

Managing invasive medical devices to prevent infection

An acute hospitals experience on
PVC device management

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Medical Device Management

'medical device' means any instrument, apparatus, appliance, software, implant intended by the manufacturer to be used, alone or in combination, for human beings.

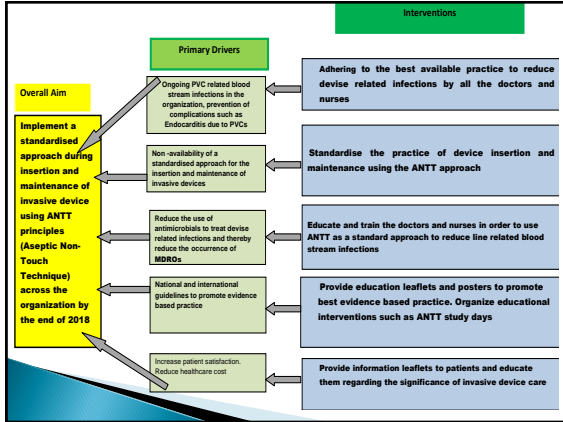
The basic principles of the following quality improvement plan can be applied to the management of all medical devices for example

- Urinary Catheter Care
- Central Vascular Catheters (CVC's)
- Dialysis Catheters
- Tracheostomy care

Our Aim

2015-2018

- To reduce invasive PVC device related infections by 50%.



Quality Improvement (QI) Development

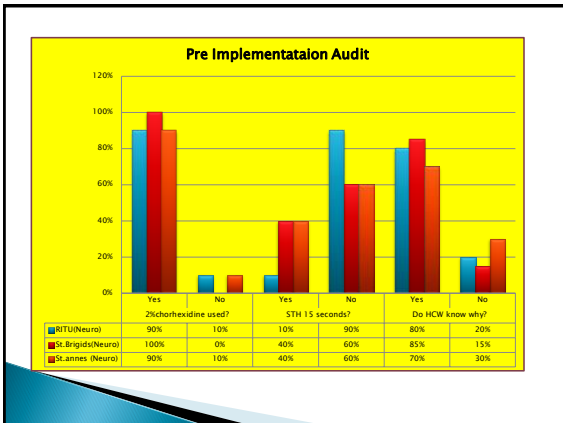
- ▶ The World Health Organisation (WHO) multifaceted strategy was used to drive the Quality Improvement Initiative.
 - Systems change; ensure necessary infrastructure in place to allow staff to perform
 - Education and training
 - Promotion and awareness
 - Evaluation and feedback
 - Reminders in the workplace

Quality Improvement (QI) Development

- ▶ Set up a steering group (QI team) to implement ANTT initiative in the organization.
- ▶ Decided to implement the QI project in phases due to the complexity of the project.
- ▶ Phase 1: Scrub the Hub (STH), Phase 2: clean and dirty area segregation and, Phase 3: SOP development.
- ▶ Piloted the first phase in two wards
- ▶ Extended the implementation to other areas in the hospital
- ▶ Identified ward based champions
- ▶ Train the trainer approach is adapted to implement the education among the front line staff
- ▶ Each phase is included with pre-implementation audit, educational intervention and a post implementation audit.

Phase 1 – 'Scrub the Hub'

- ▶ Pre implementation audit of staff knowledge and practice
- ▶ Poster developed
- ▶ Evidence based leaflet formulated
- ▶ Post implementation audit



'Scrub the Hub' 15 Seconds & Allow to Dry

When? Before inserting a syringe or IV giving set into a hub

How? Use an alcoholic 2% chlorhexidine wipe for 15 seconds and allow to dry

Why?

