

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  
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May 30, 2017



*The Good the Bad and the Ugly  
One of the most influential Western movies*

*The Good the Bad and the Ugly Methods for  
Bedpan Management  
From now on an influential PowerPoint (I hope)*



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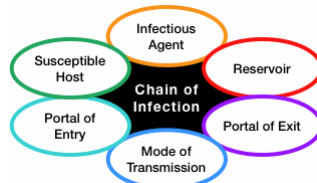
Hosted by Martin Kiernan [martin@webbertraining.com](mailto:martin@webbertraining.com)  
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## Antimicrobial Resistance & Standard Precautions



**Safe  
Bedpan  
Management  
Save Lives**

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**



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Definition Bedpan Management:  
every handling related to excreta of the human gastrointestinal tract

disposal of human excreta  
(urine, faeces, vomits, sometimes including blood)

**Seems a simple process**

But

**it is A complex process**

in Healthcare facilities  
and an important element for standard precautions



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## The Management of Human Excreta



*We have to deal with it  
If possible: we are looking for the best and cleanest toilet*



Picture Google

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## Human Dignity

### and the management of excreta in healthcare facilities

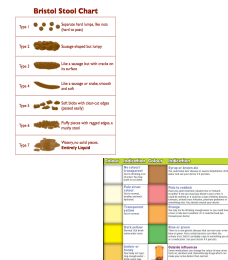
- A bedridden or wheelchair dependent patient /client needs a device (a human waste container) to poop, pee or vomit
- No free choice
- A topic which is frequently marginalized and tacitly accepted
- Use of clean devices is not always guaranteed



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## 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



Picture Google

8



## FACTS 2.4

### *Choice for Patients / Clients cared for in healthcare*

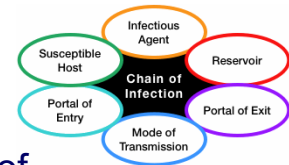
- |                                   |  |
|-----------------------------------|--|
| 1. Use the toilet                 | - Private or shared                                    |
| 2. Use a commode for bedpan       | - Stored in a variety of places<br>- Private or shared |
| 3. Use Bedpan and/or urine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

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



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## 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



Picture Google

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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*



GLOBAL PRIORITY LIST OF ANTIBIOTIC-RESISTANT BACTERIA  
 TO GUIDE RESEARCH, DISCOVERY, AND DEVELOPMENT OF  
 NEW ANTIBIOTICS

## 2017 WHO PRIORITY AMR PATHOGENS LIST 1.2

<ul style="list-style-type: none"> <li>• <i>Acinetobacter baumannii</i>, carbapenem-resistant</li> <li>• <i>Pseudomonas aeruginosa</i>, carbapenem-resistant</li> <li>• <b>Enterobacteriaceae*</b>, carbapenem-resistant, 3<sup>rd</sup> cephalosporin-resistant</li> </ul> <p><small>includes: <i>Klebsiella pneumoniae</i>, <i>Escherichia coli</i>, <i>Enterobacter species</i>, <i>Serratia species</i>, <i>Proteus species</i>, <i>Providencia species</i>, <i>Morganella species</i></small></p>	Priority 1: CRITICAL
--	----------------------

<ul style="list-style-type: none"> <li>• <i>Enterobacter faecium</i>, vancomycin-resistant</li> <li>• <i>Staphylococcus aureus</i>, methicillin-resistant, vancomycin intermediate and resistant</li> <li>• <i>Helicobacter pylori</i>, clarithromycin-resistant</li> <li>• <i>Campylobacter</i>, fluoroquinolone-resistant</li> <li>• <i>Salmonella spp.</i>, fluoroquinolone-resistant</li> <li>• <i>Neisseria gonorrhoeae</i>, 3<sup>rd</sup> generation cephalosporin-resistant, fluoroquinolone-resistant</li> </ul>	Priority 2: HIGH
---	------------------

