Minimum Structural Requirements for Successful Prevention and Control of Healthcare-Associated Infections

Health and economic burden of healthcare-associated infections and antimicrobial resistance in the European region

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World Health Organization

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No conflict of interest to disclose

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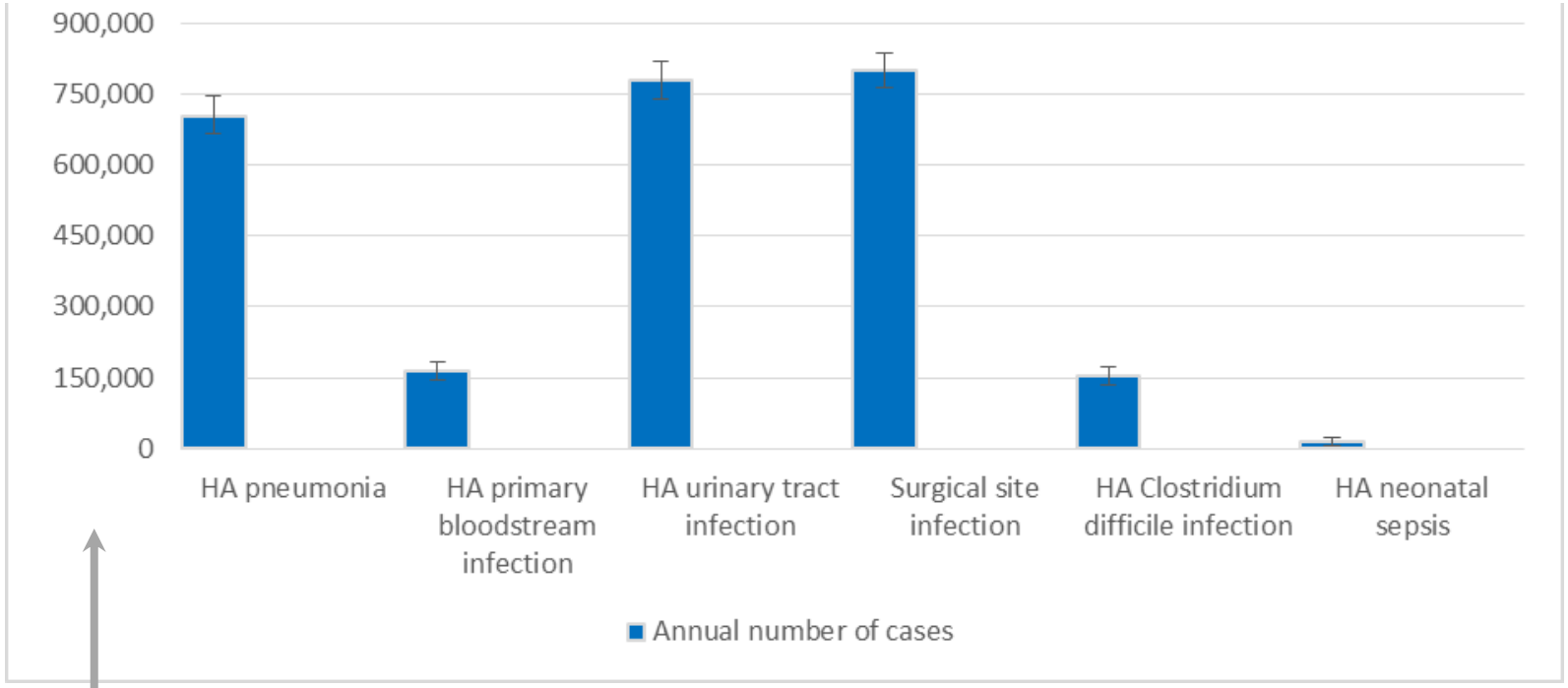
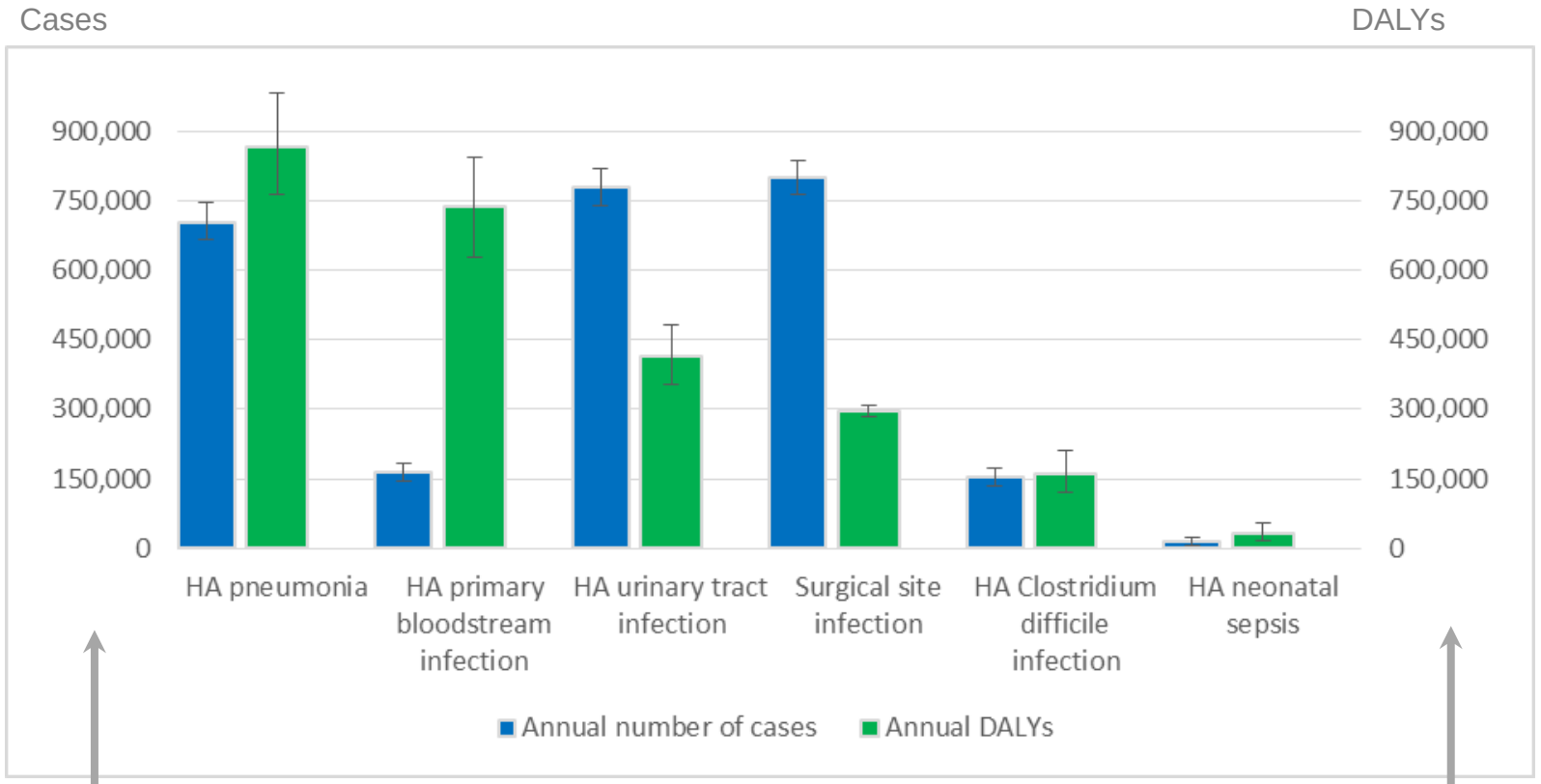
Healthcare-associated infections, antimicrobial resistance: overlapping, but not identical

