

Improving Accuracy in Transport Charging for Residential Home Transfers

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Background

Problem Statement:

Inaccurate and incomplete information at the time of transport booking for transfers from inpatient ward to residential home has led to missed or inaccurate charges, resulting in rework and financial loss for the institution.

Background:

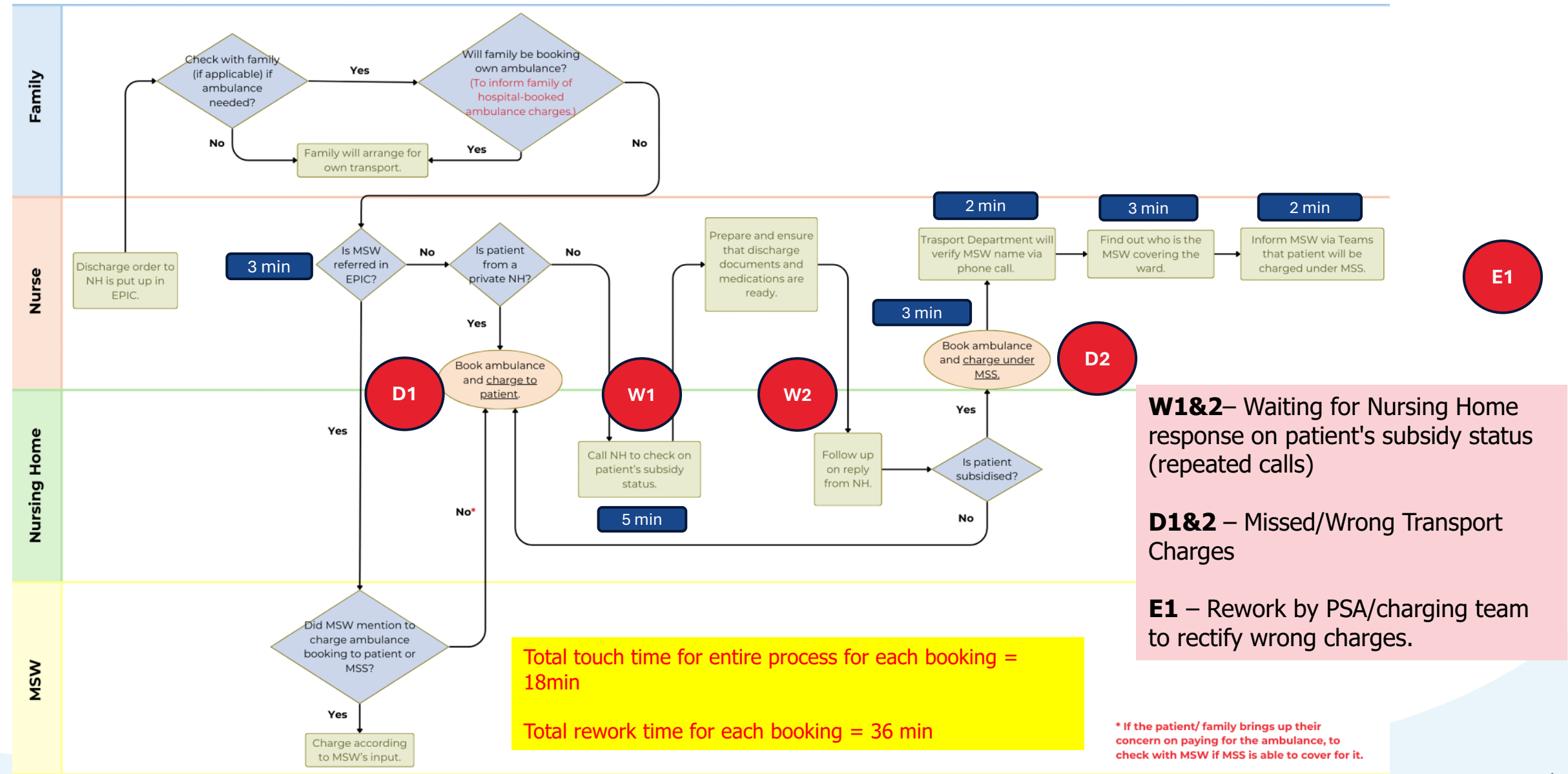
Additionally, it was observed that the existing workflow is lacking information required for staff to carry out the booking and charging process efficiently. Staff had expended much time carrying out the following:

- Making additional calls to residential homes to determine whether the transport charges should be billed to patient or to MSS.
- Carrying out rework when charges are wrongly allocated, rework is required to rectify the error, resulting in additional time, effort and stress.

Reasons for Action

- 27.75% of the total transport bookings from KTPH to NH were charged to the wrong party, resulting in a need to rectify **154 cases to recover an estimate of \$15,400 in 2024**.
- Additional time spent on gathering missing information, **reduces productivity** and **increases stress** among nurses.
- Additional time is needed for **rework** to correct the charges.

