

# Surveillance of *Clostridium difficile* infection (CDI) in Belgium

NSIH Symposium

April 27, 2017

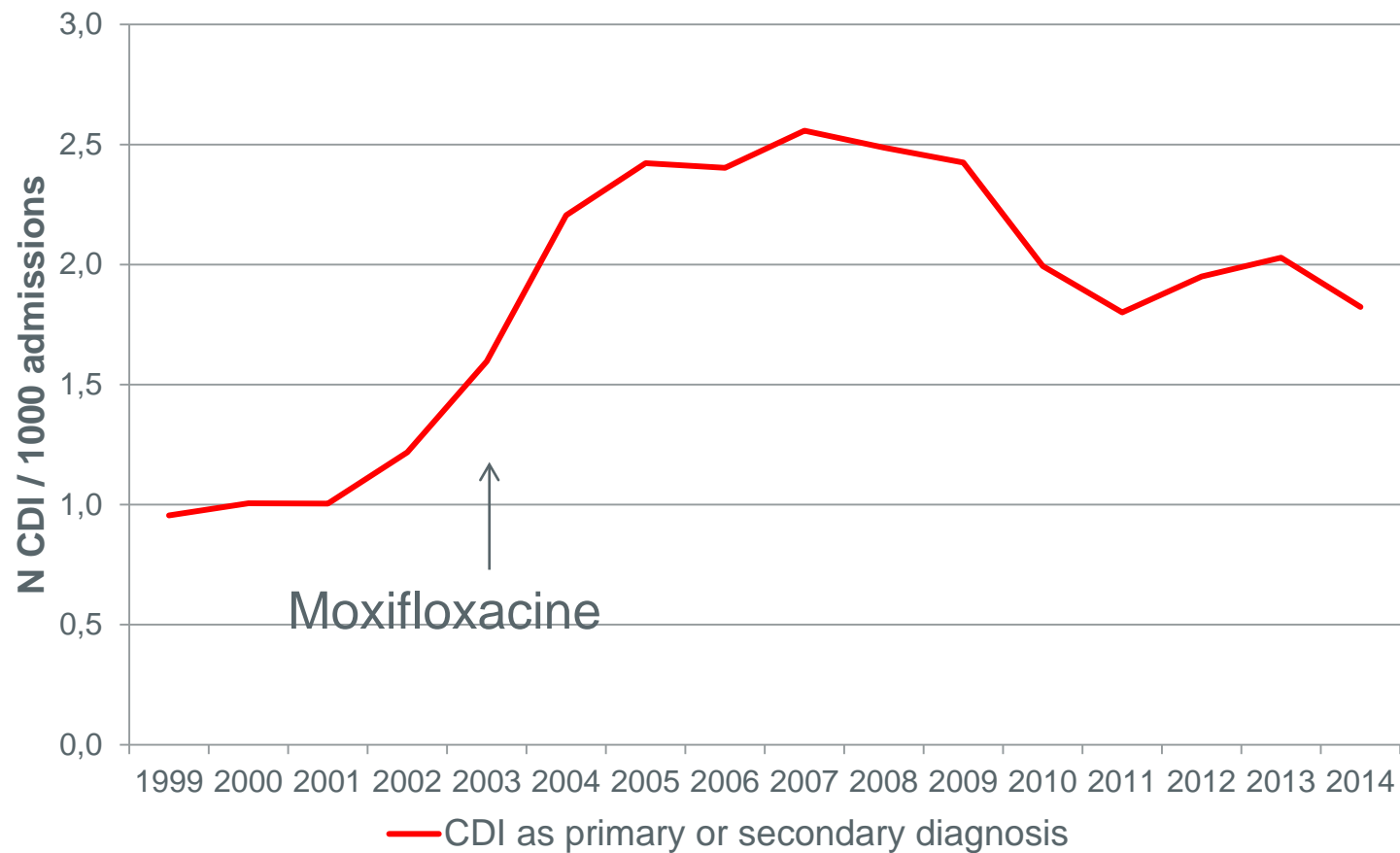
