

A mixed methods evaluation of an electronic reminder system for reducing urinary catheter use in Australian hospital

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Disclosures

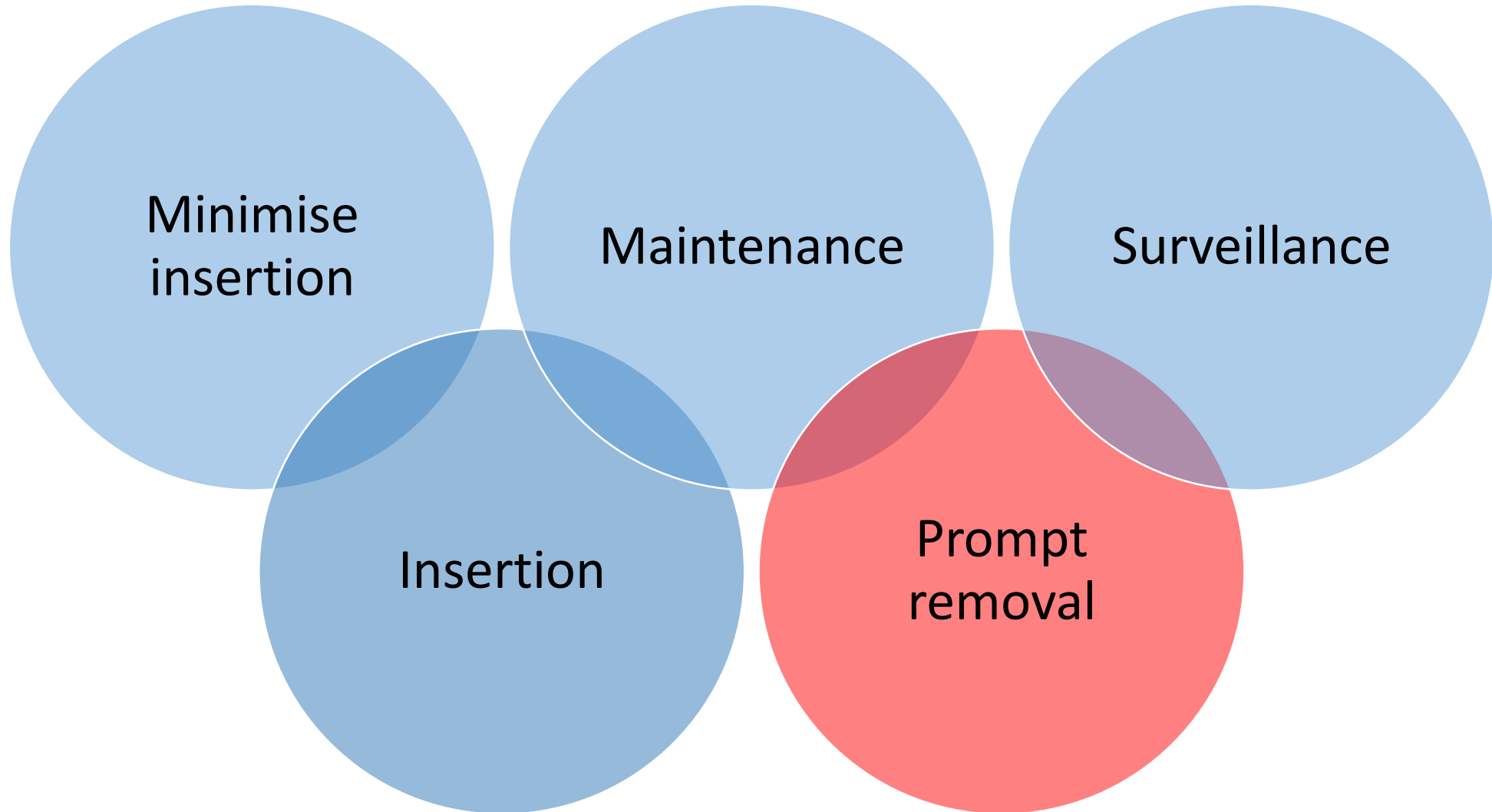
- Recipient of grant funding from various bodies, including NHMRC, Ian Potter Foundation, HCF Foundation, Senver, Norman Foundation.
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Team

