

Epidemiological data of nosocomial infections in Belgium

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ANTIBIOTIC RESISTANCE THREATS
in the United States, 2013

Urgent Threats

- *Clostridium difficile*
- Carbapenem-resistant Enterobacteriaceae (CRE)
- Drug-resistant *Neisseria gonorrhoeae*

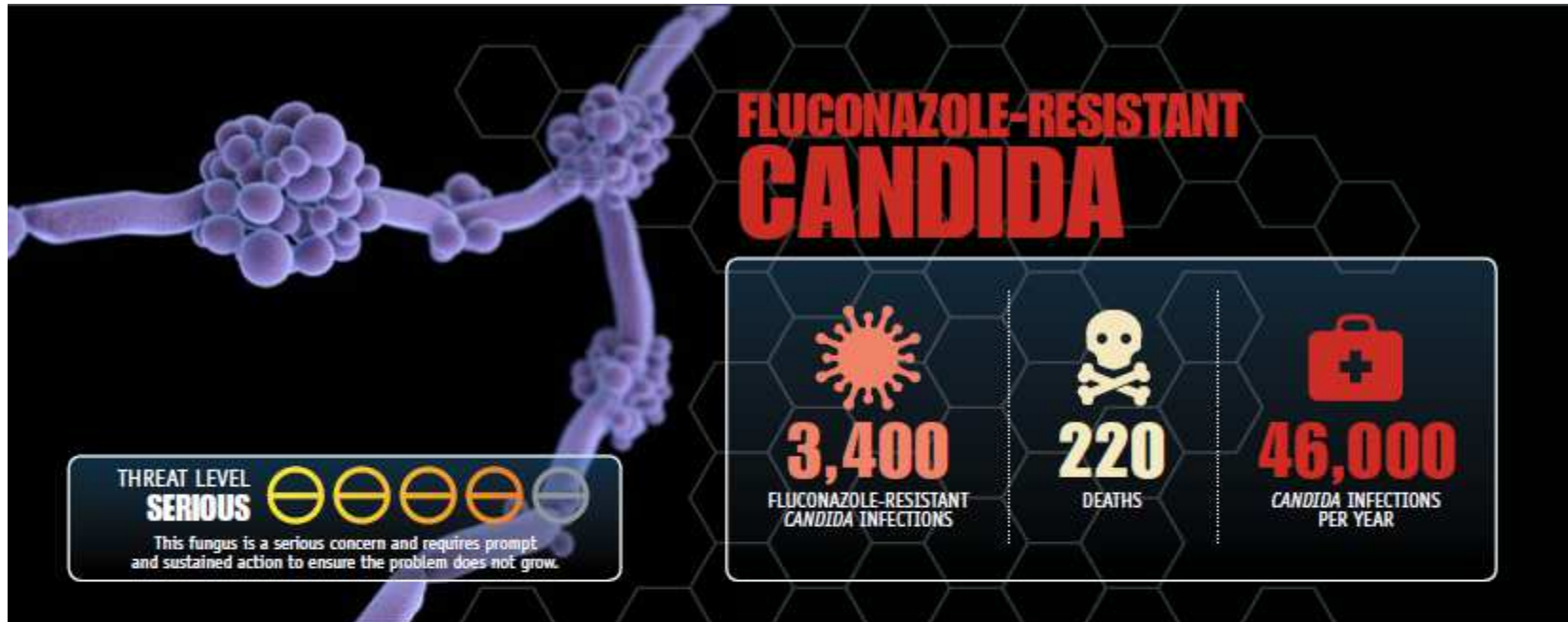
Serious Threats

- 
- Multidrug-resistant *Acinetobacter*
 - Drug-resistant *Campylobacter*
 - Fluconazole-resistant *Candida* (a fungus)
 - Extended spectrum β -lactamase producing Enterobacteriaceae (ESBLs)
 - Vancomycin-resistant *Enterococcus* (VRE)
 - Multidrug-resistant *Pseudomonas aeruginosa*
 - Drug-resistant Non-typhoidal *Salmonella*
 - Drug-resistant *Salmonella* Typhi
 - Drug-resistant *Shigella*
 - Methicillin-resistant *Staphylococcus aureus* (MRSA)
 - Drug-resistant *Streptococcus pneumoniae*
 - Drug-resistant tuberculosis