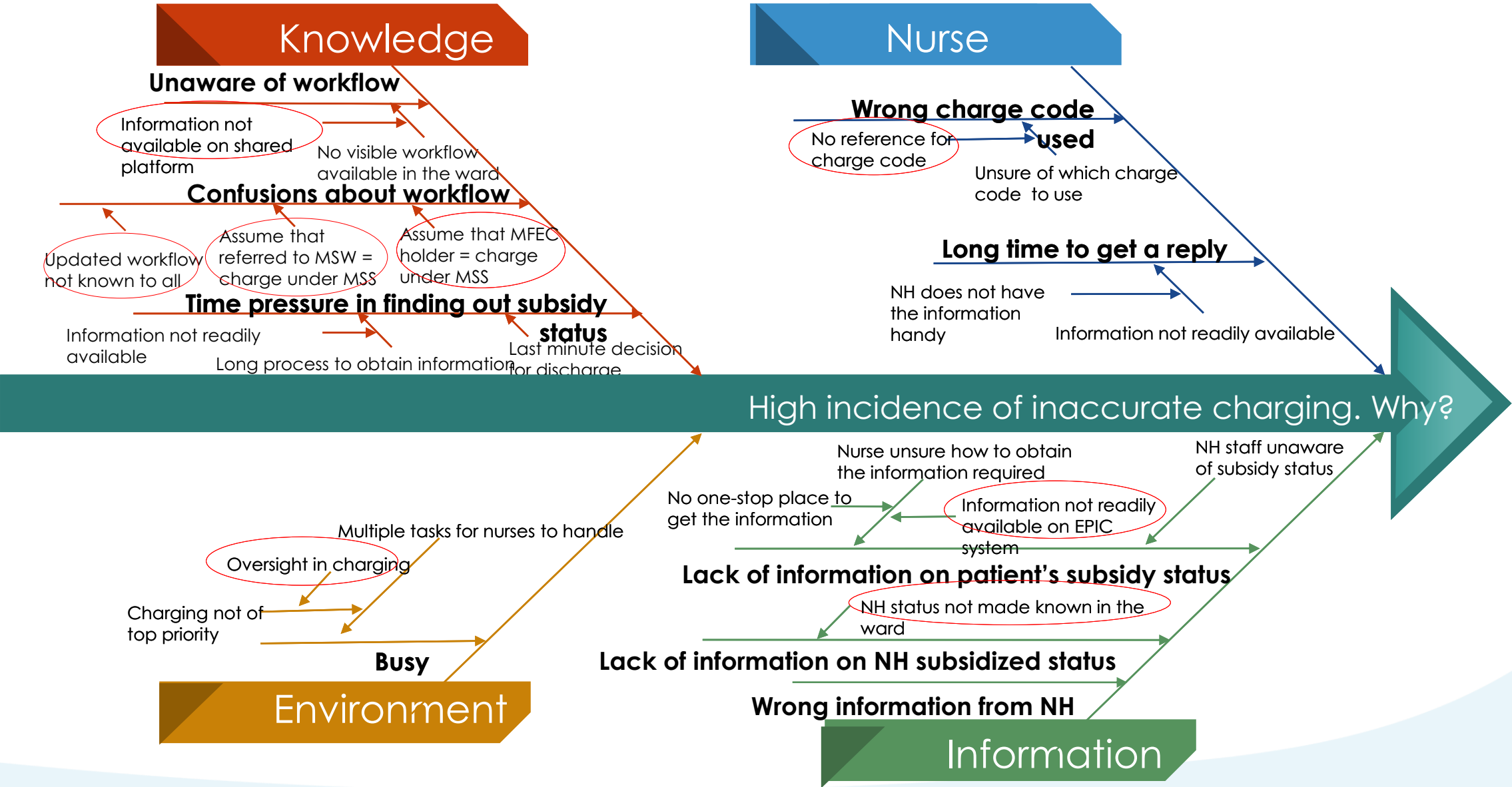
Initial State



Success Indicators

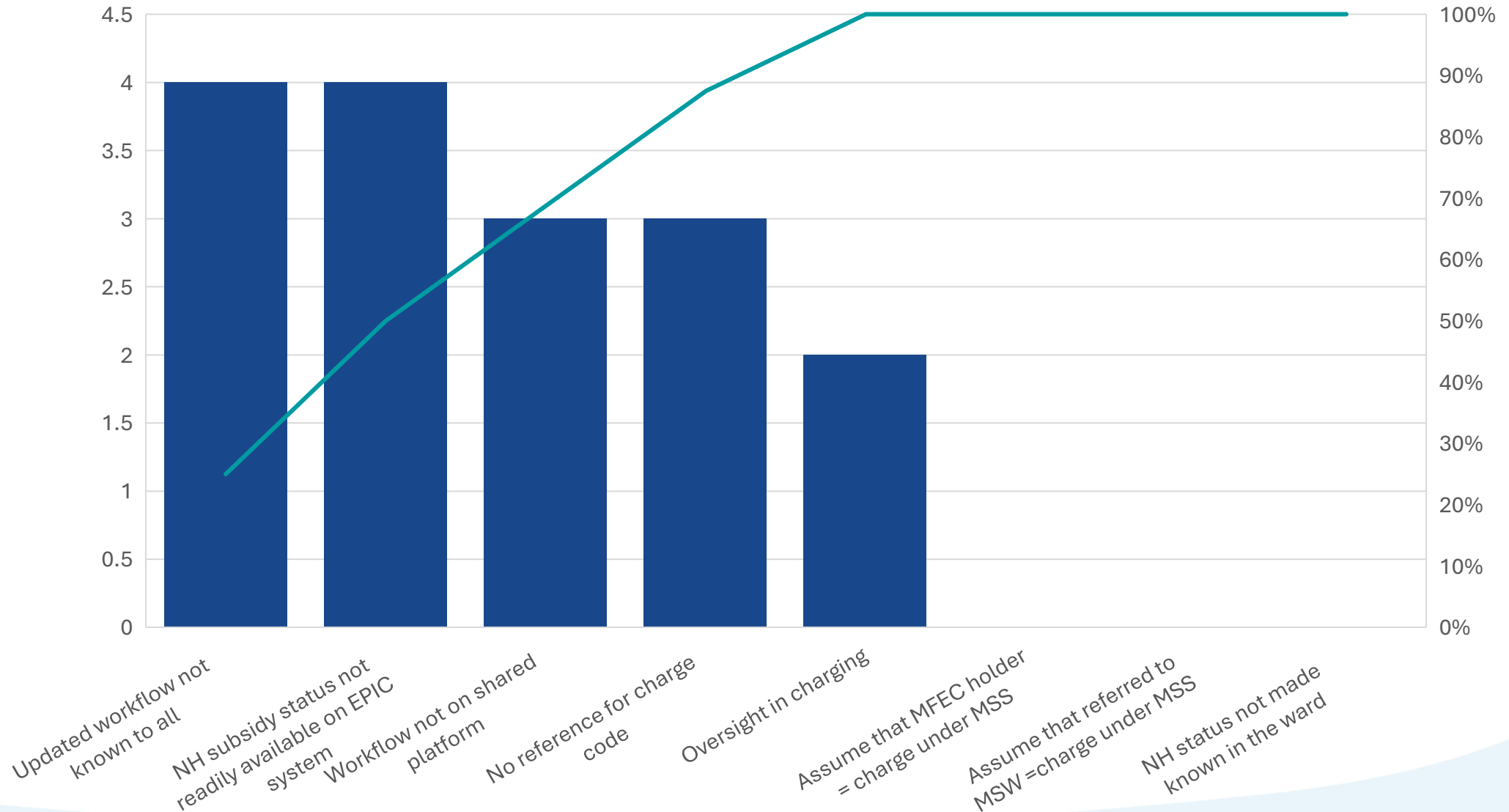
Indicators	Baseline CY2024, All Inpatient Wards in KTPH (29 wards)	Target (Annual Figures)
No. of Inaccurate Charges	154 incidences i.e. $154/555 = 27.7\%$	0 Incidences
Total Missed Charges	\$15,400 $154 \times \$100 = \$15,400$	\$0
Touch time spent on each transport booking	18 mins	7 mins
Annual touch time expensed on re-work	$(36\text{min} \times 154) = 5544 \text{ minutes} = 92\text{hrs } 24\text{mins} = $ 11.55 man days	0 minutes