- Age-group and sex prevalent number of HAIs from the PPS was converted into annual incidence rates applying the Rhame and Sudderth formula
- 2.6 million annual number of cases of HAIs estimated in the EU/EEA (95% UI: 1,624,140 - 4,084,550)



Adapted from Cassini A and Plachouras D et al. PLoS Med 2016;13(10):e1002150

- 2.6 million annual number of cases of HAIs are associated with more than 91,000 deaths (76,000 to 108,000)
- Incidence and prevalence do not provide the full picture



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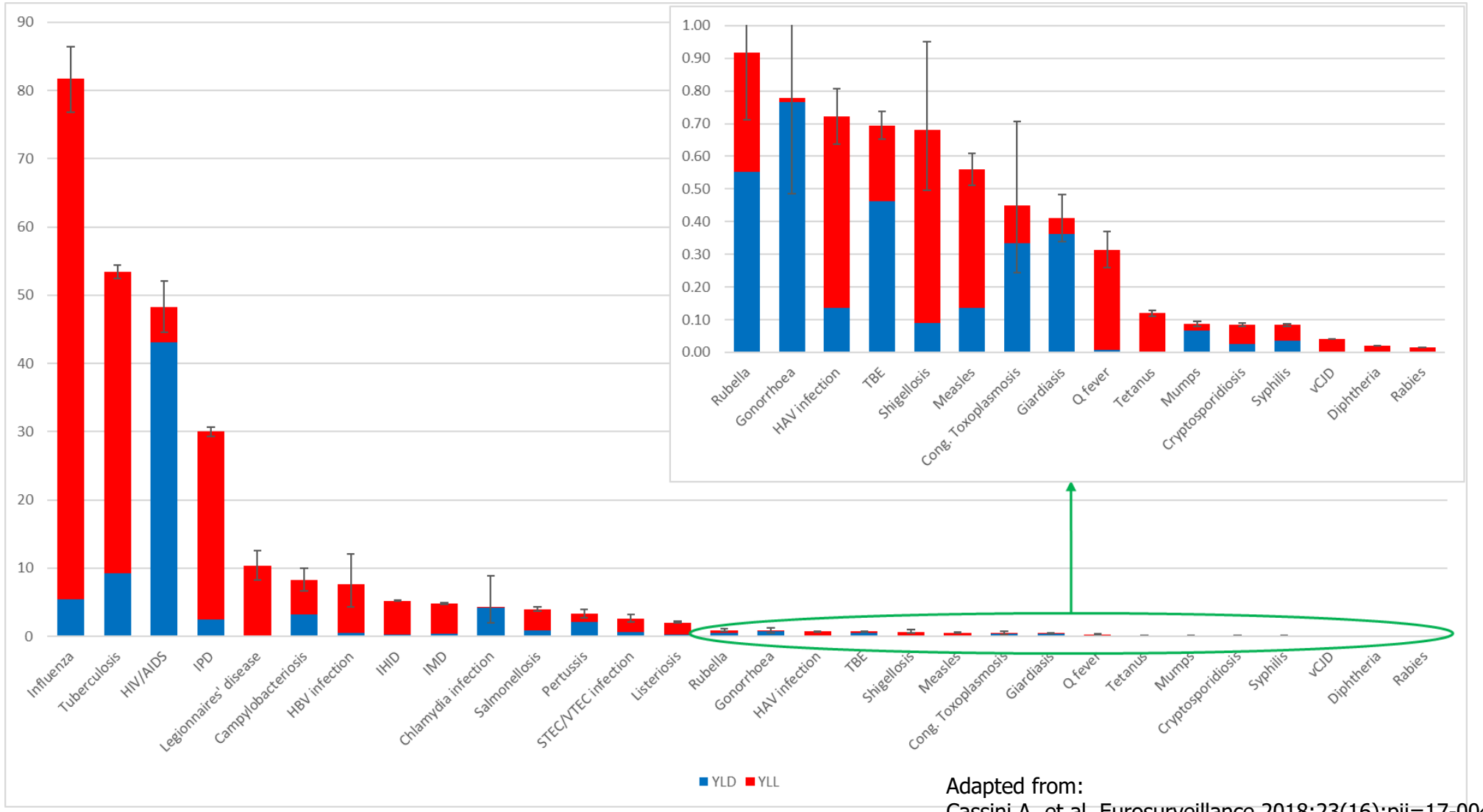
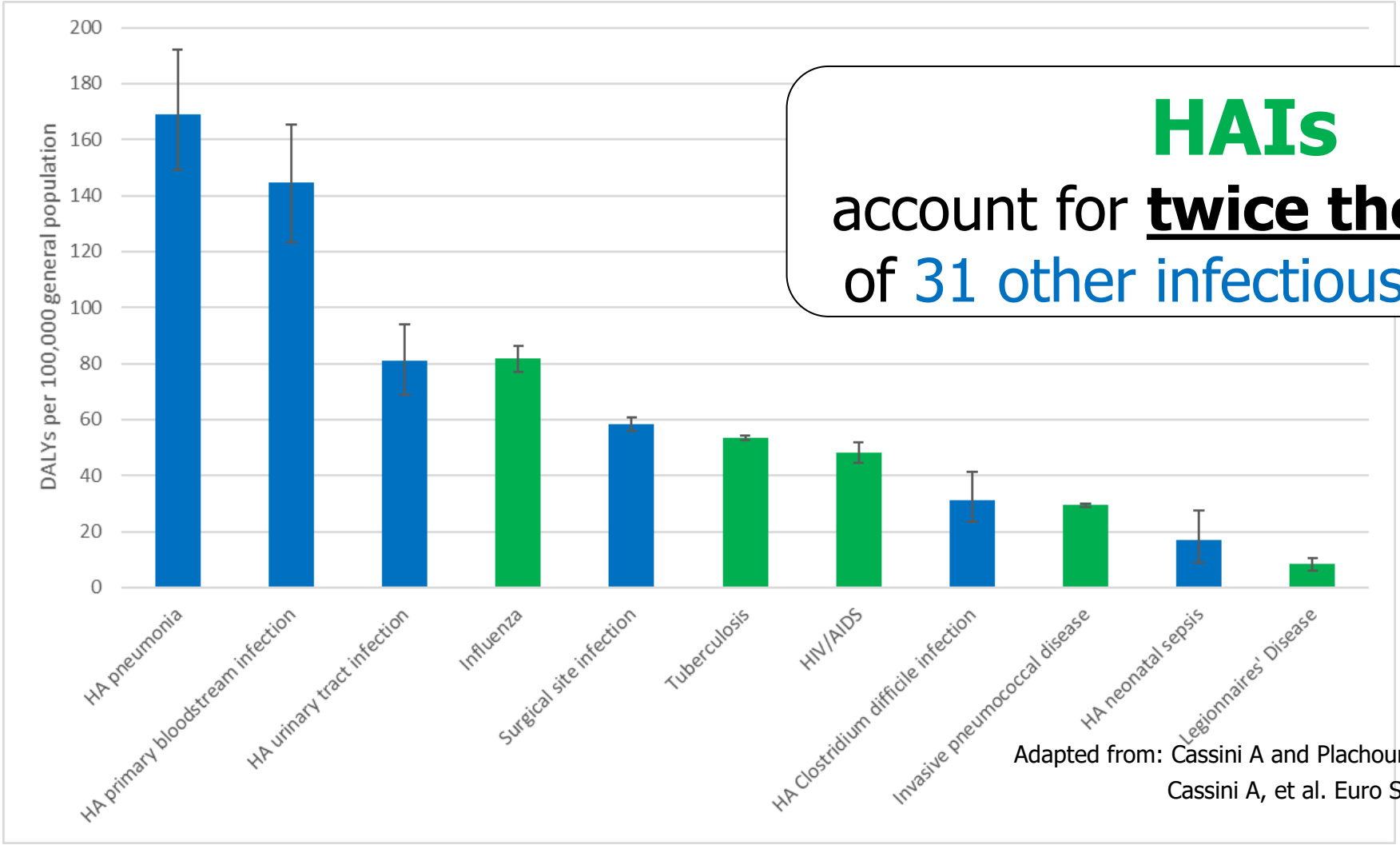
BCoDE 2009-2013 – DALYs per 100,000



