

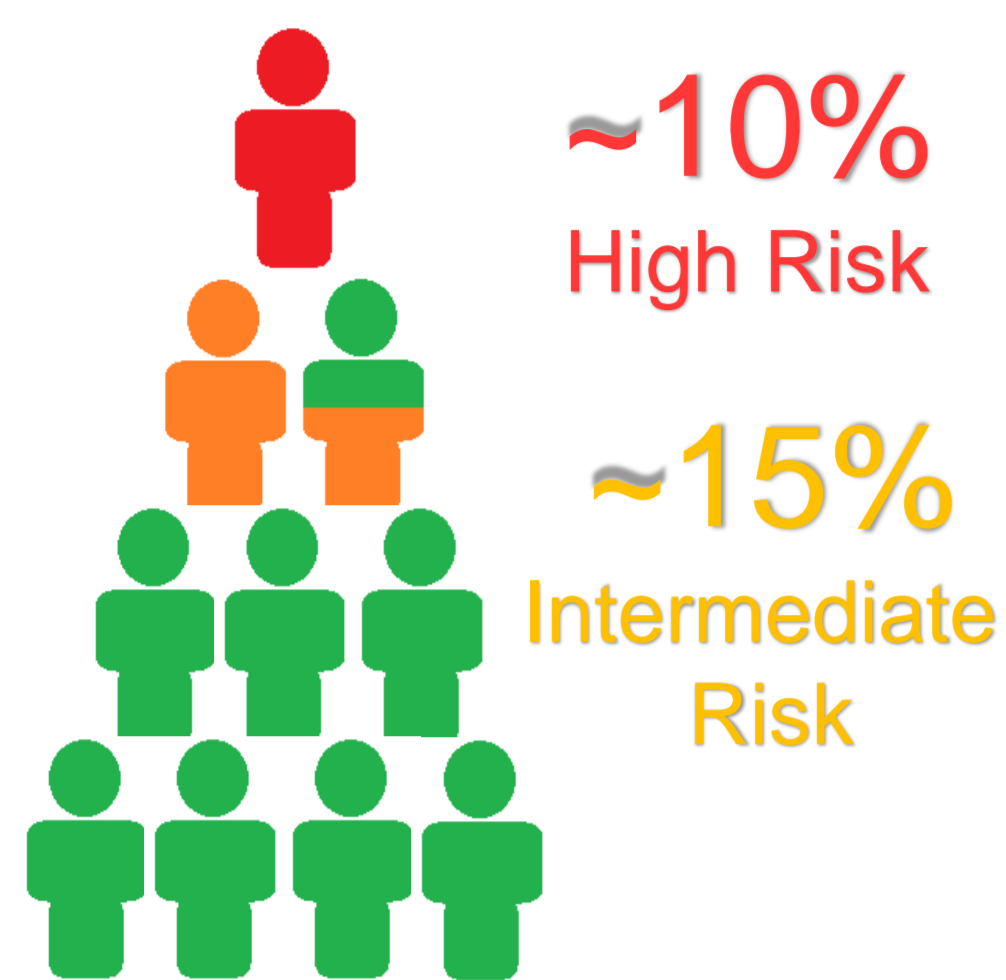
# Introducing PHarmacie-4: Doing more for high-risk patients post-discharge.

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## Overview

Clinicians from Sir Charles Gairdner Hospital (SCGH) use the Patient Risk Stratification Instrument (PRSI)<sup>1</sup> to refer complex patients to an early post discharge hospital outreach pharmacy service (CoNeCT Pharmacy). This research aims to develop a risk tool that is as effective as PRSI, easier to use at the bedside and incorporates biopsychosocial risk factors to identify high-risk patients.



