

# Responding to the Long Term Care challenge

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## THE CHALLENGE

## Why it is a challenge: the problem (1)

### • Frequency

Frequency of infections is comparable to acute care settings

Recent prevalence and incidence infection studies in LTC facilities			
Author, year, place	Type of study	N° of facilities (n° of residents)	Infection rate
Moro, 2003, Italy	Prevalence	49 (1926)	9,6 (weighed)
Eriksen, 2004, Norway	Prevalence (4 surveys, 2002-2003)	203-300 (11465-17174)	6,6-7,6
Stevenson, 2005, US	Incidence	17 (472019 resident- days)	3,64
Engelhart, 2005, Germany	Incidence	1 (34793 resident-days)	6,0
Brusaferro, 2006, Italy	Incidence	4 (21503 resident-days)	11,8

## Why it is a challenge: the problem (2)

### • Frequency

- Out of 100 cases of infections, 10 to 20 belong to an epidemic

### • Mortality

- The onset of an infection represents the most common cause of hospital admission and deaths, mainly for pneumonia

## Why it is a challenge: the problem (3)

### • Antimicrobial resistance

High prevalence of selected bugs: e.g. MRSA

- Northamptonshire: 4.7% (Cox 1999)
- Germany: 1.1% (von Baum 2002)
- Israel: 6.2% (Mendelson 2003)
- Ireland: 8.6% (O'Sullivan 2000)
- USA: 22.7% (Terpenning 1994)

## Why it is a challenge: the problem (4)

### • Antimicrobial resistance

High prevalence of selected bugs: e.g. MRSA

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY JULY 2007, VOL. 35, NO. 7

ORIGINAL ARTICLE

Prevalence of Methicillin-Resistant *Staphylococcus aureus* Colonization Among Older Residents of Care Homes in the United Kingdom

Benjamin Barr, MPH; Mark H. Wilcox, MD; Angela Brady, BSc; Peter Parnell, BSc; Bob Darby, DPH; David Tompkins, MB ChB

- 159 of 715 residents positive for MRSA, **22% prevalence** (95% CI 18%-27%)
- **Independent risk factors:** low ratio nurses: beds, care home in a deprived area, male sex, invasive device, hospitalization > 10 days in previous 2 years

## Why it is a challenge: the problem (5)

### • Antimicrobial resistance

High incidence of all R bugs

Incidence of antibiotic-resistant infection in long-term residents of skilled nursing facilities

Mary A. M. Rogers, PhD, MS,<sup>1,2</sup> Lona Mody, MD, MSc,<sup>1,4</sup> Carol Chenoweth, MD, MPH,<sup>3</sup> Samuel R. Kaufman, MA,<sup>1,4</sup> and Sanjay Saint, MD, MPH<sup>1,4\*</sup>  
Ann Arbor, Michigan

- The annual incidence was **12.7 cases per 1000 long-term residents**
- **Adjusted odds ratios** greatest in residents with paraplegia (OR 5 2.86; 95% CI 5 1.67 to 4.89) and those receiving dialysis (OR 5 2.84; 95% CI 5 1.84 to 4.37)

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## Why it is a challenge: the problem (6)

### • Antimicrobial resistance

Increasing trends

Longitudinal Trends in Antibiotic Resistance in US Nursing Homes, 2000-2004

Christopher J. Crnich, MD, MS; Nasia Safdar, MD, MS; Jim Robinson, PhD; David Zimmerman, PhD

ICHE 2007, vol. 28, no. 8

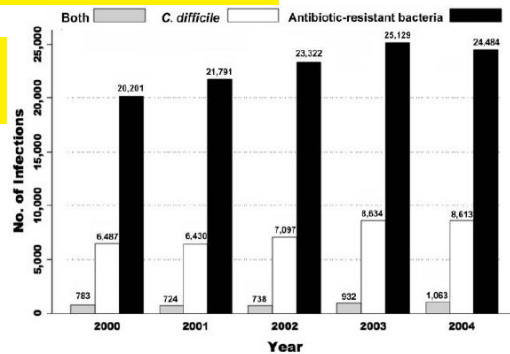


FIGURE. Longitudinal trends in the annual incidences of infections caused by antibiotic-resistant bacteria (ie, methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant enterococcus, and cephalosporin-resistant gram-negative bacteria), *Clostridium difficile*, or both in residents admitted to US nursing homes from 2000 through 2004.