<ul style="list-style-type: none"> <li>• <i>Streptococcus pneumoniae</i>, penicillin-non-susceptible</li> <li>• <i>Haemophilus influenzae</i>, ampicillin-resistant</li> <li>• <i>Shigella spp.</i>, fluoroquinolone-resistant</li> </ul>	Priority 3: MEDIUM
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[http://www.who.int/medicines/publications/WHO-PPL-Short\\_Summary\\_25Feb-ET\\_NM\\_WHO.pdf](http://www.who.int/medicines/publications/WHO-PPL-Short_Summary_25Feb-ET_NM_WHO.pdf)

**Carriers have these MDRO in faeces and on the skin**



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Contents lists available at ScienceDirect

ELSEVIER

American Journal of Infection Control

journal homepage: www.ajicjournal.org

AJIC  
American Journal of  
Infection Control

Major Article

Prevalence of multidrug-resistant gram-negative bacteria among nursing home residents: A systematic review and meta-analysis

Sainfer Aliyu MPhil, MEd, MHPM, BSN, RN <sup>a,\*</sup>, Arlene Smaldone PhD, CPNP, CDE <sup>a</sup>, Elaine Larson PhD, RN, CIC, FAAN <sup>a,b</sup>

<sup>a</sup> Columbia University School of Nursing, New York, NY  
<sup>b</sup> Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY

Reported MDR-GNB infection rates of 10.9% - 62.7%

Key Word:  
Long-term care

**Background:** Multidrug-resistant gram-negative bacteria (MDR-GNB) are associated with an increasing proportion of infections among nursing home (NH) residents. The objective of this systematic review and meta-analysis was to critically review evidence of the prevalence of MDR-GNB among NH residents.  
**Methods:** Following Meta-Analysis of Observational Studies in Epidemiology guidelines, a systematic review of literature for the years 2005-2016 using multiple databases was conducted. Study quality, appraised by 2 reviewers, used Downs and Black risk of bias criteria. Studies reporting prevalence of MDR-GNB colonization were pooled using a random effects meta-analysis model. Heterogeneity was assessed using Cochran Q and I<sup>2</sup> statistics.  
**Results:** Of 327 articles, 12 met the criteria for review; of these, 8 met the criteria for meta-analysis. *Escherichia coli* accounted for the largest proportion of isolates. Reported MDR-GNB colonization prevalence ranged from 11.2%-59.1%. Pooled prevalence for MDR-GNB colonization, representing data from 2,720 NH residents, was 27% (95% confidence interval, 15.2%-44.1%) with heterogeneity (Q = 405.6; P = .01; I<sup>2</sup> = 98.3). Two studies reported MDR-GNB infection rates of 10.9% and 62.7%.  
**Conclusion:** Our findings suggest a high prevalence of MDR-GNB colonization among NH residents, emphasizing the need to enhance policies for infection control and prevention (ICP) in NHs.  
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http://www.ajicjournal.org/article/S0196-6553(17)30085-8/abstract  
A systematic review and meta-analysis (May 1, 2017)

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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

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## Publications Google Scholar

Environment and hospital infections: **2,350,000**

➤ Interesting topic and International accepted Risk

Environment **Mobile phones** and hospital infections: **26,100**

➤ Interesting topic and International accepted Risk

Environment **Bedpans** and hospital infections: **5,260**

➤ No 'sexy' topic and (Not yet) International accepted Risk



Picture Google  
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## Professional Publications

PUBMED				AJIC		
2008	2011	2017	Topic	2008	2011	2017
<b>16</b>	20	42	Bedpan & infections	-	22	<b>75</b>
<b>12</b>	14	20	Bedpan & nosocomial infections	-	13	<b>41</b>
<b>1</b>	3	6	Bedpan & hospital assoc. infections	-	19	<b>65</b>
<b>0</b>	1	19	Bedpan & healthc. assoc. infections	-	10	<b>29</b>
-	5	9	Clostridium & bedpans	-	7	<b>31</b>

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

Oxford Advanced Learner's Dictionary

- **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 parashute
- 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



Picture Google

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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

Observation :  
KNIP Consultancy Infection Prevention



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## 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



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## Global Observations Dirty utility room / Sluice rooms 2006-2017



High income countries



Low income countries

**Who is Responsible?**



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## 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!**



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## Removal Human Waste in Healthcare-facilities



**Ugly**



**Bad**



**Good**

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## Epidemics: A global concern



Who worries about  
the risk of poor Bedpan Management?