- Hannah Rosebrock
- Professor Brett Mitchell
- Professor Allen Cheng (Monash)
- Dr Philip Russo (Deakin)
- Dr Oyebola Fasugba (ACU)
- A/Prof Maria Northcote
- Victoria Gregory



Prevention strategies



Prevention strategies: Prompt removal



Prevention strategies: Prompt removal



Prevention strategies: Prompt removal

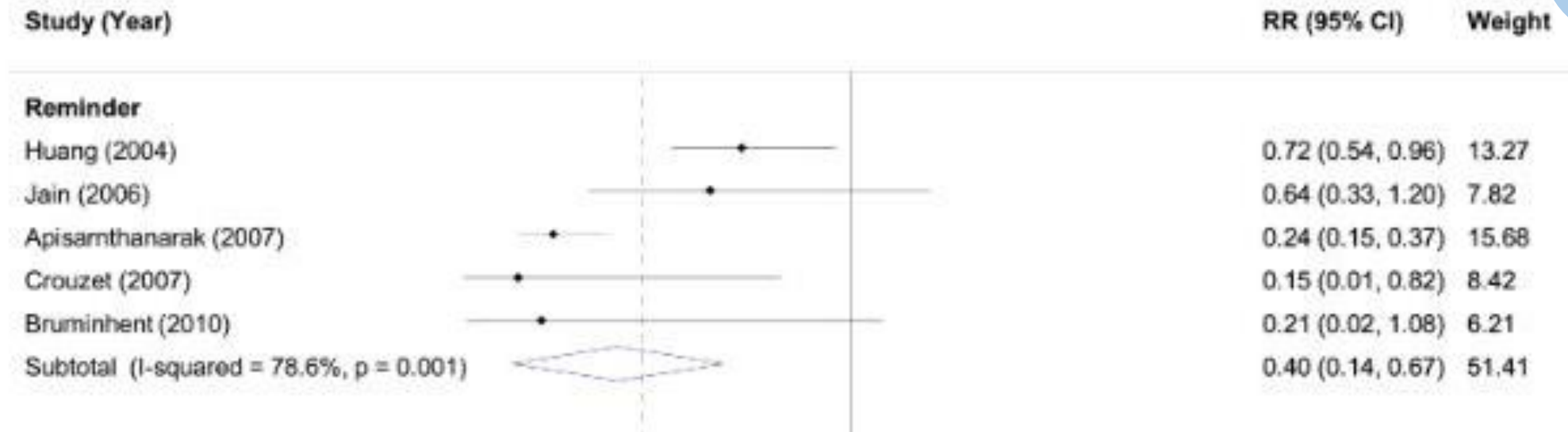
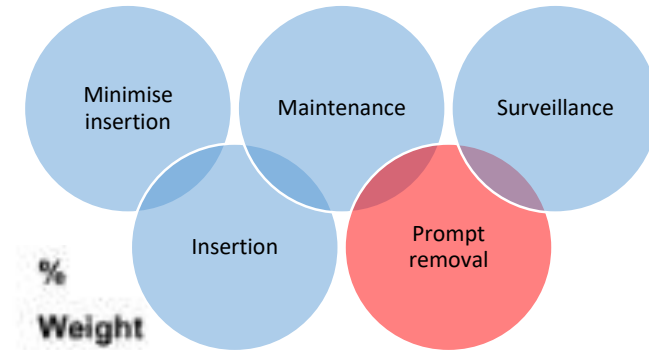


Figure 2 Meta-analysis of rate ratios for catheter-associated urinary tract infection episodes per 1000 catheter days, for intervention versus control groups, stratified by type of intervention to prompt catheter removal.