**\$1.2 Billion**

Complex patients are generally elderly and/or have a range of contributing factors for medication misadventure which has an associated cost of **\$1.2 billion annually**.<sup>2</sup> Medication misadventure is comprised of adverse drug effects, adverse drug reactions and medication errors.<sup>3</sup>

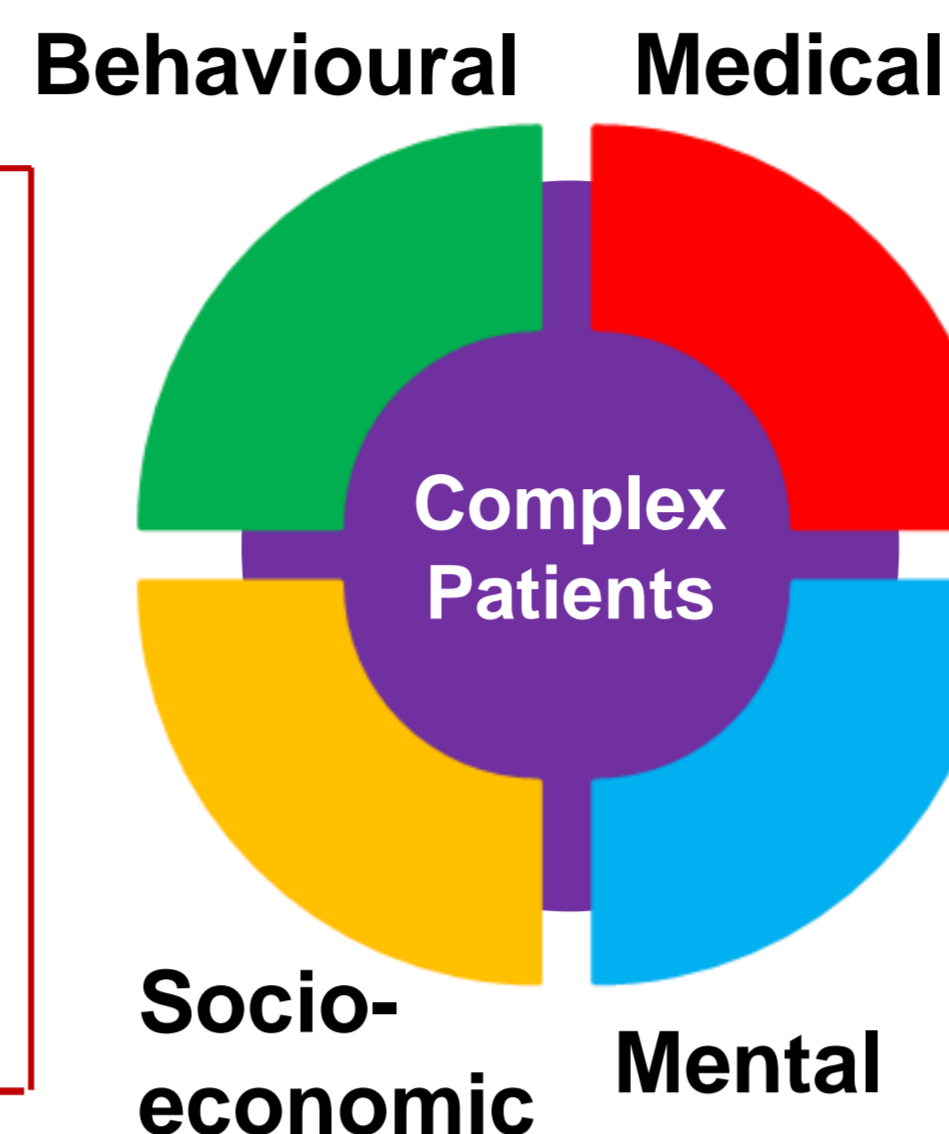


Figure 1. Contributing factors in a complex patient for medication misadventure and its associated preventable expense.