## Why it is a challenge: the setting (1)

Patient factors
• Transfer from hospital/acquisition in hospital
• Persistent colonization and Long LOS in LTCF
• Poor functional status
• Often subtle symptoms and signs of infection
Facility factors
• Increasingly step-down units after hospitalization
• Semiclosed setting
• High patient-to-staff ratio
• Inadequate infection control programs
• Diagnostic testing not readily available/physicians visit infrequent
Antibiotic use: frequently empiric and broad-spectrum

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## Why it is a challenge: the setting (2)

Nursing homes have a dual function; both to provide health care and a homely environment. It may not be possible to directly translate strategies adopted in the acute care setting to nursing homes.

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## Why it is a challenge: the lack of evidence based infection control policies

### Infection control strategies for preventing the transmission of methicillin-resistant *Staphylococcus aureus* (MRSA) in nursing homes for older people (Review)

Hughes CM, Smith MBH, Tunney MM *Cochrane Database of Systematic Reviews* 2008, Issue 1.

#### Main results

Since no studies met the selection criteria, neither a meta-analysis nor a narrative description of studies was possible.

#### Authors' conclusions

The lack of studies in this field is surprising.

.....Much of the evidence for recently-issued United Kingdom guidelines for the control and prevention of MRSA in health care facilities was generated in the acute care setting. It may not be possible to transfer such strategies directly to the nursing home environment



## Some observational studies have shown that prevention could be effective

### Risk Factors for Resistance to Antimicrobial Agents among Nursing Home Residents

Mark B. Loeb<sup>1,2</sup>, Sharon Craven<sup>2</sup>, Allison J. McGeer<sup>3</sup>, Andrew E. Simor<sup>4</sup>, Suzanne F. Bradley<sup>5</sup>, Donald E. Low<sup>3</sup>, Maxine Armstrong-Evans<sup>1</sup>, Lorraine A. Moss<sup>1</sup>, and Stephen D. Walter<sup>2</sup>

TABLE 3. Association between antimicrobial exposure and resistance to antimicrobial agents and effect of institutional factors in 50 nursing homes in the United States and Canada, 1998–1999\*

Antimicrobial-resistant bacteria	Variables kept in the multivariable model	Unadjusted odds ratio†	95% confidence interval	Adjusted odds ratio†	95% confidence interval
TMP-SMX‡-resistant Enterobacteriaceae	TMP-SMX	1.14	1.06, 1.22	1.14	1.06, 1.22
	TMP-SMX at the facility level			2.83	1.05, 5.0
	Use of intravenous therapy in the nursing home			3.5	1.1, 13.4
	No. of hand-washing sinks per 100 residents			0.94	0.90, 0.98
MRSA‡	No. of occupied beds per 100 residents			1.02	1.00, 1.03
	Penicillins	0.90	0.80, 1.02	0.97	0.85, 1.10
	Use of antimicrobial soap in the nursing home			0.40	0.18, 0.90
	Use of different soaps by staff and residents§			0.24	0.12, 0.47
	Use of intravenous therapy in the nursing home			8.55	3.65, 20.0
MRSA	No. of registered nurses per 100 residents			0.79	0.72, 0.87
	Fluoroquinolones	1.00	0.97, 1.03	1.00	0.97, 1.03
	Use of different soaps by staff and residents§			0.22	0.13, 0.36
Fluoroquinolone-resistant Enterobacteriaceae	Fluoroquinolones	1.08	1.04, 1.11	1.08	1.04, 1.11
Fluoroquinolone-resistant <i>Pseudomonas aeruginosa</i>	Fluoroquinolones	1.04	1.01, 1.07	1.04	1.01, 1.07

\* Unadjusted odds ratios for antimicrobial exposures and adjusted odds ratios for variables kept in the final multivariable models are shown.

† Odds ratio for antimicrobial exposure per one defined daily dose per 100 resident-days.

‡ TMP-SMX, trimethoprim-sulfamethoxazole; MRSA, methicillin-resistant *Staphylococcus aureus*.

§ Use of antibacterial soap by staff and use of regular soap by residents.

