

Control of MDRO in Nursing Homes
Prof. Andreas Voss, Radboud University, Netherlands
Sponsored by WHO Patient Safety Agency – CLEAN Care is Safer Care

Control of MDRO in Nursing Homes



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Hosted by
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WHO Patient Safety Challenge
Clean Care is Safer Care



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(Current) problems in NH

- ⊙ Infection control structure not always present
- ⊙ No (or hardly any) ICPs present
- ⊙ No/little cooperation with hospitals and other institutions with regard to IC
- ⊙ Different approach of MD/RN with their “clients”
 - ❖ “home” environment
 - ❖ extremely diverse settings - from ventilator units to living rooms

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Current problems in NH

- Nursing homes ≠ hospitals



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Meet Mrs A
 (during the time of Ignorance)



- ❑ UTI that can no longer be treated p.o. in NH (ESBL-E.coli)
- ❑ Standard admission in hospital (no isolation)
- ❑ Transmission to other patients.
- ❑ Due to broad-spectrum AB treatment development of CDAD.

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Meet Mrs B
 (during the time of blaming)



- ❑ Same problem/case
- ❑ ESBL = dangerous hospitals doesn't really want the patient
- ❑ In isolatie –no transmission. Still development of CDAD
- ❑ *C. difficile* = dangerous nursing home doesn't really want the patient

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Some problems appear “one way”

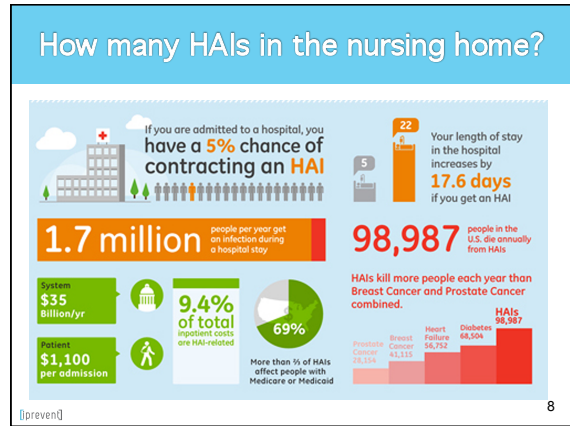


Hospital → Nursing home Nursing home → Hospital
SSI **MDRO (UTI)**

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HAIs in nursing homes

- Norwegian study on HAIs in NH-population:
 - 2 x higher risk of general morbidity
 - 9 x higher risk of being admitted to a hospital
 - 6 x higher risk of mortality
- Dutch study among elderly with dementia:
 - Patients cared for in nursing homes = higher risk of UTI, RTI & conjunctivitis

Koch AM, et al. J Hosp Infect. 2009 Mar;71(3):269-74
 Koopmans RT et al. Tijdschr Geront Geriatr 1994; 25: 231-6.

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Surveillance of HAIs

- The prevalence of HAIs in NH varies from:
 - 5.2% to 20.5%
 - no standard definitions = no comparison possible
 - Prevalence in the NL was unknown until recently

Assumptions...

Garibaldi RA et al. N Engl J Med 1981; 305:731-5
 Standfast SJ et al. Infect Control 1984;5:177-84
 Tsan L et al. Am J Infect Control 2008 Apr;36:173-9

Setia U et al. Am J Infect Control 1985;13:57-62
 Chen H et al. Hong Kong Med J 2008;14:444-50

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Aim of the lecture

- ⊙ Explanation of a new Dutch guideline on MDRO control in nursing homes
 - ❖ MDR-GNR
 - ❖ MDR-Non-fermenters
 - ❖ Acinetobacter, Pseudomonas, Stenotrophomonas
 - ❖ PRP and VRE
 - ❖ Excluding MRSA (specific guideline) and other MDRO's
 - ❖ Not dealing with outbreak situations

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Presently the Dutch only have an MDRO guideline for the hospital.