## Results

Risk Factors	P-Value
Polypharmacy	< 0.05
High Risk Medications*	0.51
Lives Alone	< 0.05
Rural/Remote*	0.26
Mental/Cognitive Impairment	< 0.05
> 65 years old*	0.53
≥ 3 Chronic comorbidities	< 0.05
Indigenous*	0.09
Interpreter*	0.18
Extended Length of Stay	< 0.05

\*Clinically important risk factors

- 188 patients were enrolled in this study.
- 22 predictor risk variables were considered. (Figure 2)
- 10 risk variables met our selection criteria to form PHarmacie-4 (Table 1)
- We found 89% correlation between PRSI and PHarmacie-4 tool
- High risk participants as scored by PHarmacie-4 had significantly higher hospital utilisation. (Table 2).
- There was a significant association between High risk participant and 90 day cumulative readmission (p=0.047)

Table 2. Comparison of hospital utilisation based on risk stratification scores for PRSI and PHarmacie-4.

Markers	Non High Risk (n=19)	High Risk (n=161)	P - Value
Mean inpatient admission in the past 12 months	1.1±0.9	5.1±5.4	< 0.05
Mean PHarmacie-4 Score	2.9±0.6	5.4±1.0	< 0.05
Mean PRSI Score	11.2±4.1	14.2±4.5	< 0.05

## Discussion and Conclusion

### PHarmacie-4 Doing more for busy clinicians

- Simple tool with easily accessible and assessable variables (Figure 3)
- Concrete risk markers (Table 1)
- Tool could be used by other health professionals (Figure 3)

### PHarmacie-4 Doing more to highlight risk

- Strict assessment of high risk patients (Table 2)
- Allows allocation of resources to patients with greater hospital utilisation (Table 2)
- Future potential for identification of intermediate-risk patients

### PHarmacie-4 Doing more to focus interventions

- Highlights potentially modifiable risk factors (Figure 3)
- Encourages culturally appropriate medication review (Figure 3)

This ground-breaking study provides the foundation for PHarmacie-4 to be used to identify patients at risk of medication misadventure who are in need of a post-discharge medication management follow-up. Further studies will be conducted to:

- Assess the feasibility of PHarmacie-4;
- Internally and externally validate PHarmacie-4;
- Determine the weighting for each risk factor;
- Identify the score which detects intermediate or rising risk.