Concerning Threats

- Vancomycin-resistant *Staphylococcus aureus* (VRSA)
- Erythromycin-resistant Group A *Streptococcus*
- Clindamycin-resistant Group B *Streptococcus*

CDC, 2013



Candidiasis is a fungal infection caused by yeasts of the genus *Candida*. There are more than 20 species of *Candida* yeasts that can cause infection in humans, the most common of which is *Candida albicans*. *Candida* yeasts normally live on the skin and mucous membranes without causing infection. However, overgrowth of these microorganisms can cause symptoms to develop. Symptoms of candidiasis vary depending on the area of the body that is infected.

Candida is the fourth most common cause of healthcare-associated bloodstream infections in the United States. In some hospitals it is the most common cause. These infections tend to occur in the sickest of patients.

RESISTANCE OF CONCERN

- Some *Candida* strains are increasingly resistant to first-line and second-line antifungal treatment agents. Recent data demonstrate a marked shift among infections towards *Candida* species with increased resistance to antifungal drugs including azoles and echinocandins.
- CDC conducts multicenter surveillance for antifungal resistance in the United States, candidal infections, their economic impact, and possible areas where prevention and control strategies can be focused.

PUBLIC HEALTH THREAT

An estimated 46,000 healthcare-associated *Candida* infections occur among hospitalized patients in the United States each year. Roughly 30% of patients with bloodstream infections (candidemia) with drug-resistant *Candida* die during their hospitalization. CDC estimates that each case of *Candida* infection results in 3–13 days of additional hospitalization, and a total of \$6,000–\$29,000 in direct healthcare costs. Based on these estimates, we calculate resistant *Candida* infections may add millions of dollars in excess costs to U.S. healthcare expenditures each year.

	Percentage of <i>Candida</i> bloodstream isolates testing resistant	Estimated number of infections per year	Estimated number of deaths
Fluconazole-resistant <i>Candida</i> species	7%	3,400	220

For more information about data methods and references, please see technical appendix.



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

This was USA, what about Europe....

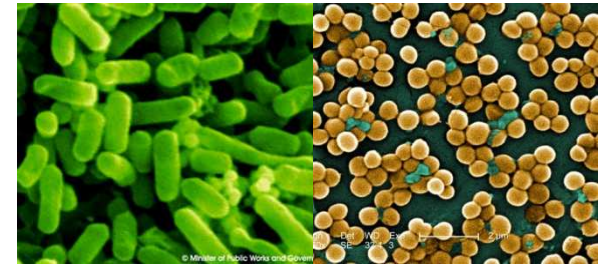
Point prevalence survey: PPS (photo)



Surveillance contineously (film)



Nosocomial infection (1/3)



An active infection was defined as “healthcare-associated” (associated to acute care hospital stay only for the purpose of this protocol) when:

The onset of the signs and symptoms had **started on Day 3 of the current admission or later** (where Day 1 is the day of admission)

OR

The signs and symptoms were present at admission or became apparent before Day 3, but the patient had been discharged from another hospital less than two days before admission

Nosocomial infection (2/3)



OR

The signs and symptoms of an active surgical site infection were present at admission or started before Day 3, and the **surgical site infection occurred within 30 days** of a surgical intervention (or in the case of surgery involving an implant, a deep or organ/space surgical site infection that developed within a year of the intervention),

Nosocomial infection (3/3)