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More is needed to control MDROs

- ⊙ In order to be able to effectively control MDROs we need:
 - ❖ clear definitions
 - ❖ reliable diagnostics (www.NVMM.nl)
 - ❖ infection control guidelines (www.WIP.nl)
 - ❖ treatment guidelines (www.SWAB.nl)

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Defining MDRO's

- ⊙ MDRO's = pathogens that evade the most common antibiotics used
 - ❖ phenotypic resistance or harbour the genes/enzymes for broad-spectrum resistance
- ⊙ While the antibiotics used in hospitals and nursing homes are very different (p.o. versus i.v. and p.o.) the Dutch expert group decided to use the exact same definitions in order to get uniformity and avoid confusion about what MDRO's are

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Definitions for MDRO's

Tabel 1. Resistentiecriteria voor Enterobacteriaceae

Gram-negatieve staven	ESBL	Fluorochinolonen	Aminoglycosiden	Carbapenemase positief
Enterobacteriaceae*	A	B	B	A

Tabel 2. Resistentiecriteria voor non-fermenters

Gram-negatieve staven: Non-fermenters	Carbapenemase positief	Aminoglycosiden	Fluorochinolonen	Ceftazidim	Piperacilline	Co-trimoxazol
Acinetobacter species	A	B	B*			
Stenotrophomonas maltophilia						A
Pseudomonas aeruginosa	C	C	C	C	C	

Tabel 3. Resistentiecriteria voor Gram-positieve kokken

Gram-positieve kokken	Penicilline-groep	Vancomycine
Streptococcus pneumoniae	A	A
Enterococcus faecium	B	B

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Reliable diagnostics

[http://www.nvmm.nl/system/files/2012.11.15%20richtlijn%20BRMO%20\(version%202.0\)%20-%20Richtlijn.pdf](http://www.nvmm.nl/system/files/2012.11.15%20richtlijn%20BRMO%20(version%202.0)%20-%20Richtlijn.pdf)

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Indications for screening

- Voer gericht onderzoek naar BRMO dragerschap uit:
- On admission of a patient/client:
 - ✦ who had been carded for in a foreign hospital/nursing home within the last 2 months for longer than 24h;
 - ✦ who is admitted from a unit in another healthcare setting with an ongoing MDRO outbreak.
- Contact-screening after contact with an (unexpected) carrier of MDRO's

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Screening sites

Micro-organism	Routine sites	Extra sites on indication
Enterobacteriaceae (incl. ESBL and CPE)	rectal swab or feces	wound, sputum, urine
<i>Acinetobacter species</i>	rectal swab or feces and sputum	wound, urine
<i>Stenotrophomonas maltophilia</i>	rectal swab or feces and sputum	wound, urine
<i>Pseudomonas aeruginosa</i>	rectal swab or feces and sputum	wound, urine
<i>Streptococcus pneumoniae</i>	sputum	
<i>Enterococcus faecium</i>	rectal swab or feces	wound, sputum, urine

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Number of cultures

- A **single set** of specimens is considered sufficient for the targeted screening for carriage of HRE.
 - ✦ Although repeated sampling may decrease the sample error, scientific data on this issue are currently insufficient to justify a recommendation to perform duplicate or repeated cultures.

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Isolation measures

- Instead of working with “universal precautions” and “specific isolation types” the experts decided to describe the specific measures per MDRO
 - ✦ the sector is not well known with isolation types or universal precautions



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Isolation measures (1)

Micro-organism	PPE			
	Hand-hygiene	Gloves	Gowns	Mask
Enterobacteriaceae (incl. ESBL, excl. CPE)	Yes	Yes	Plastic apron	No
CPE	Yes	Yes	Gown	Yes
<i>Acinetobacter species</i>	Yes	Yes	Gown	Yes
<i>Pseudomonas aeruginosa</i>	Yes	Yes	Plastic apron	No
<i>Stenotrophomonas maltophilia</i>	Yes	Yes	Plastic apron	No
<i>Streptococcus pneumoniae</i>	Yes	Yes	Plastic apron	Yes
<i>Enterococcus faecium</i>	Yes	Yes	Plastic apron	No

[preven] 23 Gloves during care and contact with environment, not for social contact

Isolation measures (2)

