

CATHETER-ASSOCIATED URINARY TRACT INFECTION, A DIFFERENT PERSPECTIVE WITH A FOCUS ON LONG-TERM URINARY CATHETERISATIONS

Australasian College for Infection Prevention and Control Conference
20th November 2018
Fiona Hamilton
Clinical Nurse Consultant, Infection Management and Control Service
Illawarra Shoalhaven Local Health District

Aim of the Study:

- To investigate the effect of an education package presented to Primary Health Nurses (PHN), who routinely change long-term urinary catheters of patients in the community.



Would you mind
collecting a urine
sample?
My urine is a bit
smelly

I might ring my
GP and ask for
some antibiotics

Background:

Management of long-term urinary catheters is core business for the PHN

Type of patient:

- Urinary retention
- Spinal cord injury
- Multiple Sclerosis
- Radiotherapy cystitis

PHN often solely responsible for providing education to the patient

Concerns re:
antimicrobial resistance
as patients routinely
report inappropriate
ordering of antibiotics

Opportunities for improvement were identified:

- *Staphylococcus aureus* bacteraemia review in the Community setting of a patient with a urinary catheter
 - Poster is on display regarding the review process
 - Details the collaboration between infection prevention and control team and Primary Health
- Increased awareness due to post-graduate studies
- Clinical observations

AN EVIDENCED-BASED EDUCATION PACKAGE WAS DEVELOPED

Content of the
education:

Diagnosis and symptoms
of catheter-associated
asymptomatic urinary
bacteriuria, catheter-
associated urinary tract
infection (CAUTI)

The difference between
catheter-associated
asymptomatic urinary
bacteriuria and catheter
associated bacteriuria

Correlation between
bacteriuria, CAUTI and
catheter dwell time



Content of the education cont'd:

How and when to collect a urine specimen using the Clinical Excellence Commission (CEC) guidelines

Link between biofilm and CAUTI

CAUTI bundle care principles. Multiple bundle principles were “bundled together” and assessed for relevance in the community

Method



A 45 minute evidence based education power point presentation on the prevention of CAUTI in the long-term catheterised patient was developed



A 3 step evaluation process was undertaken



Pre education questionnaire with 7 questions asking participants of their level of understanding of CAUTI prevention principles



Each question began with “I have a complete understanding of.....”



Four reply options of strongly agree, agree, disagree and strongly disagree



The options strongly agree and agree were combined in analysis of the data being presented today

Method



Part 2



Following the provision of the education a second questionnaire was distributed



Repeat of the 7 questions from the pre-education



To determine if perceived knowledge had increased



Qualitative responses



Three opened ended questions

Method



Part 3



Email- 3 weeks following the education. Email asked if the knowledge had translated to action

Setting and Participants



Setting:



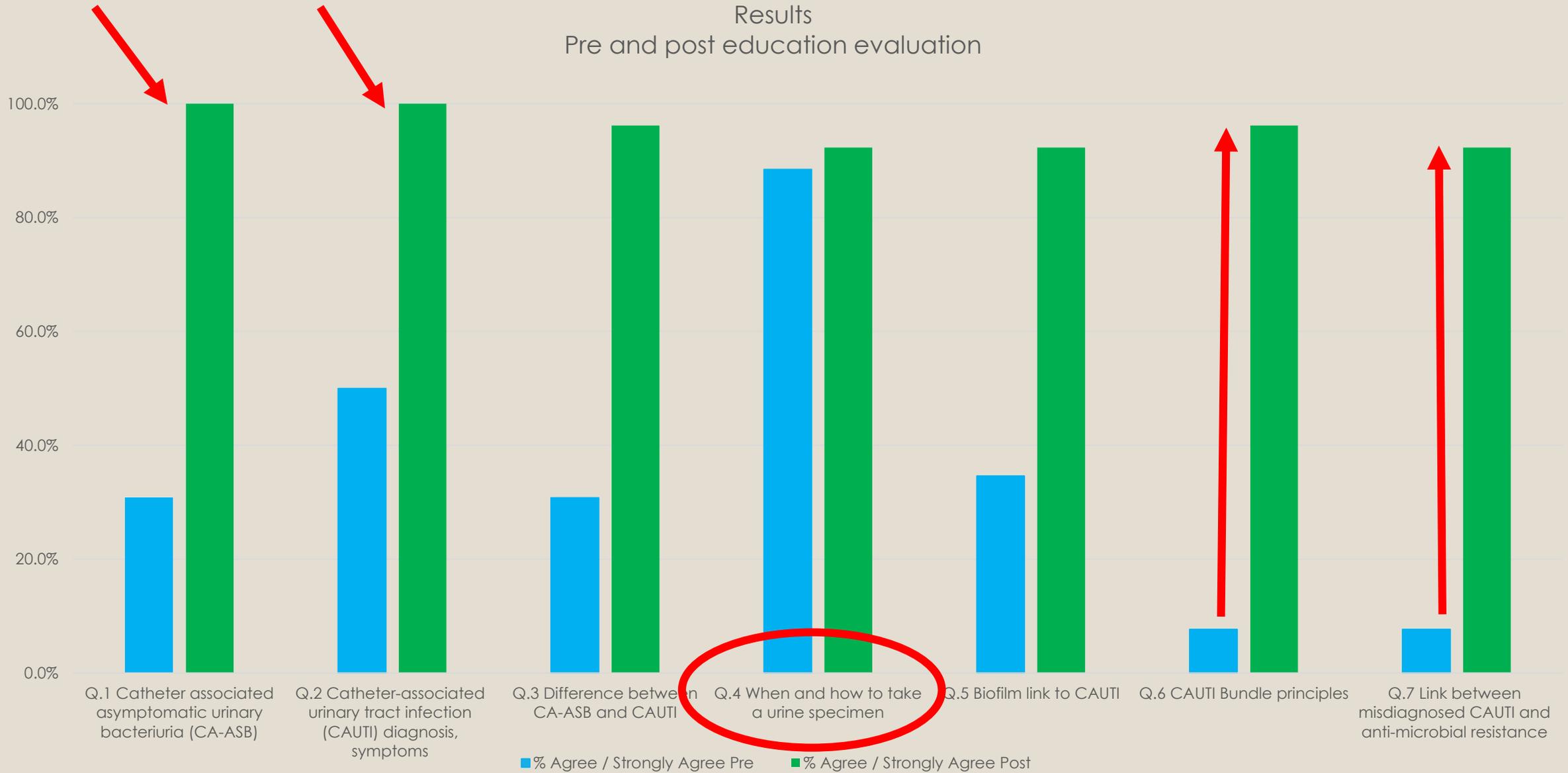
Sessions were booked in the afternoon to ensure the maximum numbers of nurses were able to attend



Twenty-six participants attended the four sessions over a three week period

Results

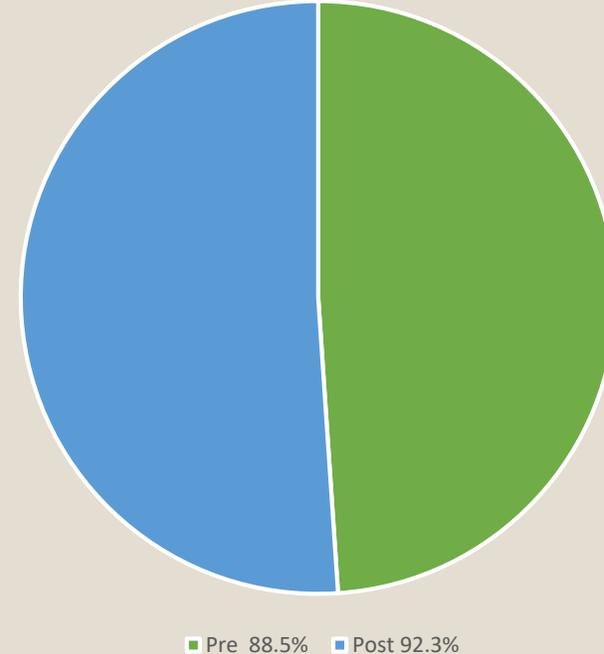
Pre and post education evaluation



Reflections on results

- High starting base of presumed understanding of the question at 88.5%
- Post 92.3%
- Improvement 3.8%
- During the discussion it became evident staff thought they had a very good understanding of the indication for urine collection
- But in reality they were not aware of the Clinical Excellence Commission (CEC) clinical indications for collection of a urine sample in the adult catheterised patient (Clinical Excellence Commission (CEC), 2015d)
- The CEC is a statutory health body 'that provides leadership in safety and quality in NSW to improve healthcare for patients' (NSW CEC 2004)