Our study: Reducing catheterisation duration

Open Access

Protocol

BMJ Open Reducing urinary catheter use: a protocol for a mixed methods evaluation of an electronic reminder system in hospitalised patients in Australia

Oyebola Fasugba,^{1,2} Allen C Cheng,^{3,4} Philip L Russo,^{2,5} Maria Northcote,⁶
Hannah Rosebrock,⁷ Brett G Mitchell⁷

- Human research ethics approval: Avondale College of Higher Education (2017:15) & Townsville (HREC17QTHS19)
- Australian and New Zealand Clinical Trial Registry: ACTRN12617001191381

Reducing catheterisation duration

Point of difference

- Explore the effect of electronic reminder at point of care
- Randomisation
- Mixed methods approach

Reducing catheterisation duration

Study design and setting

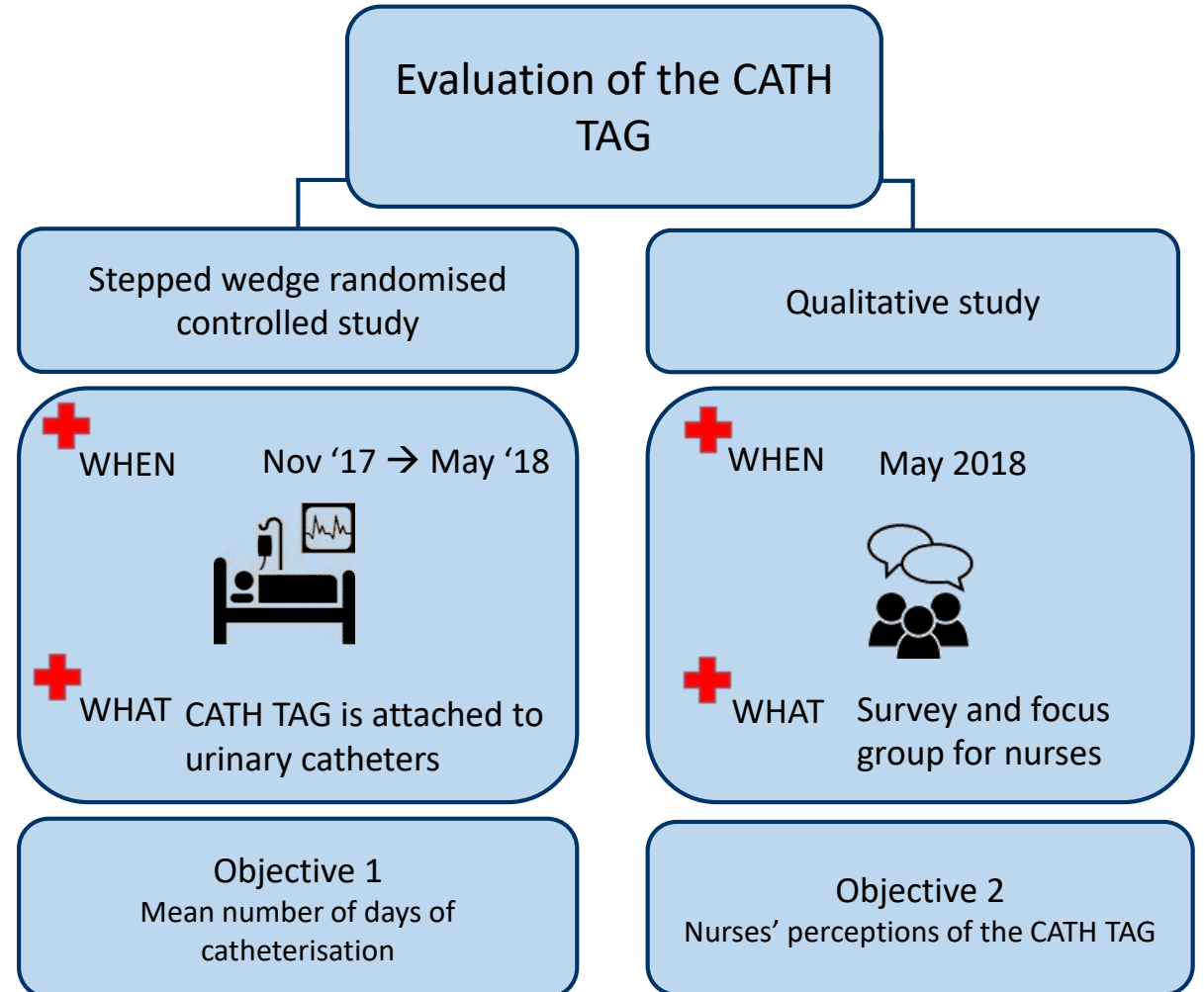


Strongly agree
 Agree
 Disagree
 Strongly disagree

Just al

• Mixed methods approach

Ward	1 m	2 m	3 m	4 m	5 m	6 m
A + B	Green	Purple	Purple	Purple	Purple	Purple
C + D	Green	Green	Purple	Purple	Purple	Purple
E + F	Green	Green	Green	Purple	Purple	Purple
G + H	Green	Green	Green	Green	Purple	Purple
I + J	Green	Green	Green	Green	Green	Purple