Micro-organism	Rooms	Wet-rooms		Use of shared rooms, contact with groups
	Room	WC, bed-pan	Bathroom	
Enterobacteriaceae (incl. ESBL, excl. CPE)	Multiple bed possible	Client specific	Shared allowed	Yes
CPE	Single	Client specific	Client specific	Decide per client
<i>Acinetobacter species</i>	Single	Client specific	Client specific	Decide per client
<i>Pseudomonas aeruginosa</i>	Multiple bed possible	Client specific	Shared allowed ¹	Yes
<i>Stenotrophomonas maltophilia</i>	Multiple bed possible	Client specific	Shared allowed	Yes
<i>Streptococcus pneumoniae</i>	Single	No measures	Shared allowed	Yes, but
<i>Enterococcus faecium</i>	Multiple bed possible	Client specific	Shared allowed	Yes

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Isolation measures (3)

Micro-organism	Medical devices etc.	Cleaning & disinfection		
		Cleaning	Disinfection	Final disinfection
Enterobacteriaceae (incl. ESBL, excl. CPE)	Per patient	Daily	Yes, all non-client specific materials	Yes
CPE	Per patient	Daily	Yes, all non-client specific materials	Yes
Acinetobacter species	Per patient	Daily	Yes, all non-client specific materials	Yes
<i>Pseudomonas aeruginosa</i>	Per patient	Daily	Yes, all non-client specific materials	Only wet-room
<i>Stenotrophomonas maltophilia</i>	Per patient	Daily	Yes, all non-client specific materials	Only wet-room
PRP	Per patient	Daily	Yes, all non-client specific materials	Yes
VRE	Per patient	Daily	Yes, all non-client specific materials	Yes

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- ### Some extra explanations ...
- ⊙ Gloves during care and contact with environment, not for social contact
 - ⊙ Mask should be used in general when assuming splashes
 - ⊙ In case of shared bathrooms client with MDRO at last → cleaning
 - ⊙ Visits of common rooms: instruct patients about HH and cover wounds, ...
 - ✦ Discuss need and measures with ICP
- prevent 26

- ### Visitors
- ⊙ Visitors should wash or disinfect their hands after contact with the patient/client
 - ⊙ If a visitor participates in the care of a patient/client they should use the same precautions as the HCWs
 - ✦ or any other person getting actively involved in hands-on-care
- 
- prevent 27

- ### Contact tracing
- ⊙ Screen contacts (clients) of a patients who wasn't known to carry MDRO's
 - ✦ not if MDRO is ESBL in non-outbreak situation
 - ⊙ No need to include HCWs
 - ✦ no means of decolonization
- prevent 28

- ### Cultures at stop of isolation
- ⊙ Once a patient has been **identified as a carrier** of HRE, it is not clear how many culture sets have to be taken to reliably identify loss of carriage of HRE.
 - ✦ no longer carrying MDRO if two culture sets, collected at least 24 hours apart, and at least 48 hours after discontinuation of antibiotic therapy are negative
 - ✦ Excluding CPE and VRE
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5 May 2014
Role of hand hygiene to combat antimicrobial resistance
<http://www.who.int/gpsc/5may/en/index.html>

Register your healthcare facility at
<http://www.who.int/gpsc/5may/register/en/index.html>

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Clean Your Hands

2014 WHO Teleclass Schedule
Clean Care is Safer Care

<p>January 29 Innovation and implementation strategic approaches to reduce catheter-related bacteraemia: The results of a European multicentre study (PROHIBIT) <i>Dr. Walter Zingg, Switzerland</i></p> <p>March 7 How to prevent the spread of multiresistant bacteria <i>Dr. Stephan Harbarth, Switzerland</i></p> <p>April 9 Highlights on SSI prevention: The new CDC guidelines and more <i>Dr. Joseph Solomkin, USA</i></p>	<p>May 5 Special lecture for International Hand Hygiene Day <i>Prof. Didier Pittet, Switzerland</i></p> <p>September 3 New WHO global campaign to eliminate unsafe therapeutic injections <i>Dr. Benedetta Allegranzi, Switzerland</i></p> <p>October 8 Public reporting and disclosure of HAI rates: Positive impact or confusion? <i>Dr. Maryanne McGuckin, USA</i></p> <p>November 5 Global application of behaviour change models and infection control strategies <i>Dr. Michael Borg, Malta</i></p>
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www.who.int/gpsc/en

www.med.uottawa.ca/crem

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