Medication Appropriateness in Older Critical Care Patients: A Scoping Review Protocol

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Background: Critical care units treat the most clinically vulnerable patients and survivors are prone to experiencing long-lasting complications post-critical care stay (1). As the population of older people is increasing within our society (2), subsequently so is the number of older people admitted to critical care units (3). Potentially inappropriate medication use occurs in older people admitted to critical care units (4), (5). Although the indication for a medicine may be appropriate at a critical time for a patient, sometimes these medications are not reviewed after a patient is stabilised and risk continuation post-critical care discharge when there is no longer an indication (6), (7). Polypharmacy, in particular the use of potentially inappropriate medications, may lead to delirium and cognitive decline, increased risk of frailty and falls, longer length of stay, emergency re-admissions and overall worsening morbidity in older people (8), (9). Therefore, there is a need to explore and challenge potentially inappropriate medication use, specifically in older critical care patients, to improve clinical outcomes and overall patient safety.

Objectives: To understand the extent and type of evidence in the assessment of medication appropriateness in older critical care patients, intervention strategies and relationship with clinical outcomes. • To identify how medication appropriateness is assessed in older critical care patients and the association with clinical outcomes. • To identify interventions used to address potentially inappropriate medication. Research Question: How is medication appropriateness assessed in older critical care patients, what intervention strategies have been used and what is the relationship with clinical outcomes?

Methods: Embase, MEDLINE, CINAHL, APA PsycInfo and Web of Science databases will be searched. Studies focusing specifically on older critical care patients will be included. Title and abstract screening followed by full text screening will be undertaken independently by JMC (primary author) and JKJ (critical care pharmacist), with arbitration by a third member of the research team (RSB). Data extraction will be performed by JMC and checked by JKJ. Results will be reported using PRISMA-ScR guidelines (10). Inclusion criteria: Older people (≥60years) admitted to critical care wards. Studies must include an assessment method to determining medication appropriateness during critical care stay and discuss clinical outcomes in relation to potentially inappropriate medication use

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Critical care units treat the most **clinically vulnerable patients,** and survivors are prone to experiencing **long-lasting complications post-critical care stay** (1).

As the population of **older people is increasing within our society**, so is the number of patients admitted to critical care units (2), (3).

Potentially inappropriate medication (PIM) use exists within critical care (4). Polypharmacy, in particular inappropriate medication, can lead to **several adverse outcomes in older patients** (5), (6).

- **Delirium and cognitive decline**
- **Increased risk of frailty and falls**
- **Longer length of stay**
- **Emergency hospital re-admission**
- **Overall worsening morbidity**

Aim and Objectives

To understand the extent and type of evidence in the assessment of medication appropriateness in older critical care patients, intervention strategies and the relationship with clinical outcomes.

1. To identify how medication appropriateness has been assessed in older critical care patients and the association with clinical outcomes.
2. To identify intervention strategies used to address PIM use in critical care

Appropriate Medication	Inappropriate Medication
Potential benefit outweighs risk	Risk of harm outweighs benefit
Clinically indicated for a patient's condition	Not clinically indicated or a better alternative exists
Prescribed at the correct dose, duration, route and frequency	Duplicated, incorrectly dosed or causes harmful interactions
Considers patient-specific considerations (e.g. age, renal function, co-morbidities)	Doesn't consider patient-specific considerations
Aligns with evidence-based guidelines	Often fails to consider patients' life expectancy or goals of care (e.g. older patients)

(7)

What methods or tools are used to determine medication appropriateness, do interventions exist to minimise PIM use and what are the associated clinical outcomes in older critical care patients?

Methods and Inclusion Criteria

- A pilot search of Embase and MEDLINE will be done to identify relevant studies and articles on the topic. The text words contained within the titles and abstracts of relevant literature and the index terms used to describe articles will be used to develop a full search strategy for each database.
- Embase, MEDLINE, CINAHL, APA PsycInfo and Web of Science databases will be searched. Studies focusing specifically on older critical care patients will be included. Title and abstract screening followed by full text screening will be undertaken independently by JMC (primary author) and JKJ (critical care pharmacist), with arbitration by a third member of the research team (RSB). Data extraction will be performed by JMC and checked by JKJ.
- Results will be reported using PRISMA-ScR guidelines (8).
- The scoping review protocol will be registered on Open Science Framework (9).

Inclusion Criteria: Older people (≥60 years) admitted to critical care wards. Studies must include an assessment method to determining medication appropriateness during critical care stay and discuss clinical outcomes in relation to potentially inappropriate medication use.

References: (1) Desai et al., 2011; (2) Floroff et al., 2012; (3) Aydemir et al., 2021; (4) Patel et al., 2024; (5) Khezrian et al., 2020; (6) Liew et al., 2019; (7) O'Mahony et al., 2015; (8) Tricco et al., 2018 and (9) Foster et al., 2017.

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