

Accelerated Mobilization for Adolescent Idiopathic Scoliosis Surgery in Prince of Wales Hospital

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*image taken with consent



15days

Hospital Stay



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Local Experience.



(Fong et al., 2015) 3

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“

what can we do to make
the journey here better?

”

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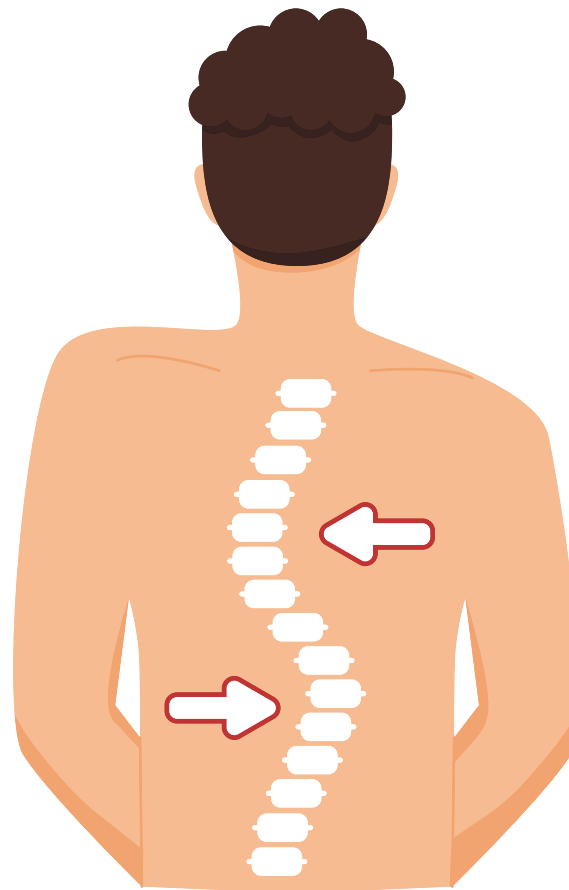
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adolescent idiopathic Scoliosis. (AIS)

“unclear
etiopathogenesis”

“progressive
deformities”



“skeletally
immature”

“in conjunction
with growth spurt”

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ais2024 Surgical Decision.

Indication for corrective surgery

- 1) Cobb's $>45-50$ degrees ;
- 2) Progress despite skeletal maturity ;
- 3) Cardiopulmonary compromise

** The extent of fusion determined by the flexibility of the curves on supine-side bending, fulcrum-side bending, traction, or push-prone position radiographs*

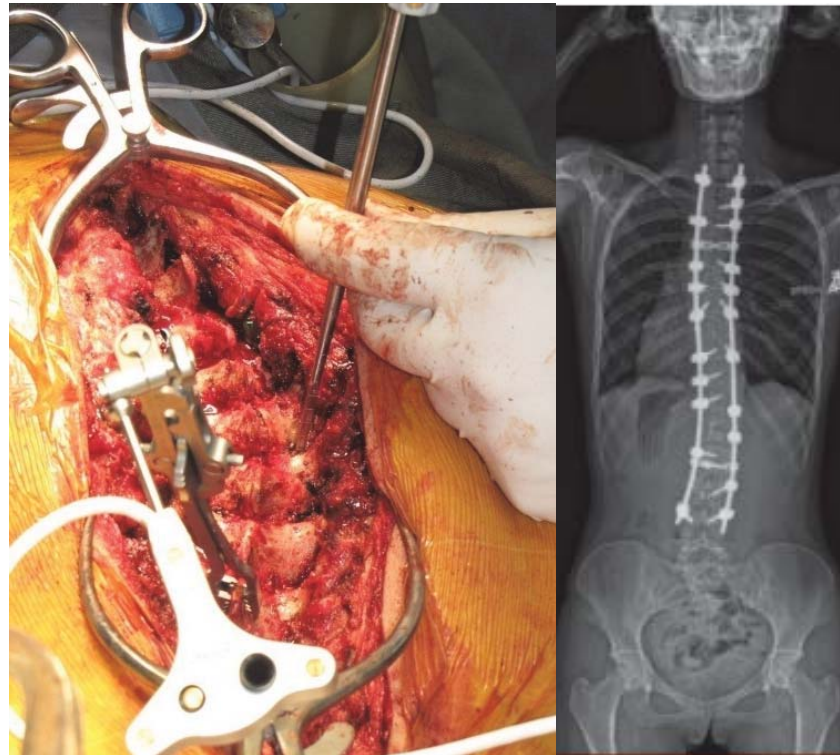


**image courtesy of PWH O&T*

(Maruyama & Takeshita, 2008)

