admission to be $14.17 or $0.10 per patient-day. During the follow-up period, the same unit costs were used, and an 8% markup, $8.83 dispensing fee, and $6.11 co-payment was added to each medication (as per ODB Formulary 42nd edition), assuming it was dispensed once during the 100 day period. Costs were only included for patients who continued to fill medications during the entire 100 day period, according to the ODB record. Patients who did not, for example because they died or went to a PCU during the follow-up period, were not included, as the date of death/date of admission could not be confirmed. Medications considered to be for hospital use only (1 for VTE prophylaxis and 1 for CIWA protocol) were removed from the analysis, as they would not have been expected to continue post-discharge.

Supplement E. Explanation of results from Beliefs about Medications Questionnaire (BMQ).
The BMQ revealed a mean Specific-Necessity subscale score of 18.5, which indicates an average score of 3.7 on each 5-point Likert question (where 3 indicates uncertainty and 4 indicates agreement, higher

scores indicate a belief that the patient's current medications are necessary). The other subscales (measuring concerns, overuse and harm) revealed average scores ranging from 2.6 to 3.1 on each question (where 2 indicates disagreement and 3 indicates uncertainty, and higher scores indicate concerns about medications).

Supplement F. Admitting Team Member Follow-up Questionnaire.

1. Approximately how often did you attend MERA meetings?
-Always/almost always
-Often (~75%)
-Sometimes (~50%)
-Rarely (~25%)
-Never/almost never

2. On average, how long did the MERA meetings last?
->60 minutes
-45-60 minutes
-30-45 minutes
-15-30 minutes
-<15 minutes

3. Please rate your agreement with the following statements.
[Each was given a 5-point Likert scale ranging from "Strongly disagree" to "Strongly agree"
-I think that medication rationalization is a good idea.
-I found it difficult to attend the MERA meetings.
-I found that the MERA meetings were too long.
-I found it easy to discuss the recommendations that came from the MERA meeting with the patient or substitute decision-maker.
-I found that substitute decision-makers were receptive to the recommendations of the MERA team.
-I think that the MERA meetings were a good use of my time.

4. Overall, how did the involvement of the MERA team affect your relationship with patients involved in the study?
-The MERA team's involvement greatly improved my relationship with the patients.
-The MERA team's involvement slightly improved my relationship with the patients.
-The MERA team's involvement did not affect my relationship with the patients.
-The MERA team's involvement slightly worsened my relationship with the patients.
-The MERA team's involvement greatly worsened my relationship with the patients.

5. Overall, how did the involvement of the MERA team affect your relationship with substitute decision-makers (SDMs) involved in the study?
-The MERA team's involvement greatly improved my relationship with the SDMs.
-The MERA team's involvement slightly improved my relationship with the SDMs.
-The MERA team's involvement did not affect my relationship with the SDMs.
-The MERA team's involvement slightly worsened my relationship with the SDMs.
-The MERA team's involvement greatly worsened my relationship with the SDMs

Supplement G. The CARENET Criteria for elevated risk of death in the next 6 months.

We enrolled medical inpatients with:

- Age >80
- Age 55 plus one of:
    - Chronic obstructive lung disease, with at least 2 of these 4 conditions: baseline Paco2 of at least 45 mm Hg; cor pulmonale; an episode of respiratory failure during the past year; forced expiratory volume in 1 second of 0.75 L or less
    - Congestive heart failure, with New York Heart Association class IV symptoms or a left-ventricular ejection fraction measured at 25% or less
    - Cirrhosis, confirmed by imaging studies or documentation of esophageal varices, and any of hepatic coma, Child's class C liver disease or Child's class B liver disease with gastrointestinal bleeding
    - Cancer, diagnosed as metastatic cancer or stage IV lymphoma