Qu.4 When and how to collect a urine specimen



- CEC indications for urine collection:
- 'Septic workup is required and/or if the patient has UTI symptoms.
- Adults with an UTI may present with ≥ 1 of these symptoms with no other recognised cause: fever, suprapubic tenderness, costovertebral angle pain or tenderness, delirium or hypothermia ($< 35.5^{\circ}\text{C}$ core)' (CEC 2015d)
- Exceptions

"I didn't know that cloudy smelly urine is not an indication on its own to collect a CSU".

Staff were challenged by the some of the criteria for collection of urine outlined in the CEC guidelines

Limitation of question design

Whereby staff understood the question in its simple meaning

On reflection the question should have asked if staff had an understanding of the (CEC) indications for collection and culture of urine of an adult catheterised patient (Clinical Excellence Commission (CEC) 2015d)

Qualitative results were obtained by asking the question “I learnt something new about....”.

- The responses were themed into the CAUTI infection prevention topics that had been presented.
- Biofilm
- Bacteriuria
- Terminology CAUTI
- Signs and symptoms of CAUTI
- Antibiotic resistance
- Collection of urine sample
- Bundle care principles



Critically assessing the “bundled” bundle principles

- The small groups were encouraged to assess and relate the CAUTI bundle principles from the acute care setting guidelines to the chronic primary health care setting
- Recognised that the acute care guidelines were not always able to be translated to the community setting

ANTT is utilised

Catheter is well lubricated

Catheter is changed as per manufacturer recommendation

Thorough documentation of when and why the catheter was inserted

A safe system of closed and continuous drainage is utilised

Achievable Bundle Principles in the Community setting

Catheter is secured

The drainage system is positioned to allow gravity drainage

Hand hygiene is utilised prior to any procedure that opens the system

Assessment of the patient, choose the smallest possible diameter catheter

Use of a clean, separate container each time the catheter bag is emptied

Semi-achievable bundle principles in the Community setting

Assess for clinical need for insertion

Remove the catheter as soon as possible

Daily assessment for the need of the catheter

Surveillance of CAUTI incidence

Unachievable Bundle Principles in
the Community setting

How will this education change your current practice?

- Multiple responses
- Themed responses
- Temperature- tool for clinical assessment of symptoms of CAUTI.
- Urine sampling- indications for collection
- Education- of the patient and antimicrobial stewardship and signs and symptoms of a CAUTI
- Knowledge, assessment, practice and confidence to liaise with GPs
- Antimicrobial resistance- the importance.

The clinical guidelines enabled me to assess the patient, check his temperature. Follow up next day ensured the patient was symptom free. The catheter was not changed unnecessarily and a urine sample was not obtained inappropriately and therefore antibiotics were not ordered unnecessarily

Part 3 of the post education evaluation

Qu: have you changed your practice as results of the education?

Aim: Implementation of knowledge to action with improved patient outcomes

Nurse:

“A patient phoned the Centre and requested that I visit his home to change the urinary catheter because he was worried he might have an infection and his urine was dark”

“In the last six months I have had two patients with catheters who have been taking antibiotics “just in case” for more than 25 years!”



I have reviewed the notes and written up my concerns and I am going to discuss this with the GP now.

