The Good, The Bad, and The Ugly Methods of Bedpan Management
Gertie van Knippenberg-Gordebeke, Knowhow Infection Prevention, Netherlands

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The Good the Bad and the Ugly Methods for Bedpan Management

Gertie van Knippenberg-Gordebeke, CCIP
Owner international consultancy Knowhow Infection Prevention KNIP
Advocate for Safe Bedpan Management

Hosted by Martin Kiernan
martin@webbertraining.com

www.webbertraining.com
May 30, 2017
Since the rise of multi drug resistant organisms (MDRO), careful handling of human waste (faeces, urine, vomits) is more important than ever to minimize the risk for Healthcare Associated Infections (HAIs)

Every caregiver needs to understand the chain of infection and every patient needs to be treated as if colonized or infectious

Bedpan Management seems a Weak Link
Definition Bedpan Management:
every handling related to excreta of the human gastrointestinal tract

disposal of human excreta
(\textit{urine, faeces, vomits, sometimes including blood})

\textbf{Seems a simple process}

\textbf{But}

\textbf{it is A complex process}

in Healthcare facilities

and an important element for standard precautions

The Management of Human Excreta

\textit{We have to deal with it}

\textit{If possible: we are looking for the best and cleanest toilet}
Human Dignity
and the management of excreta in healthcare facilities

- A bedridden or wheelchair dependent patient /client needs a device (a human waste container) to poop, pee or vomit
- No free choice
- A topic which is frequently marginalized and tacitly accepted
- Use of clean devices is not always guaranteed

FACTS 1.4
- People do not like to talk about: urine, stool, poop, shit
- Bowel: largest human microbiome (10^{14} per gr. faeces)
- 150 à 300 gram faeces per person per day
- In case of diarrhea: liters fluid stool
- Human waste containers are bedpans, urine bottles, kidney dishes
- Bedpans are Medical Devices and they are
- Underappreciated reservoirs for transmission of pathogens
FACTS 2.4

Choice for Patients / Clients cared for in healthcare

1. Use the toilet
   - Private or shared
2. Use a commode for bedpan
   - Stored in a variety of places
   - Private or shared
3. Use Bedpan and/or urine bottle
   - Stored in a variety of places
   - Private or shared
4. Incontinence products
   - Indication?*

* The unnecessary use of incontinence products without a medical indication
  - are a shocking infringement of human rights for care
  - and a taboo topic that people are reluctant to discuss

FACTS 3.4

- Transmission of these pathogens is an interaction of patients/clients, healthcare workers and human waste
- Full Bedpans/urine bottles are huge Reservoirs
- Hands can Contaminate Environment & Patients
- Contaminated Environment can Contaminate Hands
- Bedpans & Hands can Transmit Microorganisms
The Good, The Bad, and The Ugly Methods of Bedpan Management
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FACTS 4.4

- Increasing prevalence of multidrug-resistance organisms (MDRO)
- 10% of population estimated (unknown) Carrier of MDRO e.g.:
  - VRE, ESBL, CRE, MRSA, KPC, Pseudomonas aeruginosa,
  - Acinetobacter baumannii, Enterobacter cloacae
- 10-20 % of patients may be colonized with Clostridium difficile

2017 WHO PRIORITY AMR PATHOGENS LIST 1.2

<table>
<thead>
<tr>
<th>Priority 1: CRITICAL</th>
<th>Priority 2: HIGH</th>
<th>Priority 3: MEDIUM</th>
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<tbody>
<tr>
<td>Acinetobacter baumannii, carbanem-resistant</td>
<td>Enterobacteriaceae*, carbapenem-resistant, 3rd cephalosporin-resistant</td>
<td>Streptococcus pneumoniae, penicillin-non-susceptible</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa, carbapenem-resistant</td>
<td>vancomycin-resistant, vancomycin intermediate and resistant</td>
<td>Haemophilus influenza, ampicillin-resistant</td>
</tr>
<tr>
<td>Enterobacteriaceae*</td>
<td>clindamycin-resistant</td>
<td>Shigella spp., fluoroquinolone-resistant</td>
</tr>
<tr>
<td>Includes: Klebsiella pneumoniae, Escherichia coli, Enterobacter species, Serratia species Proteus species, Providencia species, Morganella species</td>
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</table>