Reducing catheterisation duration

Participants

- Objective 1 (Efficacy of the CATH TAG)

- Include all patients with indwelling urinary catheters, exclude neonates

1167 patients

- Objective 2 (Nurses' Perceptions, Survey)

- All nurses who have worked with the CATH TAG were invited

82 nurses

- Objective 2 (Nurses' Perceptions, Focus Group)

- All nurses who have worked with the CATH TAG were invited

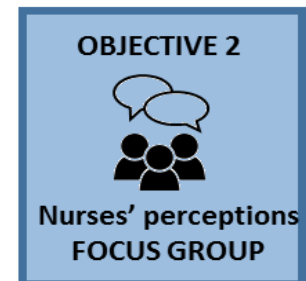
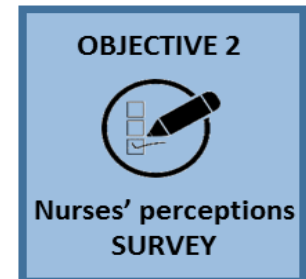
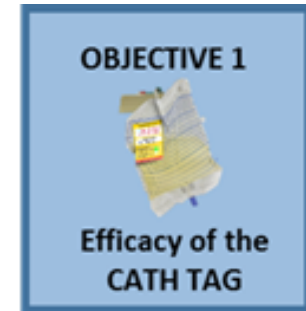
5 nurses

Reducing catheterisation duration

Outcomes

- Primary Outcome 1: Urinary catheter duration
- Secondary Outcomes: Number of cases of asymptomatic bacteriuria

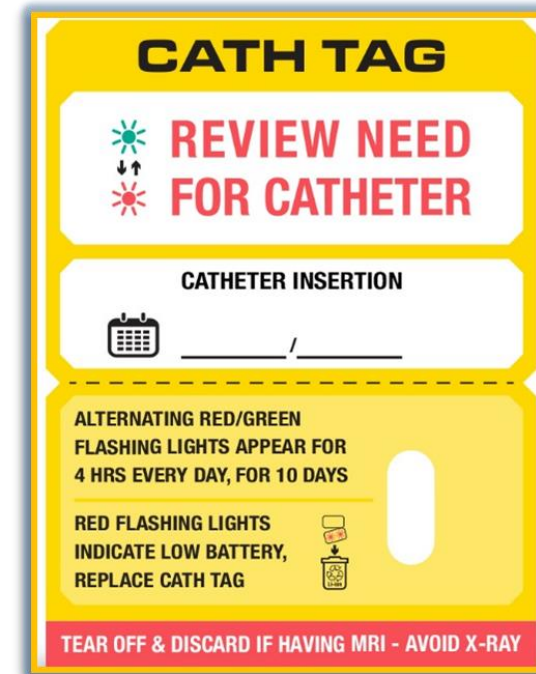
- Primary Outcome 2: Nurses' perceptions about the ease of use of the CATH TAG
- Secondary Outcomes: Nurses' perceptions about (1) effectiveness, (2) barriers, and (3) patients' experience with the CATH TAG



Reducing catheterisation duration

Intervention: CATH TAG

- Electronic reminder system, that attaches adhesively to catheter bag
- Indicates reassessment need for catheter through flashing
- No option to manipulate the flashing light



Study 2: Reducing catheterisation duration

Implementing the intervention



- Wall posters, flyers, information leaflets and engagement with the nursing managers at the ward level.
- Focussed on the use of the CATH TAG
- The CATH TAG was available for use in all intervention wards, once transitioned
- Check each working day for each patient who had a catheter

Compliance with intervention

Control

Intervention

1.7 % required removed
(n=782)

21.8 % required application
(n=839)