## References

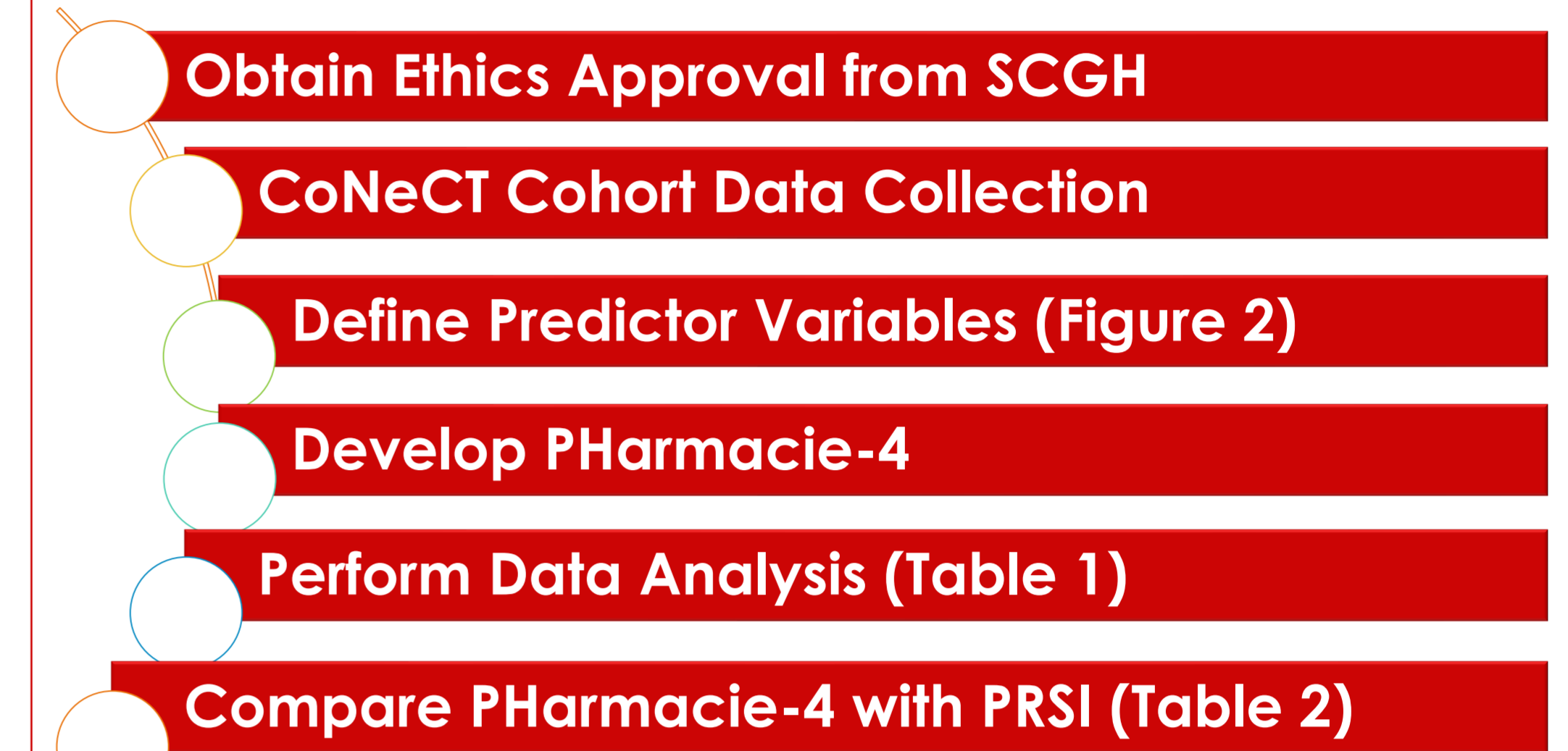
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3. Kumar N, Knowler C, Strumpman D, Bajorek B. Facilitating medication misadventure risk assessment in the emergency medical unit. J Pharm Pract Res [Internet]. 2011 [cited 2016 Aug 25];41(2):108-112. Available from: Informit Health

## Methods

This retrospective cohort study analysed complex patients referred to CoNeCT over 18 months. The criteria to develop the new risk tool included:

- Health record analysis (Figure 2)
- Statistical significance (Table 1)
- Clinical importance<sup>2</sup> (Table 1)
- Accessibility

Matthew's correlation coefficient was performed to test the correlation between PRSI and the new tool.



