ACT Government | ACT Health

ACT HEALTH VACATION STUDY PROGRAM

PROJECT SUMMARY FORM

Project Title	**Urinary Tract Infection Admission to Hospital in the Home**
Supervisor name	**Dr Ramila Varendran (submission written by Dr Karyn Cuthbert, CHS HITH Unit Director)**
CHS/ACTHD position	**Senior Staff Specialist, CHS Hospital in the Home (HITH)**
Address	**HITH Unit, Level 2, The Canberra Hospital**
Telephone	**0419 287393**
Email	**Ramila.Varendran@act.gov.au Karyn.Cuthbert@act.gov.au**

Lead discipline (please select one)	
☐ **Nursing and Midwifery**	☐ **Health Economics**
☐ **Allied Health**	☐ **Biostatistics**
✓ **Medicine**	☐ **Epidemiology**
☐ **Pre-clinical**	☐ **Health Policy**
☐ **Other**	

Does this project involve research led by, or relating to Aboriginal or Torres Strait Islanders?	
☐ **Yes**	✓ **No**

Outline of the project (250 words max)

Both the Canberra Health Services (CHS) HITH Service and North Canberra Hospital (NCH) HITH admit patients with urinary tract infection (UTI), including some with pyelonephritis, to be treated with intravenous (IV) antibiotics at home.

This however is partially in conflict with *Therapeutic Guidelines: Antibiotic* recommendation which states that adult patients with acute *severe* pyelonephritis, for whom initial IV antibiotic therapy is warranted, (with definition of *severe* pyelonephritis being " if the patient has fever (38°C or higher), systemic symptoms (eg tachycardia, nausea, vomiting), or sepsis or septic shock") that "Community-based antimicrobial therapy should only be used when appropriate oral antibiotics are not available (eg for multidrug-resistant infections) – seek expert advice"

Whilst both HITH services admit patients with pyelonephritis for IV antibiotics because of multidrug-resistant organisms (MROs), we also admit patients with *severe* pyelonephritis (eg with fever and nausea criteria but not septic shock) with non-MRO UTIs. After ≥1 – 2 doses of IV antibiotics initially at the hospital these patients transfer to HITH, with IV antibiotics then changed to an appropriate oral antibiotic and HITH discharge once fever resolves and symptom improvement occurs (as per IV to oral switch criteria in CHS Antimicrobial Choice and Administration for Adult Hospital in the Home (HITH) patients procedure)

Patients are more likely to be admitted to HITH with acute *severe* pyelonephritis if urine culture and sensitivity results are available upon HITH admission (often via external laboratory as ordered by GP) and if they are younger with few/no co-morbidities, no immune suppression, have family/carer support at home, no reason to suspect a MRO and live within a shorter distance to the HITH base.

Some patients may transfer to HITH for UTI treatment because they have a complication of pyelonephritis, such as a nephronia or renal abscess detected on initial imaging studies, or have a urological device in situ, such as a ureteric stent, which requires a longer than average duration of intravenous therapy (with infectious diseases and/or urology involvement as appropriate)

The aim of this project therefore is to demonstrate that for patients with a UTI in whom intravenous antibiotic therapy is clinically indicated, that there is a subset of these patients who can be safely managed at home by HITH.

Proposed research methods

Retrospective audit of patients admitted to both CHS and NCH HITH services since Digital Health Record (DHR) Go Live in November 2022 if this yields adequate numbers for analysis. Possible additional prospective data collection if not

Intention to Measure

- Number of patients admitted to each HITH service with UTI and further sub diagnosis details such as whether patient had eg cystitis, pyelonephritis, prostatitis, renal abscess, catheter or other device (eg ureteric stent) related infection
- Demographic details
- Presenting symptoms and signs and vital signs on hospital presentation, upon HITH transfer and during HITH admission
- Past medical history, including of prior UTIs
- Medications and allergies
- Social circumstances
- Blood test results
- Urine and blood culture results (including those collected prior to hospital presentation) and antimicrobial sensitivities
- Radiology investigations and results plus percentage of which patients had imaging and whether or not this was useful
- Antibiotics prescribed prior to and during hospital/HITH admission
- Compliance with *Antimicrobial Choice and Administration for Adult Hospital in the Home (HITH) patients* procedure at Canberra Hospital and *Antibiotic Choice and Administration for Hospital in the Home (HITH) Patients* procedure at NCH in terms of antibiotic prescription
- Duration of ED, ward, HITH admission
- Final patient outcome in terms of clinical resolution/time to discharge, UTI recurrence/readmission rates
- Percentage of patients who had initial diagnosis of pyelonephritis but didn't end up having pyelonephritis (definition of pyelonephritis to be defined)
- Percentage of patients who didn't have urine collected prior to administration of

antibiotics
- Patient experience survey

Possible subgroup analysis specifically for patients with community onset pyelonephritis admitted to HITH with comparison to those patients with pyelonephritis seen and discharged from ED and those admitted to the ward in same period to look at what seems to determine ED discharge versus HITH versus ward admission.

