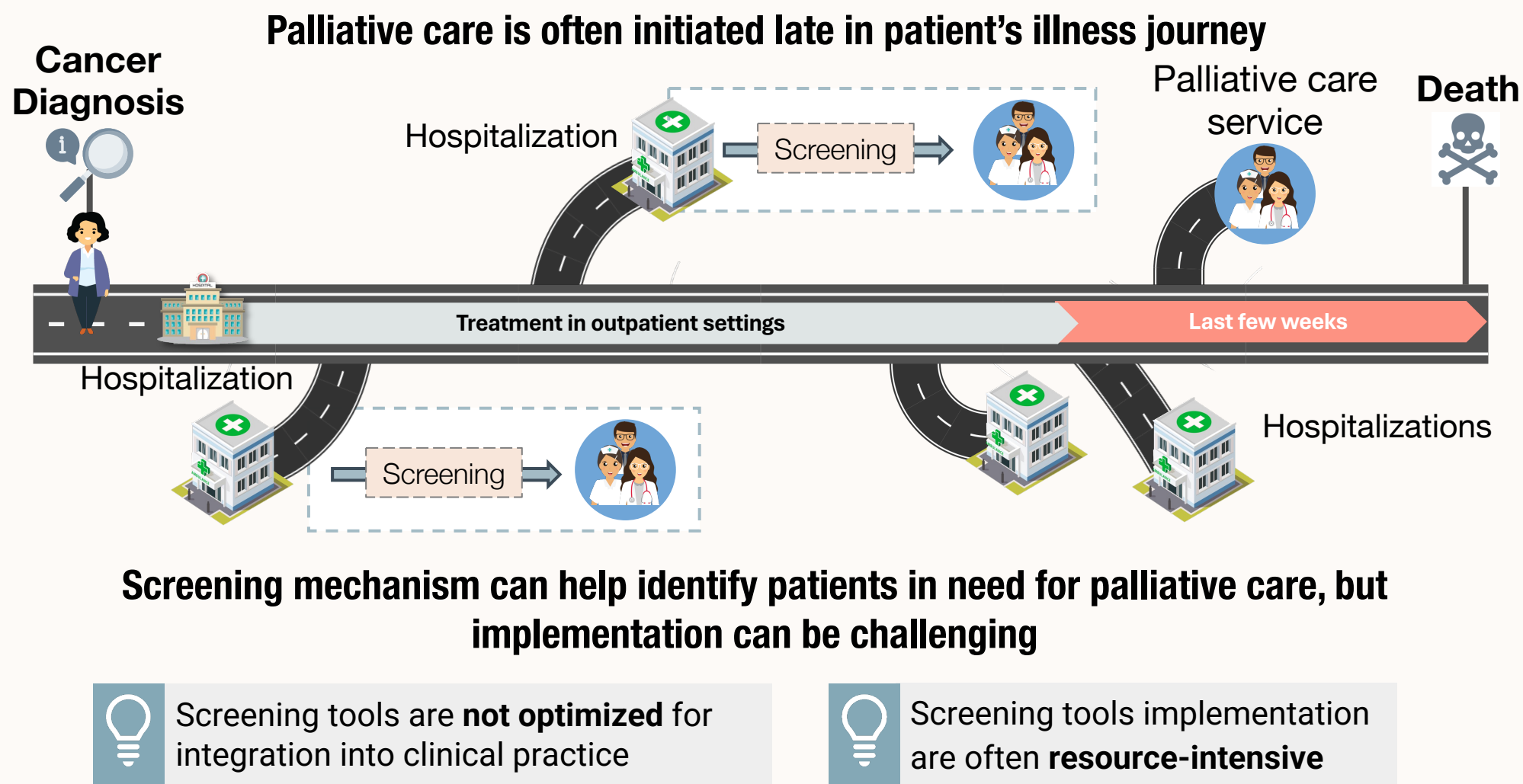# Feasibility and appropriateness of inpatient palliative care screening criteria using electronic health records and patient-reported outcome measures