Marie-Laurence Lambert, MD, PhD

# Once upon a time...



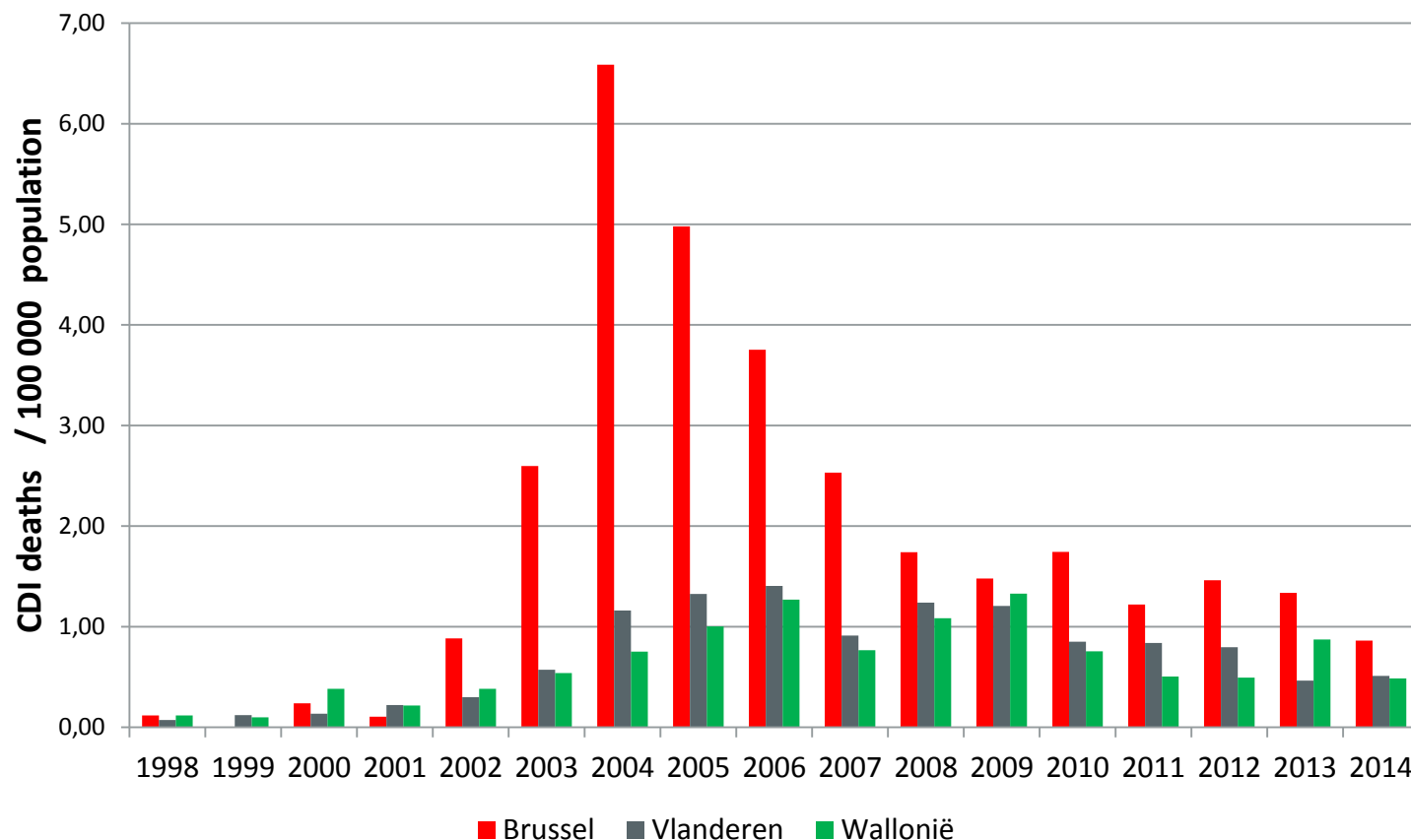
Picture courtesy of Johan Vanbroeck, NRC