Conclusion

- Multiple authors have documented education as an integral component of a multimodal approach when presenting a program on CAUTI prevention (Saint et al. 2016, Mody et al. 2015, Mody et al. 2017, Meddings et al. 2014)
- This simple study demonstrated an improved perception of enhanced knowledge
- However education/knowledge does not always indicate a change in practice
- Change of practice needs to be assessed. Blondal et al. (2016) in their study on prevention of CAUTI education sessions were able demonstrate a reduction in catheter usage
- This study demonstrated some change of practice

Conclusion - continued

- The participants were able to translate the CAUTI acute care setting guidelines into the community setting
- Dearth of research in the prevention of CAUTI in long-term catheterised patient
- Quality evidenced-based research in the community setting
- Further ongoing evaluation of sustained change (White, Brown & Terhaar, 2016)

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REDUCING CATHETER-ASSOCIATED URINARY TRACT INFECTIONS

THIS IS NOT A SIGN OF INFECTED URINE



Only collect a urine specimen
for culture from a catheterised patient if:

Your patient requires a septic work up

OR

Your patient has UTI signs or symptoms.

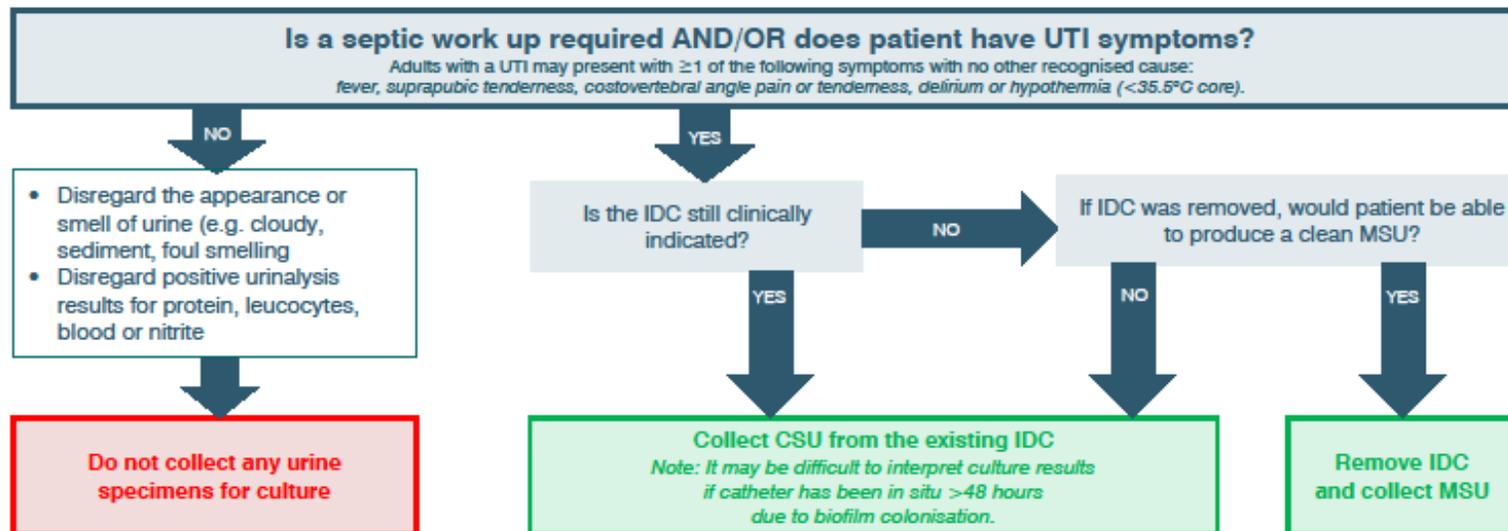
Adults with a UTI may present with ≥ 1 of the following symptoms with no other recognised cause:
fever, suprapubic tenderness, costovertebral angle pain or tenderness, delirium or hypothermia ($< 35.5^{\circ}\text{C}$ core).

URINE SPECIMEN COLLECTION AND CULTURE DURING CATHETERISATION

- ADULT ACUTE CARE SETTINGS -

Does your patient with an IDC need a urine culture?

Use the decision tree below to determine if it is necessary to collect a urine specimen for culture from an adult catheterised patient and the type of specimen to be collected.



Remember:

- Avoid dipstick urinalysis for asymptomatic patients - positive reactions for nitrite, pyuria, leukocyte and protein are likely but do not warrant laboratory investigation.
- Adults with spinal cord injury may have a different symptom presentation or may not present with pain. Seek further advice from a senior clinician if UTI is suspected.
- Asepsis must be maintained when collecting specimens and changing catheters.
- Document the indication for urine specimen collection.
- Interpret urine culture results with caution if patient was on an antimicrobial regime at the time of or prior to specimen collection.
- Signs and symptoms of UTI among older patients, particularly those with dementia, are often vague or atypical.