- The external surface of the hub is contaminated with bacteria
- If the hub is not disinfected, bacteria will be pushed into the patient's bloodstream during drug administration and/or infusion
- Effective disinfection requires:
 1. 15 seconds of 'Scrubbing the Hub' and
 2. Allow time for hub to dry

The Impact of hub disinfection at 0, 5, 10 and 15 seconds

Phase 2–Clean and dirty segregation

- Infrastructure in all clinical areas assessed for appropriate space to ensure segregation of clean and dirty area
- Audit tool developed
- Audit team consisted of IPCN, health and safety officer, ADON representative

Clean and dirty area signage



Phase 2–Clean and dirty segregation

- Clean and dirty segregation training and establishing compliance with the 2015 infrastructure audit including availability of signage

Circle the appropriate answer

Observation number	Did staff return to the dirty area to dispose of used equipment?		Can the healthcare worker explain why it is critical to separate clean and dirty?	
	Yes	No	Yes	No
	Yes	No	Yes	No
	Yes	No	Yes	No
	Yes	No	Yes	No
	Yes	No	Yes	No
	Yes	No	Yes	No
	Yes	No	Yes	No
	Yes	No	Yes	No
	Yes	No	Yes	No
	Yes	No	Yes	No
	Yes	No	Yes	No

Separate CLEAN and DIRTY area - a zero harm intervention

A clean area is a designated space to prepare medication and there by preventing cross contamination (e.g. blood).

A dirty area is a designated space used for the disposal and cleaning of used equipment

Why do we need to separate clean and dirty?

Outbreaks of blood borne viruses such as Hepatitis B and Hepatitis C are common in healthcare settings due to the lack of clean and dirty area separation.

Do's

- Use on a routine basis
- Use this area to prepare medication
- Use Precept and Itepol solution to clean the area before use
- Use Clinell wipes to decontaminate the procedure tray before use

Don'ts

- Never use this area to clean the equipment contaminated with blood
- Never bring back the contaminated equipment to this area

Do's

- Use dirty area to clean the equipment after use
- Use Clinelle wipes to clean the procedure tray
- Use Precept & Itepol solution to clean the dirty area

Don'ts

- Never use this area to store clean equipment
- Never use this area to prepare medications

Phase 3- SOP Development

- Development of hospital specific SOPs based on the principles of ANTT

ANTT Peripheral Vascular Cannula Insertion SOP

Preparation Zone

1. Gather equipment & place around tray, check tray contents with alcohol wipe, do not create an aseptic field, remove gloves & decontaminate hands.
2. Clean the PVC with 70% alcohol wipe, use aseptic technique when opening wings, using red access cannula.
3. Connect flush to white, bring & keep inside of the reservoir, maintain reservoir by protecting key ports & non-touch technique above.
4. Tapered try with equipment including roller flush.

Patient Zone

5. Explain procedure, hand hygiene & apply drapeable tourniquet.
6. Prepare site, decontaminate hands & don gloves.
7. Clean the insertion site with 70% CHG/PH, alcohol wipe & allow to dry.
8. Anchor vein below insertion site & insert cannula until blood flush back, release tourniquet.
9. Place sterile gauze aseptically, stabilize introducer slightly & advance cannula.
10. Remove introducer, flush will not appear before & dry site with gauze.

Patient Zone

11. Secure cannula with sterile dressing using aseptic technique.
12. Place blood tubing across antecubital while leaving it unrolled dressing to rest.
13. Document PVC with the rest of the dressing, ensure gloves & decontaminate hands.
14. Document why PVC inserted in the pink sheet & complete documentation each shift, give information back to patient.

Decontamination Zone

15. Discard or re-use if not possible, try to reuse.
16. Discard gloves & clean hands.

ANTT Peripheral Vascular Cannula Removal - SOP

Preparation Zone

1. Clean the surface with alcohol wipe, do not create an aseptic field, remove gloves & decontaminate hands.
2. Check tray contents with necessary equipment if needed to patient care.

Patient Zone

3. Perform SBQ & soap gloves, explain the procedure.
4. Remove the dressing.
5. Place sterile gauze on the entry passage.
6. Remove cannula & apply pressure.
7. Document Cannula in the white box.
8. Secure the site with sterile gauze & tape sterile type.
9. Document in the pink sheet:
1. Why PVC removed
2. WP where on the line of blood.

