Infection Control in Elderly Care Facilities – Where Should We Go?
Prof. Andreas Voss, Radboud University, The Netherlands
A Webber Training Teleclass

IPC in different settings
- The differences between various countries and their way to do infection control in hospitals is large – the difference for elderly care settings are gigantic.
- Which type of elderly care setting are we talking about?
  - nursing home (not home care – not ventilation unit)
- What is the background of audience
  - training and profession
  - in setting possibilities

IPC nursing home versus hospital
- Structure
  - e.g. Presence of single- and isolation-rooms, bed-pan washers, PPE, …
  - Basic IPC practices not (fully) implemented
  - e.g. handhygiene, PPE use, isolation not fitting with “home image”
- Surveillance
  - no (inter-)national definitions, routinely done?
- Guidelines
  - Who has a full set of IPC nursing home guidelines including MDRO,…
- Training/Education
  - basic training nurses/helpers, elderly-care MDs*, IPC-contact-nurses

Nursing homes & infection control practices

Just as in the hospitals ...
... it’s all about implementing the ...

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Implementing the BASICS

- Surveillance of AMR and HAI
- Antimicrobial stewardship
- Guidelines
- Training/Education
- Audits
- Handhygiene
- Isolation measures including PPE-use
- What do the “customers” want?

CR-Acinetobacter in LTC

- Overall MDRO colonization 35.1%
- MRSA 32.2%
- CRAB 6.5%
- CRE only 1 isolate, no VRE

CR-Acinetobacter in LTC

<table>
<thead>
<tr>
<th>Risk-factors in residents with CRAB and MRSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRAB (OR)</td>
</tr>
<tr>
<td>Bed-bound</td>
</tr>
<tr>
<td>Incontinence (diaper)</td>
</tr>
<tr>
<td>Nasogastric tube</td>
</tr>
<tr>
<td>Chronic cerebral condition</td>
</tr>
<tr>
<td>Beta-lactam inhibitors</td>
</tr>
</tbody>
</table>

You Can’t Manage What You Don’t Measure
- Peter Drucker

CR-Acinetobacter in LTC

- 28 nursing homes in Hong-Kong
- Nasal, axillary and rectal swabs tested for CRAB, CRE, MRSA, and VRE

Surveillance of AMR and HAI
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CRE at hospital admission
- Point prevalence survey to detect fecal carriage of CRE among 500 consecutive admissions from local nursing homes to 2 hospitals in Providence, Rhode Island.
- We performed a case-control study to identify risk factors associated with carriage of CRE.
- CRE was found in 23 (4.6%) of the 500 hospital admissions.
- Use of a gastrostomy tube was associated with CRE carriage (P = .04).

MRSA in German LTCF

Multivariate analysis of risk factors associated with MRSA:

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>OR (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower / deep soft tissue infection</td>
<td>6.61 (1.14–39.37)</td>
<td>0.032*</td>
</tr>
<tr>
<td>Urinary tract catheter (UTC)</td>
<td>2.21 (1.64–7.78)</td>
<td>0.0021*</td>
</tr>
<tr>
<td>Multiple MRSA decolonization cycles</td>
<td>2.79 (1.02–7.94)</td>
<td>0.046*</td>
</tr>
</tbody>
</table>

For multivariate analysis (logistic regression), backward, Wald, all-possible risk factors were used with the exception of ‘skin barrier’, ‘infection’, and results of rectal swabs (concomitant intestinal carriage of MRSA). Only significant risk factors depicted (* highly significant with p<0.01, * significant with p<0.05).

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Epidemiology of MRSA in Elderly French

- Worryingly high prevalence of the qacA/B gene in MRSA isolates.
- Antiseptic measures being crucial to prevent healthcare-associated infections, our findings raise questions about the potential risk associated with chlorhexidine use in qacA/B+ MRSA carriers
- NHs are a weak link in MRSA control.
- NHs to serve as reservoirs of USA300 clone for local HCFs

Role of NH in the spread of AMR

- Nursing homes are sufficiently connected to the hospital network to drive national epidemics
- Emerging pathogens can, in the absence of control measures, sustain or initiate nationwide outbreaks
- Negative surveillance data, which are often based on clinical infections and usually do not cover the entire healthcare system, should be interpreted with care and should not lead us to conclude prematurely that the healthcare network is well protected against outbreaks!

Surveillance of HAI in nursing homes

- HAI data as the first step to control
  - At start (2007) no Dutch definitions
  - First Dutch definitions made
  - Surveillance totally new for the setting
  - No “system” to support collection

Prevalence App to support standardized collection

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**Prevalence of HAI’s in nursing homes**

- No effect of surveillance during the first 4 years

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**Add antimicrobial-use to prevalence surveillance**

First step into AMS

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**Implementing the basics**

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- What do the “customers” want?

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**Point-Prevalence Study**

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While the Dutch have AMS programs running in their hospitals for years, AMS in the nursing home setting is unknown (in the NL).