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Posterior Spinal Fusion with Navigation



**image courtesy of PWH O&T*

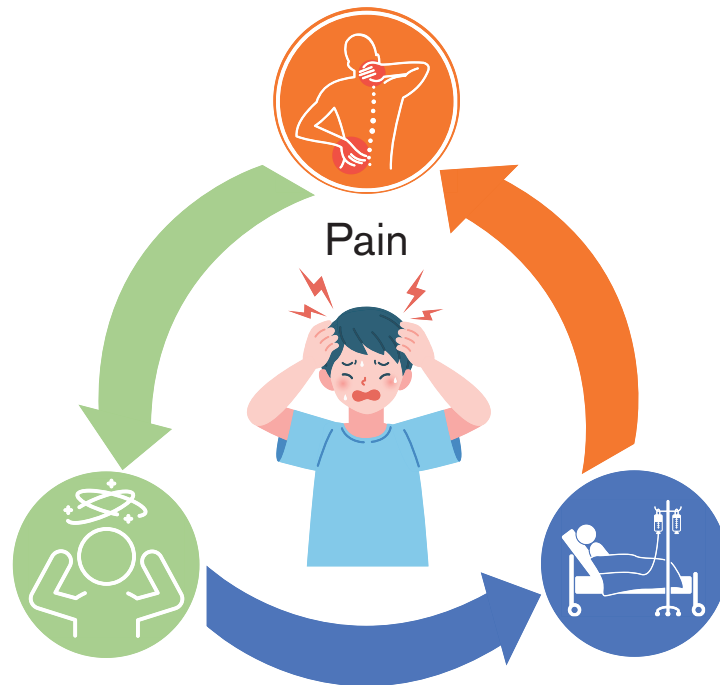


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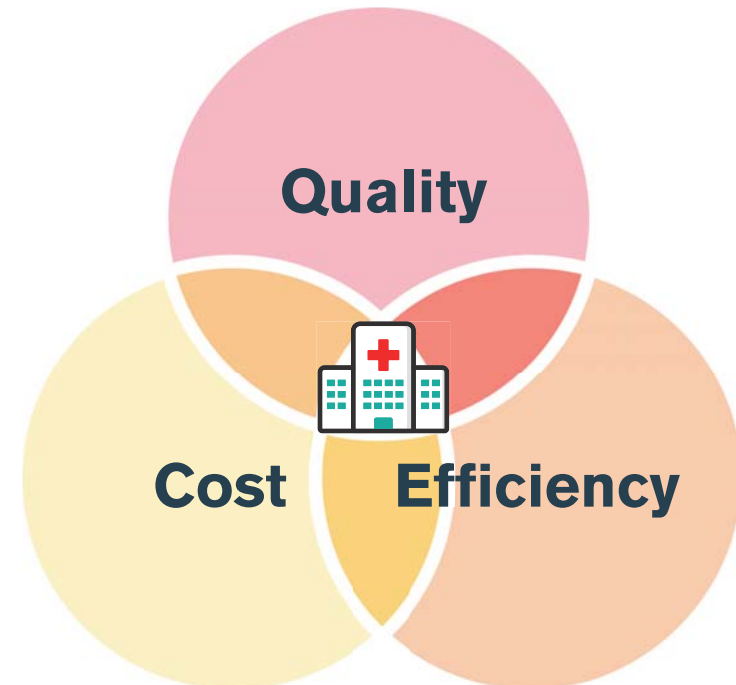
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Main Challenge for AIS-PSF Mobilization



Side-effect of analgesics

Prolonged immobilization



(Gornitzky et al., 2016)

(Lebel et al., 2023) (Song et al., 2020)

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ais2024 Objective.