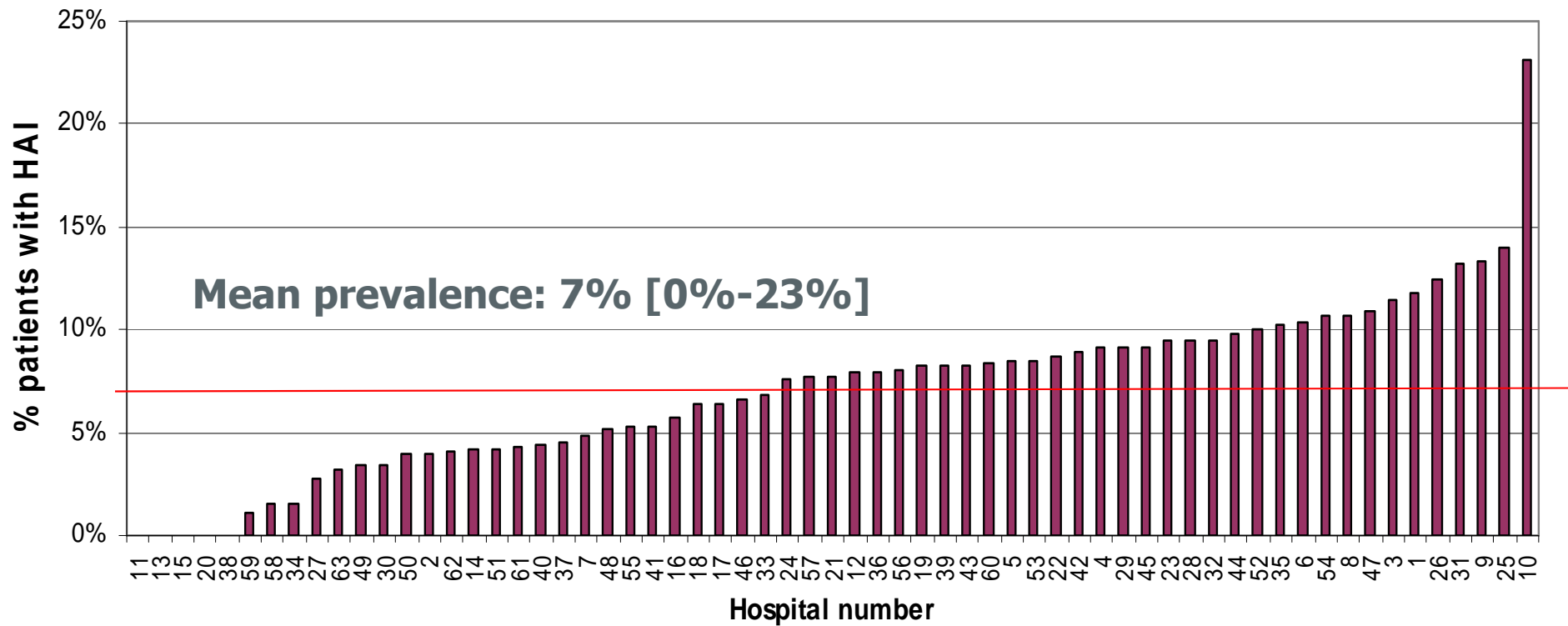
OR

The signs and symptoms of a *Clostridium difficile* infection were present at admission or started before Day 3, with the patient having been **discharged** from an acute care hospital **less than 28 days before the current admission.**

Point Prevalence Survey: Hai - ABU



Percentage patients with HAI: 7.0%



Goossens, M WIV-ISP

Point Prevalence Survey: Hai - ABU



	N pts ^(a)	Prevalence% (95%CI) ^(b)	N HAI ^(c)	Relative % HAI ^(d)
Pneumonia & other LRTI	392	2.0% (1.8-2.2)	394	25.7%
Surgical site infections ^(e)	290	1.5% (1.3-1.6)	290	18.9%
Urinary tract infections	263	1.3% (1.2-1.5)	264	17.2%
Bloodstream infections (BSI) ^(f)	216	1.1% (0.9-1.2)	217	14.2%
Gastro-intestinal system infections	118	0.6% (0.5-0.7)	119	7.8%
Skin and soft tissue infections	59	0.3% (0.2-0.4)	59	3.9%
Bone and joint infections	38	0.2% (0.1-0.3)	39	2.5%
Eye, Ear, Nose or Mouth infection	47	0.2% (0.2-0.3)	47	3.1%
Systemic infections ^(f)	40	0.2% (0.1-0.3)	40	2.6%

