

Promoting the early switch of intravenous to oral antibiotics



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Hornsby Ku-ring-gai Hospital (HKH), Northern Sydney Local Health District (NSLHD)

Case for change

Early switch to oral is an important antimicrobial stewardship (AMS) activity recommended by local, national and international guidelines.



Patient experience

IV antibiotic administration can increase patient harm



Staff experience

Clinicians were not confident in switching IV antibiotics



Organisational cost

IV antibiotic administration is resource intensive



Environmental impact

IV antibiotic use negatively impacts the environment

Diagnostics

- 1 in 5 IV antibiotic orders at HKH could have been switched to oral
- Most antibiotics suitable for switch were unrestricted (no AMS review)
- "Consultant preference" informs most prescribing decisions
- 69% of prescribers were unaware of the NSLHD switch guideline
- 79% of pharmacists were not confident in recommending switch
- 100% of patients experienced IV cannula-related problems

Projected annual costs with no change:

- 570 hours nursing time
- \$17,000 equipment cost
- 410g landfill
- 6.3tonnes CO2e emissions

Results

Patient experience – case study



- Mr JP - 74 years old
- Primary carer for his wife
- Admitted to hospital with low-severity community-acquired pneumonia (CAP)
- Received three days of IV antibiotics causing painful thrombophlebitis
- Could have been safely treated with oral antibiotics while in hospital for observation and care
- Discharge was delayed by 48 hours
- Unnecessary anxiety to the patient and his family
- Avoidable financial burden to the organisation
- Avoidable health-care related carbon emissions



Staged project implementation is ongoing. After embedding each stage, the solutions will be evaluated for effectiveness and impact on achieving the objectives.

Professional development and upskilling achieved to date

Clinician Group	Number of staff upskilled	Percentage of staff upskilled
Consultant and specialist doctors	Project presented and discussed at relevant HKH Head of Department meetings	
Medical registrar doctors	7	50%
Pharmacists	20	77%
Nursing staff on pilot ward	15	50%

Operational process measures to evaluate post implementation

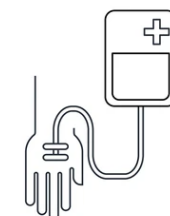
- Unnecessary IV antibiotic prescription rates
- Medical, pharmacy & nursing staff surveys to indicate changes in clinician awareness, confidence, knowledge and satisfaction in antibiotic switch prescribing
- Pharmacists' clinical intervention rate for IV to oral antibiotic switch

Financial measures

- Comparison of expenditure (in units and dollars) on IV administration equipment for HKH pilot ward before and after intervention

Carbon emission reductions

- Changes in quantity of equipment purchased will be extrapolated to reduction in carbon emissions using known emission values



26,000km



Projected carbon emission savings from IV administration equipment alone over 12 months is equivalent to driving 26,000km.

Check and balance measures

- Patient treatment failure after IV antibiotic switch
- Pharmacist core KPI rates versus FTE rates

Goal

HKH will improve the use of IV antibiotics in adult inpatients with a value-based care approach. Promoting early switch from IV to oral will enhance patients' health outcomes and experiences, with more efficient resource use and reduced environmental impact.

Objectives

By June 2025, HKH will reduce:

- Unnecessary IV antibiotic prescriptions from 21% to < 10%
- Expenditure on administration equipment for IV antibiotics by 10%
- Carbon emissions related to IV antibiotic use by at least 10%

Method

Activities employed to explore the issue:

- Baseline IV antibiotic prescribing analysis
- Medical officer surveys
- Pharmacist surveys
- Clinical staff interviews
- Nursing process observation
- Patient experience interviews
- Process mapping workshop
- Root cause analysis workshop
- Literature research

Activities employed to explore and develop potential solutions:

- Medical consultant interviews
- Medical, pharmacy and nursing focus groups
- Benchmarking with other facilities
- Prototyping with stakeholders
- Verification with subject matter experts

Solutions

To improve the culture of IV to oral antibiotic prescribing:

Prescriber and pharmacist upskilling

Project and AMS teams developed and delivered a suite of resources targeting different levels of prescribers and clinical pharmacist.

Nursing intervention

Project team upskilled and empowered nursing staff to successfully identify and communicate which patients may be suitable to switch.

eMR alert

Project and digital health teams developed an electronic prompt to aid decision making at the point of prescribing.

Sustaining change

- Change leaders identified and engaged
- Staff feel empowered by co-design
- Highly motivated lead physician to drive and support the change
- Project benefits go beyond helping patients and align with NSLHD Strategic Plan
- Fits with HKH goals and culture of reducing low-value care and environmental impact while optimising resource use
- Pharmacists to perform three monthly audits of IV antibiotic prescribing
- KPI – Pharmacist intervention rate for IV to oral antibiotic switch
- The innovation is adaptable to other clinical focuses and areas

Conclusion

There is a strong desire to enhance patient care practices while simultaneously reducing the healthcare sector's carbon footprint. The IV to oral antibiotic switch is scalable across the district and can be extended to other treatment areas.

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