IDC: Indwelling urinary catheter
UTI: Urinary tract infection
MSU: Mid stream urine
CSU: Catheter specimen of urine



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REDUCING CATHETER ASSOCIATED URINARY TRACT INFECTIONS

QUICK GUIDE ON URINE CULTURE DURING CATHETERISATION

Sending a patient's urine specimen for culture is one of the most common clinical investigations undertaken in hospitals. Culturing a urine specimen is an effective way of identifying whether a symptomatic patient has a urinary tract infection and guide subsequent direct antibiotic therapy.

Sometimes urine specimens for culture are collected from catheterised patients for the wrong reasons. As a result, subsequent culture results may be of little benefit to the patient and may encourage clinicians to initiate unnecessary antimicrobial therapy¹.

If not handled aseptically, the collection of a urine specimen from a catheterised patient also may be an opportunity for microorganisms to enter into drainage system and cause infection.

This information sheet provides general advice about collecting urine specimens for culture from catheterised patients.

When should a urine specimen for culture be collected from a catheterised patient?

A urine culture should be collected from an adult who has a catheter if:

- a septic work up is needed, or
- if the patient has UTI signs and symptoms.

Unless otherwise clinically indicated, the following factors on their own should not prompt the collection of a urine specimen:

- urine is malodorous or cloudy
- there is haematuria
- dipstick urinalysis is positive for leukocytes, protein, blood or nitrite.

For most patients, routine urine specimen screening should be avoided unless otherwise clinically indicated. Exceptions to this are: immunocompromised patients, pregnant women, and surgical patients where there is a risk of trauma to the urinary tract².

Do I need to collect a CSU if I am inserting a new catheter?

Collection of a CSU from a newly inserted catheter is only required if a UTI is suspected (i.e. UTI signs and symptoms are present) or if a septic work up is required.

Why is it important to use aseptic technique when I collect a specimen?

Using aseptic technique to collect a specimen will minimise contamination of the closed catheter system and as a result, minimise the risk of the patient getting an infection. Aseptic technique will also minimise the risk of the urine specimen being contaminated and in turn, reduce the risk of the false positive culture

What type of specimen should be collected from a patient with a urinary catheter?

- Firstly, determine if catheterisation is still required and whether the patient could produce a clean mid stream urine specimen (MSU). If so, remove the catheter and collect a MSU.
- If catheterisation is still required or the collection of clean MSU is not possible, collect a **catheter specimen of urine (CSU)** from the existing catheter. Use the sampling port if the catheter has not been newly inserted.
- If a catheter has been in place for 48 hours or longer, change the catheter and collect a CSU when inserting the new catheter.

If a catheter has been in place for over 48 hours, it is likely that the specimen will be positive for bacteriuria. This positive result will be difficult for the laboratory to interpret, as bacteriuria may be due to symptomatic infection (which will require treatment) or may be due to asymptomatic biofilm colonization (which may not require treatment). Always assess the patient for UTI signs and symptoms before commencing any recommended antimicrobial therapy.

Tips for better CSU culture results

- Whether collecting at the time of insertion or via a sampling port, CSU collection is an aseptic procedure.
- Perform hand hygiene before and after specimen collection.
- The sterile specimen container should be included in the aseptic field set up. Loosen the container lid before any manipulation of the drainage device.
- Be sure to identify and protect key parts.
- Document the specimen type (MSU or CSU) on the specimen, on the pathology order and in the patient's healthcare record.
- Ensure the collected specimen is packaged in accordance with local protocols. Consider whether double or triple packaging is necessary.
- Transport specimen to laboratory within 2 hours or refrigerate (4-10°C) until transported.

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About this Project

This project is being undertaken by the CEC's HAI program. The HAI program assists local health districts and speciality health networks to improve systems to manage and monitor the prevention and control of HAIs. For further information on the HAI program, please visit <http://www.cec.health.nsw.gov.au/programs/hai>

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