


The Life and Times of the Urinary Catheter

Martin Kiernan, Southport and Ormskirk Hospital NHS Trust

Broadcast Live from IPS 2013 Conference

Infection Prevention **2013** Broadcast live from ... ips Infection Prevention Society
 ExCeL London
 30th September – 2nd October 2013



The Life and Times of the Urinary Catheter

Martin Kiernan
 Nurse Consultant, Southport and Ormskirk Hospital NHS Trust

@emrsa15 www.webbertraining.com September 30, 2013

Disclosures

- Member of advisory boards for Carefusion, Pfizer, Gama and Vernacare and have presented at educational meetings sponsored by Gama, Johnson and Johnson, Pall Medical and Vernacare
 - The views presented before you are my own

What's in a name?

- Greek 'to let or send down'
 - Used to relieve painful urinary retention for thousands of years
- Various materials used in production
 - Natural
 - Straw
 - Rolled-up palm and dried Allium leaves
 - Metals
 - Gold, copper, brass and lead
 - Silver used as malleable and antiseptic
 - Benjamin Franklin

History

- Rubber used from 18th century
 - At body temperature were friable leaving fragments in the bladder; then vulcanisation
- Early devices had shoulders, tied to penis or stitched to the female urethra
- 1930's; latex and the balloon introduced
 - Foley, an American Medical Student (did not patent the design)

Catheter use is significant

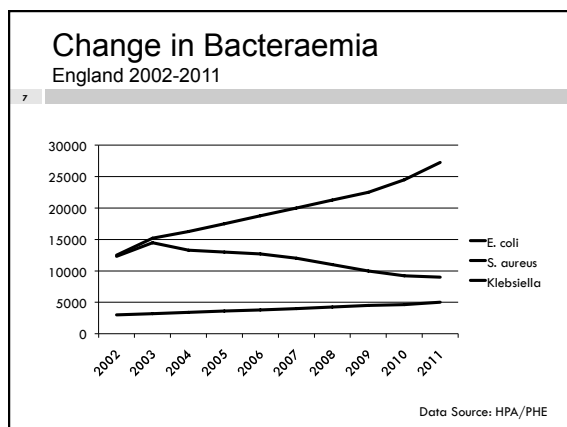
- UK hospital prevalence of urinary catheters (2006) was 32%, with an additional 6% in the previous 7 days
 - (Smith et al, 2008)
- By 2011 this had fallen to 18%
 - 43% of healthcare-associated UTIs linked with urinary catheters (HPA, 2012)
- How many outside of hospitals?

Catheters are not a benign intervention

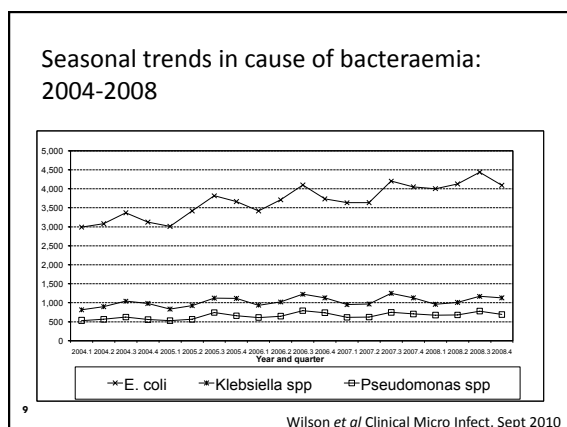
- Infection
 - Always cited as the most common healthcare-associated infection but not the only risk
 - Pain
 - Mechanical: Blockage, bypass etc etc
 - Calculi
 - Tumour
- We do not really know the burden of this
 - Apart from figuring highly in prevalence studies

The Life and Times of the Urinary Catheter

Martin Kiernan, Southport and Ormskirk Hospital NHS Trust
Broadcast Live from IPS 2013 Conference



- ### Surveillance
- *E. coli* bacteraemia is rising - Why?
 - Catheters?
 - Gall Bladders?
 - Uropathogenic strains?
 - Food?
 - Antimicrobial resistance?
 - Elderly?
 - Global warming?



- ### The original medical device
- So
 - Used for maybe a couple of thousand years
 - Used on millions of people every day
 - Inserted by most healthcare professionals at some time in their career and frequently by many
 - We must have a fantastic evidence base



- ### Reducing Catheter Use: Systematic Review
- Meddings *et al* 2010 CID 51: 550-60
- Stop orders are effective
 - CAUTI down 52%
 - Duration of catheterisation down 37%
 - USA – 4 steps to removing a catheter
 - Physician recognition that there is one
 - Physician recognises no longer needed
 - Order to remove written
 - Nurse removes catheter
 - UK
 - Um....