# *Clostridium difficile* infections (CDI) in Belgian hospitals, 1999-2014



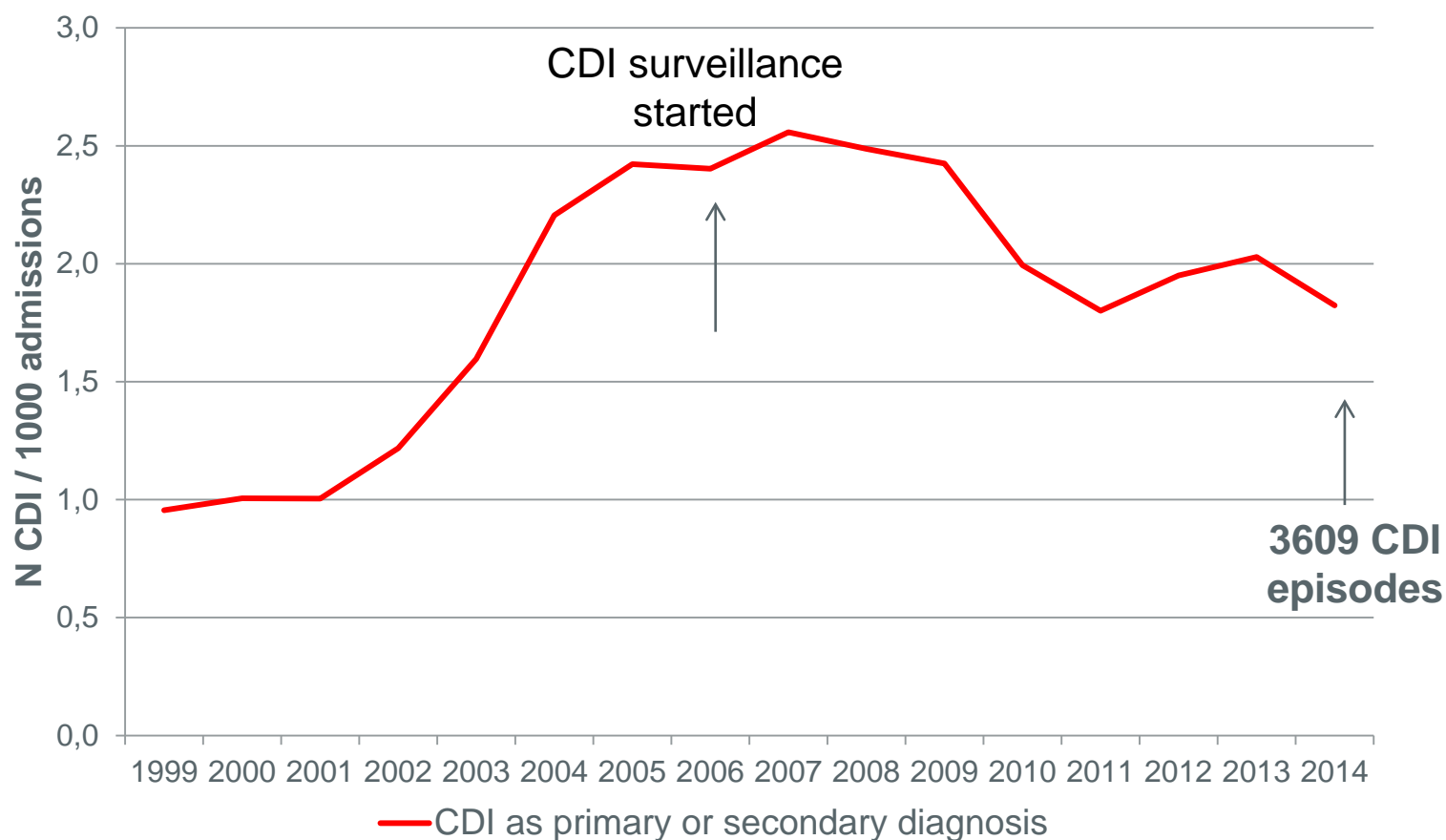
Source: Hospital stays (MKG/RHM) with diagnosis code ICD-9-CM 008.45: "Intestinal infection due to *C. difficile*".