Carriers have these MDRO in faeces and on the skin
Reported MDR-GNB infection rates of 10.9% - 62.7%

http://www.ajicjournal.org/article/S0196-6553(17)30085-8/abstract
A systematic review and meta-analysis (May 1, 2017)

While optimizing hand hygiene and isolation practice is clearly important there is no reason why the effectiveness and thoroughness of Environmental hygienic cleaning should not also be optimized

Philip C. Carling, M.D. Boston University School of Medicine, 2010

The Environment is everything that cannot walk and cannot talk

Dr. Peter Hoffman London, UK

Many infection prevention professionals do not consider Bedpans as part of the Environment

Gertie van Knippenberg-Gordebeke, NL
# The Good, The Bad, and The Ugly Methods of Bedpan Management

Gertie van Knippenberg-Gordebeke, Knowhow Infection Prevention, Netherlands

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## Publications

<table>
<thead>
<tr>
<th>Environment and hospital infections:</th>
<th>2,350,000</th>
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<tr>
<td>Interesting topic and International accepted Risk</td>
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<table>
<thead>
<tr>
<th>Environment Mobile phones and hospital infections:</th>
<th>26,100</th>
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<tr>
<td>Interesting topic and International accepted Risk</td>
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<table>
<thead>
<tr>
<th>Environment Bedpans and hospital infections:</th>
<th>5,260</th>
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<tbody>
<tr>
<td>No ‘sexy’ topic and (Not yet) International accepted Risk</td>
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## Professional Publications

<table>
<thead>
<tr>
<th>PUBMED</th>
<th>AJIC</th>
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<td><strong>2008</strong></td>
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<td>5</td>
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This minority number of published articles gives **not many evidence** where IC professionals always looking for

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Is Evidence always needed to make decisions?

- **Evidence**: The facts, signs or objects that make you believe that something is true
- **Non-Evidence**: Does that mean the fact, signs or objects that make you believe that something is NOT true?

- Authors have searched literature for the words “parashute” and “trial”
- They did not find any randomised controlled trials of the parachute
- Conclusion: to wear a parachute to prevent death/severe trauma when jumping from an airplane is not an Evidence Based Procedure

*BMJ 2003;327:1459-1461*

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Global Observations Bedpan management 2006-2017

- 44 visits to low- and high income countries
- Observations of the provided care in bedpan management
- Observations in the sluice rooms (30-60 minutes)
- 69 standardized interviews about bedpan management
- 399 experience exchanges with infection prevention professionals
Results Global Observations Bedpan management 2006-2017

- For convenience staff: no bedpans or urine bottles but instead:
  - Diapers
  - Urinary catheter,
    (sometimes including antibiotic prophylaxis to prevent urine tract infections)
- Nurses, nurse aids and relatives do the job without training 'how to'
- Manual emptying in different places
- Personal protective equipment (PPE) is seldom used
- Cleaning & disinfection without attention to the right procedure
- Sluice-rooms poorly equipped and designed
- Poorly maintained/validated Macerators and Washer disinfectors

Global Observations Dirty utility room / Sluice rooms 2006-2017

Who is Responsible?
Categories of Healthcare waste

1. Pharmaceutical waste  
2. Sharps  
3. Radioactive waste  
4. Genotoxic waste  
5. Chemical waste  
6. Pathological waste

7. Infectious waste
Suspected to contain pathogens, from isolation wards, materials or equipment that have been in contact with:

- infected patients
- excreta contaminated with
- potentially infectious fluids or blood

How do we recognize infected patients?