At a minimum want to demonstrate that patients admitted to HITH with UTI do have good clinical outcomes, with a low incidence of adverse events during the HITH admission. Also would like to see that the appropriate indications for IV antibiotic therapy are being adhered to and ideally be able to demonstrate that there is at least an equivalence for HITH versus ward care for this cohort in terms of patient outcomes ie a non-inferiority outcome.

Preferred study discipline being undertaken by the student

It is anticipated that a medical student will be involved in this project

Benefits to the student and to the department

This project will benefit the student by having exposure to Hospital in the Home practice as an alternative mode of inpatient care delivery as compared to traditional hospital ward care. They will also gain knowledge in research practice and infectious diseases and microbiology. Medical staff members from CHS HITH, NCH HITH and Infectious Diseases and Microbiology Units have provided ideas for this project and it is anticipated that they may enjoy this collaborative approach.

The CHS and NCH HITH departments will benefit by auditing our practice in the management of UTIs with IV antibiotics at home to hopefully confirm our observation that these patients do seem to have good clinical outcomes when managed in HITH instead of on a hospital ward for at least part of their admission (given that they have not been identified as a group with poor outcomes in our regular audit practices such as Morbidity and Mortality meetings to date). And also noting that current recommendations in a consensus guideline like *Therapeutic Guidelines: Antibiotic* is not broadly supportive of this practice currently (but recognising that this is likely partially because of a paucity of published evidence to support UTI admission to HITH for IV antibiotics currently), this therefore also gives us the opportunity to feasibly share this practice as published research with the broader medical community.

How does this project align with any or all of the three strategic objectives of *Better Together: A strategic plan for research in the ACT health system* (100w max)

Better together - A strategic plan for research in the ACT health system 2022–2030

1) The ACT health system becomes a learning health system – involving a student at the onset of this student/s medical career in the ACT encourages a curious approach to learning in their future career. For ACT HITH services this is expected to provide evidence that we are providing a safe and effective alternative to traditional ward admission for a subset of patients with UTI unwell enough to warrant IV antibiotics.

2) ACT people have capacity to undertake high value research in the health system – this project will involve ACT Health staff and students across the 2 acute public hospitals and 3 medical units. If the audit shows positive clinical and patient satisfaction outcomes as anticipated, this will translate to sharing these outcomes with health services external to the ACT

ACTHD/CHS Department where the student will be based
CHS HITH Unit, Division of Medicine, Canberra Hospital

Will the student be in a patient facing role at any time during the project?
No – may possibly be asked to phone patients for patient survey but face to face contact not proposed currently

Will the student require access to CHS and/or ACTHD network / DHR / applications / database? If yes, please identify
Yes – will need Digital Health Record access

Will the student require CHS / ACT Health building access? If yes, please identify
Yes – to CHS HITH Unit on Canberra Hospital campus

Supervisor availability across key dates	
Friday 10 Nov – Preplacement presentation session, Canberra Hospital Auditorium *Approximate duration 9am-12pm – supervisors are not required for full session. Possible Webex option.*	Yes / No
Placement period 10 Nov – 9 Feb Please indicate availability across this time. *E.g. leave over Christmas/New Year*	*Please detail availability* *Ramila Varendran on leave 15/12-29/12/23 and 17/1-31/1/24 However it is anticipated that other CHS HITH Unit specialists may be available for supervision in these periods*
At least two face-to-face sessions with the student each week during their 6-week placement.	Yes / No
Friday 9 Feb – Final presentation session, Canberra Hospital Auditorium *Approximate duration 9am-1pm – supervisors are not required for full session. Possible Webex option.*	Yes / No

✓I have read and I agree to the ACT Health privacy policy which includes statements on how the ACT Health Directorate acts lawfully to collect and use data to report on activities and to plan for future events and initiatives; including that we may use your details to contact you if

required for program delivery and/or evaluation and to inform you of future similar opportunities.

Please submit form to health.research@act.gov.au