# Age standardized mortality rate, *C. difficile*, by region. Belgium 1998-2014.



Source: death registry ICD-10 code A04.7; Population data: <https://www.wiv-isp.be/epidemi/spma/index.html> 2014. Standardised using 2010 Belgian population, as a standard, 3 age groups 0-64, 65-79, >80

# *Clostridium difficile* infections (CDI) in hospital stay data, Belgium 1999-2014



Hospital stays (MKG/RHM) with diagnosis code ICD-9-CM 008.45: “Intestinal infection due<sup>5</sup> to *C. difficile*”. Source: FOD/SPF

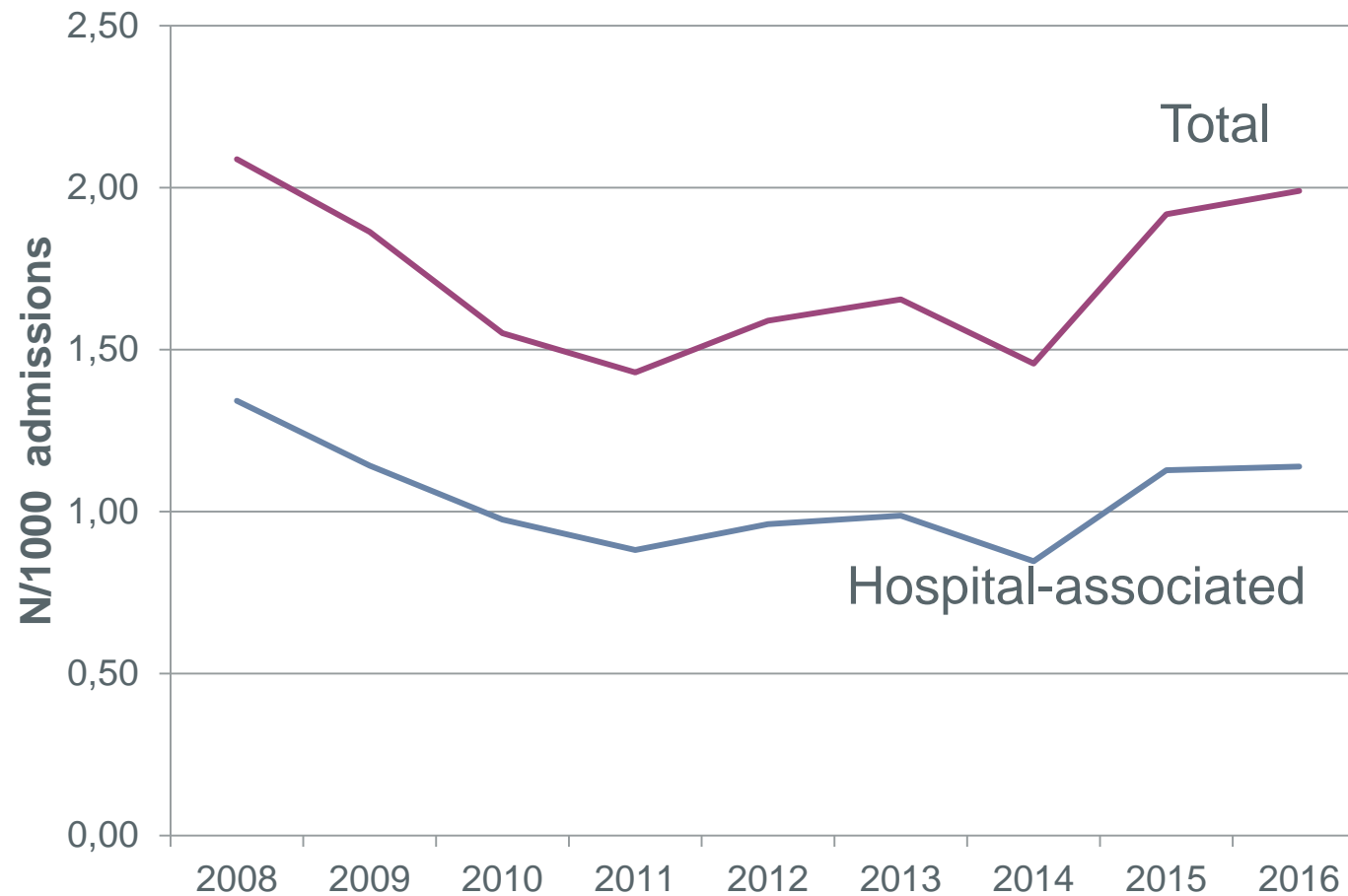
# Objectives of *C. difficile* infection surveillance:



- Monitor:
  - Incidence
  - Circulating strains
  - Severity
- Level
  - National
  - Hospital
- Tool for prevention!!!

# SURVEILLANCE DATA

# Incidence of *Clostridium difficile* infections in acute care hospitals, Belgium 2008-2016

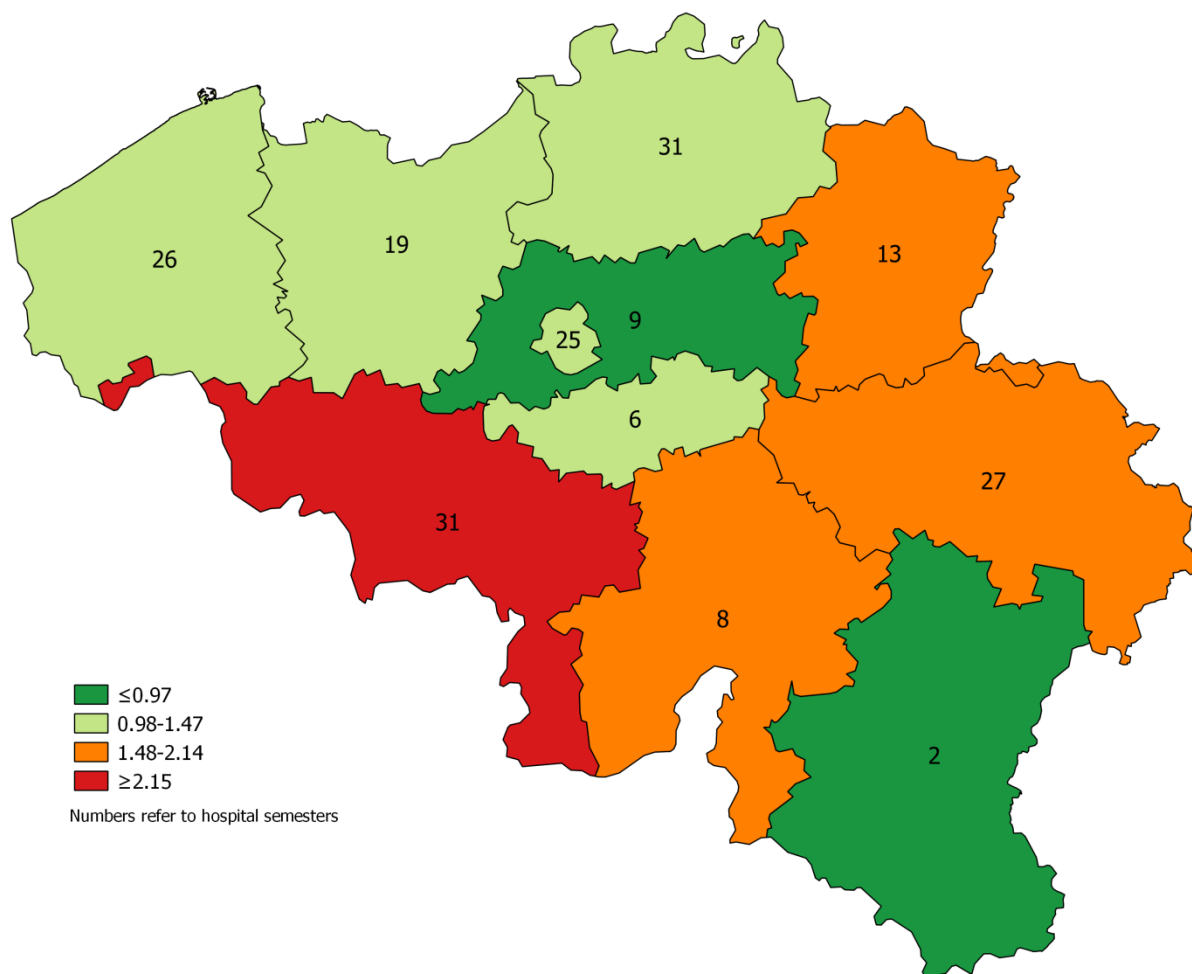


\* **Hospital associated CDI:** onset of symptoms 2 days or more after admission in the declaring

8 hospital \***Acute care hospitals:** average length of stay <14 days,



# Hospital-associated *Clostridium difficile* infections\*, per 10.000 hospital-days, per province. Belgium, 2016



# Surveillance, 2016



- 135 hospitals reporting at least one semester
  - Median : 8 CDI episodes (min: 0, max 60) / hosp-semester
  - 58% episodes hospital associated (HA)
    - onset  $\geq$  2d after admission

# Surveillance, 2016

## Patients

- Median age, HA-CDI: 80 y.o
  
- 2.3% death related directly or indirectly to CDI

# National Reference Laboratory typing data, 2016

- 942 strains typed from 84 hospitals
  - Most frequent Ribo 16 (11%)
- 137 different ribotypes, 72 isolated once
  - → multiple sources of transmission

# Hypervirulent, *C. difficile* ribotypes, Belgian hospitals , 2009-2016

	2009	2010	2011	2012	2013	2014	2015	2016
<b>Total hospitals</b>	104	103	84	111	103	112	97	84
<i>% hospitals with</i>								
<b>BR027 (UCL027)</b>	34	33	20	17	15	12	15	26

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<b>BR078 (UCL 3)</b>	11	25	24	31	24	25	42	38

# Validation of surveillance data

- Hospital stay data (RHM/MKG) provide exhaustive data on incidence of CDI in hospitalised patients