Danger: Unknown carriers!

Removal Human Waste in Healthcare-facilities

Ugly  
Bad  
Good

Hosted by Martin Kiernan  martin@webbertraining.com  www.webbertraining.com
Global Survey Bedpan Management 2017 (1.3)

*Digital survey in English, Spanish and PFD in Russian and French*

- 233 Responders
- 44 Countries
- Healthcare settings (10 - 2000 beds)
- 26% Local guidelines for bedpan management in case of MDRO and *C. difficile*
- 38% Intensive Care Unit all bedridden patients gets ALWAYS incontinent products for the convenience of the staff

These numbers do not representing ‘the world. It gives an impression of the practice.
The Good, The Bad, and The Ugly Methods of Bedpan Management
Gertie van Knippenberg-Gordebeke, Knowhow Infection Prevention, Netherlands
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44 Participating Countries

<table>
<thead>
<tr>
<th>Country</th>
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<td>Denmark</td>
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Preliminary results Survey: KNIP Consultancy Infection Prevention
With help from: Prof. dr. Pola Brenner, Chile
Tim Lieske, Germany, Jim Gautier, Canada

Global Survey Bedpan-Management 2017

Equipment for emptying and decontamination for human waste containers

- 45% No equipment
- 10.7% Macerator (Mac)
- 45.4% Washer-Disinfector (WD)
- 11.5% Liner (Coverbag)

- 76% Empties bedpans and urine bottles in toilets or slophoppers (even with WD or Mac)

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Bedpans</th>
<th>Urine bottles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only Rinsing with tap water/ wand sprayer/water &amp; brush</td>
<td>28%</td>
<td>41%</td>
</tr>
<tr>
<td>Only Soaking in a disinfection/detergent solution</td>
<td>25%</td>
<td>29%</td>
</tr>
</tbody>
</table>
Global Survey Bedpan-Management 2017

Sluiceroom / Dirty utility room
- 10% No sluiceroom
- 15% Clean/dirty section is clearly indicated
- 28% Hand hygiene: soap and water at this dedicated sink
- 26% Hand hygiene: alcohol rub available in this room

Involvement Infection Control Professional in Bedpan Management
- 5% Not involved
- 16% Proces of bedpan management
- 12% Design sluiceroom
- 48% Developing requirements for chosen equipment

Role bedpan management in Outbreaks and Single HAIs
- 26% I do not know / unknown
- 21% Never searched
- 16% Bedpan-Management as part of outbreak management
- 3% Washer-disinfector played a role
- 2% Macerator played a role
- 9% Bedpans played a role
- 7% Urine bottles played a role
Global Survey Bedpan-Management 2017

- 5-26% reported Healthcare Associated Infections (HAIs)
  - 17% Urine tract infections
  - 15% Gastro-intestinal infections
  - 7% Wound infections
  - 1% Other infections

Causing Micro-organisms
- VRE
- C. difficile
- Salmonella species
- Rota virus

No published findings
One colleague sent me a poster

Due to Improper Bedpan Management

Risk for All Types of Healthcare Associate Infections

Outbreak with multi resistant Pseudomonas aeruginosa

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Critical Items: Sterilization
Affect normally sterile tissues or the blood system and represent the highest level of infection risk. 
Surgical instruments, catheters, probes, etc.

Semi-critical Items: High level disinfection
Second in importance and affect mucous membranes and small areas of non-intact skin and represent a high level of infection risk. Anaesthesia equipment, endoscopes, etc.