- Enhance functional ability and shorten length of stay (LOS)
- Streamline patients' journeys with better care
- Hasten hospital bed turnover and resources utilisation

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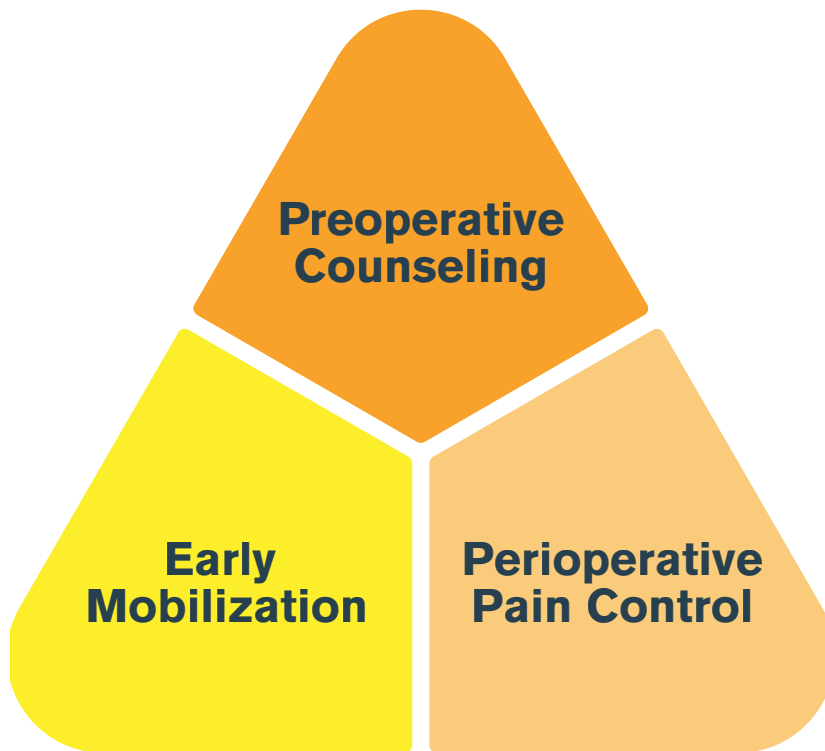


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Mainstay of Enhanced Recovery.



Side-effect of analgesics Prolonged immobilization

(Song et al., 2020)
(Gornitzky et al., 2016) 10

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ais2024 Study Design.



2023

Conventional Protocol
PWH O&T 2015.



2024

Early Mobilization
Programme

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ais2024 Subject Selection.

Exclusion Criteria

- Congenital Scoliosis
- Atypical form of AIS
- Systemic comorbidities
- Post-operative complications requiring after-care