Gap Analysis



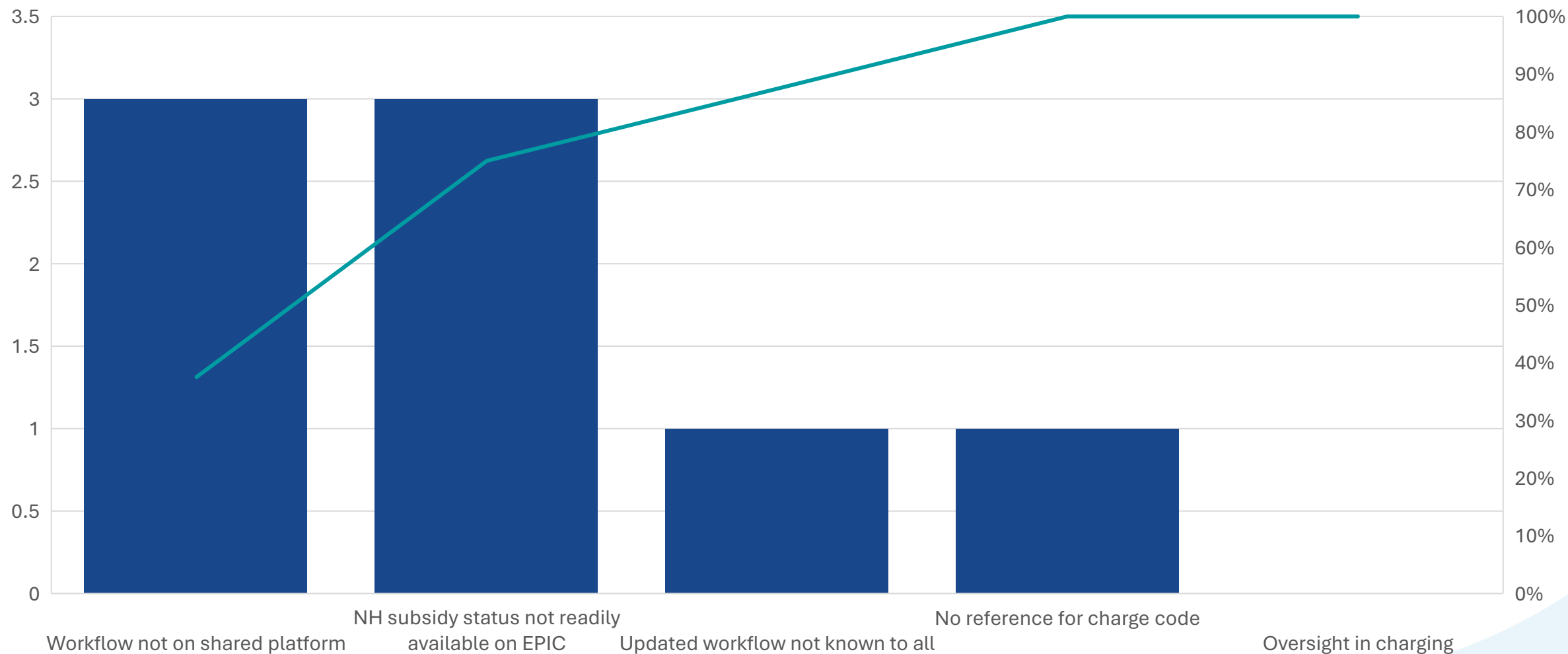
Root Cause Analysis – Pareto Chart

1st Round of Pareto Chart



Root Cause Analysis – Pareto Chart

2nd Round of Pareto Chart



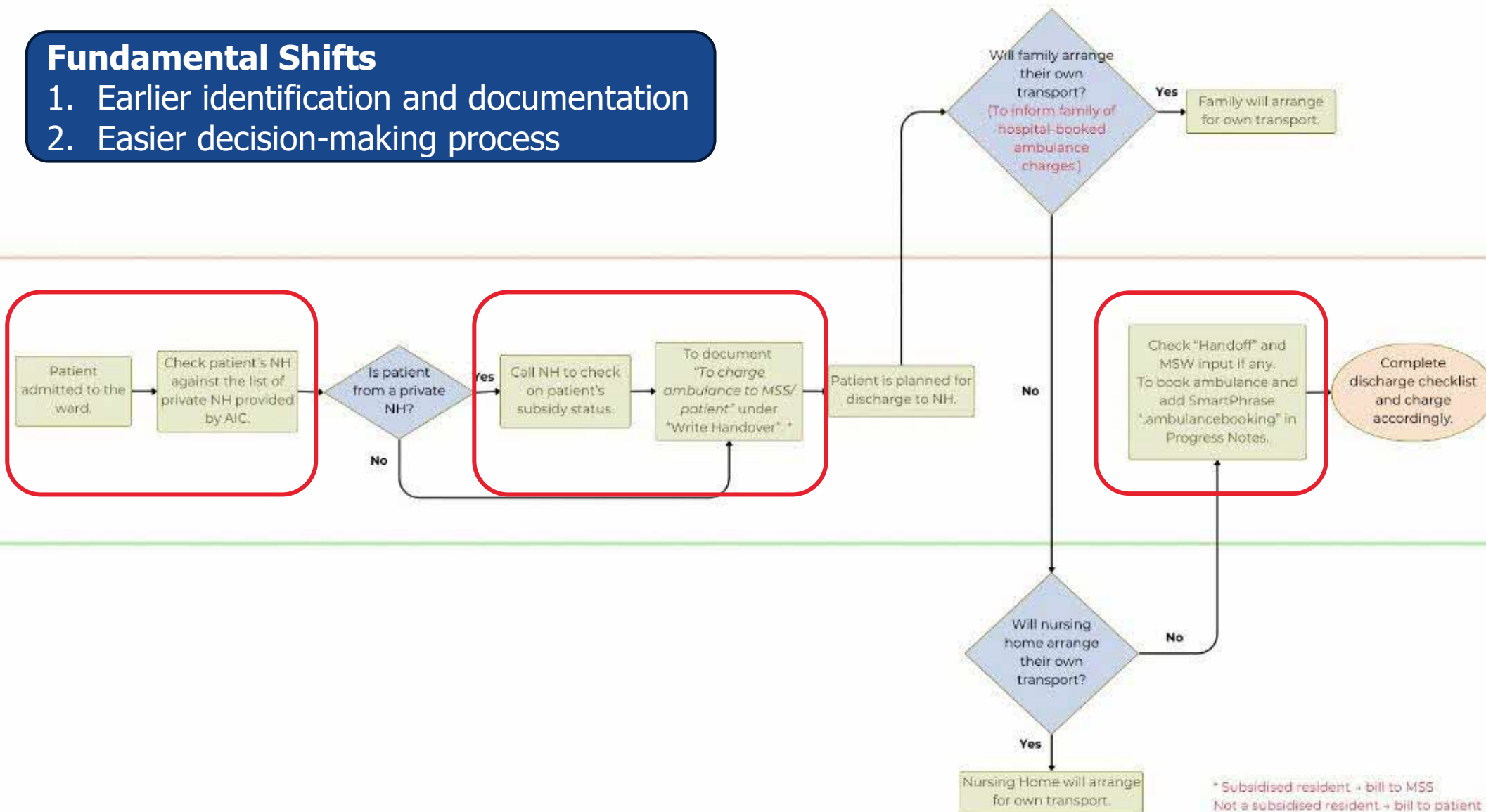
Solution Approach

Targeted Problem	Proposed Solution
Workflow not readily available in shared platform	Workflow to be made available in R drive and announce to nurses through email.
NH subsidy status not available	Disseminate the list of private nursing homes whenever updates are received from AIC to each ward to be put up for referencing. • For patients admitted from these homes, nurses must check and document the patient's subsidized status in hand off notes during admission. • For nursing homes not listed, patients are considered subsidized and MSS will bear the transport cost if transport is not provided by the nursing home.
Updated workflow not known to all	Providing the new workflow for the pilot wards for reference. Announce new workflow during NJC once finalized.
No reference for charging code	Include charge code in the workflow for easy reference.

Proposed Solution

Fundamental Shifts

1. Earlier identification and documentation
2. Easier decision-making process



* Subsidised resident + bill to MSS
Not a subsidised resident + bill to patient

Admission Documentation in EPIC

Telephone Call  Label Hx

Patient |  Wrap Text |  Work List |  Assignment Wizard |  Update Location |  Write Handover

Assignment for the Day 8 Patients

Bed & Current Location	Patient	Problem	Allergies	Attending Clinician	Orders	Last POCT Glucose (Past 24 Hrs)	STAT Med	Con (Ba) Stat
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Document "Subsidized/Private Patient" under this column.