Non-critical Items: Low Level disinfection
Items and practices that involve intact skin and represent the lowest level of risk: Bedpans, Bloodpressure cuffs, etc.
Spaulding’s Classification scheme:

2017 NOT SUFFICIENT for Bedpans

This scheme ignored the risk of:

1. Heavenly bacterial load of faeces and urine
2. Risks of contamination of hands and environment
3. Transmission by hands and unclean bedpans
4. Bedpans that come in contact with non-intact skin

Bedpan Management

1. Care at the bedside
2. Transport to Empty
3. Emptying (manual or mechanical)
4. Flushing (manual or mechanical)
5. Cleaning (manual or mechanical)
6. Loading in Machine
7. Disinfection (manual or mechanical)
8. Drying (manual or mechanical)
9. Storage
Patientcare and Bedpan Management

- Where to place the bedpan direct after use?
- When remove gloves?
- How to handle / carry bedpan?
- Is the healthcare worker trained?

Transport to empty

Occupational Safety and Health Standards:

Specimens shall be placed in a container which prevents leakage during collection, handling, processing, storage, and transport.

To minimize the risk of spread of infection, all blood and body substances should be treated as potentially infectious.

Why no (Standard) Precautions for transport of FULL bedpans?

A Webber Training Teleclass

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Transport to empty

- Who is doing the job?
- Bedpan covered?
- When removing gloves?

Place to empty

- Contamination through platters, splashes and aerosols
- Toilets used by more patients and healthcare workers
- Sometimes difficult to reach
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Gertie van Knippenberg-Gordebeke, Knowhow Infection Prevention, Netherlands
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Manual Emptying Risks

Contamination Healthcare Worker

- Hands
- Eyes
- Uniforms

Contamination Environment

- Floors
- Walls
- Surfaces
- Stored Clean items

Something hardly noticed

Using Sink & Slop-hoppers hold many Risks

- Manual Handling
- Flush or Rinse or Water spray
- Disinfection?
- Splashes, Splatters, Aerosols

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Manual Cleaning by rinsing or spraying or brushing with water

The need for GOOD cleaning before disinfection
An important task what can only be done by trained staff

Manual Cleaning
Only 50% is touched by manual handling
Dr. Philip C. Carling: ± 30%  Dr. William A. Rutela: ± 50%
Will Bedpans 100% touched?

Hosted by Martin Kiernan  martin@webbertraining.com
www.webbertraining.com
Manual Disinfection

Soaking in disinfectant
After spraying

Personal regulation
More or Less Steam

Water 76° C

No attention for the right procedures

Drying is Essential

Wet bedpans are Potential Reservoirs!
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Shape and Material of Bedpans and Urine bottles are important

Bedpans and Urine-bottles are Medical Devices

Design Shape and Material
Can have an adverse effect on the reprocessing

Some Bedpan types difficult to carry, clean or dry

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Design Shape and Material

Can have an adverse effect on the reprocessing

Impossible to:
- Measure urine-volume
- Inspection urine-color

Inside this urine-bottle, High ATP value After Sterilization

Set Requirements for Bedpans, Urine bottles, Kidney dishes

- Reusable or disposable and/or covers
- Easy to carry with lid/cover and firm grip
- Cover
- Seamless
- Easy to clean & disinfect
- Long lasting
- Heat resistant
- No water residue after reprocessing
Dirty Utility / Sluice Room

• Reality check and analyse current situations
• Focus on **what people DO**
• Audit
• Take photographs
• Use nose and eyes

• Microbial check ?
• ATP?

Don’t Hear? Don’t See? Don’t Speak?

Global Observations Dirty utility room / Sluice rooms 2006-2017

Survey: 16 % Audit Dirty utility room / sluice room
Improvement Dirty utility room / Sluice room

Designing
• Easy to clean
• Easy to maintain
• Prevent transmission & contamination

Operating
• Reduce
• Reuse
• Recycle

Trend (all) disposables (2017 APSIC)
• Try to use as less as possible
• Go for long lasting reusable
• Reduce disinfectants

Requirements Dirty utility room / sluice room
A well (preventive) designed sluice room can minimize HAIs