# THE EUROPEAN STATE OF THE ART



European Survey on Infection Control in Nursing  
Homes and Home Care Organisation

- **Respondent countries;** Austria, Belgium, Bulgaria, Croatia, The Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Luxembourg, The Netherlands, Norway, Portugal, Republic of Ireland, Slovakia, Spain, Sweden, Turkey, UK- England, UK- Scotland, UK- Wales (78,8%)



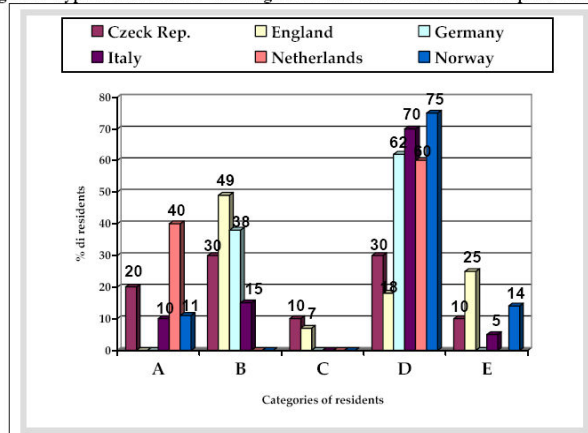
## 1. The true identity of these services is frequently unknown

- Only half of the countries have a national plan/policy defining the services to be provided, the population eligible, the sources for funding
- Only one third of the countries have a national information system, with available data
- Only 36% have developed an accreditation system



## 2. A significant variability among countries of residents and type of organization exists

Figure 1- Type of residents in "nursing home-like" facilities across European countries



A= Rehabilitation B= Custodial/supportive care C= Mental disorders  
D= Medical/nursing care E= Dementia





European Survey on Infection Control in Nursing Homes and Home Care Organisation



## 2. A significant variability among countries of residents and type of organization exists

No uniform system exists aimed at classifying residents according to their conditions and need



European Survey on Infection Control in Nursing Homes and Home Care Organisation



## 3. The perception of the relevance and resources available for IC are scarce

- Only 36% of the countries have a legally responsible person for IC in LTCFs
- Only one country has dedicated ICNs, in LTCFs; four partially detached ICNs





European Survey on Infection Control in Nursing Homes and Home Care Organisation

#### 4. Few epidemiological data on infections

- Epidemiological studies have been conducted in five countries (Belgium, France, Germany, Italy, Norway)
- Five countries have national or regional surveillance system, based on repeated prevalence surveys in four cases (national in France, Norway, Sweden)



#### 4. Few epidemiological data on infections

Country	Year	Type of study	Population	Key results
Belgium	2005	National P of MRSA	N=2958	MRSA 19% (17-22) S.Aureus 51%
France	2001	National P incl. LTCF	N=28164	9,5%
	2007	National P LTCF	N=16570	9,34%
Germany	2002	Regional P of MRSA	N=1057	3%
	2007	Local Incidence	N=103 beds	6/1000 resid.days
Italy	2001	Regional P	N=1926	14,6 (Nursing Homes) 7,5 (Resident.Homes)
	2003	Local I	N=859	11,8/1000 resid.days



## THE PROPOSAL

### The proposal (1)

#### Valid data on infection are essential for:

- individual facilities to improve their capacity to control infections and adjust their resources as needed.
- to convince nursing home administrators and regulatory agencies that infection control in LTCFs is important and worthy of support and the resources necessary to improve quality of care and resident safety.

#### Available resources for surveillance are scarce:

- routine data whenever possible (lab data)
- simple data and surveillance methods

## The proposal (2)

**An agreed protocol for conducting prevalence surveys at country or local level:**

- Methods (population, time of the year, method for data collection)
- Criteria for defining infections (McGeer plus "probable cases")
- Variables to be included (compulsory, recommended)
- Organization of the survey
- Data analysis

## The proposal (3)

**It is recommended to include nursing homes in outbreak and alert system surveillance:**

- Several European countries have launched national systems for the surveillance of healthcare acquired infections outbreaks, involving nursing homes also (Germany, France, Scotland). In Germany, the Survnet has been implemented in 2001: in 2004-2005 out of 9946 outbreaks recorded, 12% occurred in nursing homes and 12% in hospitals.

## The proposal (4)

It is recommended to conduct audit programmes in nursing homes taking advantage of existing tools:

Ten audit tools developed by the ICNA (2005)

- \* Hand hygiene
- \* Environment
- \* Kitchen area
- \* Disposal of waste
- \* Bodily fluid spillage
- \* Personal protective equipment
- \* Sharps handling
- \* Specimen handling
- \* Vaccine storage and transport
- \* Decontamination

[www.icna.co.uk/public/downloads/index.asp](http://www.icna.co.uk/public/downloads/index.asp)

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## The proposal (5)

Where laboratory information systems are available, it should be checked if it possible to obtain data stratified by service requiring the microbiology tests, separately for the nursing homes.

Whenever possible, it should be pursued the use of existing pharmacy database for continuously monitor the frequency and characteristics of antimicrobial consumption in nursing homes.

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To increase the awareness at European level.....

A widespread standardized prevalence survey would be of help?

Thank you