Illness Severity and Patient Summary  

 abc       More

Illness Severity: Handoff Patient Severity

Summary: Patient condition is *** since admission for ***

Assessment: ***

Action List 

 abc       More

Situation Awareness 

 abc       More

Private Nursing Home List Received from AIC

41 Private Nursing Homes

Private Nursing Home List for Respite Care					
	Nursing Home	Address	Contact	Region	General Location
1	Allium Care Suites	71 Venus Drive, (S) 573859	87338099	North	Bishan / Ang Mo Kio
2	Charis Manor Nursing Home	39 Sims Ave, (S) 387412	67418566 / 89162833 (WhatsApp)	East	Geylang / Eunos
3	ECON Medicare Centre & Nursing Home (Buangkok)	10 Buangkok View Blocks 5 & 9, Level 1 & 2, (S) 539747	63856860	North	Serangoon Garden, Hougang, Punggol
4	ECON Medicare Centre (Braddell)	58 Braddell Road, (S) 359905	64873133	East	Macpherson / Braddell
5	ECON Medicare Centre (Chai Chee)	351 Chai Chee Street #03-01, (S) 468982	64416811	East	Bedok / Upper East Coast / Eastwood / Kew Drive
6	ECON Medicare Centre (Choa Chu Kang)	53 Choa Chu Kang Road, (S) 689385	67698878	West	Hillview / Dairy Farm / Bukit Panjang / Choa Chu Kang
7	ECON Medicare Centre (Henderson Care Residence)	100 Henderson Road, (S) 159544	62791399	South	Queenstown / Tiong Bahru
8	ECON Medicare Centre (Recreation Road)	25 Recreation Road, (S) 546522	63828463	North	Serangoon Garden, Hougang, Punggol
9	ECON Medicare Centre (Upper East Coast)	452 Upper East Coast Road, (S) 466500	64458838	East	Bedok / Upper East Coast / Eastwood / Kew Drive
10	ECON Medicare Centre (Yio Chu Kang)	451 Yio Chu Kang Road, (S) 805947	67520038	North	Seletar
11	Good Shepherd Loft	225 Bukit Timah Road, (S) 259691	62350850	Central	Ardmore / Bukit Timah / Holland Road / Tanglin
12	Green Avenue Home for the Elderly	No 1 Lorong 23 Geylang, (S) 388352	67432887	East	Geylang / Eunos
13	Irene Nursing Home (affiliated to Serene NH)	11 Jalan Ampas, (S) 329514	62544085	Central	Balestier / Toa Payoh / Serangoon
14	LC Nursing Home	2 Jalan Ulu Siglap, (S) 457121	62415222 (incl WhatsApp)	East	Katong / Joo Chiat / Amber Road
15	Lee Ah Mooi Old Age Home (Silat Home)	148A Silat Avenue, (S) 168871	62762493	South	Queenstown / Tiong Bahru
16	Lee Ah Mooi Old Age Home (Thomson Home)	1 Thomson Lane, (S) 297728	62568502	Central	Watten Estate / Novena / Thomson
17	Lions Home for the Elders (Bedok)	487 Bedok South Ave 2, (S) 469316	62440667	East	Bedok / Upper East Coast / Eastwood / Kew Drive
18	Lions Home for the Elders (Bishan)	9 Bishan Street 13, (S) 579804	62529900	North	Bishan / Ang Mo Kio
19	Moonlight Home for the Aged and Handicapped	134 Lor J Telok Kurau, (S) 425962	62808990	East	Katong / Joo Chiat / Amber Road
20	Moonlight Home for the Aged and Handicapped	156 Yio Chu Kang Road, (S) 545610	98775528	North	Serangoon Garden / Hougang / Punggol
21	Moral Home for the Aged Sick	No. 1 Jalan Bilal (off Bedok Road), (S) 468854	64422268	East	Bedok / Upper East Coast / Eastwood / Kew Drive
22	NTUC Health Nursing Home (Chai Chee)	35 Chai Chee Street, (S) 468984	68128960	East	Bedok / Upper East Coast / Eastwood / Kew Drive
23	NTUC Health Nursing Home (Geylang East)	25 Geylang East Central, (S) 389708	67088600	East	Geylang / Eunos
24	NTUC Health Nursing Home (Jurong Spring)	68 Jurong West Street 52, (S) 649298	63048870	West	Jurong
25	NTUC Health Nursing Home (Jurong West)	50 Jurong West Street 93, (S) 648967	67088400	West	Jurong
26	NTUC Health Nursing Home (Pasir Ris)	12 Pasir Ris Walk, (S) 518063	63728200	East	Tampines / Pasir Ris
27	NTUC Health Nursing Home (Tampines)	1 Tampines Street 22, (S) 529367	63728388	East	Tampines / Pasir Ris
28	Orange Valley Nursing Home (Balestier)	363 Balestier Road, (S) 329784	62506636	Central	Balestier / Toa Payoh / Serangoon
29	Orange Valley Nursing Home (Changi)	52/53 Biggin Hill Road, (S) 509945	65455977	East	Loyang / Changi
30	Orange Valley Nursing Home (Clementi)	221 Clementi Avenue 4, (S) 129881	68739988	West	Pasir Panjang / Hong Leong Garden / Clementi New Town
31	Orange Valley Nursing Home (Marsiling)	11 Woodlands Ave 1, (S) 739068	63627333	North	Kranji / Woodgrove
32	Orange Valley Nursing Home (Simei)	6 Simei Street 3, (S) 529898	62600020	East	Tampines / Pasir Ris
33	Our Lady of Lourdes Nursing Home	19 Toh Drive, (S) 507871	65427158	East	Loyang / Changi
34	Pacific Healthcare Nursing Home I	6 Lengkok Bahru, (S) 159051	62723133	South	Queenstown / Tiong Bahru
35	Pacific Healthcare Nursing Home II	21 Senja Road, (S) 677736	67662722	West	Hillview / Dairy Farm / Bukit Panjang / Choa Chu Kang
36	Serene Nursing Home (affiliated to Irene NH)	31 Joo Chiat Lane, (S) 428101	63481482	East	Katong / Joo Chiat / Amber Road
37	The Lentor Residence	51 Lentor Avenue, (S) 786876	64516300	North	Upper Thomson / Springleaf
38	United Medicare Centre (Elizabeth Drive)	72 Elizabeth Drive, (S) 669745	67601555 / 82281928 (WhatsApp)	West	Hillview / Dairy Farm / Bukit Panjang / Choa Chu Kang
39	United Medicare Centre (Queensway)	55 Queensway, (S) 149058	64795888 / 92341091 (WhatsApp)	South	Queenstown / Tiong Bahru
40	United Medicare Centre (Toa Payoh)	170 Toa Payoh Lorong 6, (S) 319400	62584848 / 91161654 (WhatsApp)	Central	Balestier / Toa Payoh / Serangoon
41	Windsor Convalescent Home	369 Pasir Panjang Road, (S) 118706	68725881	West	Pasir Panjang / Hong Leong Garden / Clementi New Town

Smart Text Documentation

Nurses to add ".ambulancebooking" when booking of transport is completed for patients discharging to NH.