### 22 Predictor Risk Factors Identified For Analysis

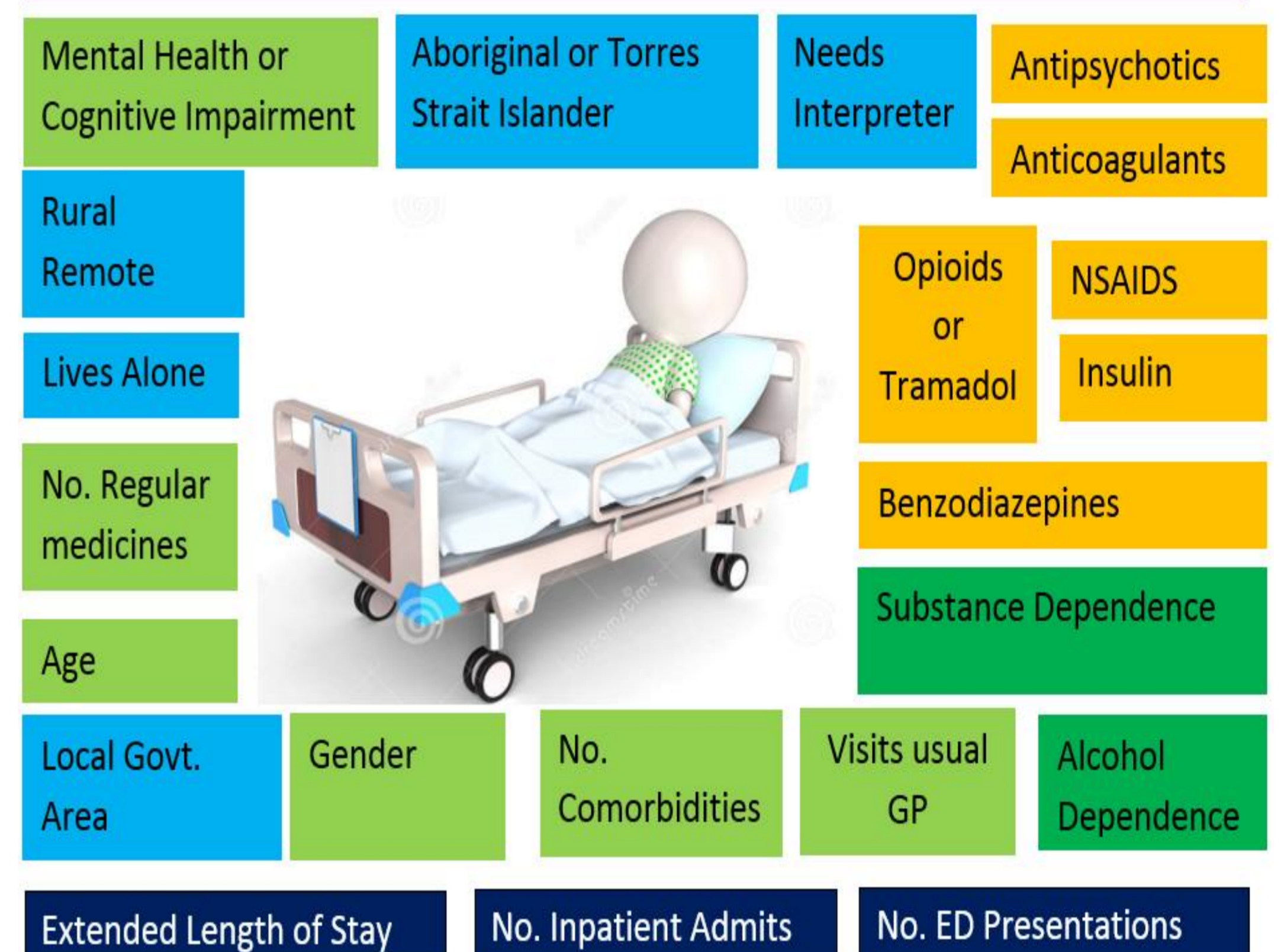


Figure 2. 22 Risk predictor variables collected from the CoNeCT cohort.

PHarmacie-4 Risk Tool	Score
<b>P</b> Polypharmacy (≥5 regular medicines daily) AND/OR	1
<b>H</b> High Risk Medicine NB: MUST HAVE EITHER POLYPHARMACY OR HIGH RISK DRUG TO ACCESS CoNeCT PHARMACY SERVICE	1
<b>A</b> Lives Alone	1
<b>R</b> Rural/Remote	1
<b>M</b> Mental health diagnosis OR Cognitive Impairment	1
<b>A</b> Age >65 years OR Age > 45 years if Aboriginal or Torres Strait Islander	1
<b>C</b> Chronic comorbidities (≥ 3)	1
<b>I</b> Indigenous OR Interpreter needed	1
<b>E</b> Extended length of stay (≥ 5 days)	1
<b>4</b> Score of 4 or more deems patient as high risk	

Figure 3. PHarmacie-4 enabling risk stratification for complex patients.