Reducing catheterisation duration

Results

OBJECTIVE 1



Efficacy of the
CATH TAG

Variable	Control phase	Intervention phase	P value
Participants	595	572	-
Age			<0.01
Median	66	63	<0.01
IQR	54, 75	49, 73	
Sex			
Female	291 (48.9%)	235 (41.1%)	0.05
Male	304 (51.1%)	337 (58.9%)	0.03
Infectious diagnosis			
Yes	391 (65.7%)	421 (73.6%)	0.05

1167 patients

Median age 65

45% female

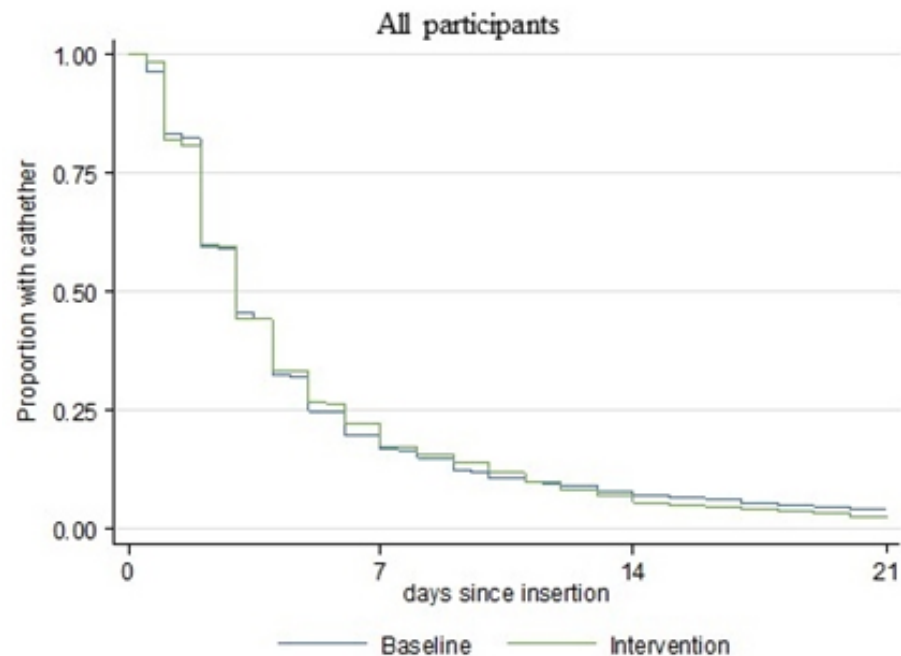
Reducing catheterisation duration

Results

OBJECTIVE 1



Efficacy of the
CATH TAG



- Non-significant reduction in catheter duration
 - Hazard ratio: 1.02 (95%CI 0.91–1.14, $p=0.75$).
 - Mean catheterisation duration
 - Control: 5.51 days (95% CI, 4.9–6.2)
 - Intervention: 5.08 days (95% CI, 4.6–5.6 days)