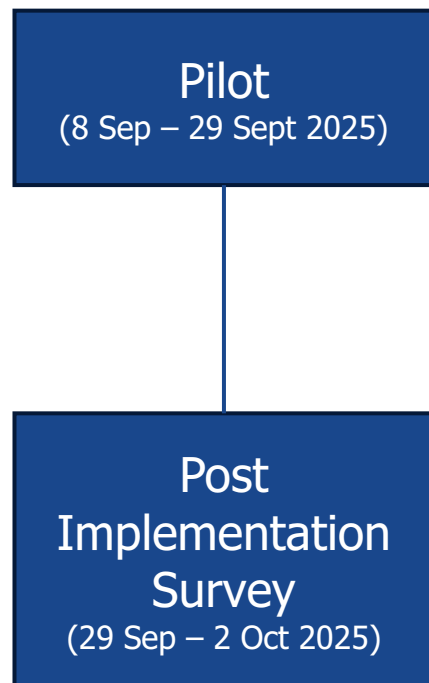
Ambulance booked by KTPH

Date & Time: ***

To Bill to: Bill to Who? ▾

Charging Done? Ambulance Charging Done? ▾

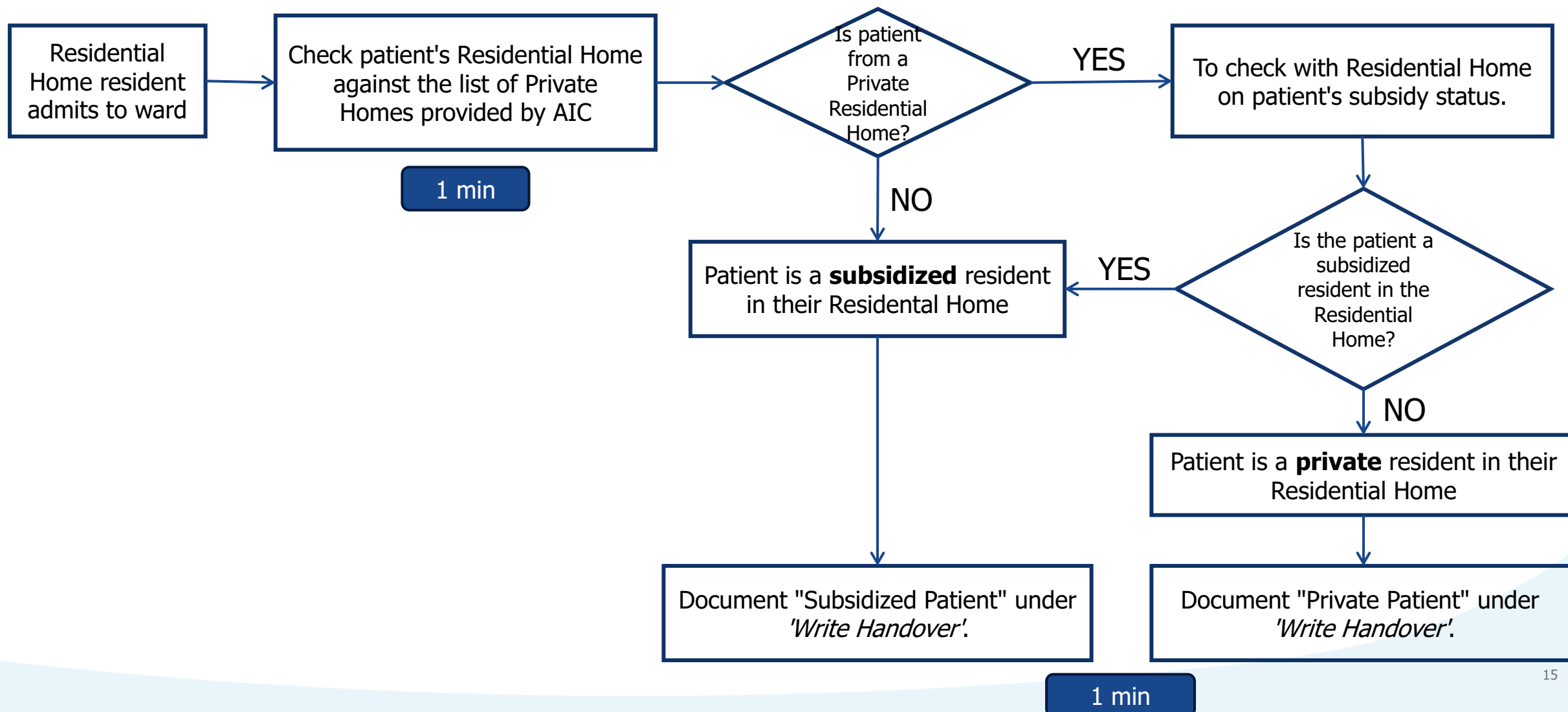
Rapid Experiments



- Pilot testing was initiated in wards B96, D57 and D87 from 8 September 2025 onwards (on-going), cumulating to 14 transfer cases to residential homes.
- SN representatives from the above wards **have shared the streamlined workflow** with their ward staff before pilot testing and **guided them through the discharge process** to ensure compliance.
- A post-implementation survey was done on the third week of pilot testing to **understand the receptiveness** of the streamlined workflow and **to gather feedback** from the nurses.