BELGIAN PPS 2011 hospitals

		-----Belgian PPS-----											
		-----PN/LRI-----		-----SSI-----		-----UTI-----		-----BSI-----		-----GI-----		-----All HAI-----	
		N	Rel %	N	Rel %	N	Rel %	N	Rel %	N	Rel %	N	Rel %
FUNGI		20	8.1%	11	4.6%	13	5.3%	27	12.1%	4	5.4%	80	6.9%
	Candida spp	8	3.2%	11	4.6%	13	5.3%	25	11.2%	3	4.1%	64	5.5%
	Aspergillus spp	11	4.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	12	1.0%
	Other	1	0.4%	0	0.0%	0	0.0%	2	0.9%	1	1.4%	4	0.3%
VIRUS		2	0.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	3	0.3%
total N of microorganisms		247	100.0%	241	100.0%	243	100.0%	224	100.0%	74	100.0%	1167	100.0%

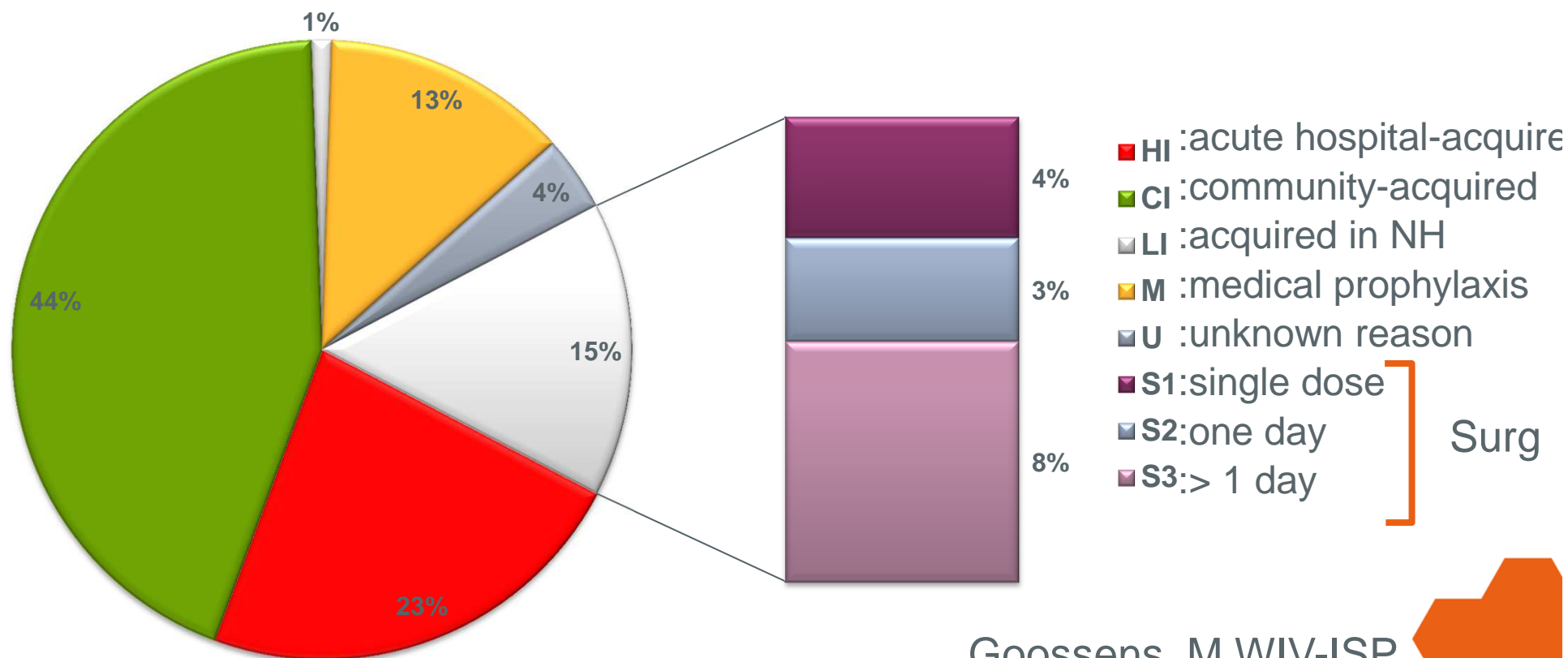
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Point Prevalence Survey: Hai - ABU

On antimicrobials: 36.6%

Mean antimicrobials for those on antimicrobials: 1.5

Indication for Antimicrobial N=5543



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