- 2011-2014: incidence +25% compared to surveillance data

# RESEARCH PROJECT

## TRANSMISSION OF *C.DIFFICILE* IN BELGIAN HOSPITALS



# Transmission of *C.difficile* in Belgian hospitals



- 27 hospitals sent all culture-positive CDI for typing between January 2015 to January 2016.
- 29% hospital-associated CDI *possibly* due to case-to-case transmission (min: 0%, max 52%)
  - MLVA needed to confirm similarity of strains within clusters

# TAKE HOME MESSAGES



# Take home messages (1)

- CDI Incidence stable in Belgium
  - Higher in Wallonia, lower in Flanders
  - Wide variation between hospitals
  - Underestimated by surveillance data
- CDI severity decreasing

# Take home message (2)



CDI in Belgian hospitals mainly endemic:

- most cases NOT attributable to case-to-case transmission BUT
  - sporadic outbreaks + hypervirulent strains circulating
  - → surveillance!
- prudent use of antimicrobials needed for better CDI control
- Role of the environment / colonised patients ?

# *C. difficile* surveillance in Belgian hospitals

## THE FUTURE



# The future of *C. difficile* surveillance in Belgian hospitals



- New Health data software :
  - Pilot January- June 1, 2017
  - Improved feed-back
- Data validation

# Report 2017

- [http://www.nsih.be/surv\\_cdif/results\\_nl.asp](http://www.nsih.be/surv_cdif/results_nl.asp)
- [http://www.nsih.be/surv\\_cdif/results\\_fr.asp](http://www.nsih.be/surv_cdif/results_fr.asp)

*Thank you!*