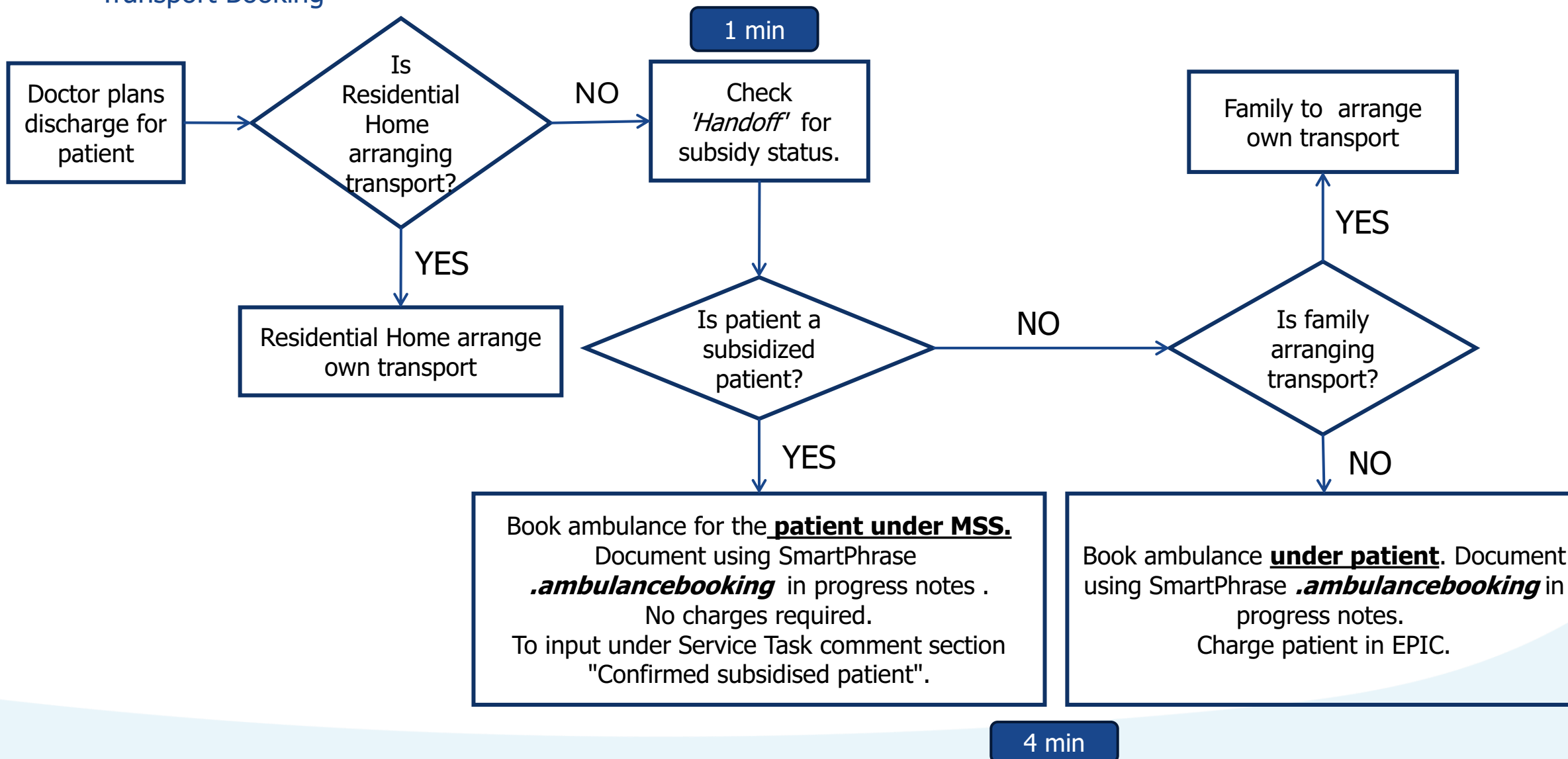
New Workflow

Early Identification



New Workflow

Transport Booking



Success Indicators

Indicators	Baseline CY2024, All Inpatient Wards in KTPH (29 wards)	Target (Annual Figures)	Pilot Testing (based on 8 Sept – 29 Sept 2025, 3 wards)
No. of Inaccurate Charges	154 incidences i.e. $154/555 = 27.7\%$	0 Incidences	4 Incidences (errors in charges due to unfamiliarity/ lack of confidence in carrying out the process)
Total Missed Charges	\$15,400	\$0	\$0
Touch time spent on each transport booking	18 mins	7 mins	7 mins
Touch time expended on re-work	$(36\text{min} \times 154) = 5544 \text{ minutes} = 92\text{hrs } 24\text{mins} = \mathbf{11.55 \text{ man days}}$	0 minutes	$144 \text{ minutes} = \mathbf{2.4 \text{ hours}}$

What is the new process impacting the staff?

A pilot testing was done in 3 wards of different disciplines over 3 weeks, and a survey was done to collect data on the staff's perspective on the streamlined workflow. The differences are reflected below:

Initial State	Current State (After implementation of pilot testing)
With N = 48 Inpatient Nurses, out of the 48 who responded: 1. 83% experienced frustration in the process 2. 75% are not confident in carrying out the Transport booking process - The top 3 challenges the Inpatient Nurses faced are: i) Unsure of patient's subsidy status in NH ii) No information on who to bill ambulance fees prior to planned discharge. iii) No official MSW documentation on who to bill ambulance fees to.	With N = 75 Inpatient Nurses, out of the 75 who responded (perceived): 1. 20% experienced frustration in the process 2. 8% are not confident in carrying out the transport booking process. 3. NO new challenges faced by the inpatient nurses, but 96% of the nurses expressed that the new workflow have helped mitigate the top 3 challenges faced.