The Life and Times of the Urinary Catheter

Martin Kiernan, Southport and Ormskirk Hospital NHS Trust

Broadcast Live from IPS 2013 Conference

HOUDINI
Adams et al, (2012) JIP 13:44

- Nurse-led protocol for removal by use of the HOUDINI acronym
 - ▣ Haematuria
 - ▣ Obstruction
 - ▣ Decubitus ulcer
 - ▣ Input and output measurement
 - ▣ Nursing care (end of life)
 - ▣ Immobility
- Effect
 - ▣ Catheter usage down 17%
 - ▣ Catheter specimens of urine with E. coli down

Reminders and 'Stop' Orders

- Can be useful but needs
 - ▣ Education
 - ▣ Recognition of accountability
 - ▣ Delegation of responsibility
 - ▣ Action
- No more 'catheter patent and draining'..

Reducing Prevalence
Rothfeld and Stickley, AJIC 2010, 38:568-71

- Implemented a programme to limit urinary catheters to specific indications
 - ▣ Hourly urine output reporting
 - ▣ Obstruction
 - ▣ Active UTI and stage 3/4 sacral ulcer
 - ▣ Inflammation of perineum unlikely to respond to barrier methods as determined by wound care nurse
 - ▣ Driver was reimbursement criteria change

Reducing Prevalence
Rothfeld and Stickley, AJIC 2010, 38:568-71

- Results
 - ▣ Reduction of 42% from 300/1000 pt days to 190
 - ▣ CAUTIs
 - 7.2/month down to 5.2/month
 - ▣ Significant reduction in CAUTI rate per 1000 patient days
 - 1.05 vs. 0.45; reduction 57% (P<.05)

Reducing Prevalence
Rothfeld and Stickley, AJIC 2010, 38:568-71

	Worse, %	No effect or no feedback, %	Better, %
How would you rate the effect of the "no Foley program" in terms of the difficulty of your job?	45	30	25
How would you rate the effect of the "no Foley program" in terms of your personal job satisfaction?	5	43	52
What has the feedback from patients been?	0	43	21
What has feedback from physicians been?	9	36	12

CAUTI Denominators
Wright, Kharasch et al 2011 ICHE 32(7)

- Utilisation fell from 36% to 28% (P<.001)
 - ▣ Reduction across all units
 - ▣ Infections were reduced by the intervention
 - ▣ Infection rates fell by 18% from 28.2/10000 patient days to 23.2 (P=0.2)
- But..
 - ▣ Infection rates rose by 6% from 7.78/1000 device days to 8.28 (P=NS)

The Life and Times of the Urinary Catheter
Martin Kiernan, Southport and Ormskirk Hospital NHS Trust
Broadcast Live from IPS 2013 Conference

Is CAUTI detection robust?

19

- Definitions vary among published studies
 - "bacteriuria" and "urinary tract infection" are frequently used indistinctly
- Signs and symptoms such as fever, dysuria, urgency, flank pain and leukocytosis have a low positive predictive value
 - 90% may be asymptomatic
 - 52% detected by using the laboratory
 - Tambyah and Maki (2000) Arch Int Med 160 p 678-82

Clinical vs. Surveillance Definitions

20

- Clinical
 - Patient specific; used for making treatment decisions
- Surveillance
 - Population-based
 - Must be applied uniformly and consistently
- Never the twain shall meet

Clinician diagnosis vs definitions

Hanna, Sambriska et al AJIC 2013 (in Press)

21

- Adult inpatients with positive urine culture in a single centre (n=387)
 - Clinician initiated ABx in 55.8% of cases
 - based on organism and age
 - 30.7% fitted the NHSN definition
 - Dependent on signs of fever
 - 29.9% considered to have CAUTI by ID
 - Based on signs of sepsis
 - If 'gold standard' is ID opinion, NHSN definition has positive predictive value of 35%

Appropriate Catheter Use

Gould et al (2009) HICPAC

22

- Acceptable
 - Acute urinary retention / bladder outlet obstruction
 - Need for accurate measurements of urinary output in the critically ill
 - Perioperative use for selected surgical procedures
 - Assist in healing open sacral/perineal wounds in incontinent patients
 - Prolonged immobilization (e.g., potentially unstable thoracic or lumbar spine)
 - To improve comfort for end of life care if needed

And why are they inserted?