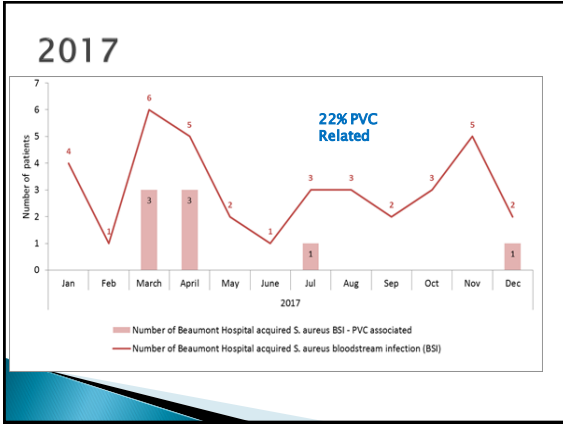
Patient Zone

10. Remove the dressing after 24 hrs & assess the site.
11. Daily assess the PVC in place is still needed or could be removed.

Decontamination Zone

12. Discard or re-use if not possible, try to reuse.
13. Discard gloves & clean hands.

Did this have an impact on infection rates?

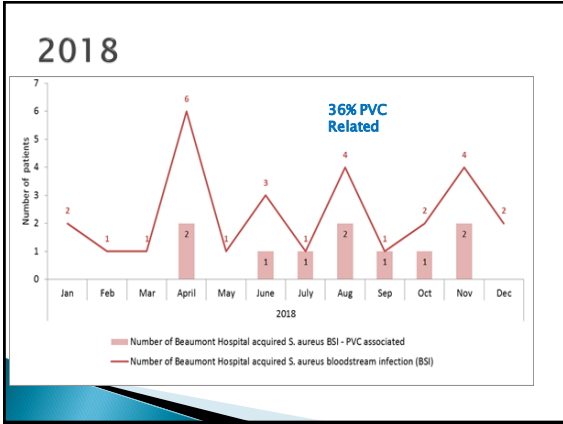


Sustaining change

To achieve sustainable change, quality improvement initiatives must become the new way of working rather than something added on to routine clinical care. However, most organizational change is not maintained. (Silver et al. 2016)

Challenges for sustainability and continuity

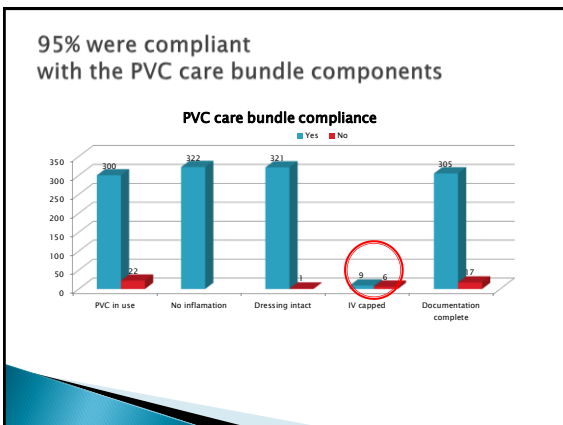
- ▶ Some ANTT champions left post
- ▶ Competing demands
- ▶ Huge staff turnover
- ▶ Time constraints

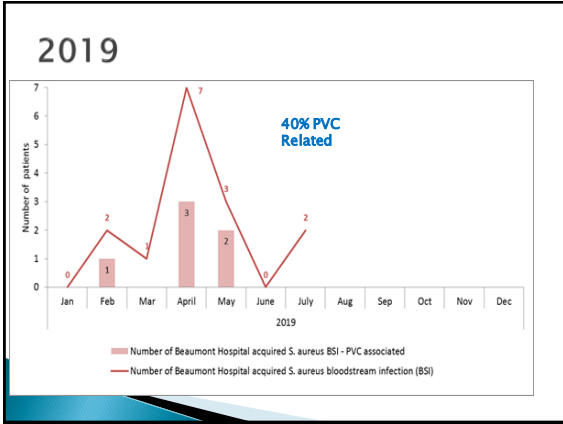


What was the main issues of concern?