Adapted from:
Cassini A, et al. Eurosurveillance 2018;23(16):pii=17-00454

Comparing the burden of HAIs with other infectious diseases



HAIs
account for **twice the burden**
of 31 other infectious diseases

Adapted from: Cassini A and Plachouras D et al. PLoS Med 2016;13(10):e10021
Cassini A, et al. Euro Surveill. 2018;23(16):pii=17-00454

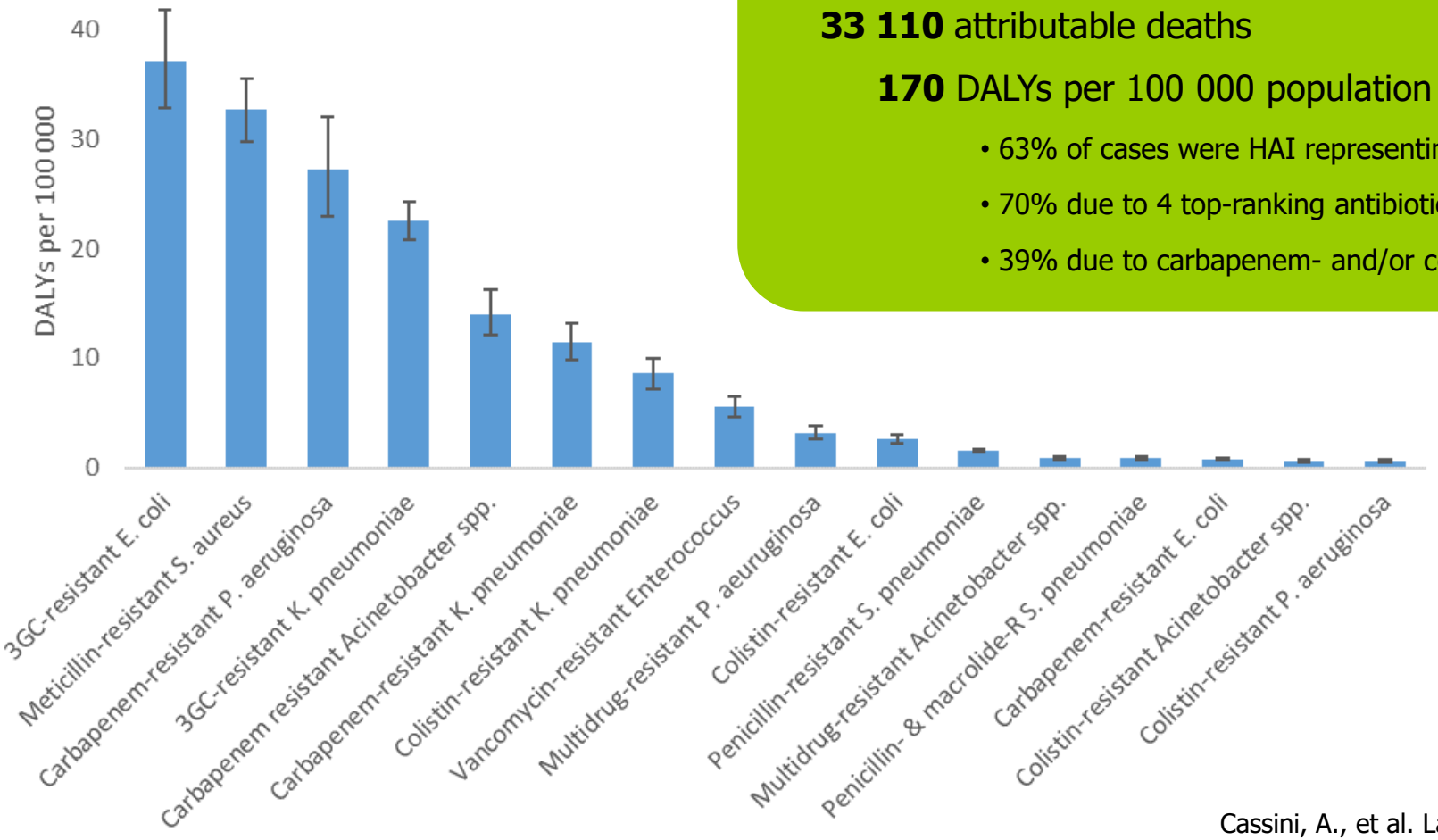
Estimated burden of infections with antibiotic-resistant bacteria, EU/EEA, 2015