Non-significant reduction in asymptomatic bacteriuria

- Odds ratio: 0.90, 95% CI, 0.52–1.53, $p=0.69$

Reducing catheterisation duration

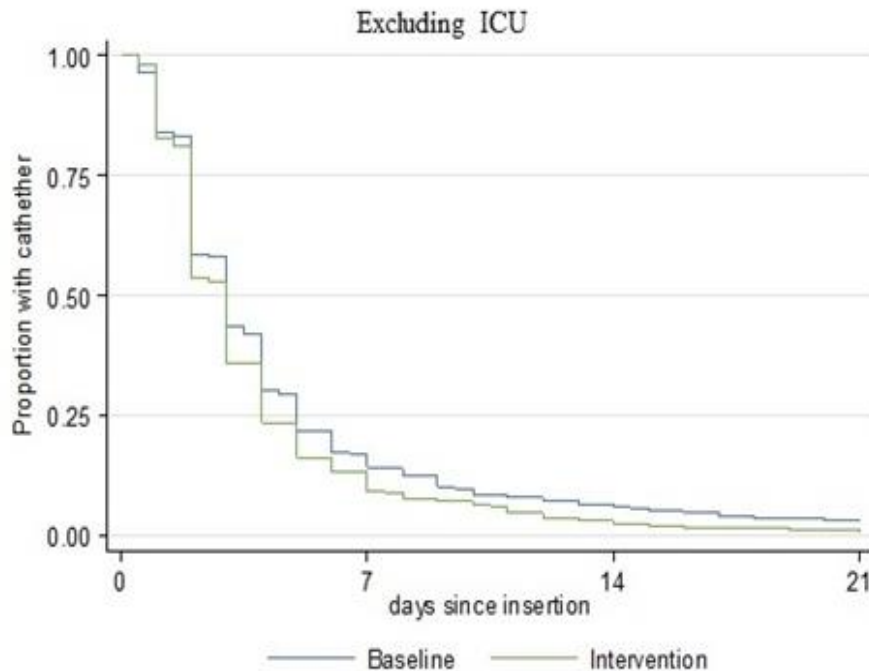
Results – Non-ICU

OBJECTIVE 1



Efficacy of the
CATH TAG

- Significant reduction in mean duration of catheterisation, when ICU is excluded



- Hazard ratio: 1.20, 95% CI, 1.06–1.37, $p < 0.01$
- Mean catheterisation duration
 - Control: 5.00 days (95% CI, 4.44–5.56)
 - Intervention: 3.84 days (95% CI, 3.47–4.21)

23% reduction



Reducing catheterisation duration

Results: Survey (n=82)

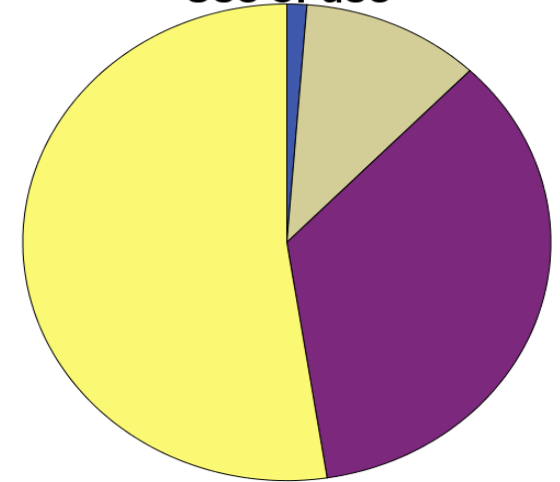
OBJECTIVE 2



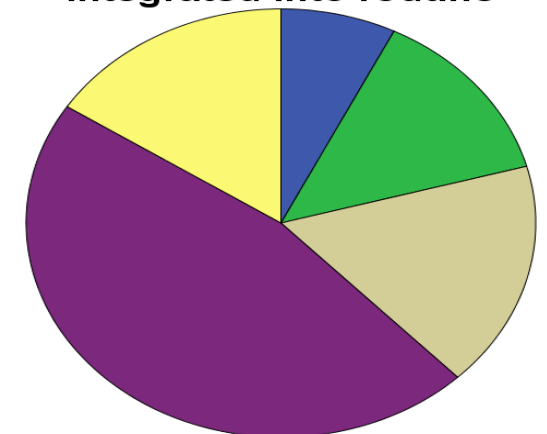
Nurses' perceptions
SURVEY

- Response rate 27% to survey
- Nurses responded very positively to:
 - the ease of use of the CATH TAG
 - being able to integrated the CATH TAG in their daily routine
- Compared to ICU nurses, non-ICU nurses had significantly more positive responses to the CATH TAG being helpful in daily routines and to serve as a reminder
- Non-ICU nurses were more
 - satisfied
 - likely to recommend the CATH TAG
 - more positive experience than ICU nurses

Use of use



Integrated into routine




Reducing catheterisation duration

Results: Focus group

Main themes

1. Issues related to practical use of the CATH TAG
2. Issues related to patient care
3. Issues related to future use of the CATH TAG

OBJECTIVE 2



**Nurses' perceptions
FOCUS GROUP**

It's the beginning of something good

They need to be in a catheter set



Reducing catheterisation duration

Limitations and considerations

- Recruitment of nurses for survey and focus group was difficult
- Data analysis complicated
- Strengthened by mixed methods
- One hospital, limited time-frame
- Context important, showed promising in the background of minimal education/training (deliberately), short-time frame, problem/rationale not clear for nurse participants

Conclusion

- Pragmatic study and could be (relatively) easily implemented
- Stepped-wedge design has some advantages and challenges
- Next steps....
 - Dissemination
 - Company

Acknowledgments

- Townsville hospital
- Infection Prevention and Control team

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