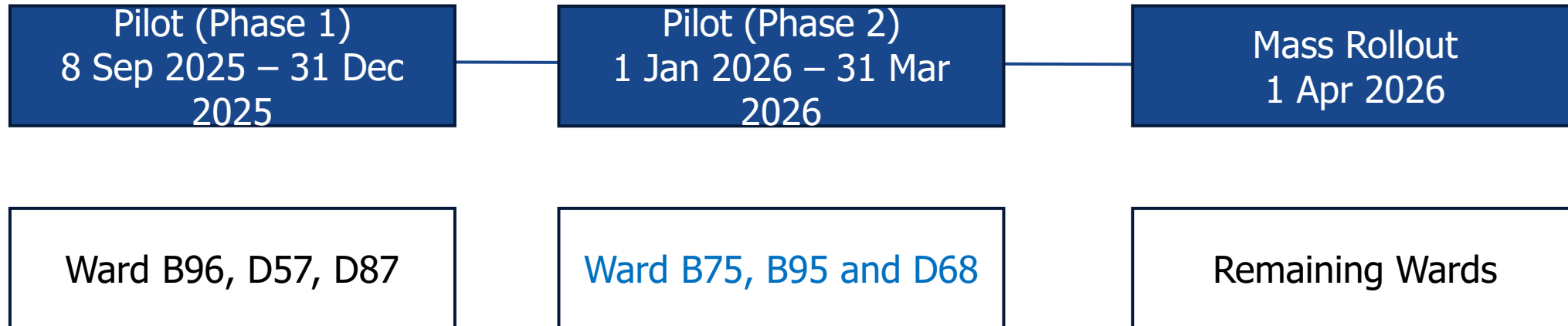
Cost Savings/Avoidance

- Time per booking reduced: 18 minutes → 7 minutes
- Time saved per booking: 11 minutes
- Annual bookings: 555 cases
- **Total nursing time freed: 102 hours annually**
- Nursing time redirected to patient care activities

Action Plans

Action Item	By Who	By When	Type	Status
Pilot Test (Phase 1)				
Prepare a SmartPhrase for nurses in B96, D57 and D78 to use for ambulance booking and charging.	Darren and Xue Zhen	8 Aug 2025	JDI	Completed
Share the new workflow with the MSW	Suma	28 Aug 2025	JDI	Completed
Prepare the list of private nursing homes for the pilot wards (B96, D57 & D78)	Suma	28 Aug 2025	JDI	Completed
Communicate the new workflow to nurses in B96, D57 and D78 and conduct pilot testing.	Darren, Xue Zhen, Mugambigai	1 Sep 2025	RE	Ongoing
Collate feedback from the pilot wards through a survey (general) and short interview (handful)	Darren, Xue Zhen, Mugambigai	21 Sep 2025	JDI	Completed
Pilot Test (Phase 2)				
To work with Nursing Informatics to create a Smart Phrase for the organization	Suma	1 Jan 2026	JDI	To be done
To work with ITD to link AIC website Nursing List with Epic	Suma	1 Jan 2026	JDI	To be done
Communicate the new workflow to nurses in Ward B75, B95, D68 and conduct Phase 2 of pilot testing.	Darren, Xue Zhen, Mugambigai	1 Jan 2026	RE	To be done
Mass Rollout				
Share the new workflow to all nurses during the NJC and/or RN/EN meeting – to be implemented officially.	Suma	1 Apr 2026	JDI	To be approved

Timeline of Phased Rollout



Insights

Strategies for spread:

1. **Raise Awareness**

- Sharing through **nursing journal club** to raise awareness of new workflow implementation.
- Reinforcing through **RN/EN meeting**.
- Send **workflow slide** to all nurses via email.

2. **Direct adoption by other settings e.g. ED**

- Work with departments who are keen to adopt workflow.

3. **Change Management is key to boost confidence**

Insights

1. What went well?
 - Team was able to put the knowledge gained during the workshop into practice.
 - Work distribution was shared across team members with **collaborative approach**.
 - Challenges were addressed promptly through **collective brainstorming and idea-sharing**.
 - **Process clarity improved** progressively throughout project phases.
2. What did not go well?
 - **Scheduling team discussions was challenging** due to three rotating shift patterns across all members.
3. What helped?
 - **Stakeholders assisted with verification** of many assumptions and behind the scenes thought processes. Collaboration with them allowed us to find alternative solutions and rework on our previous ones.
 - Team members **utilised individual expertise areas** and shared knowledge across the group.
 - Members supported one another and worked cohesively towards a common goal.
4. What hindered?
 - The short time-frame coupled with the nature of our context restricted comprehensive data collection prior to final presentation.
 - **Slight delay** in pilot test rollout due to stakeholders **vetting and validation of workflow prior to pilot testing** to ensure consistency for mass roll-out.



Thank You

Tan Tock Seng Hospital • Khoo Teck Puat Hospital • Woodlands Hospital • Yishun Community Hospital • TTSH Integrated Care Hub
Institute of Mental Health • National Skin Centre • National Centre for Infectious Diseases • NHG Cancer Institute • NHG Eye Institute • NHG Heart Institute
Population Health • NHG Polyclinics • Diagnostics • Pharmacy • Community Care • NHG College • Centre for Healthcare Innovation