671 689 infections with antibiotic-resistant bacteria

33 110 attributable deaths

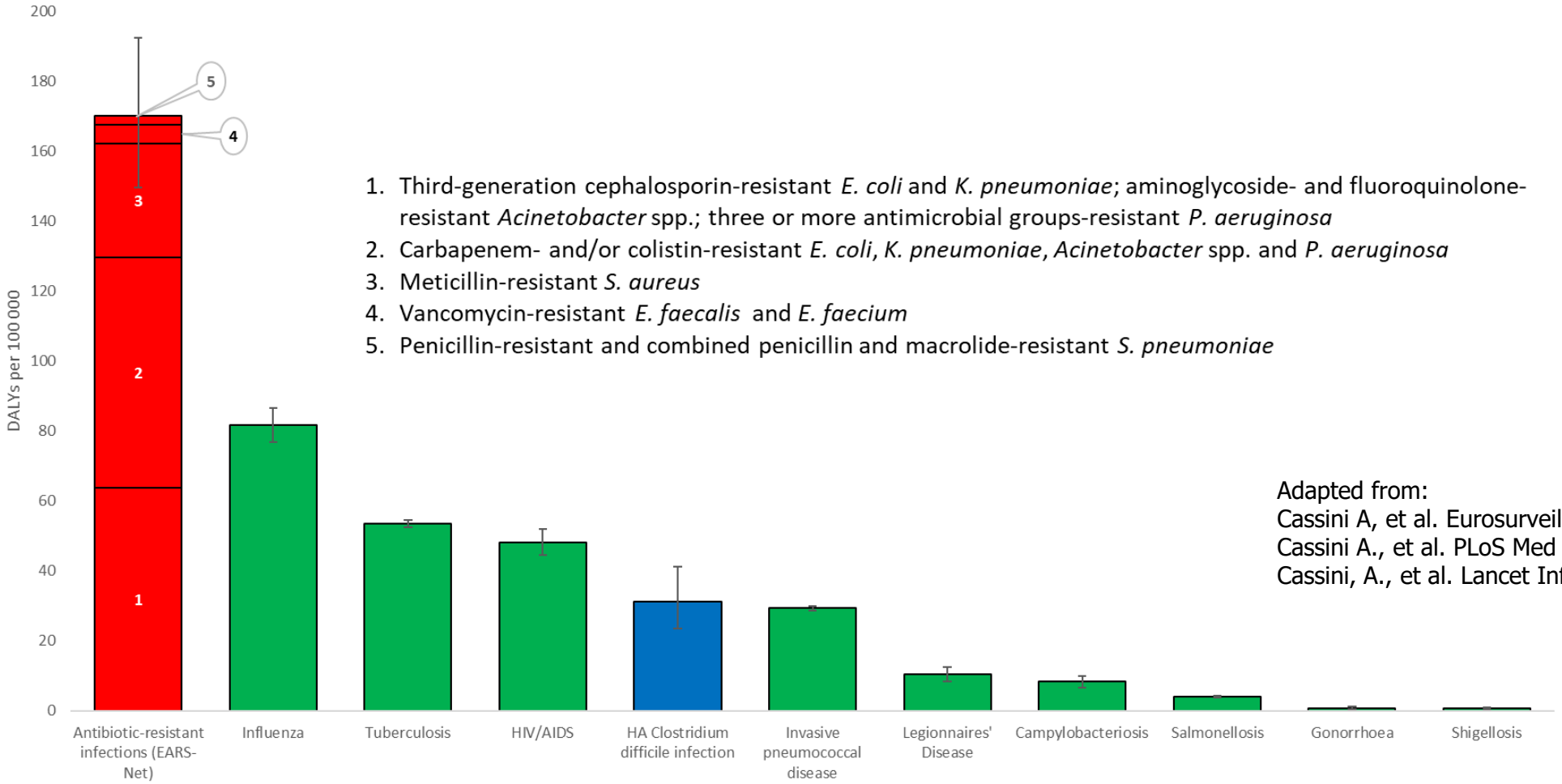
170 DALYs per 100 000 population

- 63% of cases were HAI representing 75% of total burden (DALYs)
- 70% due to 4 top-ranking antibiotic-resistant bacteria
- 39% due to carbapenem- and/or colistin resistance



Cassini, A., et al. Lancet Infect Dis. 2019 Feb;19(2):129-130.