Pictures Google  
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## 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 represent 'the world'. It gives an impression of the practice

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



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## 44 Participating Countries

Argentina	8	Denmark	2	Mongolia	1	Netherlands	35
Aruba	1	Egypt	3	Peru	1	Peru	1
Australia	1	Ecuador	1	Philippines	51	Sweden	1
Austria	2	France	23	Qatar	1	Switzerland	2
Belgium	8	Germany	1	Romania	3	Thailand	6
Brazil	2	Hong Kong	1	Russia	4	United Arab Emirates	1
Cameroon	1	Iceland	1	Saudi-Arabia	6	United Kingdom	2
Canada	22	Indonesia	3	Singapore	4	USA	5
Chile	3	Kosovo	1	South-Africa	3	Uruguay	3
China Republic	1	Malaysia	5	South-Korea	1	Vietnam	1
Congo	1	Mexico	5	Spain	2	Zimbabwe	1

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

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## 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)

	urine bottles	bedpans
•Only Rinsing with tap water/ wand sprayer/water & brush	41 %	28 %
•Only Soaking in a disinfection/detergent solution	29 %	25 %

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

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## 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



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

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## Global Survey Bedpan-Management 2017

### 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



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Tim Lieske, Germany, Jim Gautier, Canada

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## 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*

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



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## DUE TO IMPROPER BEDPAN MANAGEMENT

### Risk for **All Types** of Healthcare Associate Infections



*Outbreak with multi resistant Pseudomonas aeruginosa*



Pictures KNIP Consultancy

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## International Recommendations/Standards



Many recommendations and guidelines do mention:

- Diarrhoea
- Toilet and Commode
- Cleaning & Disinfection
- Hand hygiene
- **No Specifications for Bedpan Management**

## Need for Specification Bedpan Management



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## Cleaning, Disinfection, Sterilization

### USA Classification scheme: Spaulding 1968, CDC HICPAC 2008

#### **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.**



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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?*



Picture Google  
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## 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

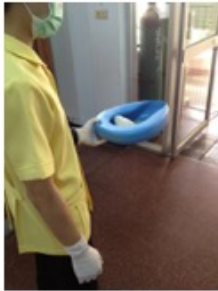
***Why no (Standard) Precautions  
for transport of FULL bedpans?***



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## Transport to empty



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



Observation :  
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## Place to empty



- Contamination trough platters, splashes and aerosols
- Toilets used by more patients and healthcare workers
- Sometimes difficult to reach



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## Manual Emptying Risks



### Contamination Healthcare Worker

- Hands
- Eyes
- Uniforms

### Contamination Environment

- Floors
- Walls
- Surfaces
- Stored Clean items



**Something hardly noticed**

Observation :  
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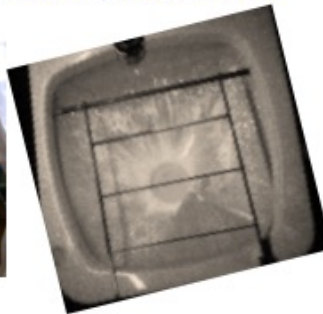
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## Using Sink & Slop-hoppers hold many Risks



- 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**



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## Manual Cleaning

Only 50% is touched by manual handling

Dr. Philip C. Carling:  $\pm 30\%$

Dr. William A. Rutala:  $\pm 50\%$



**Will Bedpans 100% touched ?**



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## Manual Disinfection

Soaking in disinfectant  
After spraying

Soaking in disinfectant

Personal regulation  
More or Less Steam

Water 76° C

### No attention for the right procedures

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## 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



Pictures KNP Consultancy

Some Bedpan types difficult to carry, clean or dry

## 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

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## 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

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## 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?