✓ Reasonable distance from patients’ rooms
✓ Handwash and Handrub dispensers
✓ Storage capacity
✓ Connection to sewage system
✓ Separation clean and dirty area
✓ Ask support from Manufacturers and Architects
**2013** Report Dutch Healthcare Inspection Infection Prevention in Hospitals

"Report "Chain of infection prevention in hospitals fragile: Several weak links lead to unsafe care"

- Good
- Sufficient
- Moderate
- Insufficient

1. General Cleaning & Disinfection
2. Washer Disinfectors for bedpans

**2017** Dutch Healthcare Inspection Monitoring /Review Infection Prevention in Hospitals

**Bedpan Management in the Netherlands**

1967 Ministry of Health: “Urine-bottles and bedpans have to be automatically cleaned, rinsed and sanitized with steam or hot water at least 1 minute for 80° C.”

1980 Development of automatic bedpan Washer Disinfector (WD)

1990 1st Dutch survey: "Bedpan washer disinfector - a forgotten problem? (Awareness)"

1995 Working Group Infection Prevention (WIP) developed GUIDELINES for WD

2006 International Standard BS- EN- ISO 15883 Part 1-6 WD

2010 2nd Dutch survey Bedpan management

2017 New WIP Guideline for WD, Macerators and Liners (bedpan covers)

2017 - 2nd International survey Bedpan management
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Washer Disinfectors (WD) Part 1-7

- Part 1 General requirements, terms and definitions and tests
- Part 2 Requirements and tests for WD employing thermal disinfection for surgical instruments, anaesthetic equipment
- Part 3 Requirements and tests for WD employing thermal disinfection for human waste containers
- Part 4 Requirements and tests for WD employing chemical disinfection for thermo-labile endoscopes
- Part 5 Test soils and methods for demonstrating cleaning efficacy
- Part 6 Requirements and tests for WD employing thermal disinfection for non-invasive, non-critical medical devices and healthcare equipment

Awareness Responders
ISO 15883-2 7%
ISO 15883-3 4%
ISO 15883-4 9%

Preliminary results Survey: KNIP Consultancy Infection Prevention
With help from: Prof.dr. Pola Brenner, Chile
Tim Lieske, Germany, Jim Gautier, Canada

ISO15883 - Part 3
WD for human waste containers*
*Intended for reusables such as Bedpans, Urine-bottles, Suction bottles, Wash bowls etc.

1. Emptying behind closed door direct in sanitary sewer system
2. Flushing with cold water
3. Cleaning with water pressure and (possible) detergent
4. Thermal disinfection (minimal 1 minute 80°C.)
5. Rinsing
6. Cooling down
7. Drying
Washer Disinfectors (WD)

Cleaning and disinfection in WD = Invisible Process
Only Reliable if regular Validation and Maintenance is proceeded

1990 Problems with WD

Who was Responsible for:
1. Correct loading?
2. Cleaning maintenance?
3. Validation?
4. Monitoring?
Correct Loading Washer disinfector

**Malpractice**

![Image of incorrect loading](image1.png)

**Best Practice**

![Image of correct loading](image2.png)

Global Observation Validation and Maintenance Jan 2010 - Feb 2017

Do a Check in your setting

![Image of observation](image3.png)

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Systems for disposal human waste
bedpans, urine bottles, commode buckets, kidney basins washing bowls

Manual Procedure

• Cheap
• Never a safe standard operated procedure (SOP)
• Risks for contamination and transmission
• Nasty Job

Should be avoid as much as possible

Systems for disposal human waste
bedpans, urine bottles, commode buckets, kidney basins washing bowls

• Pharmafilter
• Bedpan liner
• Macerator
• Washer Disinfector

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**Pharmafilter**

Shredder connected to special sewer system, processing waste and purifying waste water

2008 1st Dutch Hospital (Delft)  2017 2nd signed contract for new to build hospital Erasmus Uni. Rotterdam

**PRO**

- No manual handling
- All biodegradable plastics waste
- Environmentally friendly
- Reuse waste water