Burden of AMR is comparable to the combined burden of influenza, TB & HIV/AIDS



1. Third-generation cephalosporin-resistant *E. coli* and *K. pneumoniae*; aminoglycoside- and fluoroquinolone-resistant *Acinetobacter* spp.; three or more antimicrobial groups-resistant *P. aeruginosa*
2. Carbapenem- and/or colistin-resistant *E. coli*, *K. pneumoniae*, *Acinetobacter* spp. and *P. aeruginosa*
3. Meticillin-resistant *S. aureus*
4. Vancomycin-resistant *E. faecalis* and *E. faecium*
5. Penicillin-resistant and combined penicillin and macrolide-resistant *S. pneumoniae*

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Cassini A, et al. Eurosurveillance 2018;23(16):pii=17-00454
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33000 deaths

Each year, 33000 people die from an infection due to bacteria resistant to antibiotics. This is comparable to the total number of passengers of more than 100 medium-sized airplanes.

The burden of infections with bacteria resistant to antibiotics on the European population is comparable to that of influenza, tuberculosis and HIV/AIDS combined.

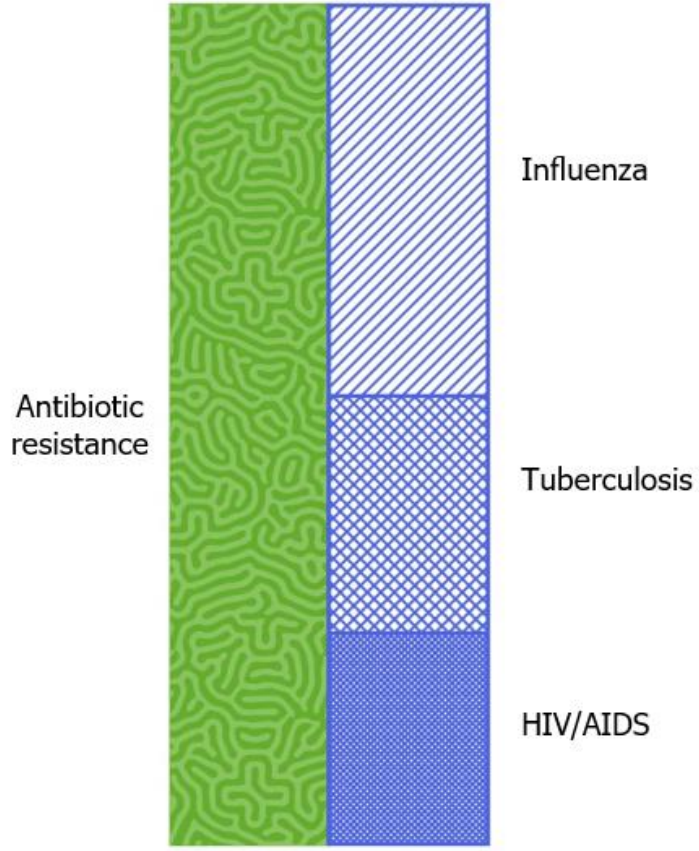
75 %

Healthcare-associated infections

75% of the burden of bacteria resistant to antibiotics in Europe is due to healthcare-associated infections. This could be minimised through adequate infection prevention and control measures, as well as antibiotic stewardship in healthcare settings.