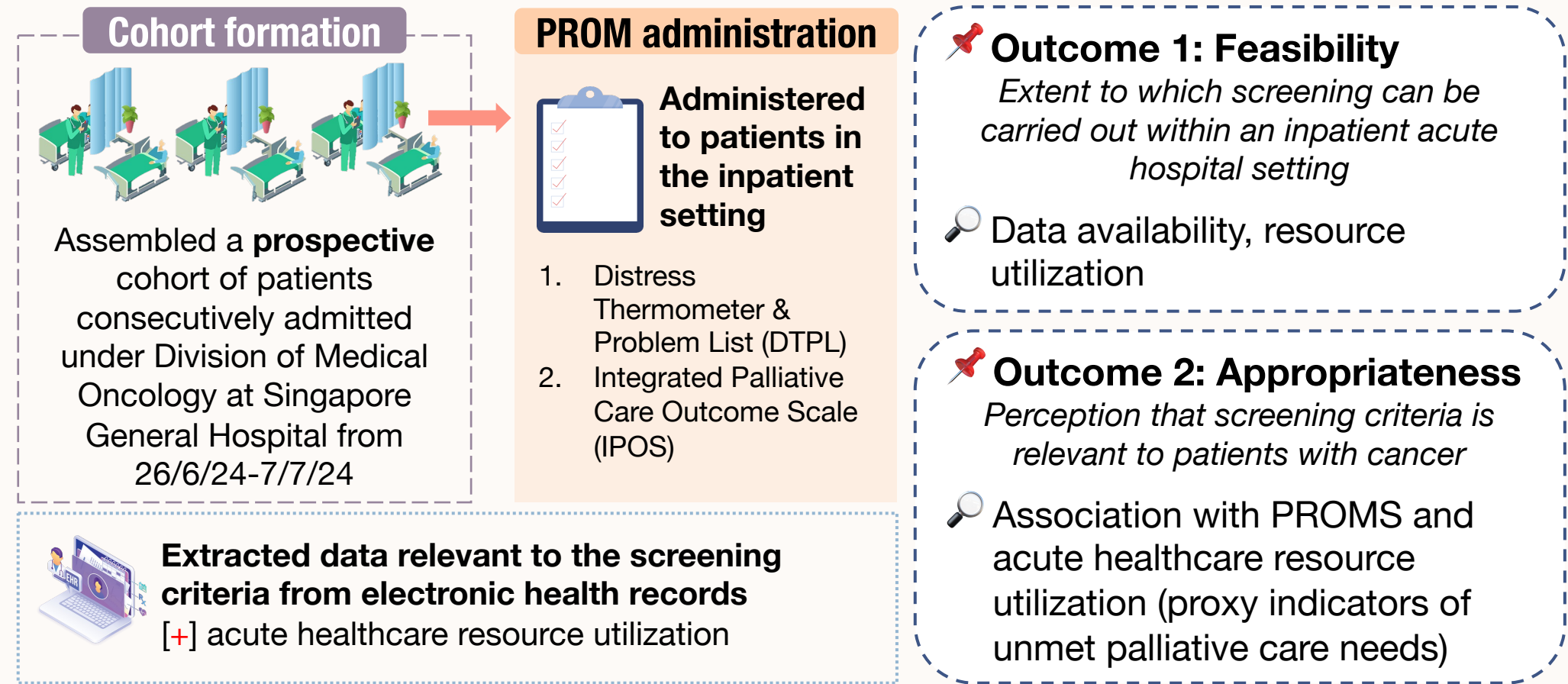Yu Ke[1], Shirlyn Hui Shan Neo[1,2], Wah Ying Ong[1,2], Grace Meijuan Yang[1,2,3]

1 Division of Supportive and Palliative Care, National Cancer Centre Singapore, Singapore ; 2 Lien Centre for Palliative Care, Duke-NUS Medical School, Singapore; 3 Programme in Health Services & Systems Research, Duke-NUS Medical School, Singapore

National Cancer Centre Singapore SingHealth

BACKGROUND

Palliative care is often initiated late in patient's illness journey

Cancer Diagnosis — Hospitalization — Screening — Palliative care service — Death

Treatment in outpatient settings — Last few weeks

Hospitalization — Screening

Hospitalization — Hospitalizations

Screening mechanism can help identify patients in need for palliative care, but implementation can be challenging