23

- Frequently deemed to be inappropriate
 - use of medical records to report reasons for insertion (Munasinghe et al. 2001)
- Reason for insertion was documented in just 13% of notes (Gokula, Hickner et al. 2004)
- Quantitative studies provide no details of decision-making, staff groups involved and only describe what authors consider to be 'appropriate' – often not defined

Clinical realities of catheterisation

Cowey et al (2011) Clinical Rehabilitation 26(5): 470-9

24

- Mixed methods study
 - Nurses key decision-makers
 - Primary focus most prominent medical issue
 - Medical staff: Retention, output monitoring
 - Nurses: Skin care, patient comfort
 - Unwritten rules based on gender
 - Patients/families did not participate
 - Decision-making not explored further as did not relate to a specific event

The Life and Times of the Urinary Catheter

Martin Kiernan, Southport and Ormskirk Hospital NHS Trust

Broadcast Live from IPS 2013 Conference

Small Qualitative Study

Kiernan M 2012 IPS Conference Abstract

25

- Two predominant reasons for catheter insertion
 - Retention (45%) and output monitoring (30%)
 - No catheters were inserted for incontinence
- Who makes the decision?
 - Medical staff described as having made decisions (often prompted by nurses)
 - Nurses frequent instigators of use for retention in non-emergency settings

Why?

26

- Nurses primarily motivated by providing relief of symptoms of distress, pain or breathlessness
 - Cause of retention not considered
 - Post-operative retention: intermittent not used
 - Constipation and faecal impaction
 - None could recall education on the causes of retention
- Alternative methods of output measurement not considered

External influences

27

- Unwritten rules based on nurses' perception of pain were evident
 - This was a cause of some friction

"It was expected of us to catheterise every female fractured neck of femur which I don't agree with... I mean taking people when it's expected they were going to be catheterised, and they weren't. That was a cause of friction massively really"

Other findings

28

- Patient/relative participation in decision-making was minimal
- Patients were almost never asked for consent
 - also Cowey 2011
- There was active avoidance of discussion of risks of catheterisation
 - Virtually the only complication mentioned was infection and risk perception of this was low

Risk perception

29

- Although acknowledged, nurses displayed a low perception of risk to patients

"I think we think, we're doing things to wash our hands, so we believe we've covered the infection side of it... I think when you do an aseptic technique you probably.. without thinking about it, you think I've got the infection side covered"

Risk Perception

Harrod et al, BMC Health Services Research (2013) 13:151

30

- Multi-centre qualitative study
 - Perceptions of risk used to determine need for catheter
- Competing priorities
 - Other patient safety initiatives
- Lack of linkage with negative outcomes
- Staff used workarounds to bypass organisational initiatives to justify non-compliance

The Life and Times of the Urinary Catheter

Martin Kiernan, Southport and Ormskirk Hospital NHS Trust

Broadcast Live from IPS 2013 Conference

Suboptimal IC behaviours

Dixon-Woods et al, Social Science and Medicine (2009) 69: 362-9

31

- Ethnographic study
 - Behaviour not tightly coupled to the outcome
 - Infection cannot be traced back to an individual; blame diffused or relocated
 - Questioning the evidence not a substantial reason
- Poor behaviour is normalised, therefore poor practice becomes rendered as non-deviant and remains unsanctioned

Risk in Long-term Catheters

Wilde et al, J Clin Nursing (2013) 22:356-67

32

- Cross sectional descriptive and analysis
 - 202 interviews with patients, mean use 6 yr
 - Urethral (56%) > Suprapubic (44%)
- Problems
 - Leakage 43%
 - UTI 31%
 - Blockage 24%
 - Pain 23%
 - Dislodgement 12%
- Surgical risk disclosure for informed consent is about 1%

Moving forward

33

- The equipment
 - Catheter design and collection systems
- Evidence required
 - Long term catheters (anything..)
 - Suprapubic vs. urethral
 - Decision-making
 - Patient consent
 - Community management
 - Gazillions of specimens sent - ?why
 - Prophylaxis

Catheters and AB prophylaxis

Marschall et al, BMJ 2013 doi 10.1136/bmj.f3147

34

- Systematic review and meta-analysis of prophylaxis for catheter removal
 - Suggests benefit (RR 0.45 CI 0.28-0.72)
 - Number needed to treat to prevent 1 was 17
- But
 - Short term catheters only (<14d)
 - So; long-term catheters, routine catheter changes, insertions etc still not evidenced

The Urinary Catheter

35

- After 2,000 years we should be doing a little better
 - Use can be reduced
 - Don't put them in, get them out fast
- Should be a device of last resort and not one of first response
 - Much more work on decision-making and making it easy to do the right thing required
- Qualitative studies required; even at local level

A Webber Training Teleclass
www.webbertraining.com

The Life and Times of the Urinary Catheter
Martin Kiernan, Southport and Ormskirk Hospital NHS Trust
Broadcast Live from IPS 2013 Conference

Thanks to Teleclass Education
PATRON SPONSORS

 <p>VIROX TECHNOLOGIES INC. www.virox.com</p>	 <p>World Health Organization Clean Care is Safer Care www.who.int/gpsc/en</p>	 <p>CREM Centre for Research on Environmental Microbiology www.med.uottawa.ca/crem</p>
--	---	---

For information on Patron Sponsorship, contact Paul Harrison (Paul.Harrison@fitwise.co.uk)

A Webber Training Teleclass
www.webbertraining.com