✓ Age 10-18

✓ AIS for PSF

✓ Standard List

stipulated by Ortho surgeon

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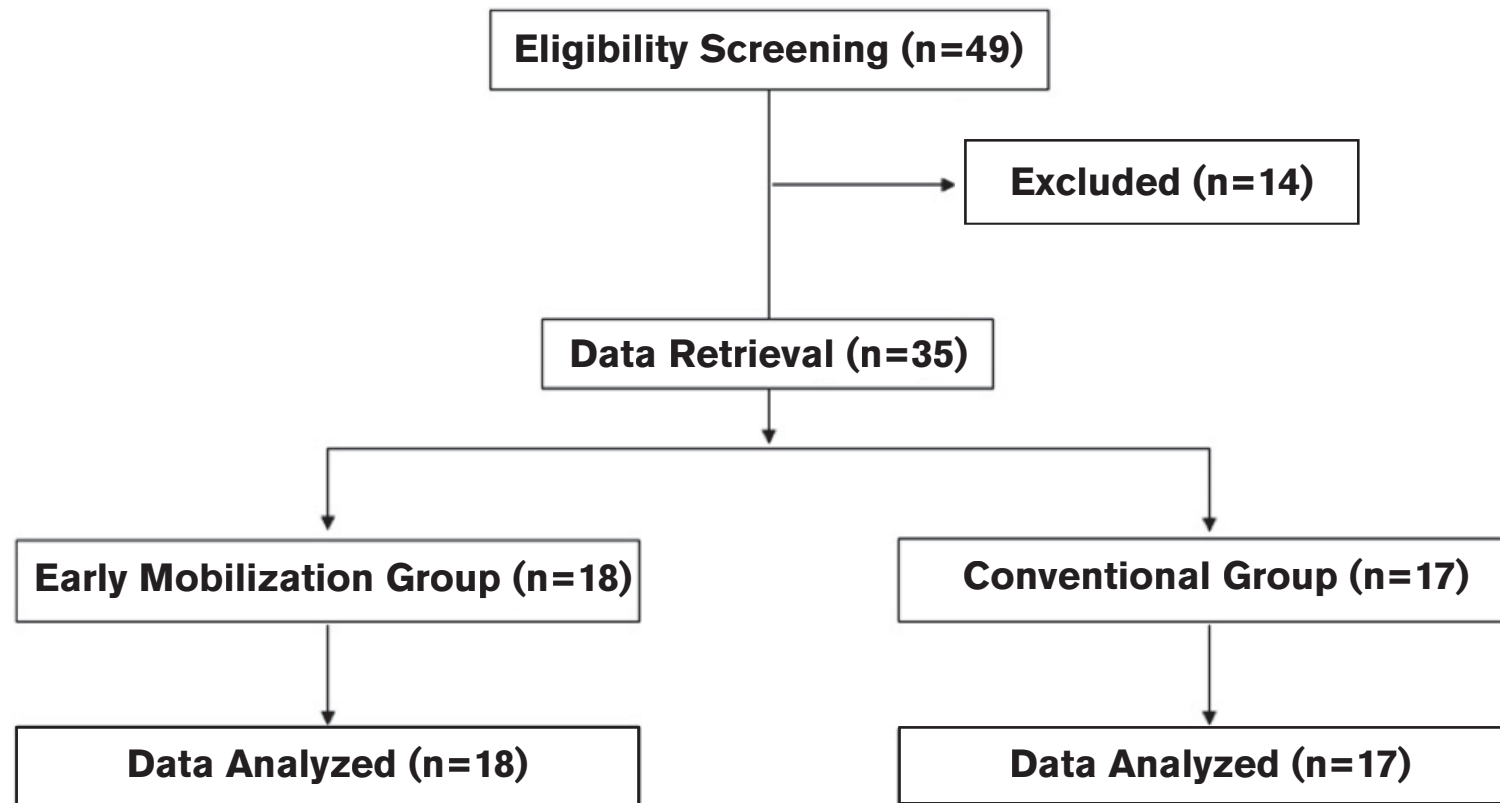
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ais2024 Study Flow.

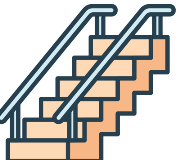


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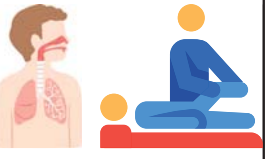
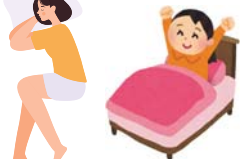
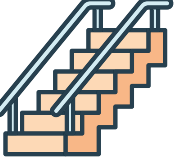
Mobilization Program.



Early Mobilization Program

Pre-op Admission	Day 0 (OT)	Day 1 onwards (progress as tolerated)			
 Pre-op Consult	 Chest PT+ Limbs Ex <i>*depends on return time</i>	 Logroll Turning	 Sit Out	 Walking Exercise	 Stairs Training

Conventional Protocol (NTEC/PWH O&T, 2015)

Pre-op Admission	Day 0 (OT)	Day 1	Day 2-3	Day 4-5 (typically weekend)	Day 6-7	Day 8-9 onwards
/	/	 Chest PT+ Limbs Ex	 Logroll Turning+Sit up	 Sit Out	 Walking Exercise	 Stairs Training

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Methodology.