- Screening tools are **not optimized** for integration into clinical practice
- Screening tools implementation are often **resource-intensive**

Aim: Assess the feasibility and appropriateness of implementing screening criteria leveraging electronic health records (EHR) and patient-reported outcome measures (PROMs) among oncology inpatients

METHODOLOGY

Cohort formation

Assembled a **prospective** cohort of patients consecutively admitted under Division of Medical Oncology at Singapore General Hospital from 26/6/24-7/7/24

Extracted data relevant to the screening criteria from electronic health records
[+] acute healthcare resource utilization

PROM administration

Administered to patients in the inpatient setting
1. Distress Thermometer & Problem List (DTPL)
2. Integrated Palliative Care Outcome Scale (IPOS)

📌 **Outcome 1: Feasibility**
Extent to which screening can be carried out within an inpatient acute hospital setting
🔍 Data availability, resource utilization

📌 **Outcome 2: Appropriateness**
Perception that screening criteria is relevant to patients with cancer
🔍 Association with PROMS and acute healthcare resource utilization (proxy indicators of unmet palliative care needs)

RESULTS

1 Patient characteristics

Characteristic	Total (N = 202)
Age, years, mean (SD)	64.7 (13.6)
Gender, n (%)	
Male	98 (48.5%)
Female	104 (51.5%)
Race, n (%)	
Chinese	159 (78.7%)
Malay	22 (10.9%)
Indian	11 (5.5%)
Others	10 (5.0%)
No. of chronic conditions, median (IQR)	2 (1-3)
Chronic conditions, n (%)	
Hypertension	95 (47.7%)
Hyperlipidemia	81 (40.7%)
Type 2 diabetes	53 (26.6%)
Pulmonary disease	23 (11.6%)
Renal disease	22 (11.1%)
Ischemic heart disease	20 (10.1%)

Cancer type	Total
Breast	28 (13.9%)
Lung	39 (19.3%)
Gastrointestinal	58 (28.7%)
Prostate	6 (3.0%)
Lymphoma	14 (6.9%)
Mixed	13 (6.4%)
Others	29 (14.4%)
Gynecological	15 (7.4%)