▶ **Peripheral Vascular Catheter Care Bundle Audit Report (2018)**

The use of care bundles is one of the important components of an intravascular catheter-related infection prevention programme, recommended by the national guidelines on the prevention of intravascular catheter-related infections (2009).





January 2019

Action plan revised
Phase One (8 week period)

a. Training

1. 100% Standard Precautions training compliance; all employees
2. IV study day – ANTT training completed by all nursing staff reinforcing 'scrub the hub' and 'clean and dirty segregation'.
3. IV drug administration SOP; PVC & CVC posters displayed in treatment room

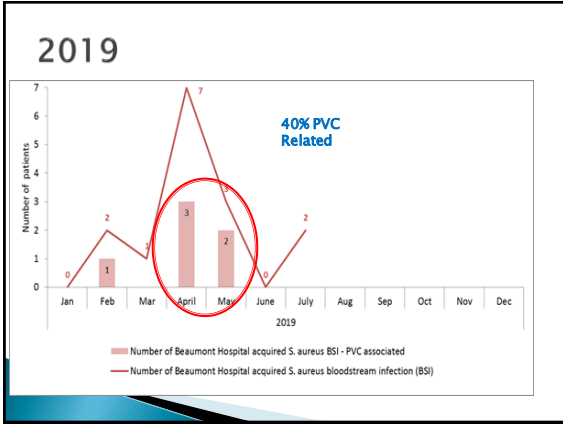
b. PVC care bundle

1. Unit agree cut off time for PVC assessment day/night e.g., 12PM, 12AM
2. All patients with a PVC is assessed and correct VIP score assigned / 12 h
3. CNM/CPSN performs PVC assesment, minimum of six patients each day along with the registered nurse assigned to these patients

Phase Two: Sustaining good practice

Buddy wards; two units work together to share, improve and sustain good practice.

1. Agree your buddy ward. List collated by the Clinical directorate (CNM3)
2. Identity QI champions; ideally all registered nurses in a unit
3. Two QI champions jointly perform PVC assessment (one from each buddy ward), one audit in each of the two buddy wards every week. Minimum 12 patients to be assessed per ward. Provide immediate, and end of audit feedback to
4. Audit score communicated to unit CNMs & ADON each week
5. Acknowledge good practice and identify areas for improvement



If bundle compliance complete what else could be an issue?

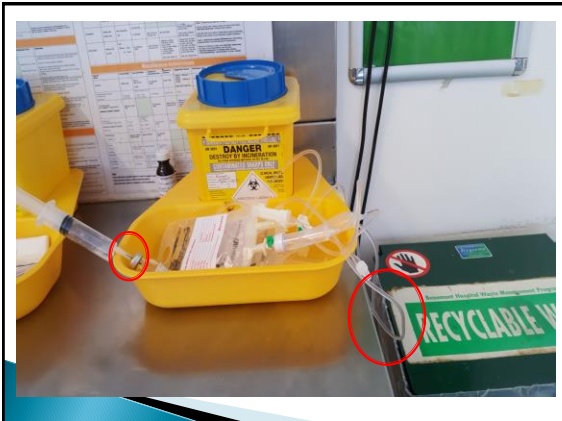












June 2019

- ▶ IV Road Show Initiative implemented
- ▶ Use the QI approach (PDSA cycle)
- ▶ Leadership spearheaded by nursing executive
- ▶ Supported by nurse practice development team.

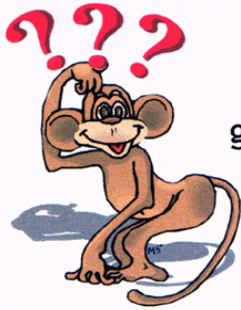




70 days
free from PVC
related BSI

Conclusions

- › Improving care in the short term isn't enough
- › Having a systematic approach to sustaining improvement is equally important.
- › To sustain change, you need a strong strategy for engaging and standardising the work of frontline managers.



Questions
are
guaranteed in
life;
Answers
aren't.