**Contra**

- Blockage drains possible
- Continuous costs disposables
- Logistic supply chain
- Maintenance
- Noise
- Plant for recycling waste water
- Expensive

**Requirements**

Sufficient Electricity, Water supply and Sewage connection

**PHARMAFILTER PLANT OUTSIDE THE HOSPITAL**

![Picture of Pharmafilter plant]

[https://www.leaflet.com/](https://www.leaflet.com/)

**Figure 2.1 Structure of the filtering steps**

Biodigester
Biogas
Hydrolysis
treatment & digestion
Solid/liquid separation
Bacterial filter
Blower
Mimetic membranes
Ozone generator
Ozone contact tank
Activated Carbon
Clear water reservoir

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MACERATOR

**Pulp bedpans, urine bottles, commode buckets, kidney basins, washing bowls**

**PRO**
- No manual handling
- Disposable bedpans etc.
- Only cold water

**Contra**
- Different quality on market
- Allowed for sewage system?
- Blockage drains is possible
- Continuous costs disposables
- Clean & disinfection Support
- Logistic and supply chain
- Urine measuring
- Needs Maintenance
- Storage capacity

Requirements: Sufficient Electricity, Water supply and Sewage connection

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WASHER DISINFECTOR

**Reusasble bedpans, urine bottles, commode buckets, kidney basins, washing bowls**

**Pro**
- No Manual handling
- Reusable bedpans etc.
- Elimination most spores
- Validation possible

**Contra**
- Different Quality on market
- Needs Maintenance
- Needs Validation

Requirements: Sufficient Electricity, Water supply and Sewage connection

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LINERS Absorbent devices for excreta collection
bedpans, urine bottles, commode buckets, kidney basins washing bowls

Pro
• Absorption Content
• Disposable Covers
• Absorption Content
• Easy to use

Contra
• Different quality on market
• Continuous costs disposables
• Decontamination Support
• Logistic and supply chain
• Storage capacity

Adequate Bedpan Management should be implemented in:

• Patient Safety Programmes
• Occupational Health Programmes
• Accreditation Standards
• Risk Management
• Budget planning
• Education
The Good, The Bad, and The Ugly Methods of Bedpan Management
Gertie van Knippenberg-Gordebeke, Knowhow Infection Prevention, Netherlands
Sponsored by CleanIS (www.cleanis.com)

All countries need a Bedpan Queen/King
To PROMOTE the good methods and to FIGHT the bad and ugly methods

<table>
<thead>
<tr>
<th>Country</th>
<th>Image</th>
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<tbody>
<tr>
<td>Ecuador</td>
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<td>Mexico Country</td>
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Thank You

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**www.webbertraining.com/schedulept1.php**

**June 1, 2017**

**USING UNOFFICIAL SOURCES TO MONITOR OUTBREAKS OF EMERGING INFECTIOUS DISEASES: LESSONS FROM PROMED**
Speaker: Prof. Lawrence Madoff, Harvard University Medical School, Editor of ProMED Mail

**June 7, 2017**

**THE IMPACT OF CATHETER ASSOCIATED URINARY TRACT INFECTION**
Speaker: Prof. Brett Mitchell, Avondale College of Higher Education, Australia

**June 20, 2017**

**FREE Teleclass - Broadcast live from the 2017 IPAC-Canada conference**
**MAKING SENSE OF ALPHABET SOUP - ANTIMICROBIAL RESISTANCE IN GRAM-NEGATIVE BACILLI**
Speaker: Dr. Andrew Simor, Sunnybrook Health Sciences Centre, Toronto
Sponsored by Sealed Air Diversey Care (www.sealedair.com)

**THE PSYCHOLOGY OF HAND HYGIENE: HOW TO IMPROVE HAND HYGIENE**

Hosted by Martin Kiernan martin@webbertraining.com
www.webbertraining.com