2 Screening results

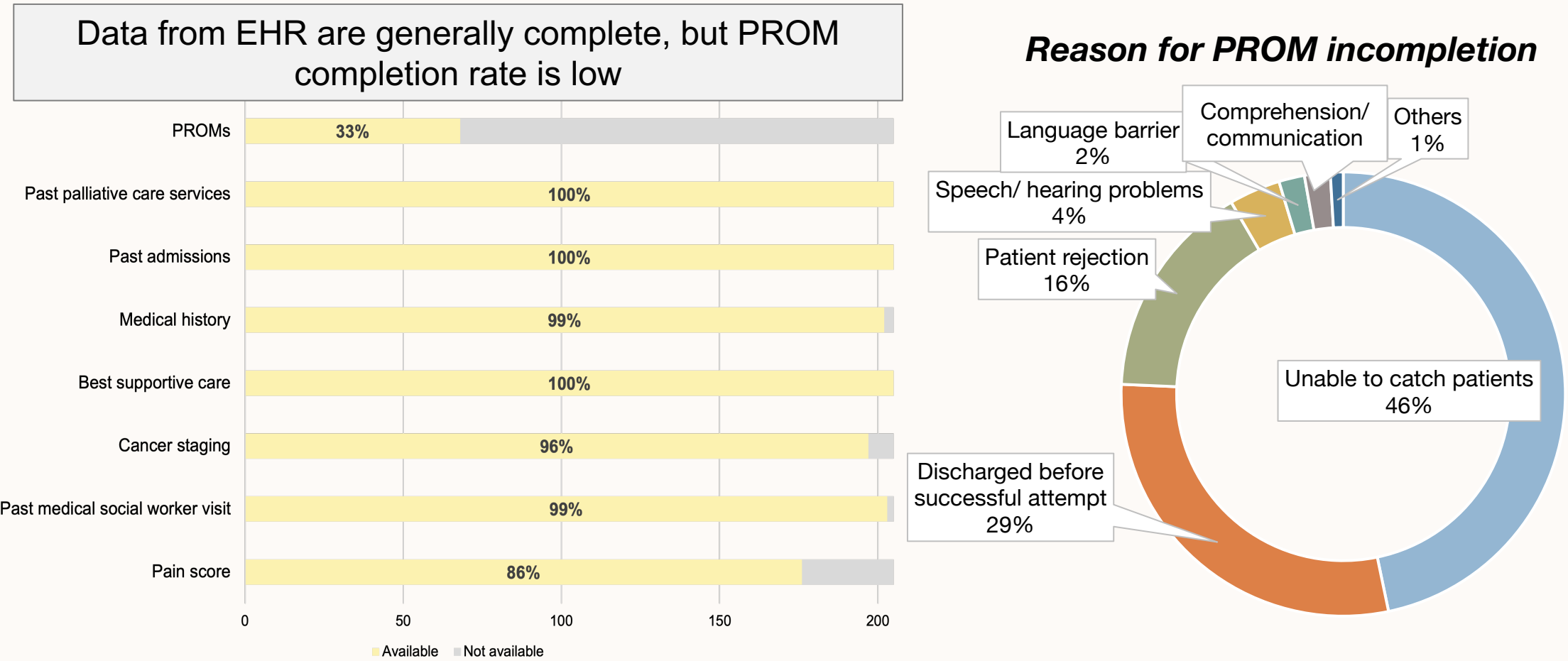| Screening criteria	Total (N = 202)
Number of criterion screened positive, median (IQR)	2 (1-3)
Patient-related criteria	
Pain score	
Presence of moderate pain, n (%)	12/174 (6.9%)
Medical social worker (MSW) visit history	
History of visit, n (%)	85/200 (42.5%)
Disease-related criteria	
Cancer staging	
Stage IV cancer, n (%)	142/194 (73.2%)
Treatment status	
On best supportive care, n (%)	25/202 (12.4%)
Comorbidity burden	
≥2 CCI conditions, n (%)	35/199 (17.6%)
Healthcare resource utilization-related criteria	
Admission history	
≥2 admissions in past 6 months, n (%)	69/202 (34.2%)
Palliative care visit history	
Known to palliative care services, n (%)	49/202 (24.3%)

A sizable group was reviewed by MSW

Most patients had stage IV cancer on active treatment

Around 1 in 4 already known to palliative care services

3 Outcome 1 - Feasibility

Data from EHR are generally complete, but PROM completion rate is low

- PROMs 33%
- Past palliative care services 100%
- Past admissions 100%
- Medical history 99%
- Best supportive care 100%
- Cancer staging 96%
- Past medical social worker visit 99%
- Pain score 86%

Available / Not available

Reason for PROM incompletion

- Language barrier 2%
- Comprehension/ communication 1%
- Others 1%
- Speech/ hearing problems 4%
- Patient rejection 16%
- Unable to catch patients 46%
- Discharged before successful attempt 29%

4 Outcome 2 - Appropriateness

Outcomes	Positive = ≥1 disease-related criterion and ≥1 other criterion		
	Screen negative	Screen positive	P
Healthcare resource utilization	n = 74	n = 125	
Length of stay, days, median (IQR)	4 (2-6)	6 (3-12)	**0.021**
ED visits within 30 days of discharge, n (%)	24 (32.4%)	63 (50.4%)	**0.014**
Unplanned readmission within 30 days of discharge, n (%)	13 (17.6%)	22 (17.6%)	0.995
PROM responses	n = 29	n = 39	
Clinically significant distress (≥4/10), n (%)	18 (62.1%)	25 (64.1%)	0.863
No. of problems reported on DTPL, median (IQR)	5 (2-9)	9 (3-13)	**0.032**
IPOS total score, mean (SD)	24.8 (16.9)	31.7 (14.9)	0.086

DISCUSSION & CONCLUSION

- ☑ EHR-based screening is feasible and appropriate with screen positive identifying patients more likely to have longer stay and 30-day return visits to the emergency department
- ❓ Incorporating PROMs data from routine outpatient administration may address low inpatient completion rates
- 🔍 Future work will explore meaningful screening thresholds and automation with dashboards