*NEEDED: Bundle approach with a combination of infection control and antimicrobial management strategies*

**C. difficile in LTC**

- Antibiotic use in the previous 3 mos.
- History of previous C. difficile infection
- Fecal incontinence

**AMS in Long-Term Care**

- Formal AMS programs: 28%
- Budget support for AMS: 15%
- FTE for infection control: 74%
- FTE for AMS: 26%

<table>
<thead>
<tr>
<th>Role</th>
<th>Facility-side</th>
<th>AMS-specific</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection prevention</td>
<td>0.35</td>
<td>0.15</td>
</tr>
<tr>
<td>ID physician</td>
<td>0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>0.26</td>
<td>0.06</td>
</tr>
<tr>
<td>ID pharmacist</td>
<td>0.01</td>
<td>0.01</td>
</tr>
</tbody>
</table>
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Infec&on	Control	in	Elderly	Care	Facili&es	–	Where	Should	We	Go?
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Survey of C. difficile guidelines

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Far less offers for IPC T&E in nursing homes
Many countries have no specially trained IPC-nurses for NH or can’t train them on the job
NL only training for IPC-nurses in hospital setting recognized
- Nurses working in NH should be able to get trained as IPC-nurse
As the chance of enough IPC nurses is very low, a network of “IPC link nurses” including T&E should be established
- Basic course and yearly booster course
- Continuous contact with coordinating ICP-nurse (questions, tasks, …)

IPC Training & Education

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Quality of IC in Dutch Nursing Homes
A. Availability of local guidelines
B. Shortcomings in constraints
C. HAIs
D. Use of medical devices
E. Environmental contamination
F. Antimicrobial use
G. ESBL carriage

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Presence of Infection Control Committee
MUO with Public-health Service
Trained Link nurses and/or IPC-nurse present
Guidelines
MRSA, personal hygiene, hand hygiene, Flu, UTI prevention, Norovirus
Prevalence of HAIs
Incidence of UTIs

Aim of the certificate was to introduce basic Infection Control into the regional nursing homes
The content of the certificate should be agreed on locally (together with MDs from nursing homes)
Nursing homes were allowed to go on their own speed and got the certificate when reaching 80% of the goals
The idea is to continue step-wise with new certificates, always taking the content of the earlier certificate along

Whether it is the “IRIS-scan” or “a Certificate”, or any other standardized audit tool, audits allows insights into the standing of an institution and thus motivation and guidance to improve
only for internal use and anonymous comparison (no external use)

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How many moments?

The moments

Some examples may be:
• shaking hands, stroking an arm
• helping a resident to move around, get washed, giving a massage
• taking pulse, blood pressure, chest auscultation, abdominal palpation

The moments

Some examples may be:
• percutaneous care, giving eye drops, secretion aspiration
• skin lesion care, wound dressing, subcutaneous injection
• catheter insertion, opening a vascular access system or a draining system
• preparation of medication, dressing sets

The moments

Some examples may be:
• percutaneous care, giving eye drops, secretion aspiration
• skin lesion care, wound dressing, subcutaneous injection
• drawing and manipulating any fluid sample, opening a draining system, endotracheal tube insertion and removal
• cleaning up urine, feces, vomit, handling waste (bandages, soaps, incontinence pads), cleaning of contaminated and vitality aided material or areas (bathroom, medical instruments)

HH in NH: a systematic review

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Systematic review of studies on HH in nursing homes.

56 studies met the inclusion criteria.

- Most were outbreak reports (39%), followed by observational studies (23%), controlled trials (23%), and before-after intervention studies (14%).
- 35 studies (63%) reported results in favor of HH on at least one of their outcome measures; in addition, the infection control success rate was higher when at least one HH-related intervention was included (70% vs 30% for no intervention).

Hooine & Temime AJIC 2015;43:e47 (France)

More studies and better methods needed

Patient Hand Hygiene

- Little emphasis on patient hand hygiene
- Systematic review
  - 10 studies, uncontrolled, before-after
  - Multi-modal intervention many including HCWs
- Interventions to improve patient hand hygiene may reduce the incidence of HAIs and improve hand hygiene rate, but the quality of evidence is low.


Hand sanitizer was provided in 500-ml, wall-mounted and bed-mounted dispensers for use by staff, patients, and visitors. Additional bottles of hand sanitizer were available on medication and treatment carts. Portable 100mL bottles also were provided to nursing staff and doctors to carry in their pockets.

Best of the 10 studies but is mainly directed at HCWs and was the change from soap and water to alcohol-based handrub!

Thu et al. J Hosp Infect 2007;65:583

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Yes, they can (and should) ....

But the evidence that their HH helps is ZERO!

Stochastic compartmental model of norovirus transmission based on the residents and staff of a 100-bed NH in France.

Using this model, we investigated how the size of a 100-day norovirus outbreak changed following three interventions:
- increasing staff hand hygiene (HH)
- increasing resident HH
- isolating symptomatic residents

Model can be used to evaluate all different kinds of interventions

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While HCWs in nursing homes have strong opinions about the wishes of their clients:
- Pilot study among nursing home clients in Nijmegen region (n=47)

**IPC is important for me**

- 82.06%
- 2.13%
- 0.88%
- 0.88%
- 1.37%

**I did hear about IPC and AMR**

Next steps…

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**What do the “customers” want?**

**Teleclass Education**

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