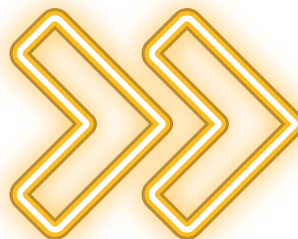
Clinical Outcomes

- Day to tolerate sit-out
- Day to achieve independent walking
- Day to start stairs walking
- Length of Stay (LOS)

Data Analysis

- Year 2023 data through CDARS
- Year 2024 data through logging

Unpaired T-test



Hypothesis

Early mobilization post-PSF in AIS population would achieve

1. Earlier mobility milestone
2. Shorter LOS



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ais2024 Perioperative Program



**Pre-operative
Consultation**

**Progressive
Mobility**

**MODIFIED FUNCTIONAL
ACTIVITIES**



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ais2024 Results.

N=35

- Female subjects = 24
- Male subjects = 11
- Mean age=14.6 (SD=1.9)
- Mean Cobb's=63.1 (SD=12.4)



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	Conventional (n=17)	Early Mobilization (n=18)	P
Anthropometric			
• Gender (M:F)	4:13	7:11	0.342
• Age (years)	14.4 (SD=2.00)	14.9 (SD=1.81)	0.411
• Cobb's Angle	62.6 (SD=11.90)	63.7 (SD=13.20)	0.789
PICU Admission	4 (23.5%) [^]	7 (38.9%) [^]	0.342
Length of Stay# (days)	11.1 (SD=1.50)	8.44 (SD=0.98)	<0.001*

LOS is 1-day pre-operative admission inclusive

[^] 8 for close monitoring; 3 for labile blood pressure (stepdown within 2 days) 17



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ais2024 Results.



	Conventional (n=17)	Early Mobilization (n=18)	<i>P</i>
Treatment • Daily Sessions • Attendance	Weekdays only 100%	365 except Sundays 100%	N/A N/A
Mobility Milestone (days) • Sit-out • Independent walking • Stairs training	4 6 8	2.33 (SD=0.59) 4.72 (SD=1.27) 6.22 (SD=1.52)	<0.001* <0.001* <0.001*



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Clinical Significance.



21%

Independent
Mobility



22%

Advanced
Mobility

24%

Faster Discharge

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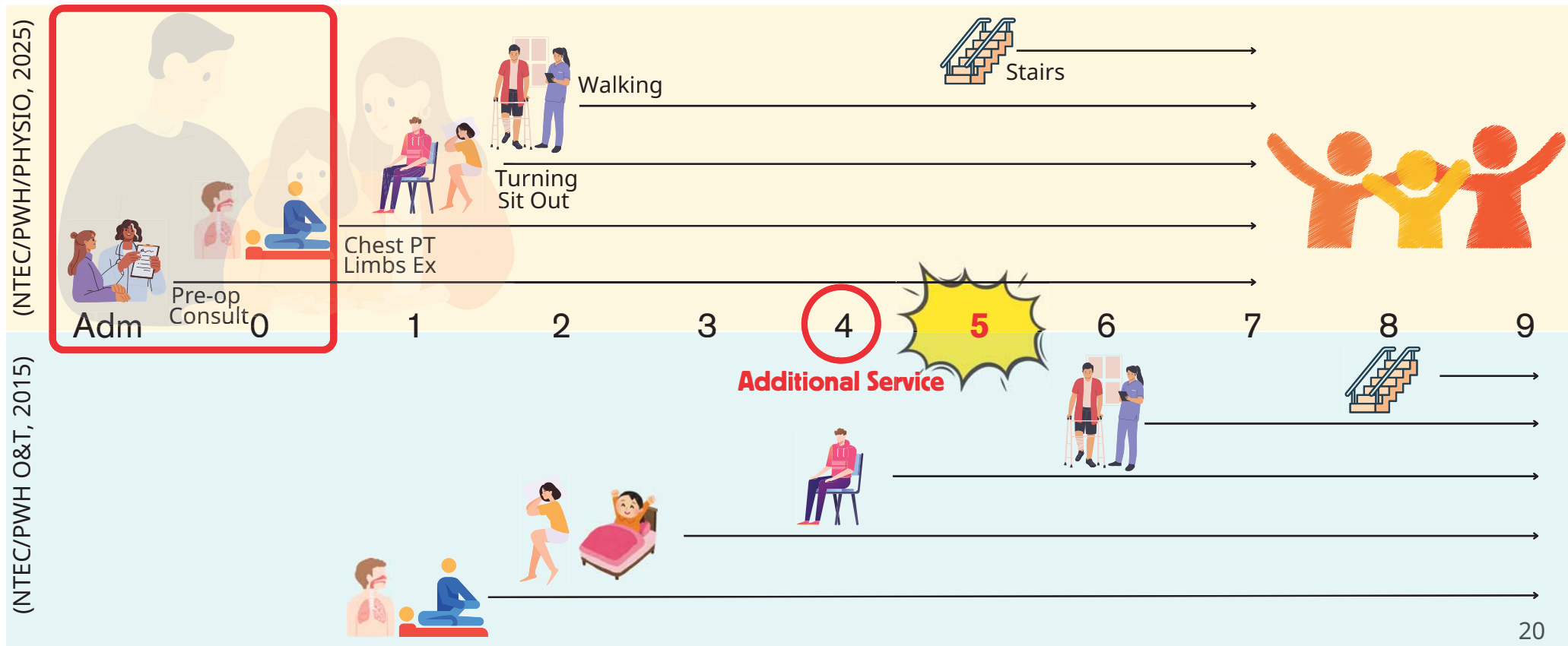