Picture Google  
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## Global Observations Dirty utility room / Sluice rooms 2006-2017



Survey: 16 % Audit Dirty utility room / sluice room

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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



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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



Picture Google

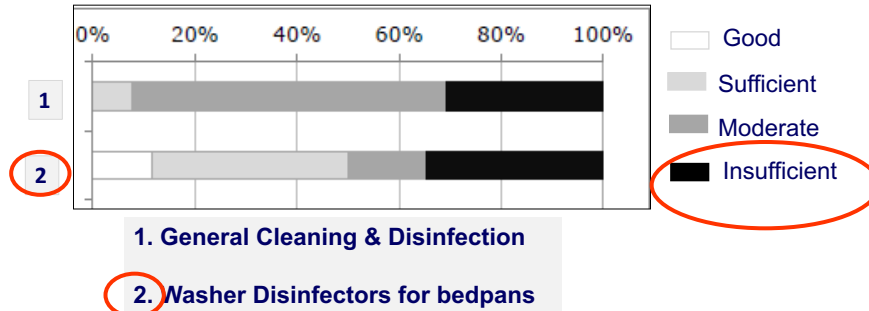
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2013 Report Dutch Healthcare Inspection  
 Infection Prevention in Hospitals

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



2017  
 Dutch Healthcare Inspection  
 Monitoring /Review Infection Prevention in Hospitals

www.igz.nl/zoeken/document.aspx?doc=Keten+van+infectiepreventie+in+ziekenhuizen+breekbaar%3A+meerdere+zwakke+schakels+leiden+tot+onveilige+zorg&docid=6677



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 1<sup>st</sup> 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 2<sup>nd</sup> Dutch survey Bedpan management  
 1<sup>st</sup> International survey Bedpan management

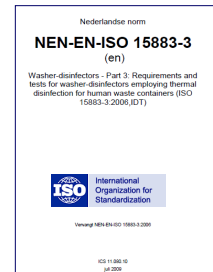
2017 New WIP Guideline for WD, Macerators and Liners (bedpan covers)

2017 - 2<sup>nd</sup> International survey Bedpan management



## BS-EN-ISO 15883-Standard (2006) *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  
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## 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



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### 1990 Problems with WD

Who was Responsible for:

1. Correct loading?
2. Cleaning maintenance?
3. Validation?
4. Monitoring?



Pictures KNIP Consultancy

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## Correct Loading Washer disinfector

*Malpractice*



*Best Practice*



Observation :  
KNIP Consultancy Infection Prevention

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## Global Observation Validation and Maintenance Jan 2010 - Feb 2017



Do a Check in your setting



Observation :  
KNIP Consultancy Infection Prevention

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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*



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## 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 1<sup>st</sup> Dutch Hospital (Delft)      2017 2<sup>nd</sup> 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*



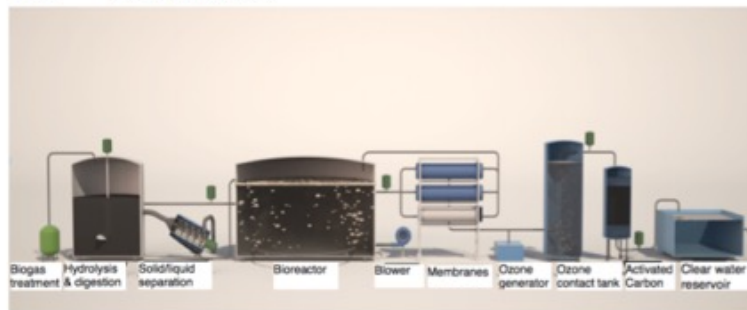
Picture Google

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## PHARMAFILTER PLANT OUTSIDE THE HOSPITAL



FIGURE 2.1      STRUCTURE OF THE FILTERING STEPS



<https://reiniertegraaf.nl/rdgg/cache/file/507BD2BF-CC1D-42DA-A8577060EA03638E.pdf>



Picture Google

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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*



Picture Google  
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## Washer Disinfecter

*Reusable 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*



Picture Google  
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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



Picture Google

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**Adequate Bedpan Management should be implemented in:**

- Patient Safety Programmes
- Occupational Health Programmes
- Accreditation Standards
- Risk Management
- Budget planning
- Education



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



*Ecuador*



*Mexico country*



*France*



*Thailand*



*Singapore*



*Mexico City*

*Thank You*



*Philippines*



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