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2023 Day 2024

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Cost Effectiveness.



15mins

Plus early mobilization



~0.06

FTE of Physiotherapist

2.7days

Shorter in average



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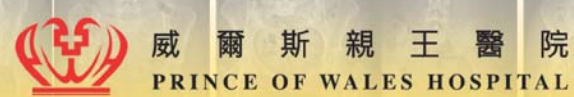


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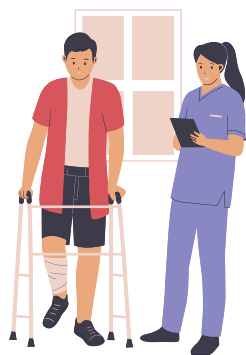




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ais2024 Quality Assurance.



Onwards

2025
Protocolisation

2024
Efficacy Assessment

 Prince of Wales Hospital 威爾斯親王醫院		Document No.	PWH-PT-GL-PT-024-v01
Guidelines for Accelerated Mobilization Program in Post-operative Adolescent Idiopathic Scoliosis Surgery – IP Paediatric Service		Review Date	27/02/2028
		Approved by	PT
		Page	1 of 8

Guidelines for Accelerated Mobilization Program in Post-operative Adolescent Idiopathic Scoliosis Surgery – IP Paediatric Service

Version	Effective Date
1.0	27/02/2025

Document Number	PWH-PT-GL-PT-024-v01
Author	Dominic Chun Him LEUNG, PWHPHYSIO APPT(PHYSIO)
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Approved By	PT
Approver	Eddy Hon Kit SIU Dr, NTEC CSC(AH)/NTEC

** endorsed by PWH O&T*

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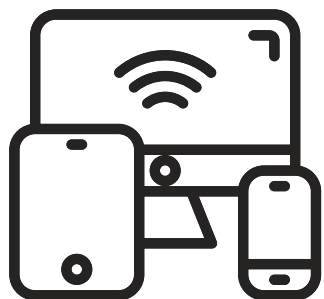


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Way forward.



Carer Package

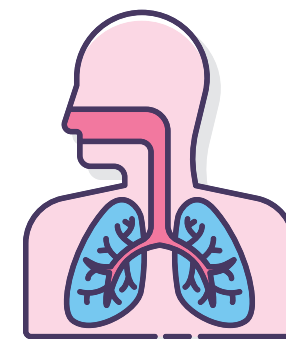


Electronization

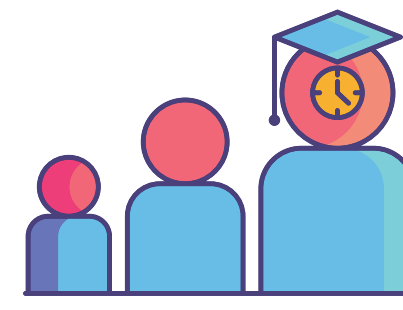
CLINICAL



RESEARCH



Respiratory Function



Longitudinality

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Acknowledgement.



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- | | |
|------------------------------|--|
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Kudos to the team!



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THANK YOU