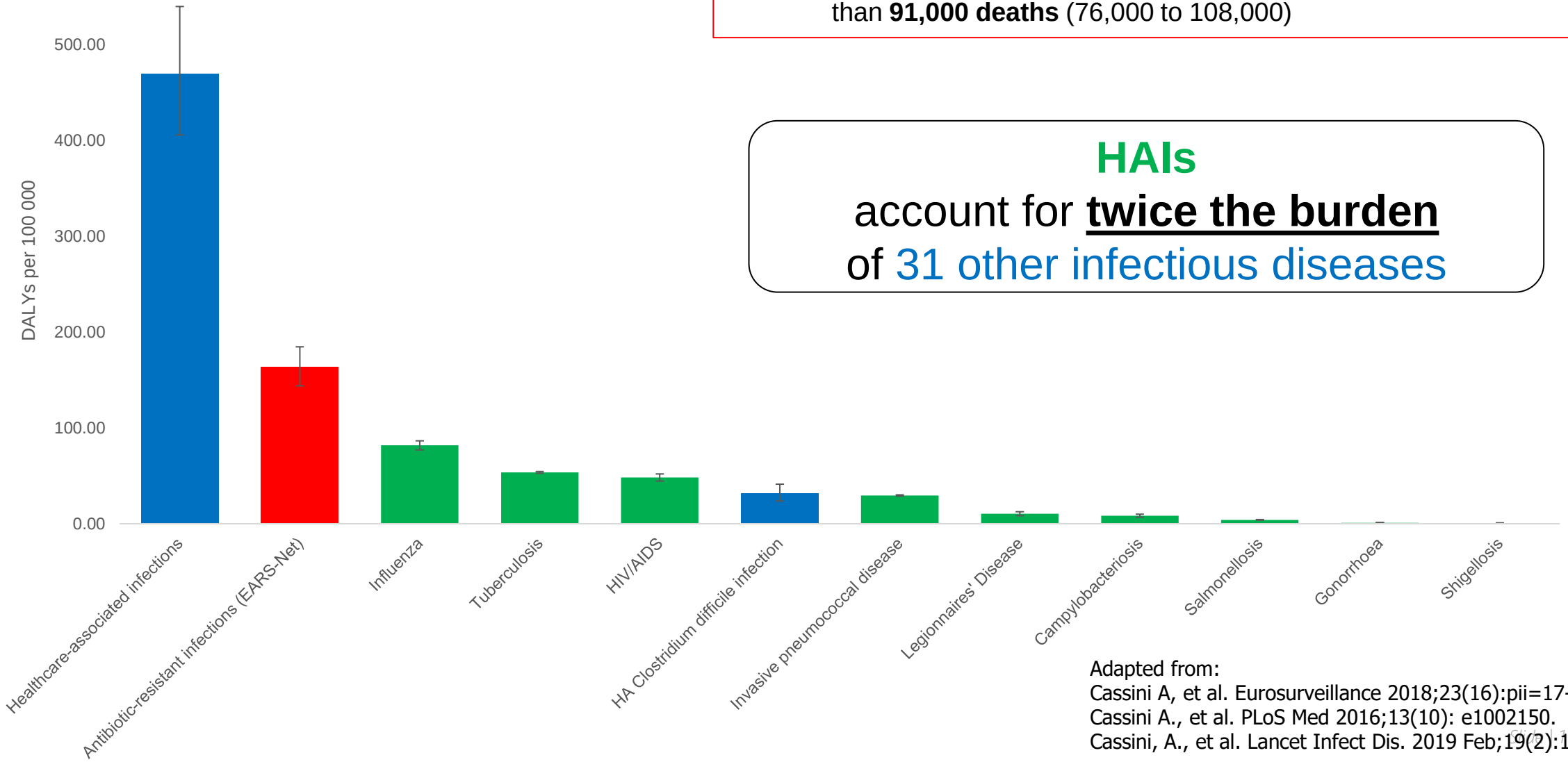
Last-line antibiotics

39% of the burden is caused by infections with bacteria resistant to last-line antibiotics such as carbapenems and colistin - the last treatment option available.



Burden of HAIs

2.6 million annual number of cases of HAIs are associated with more than **91,000 deaths** (76,000 to 108,000)



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Healthcare-associated infections, antimicrobial resistance: Overlapping, but not identical

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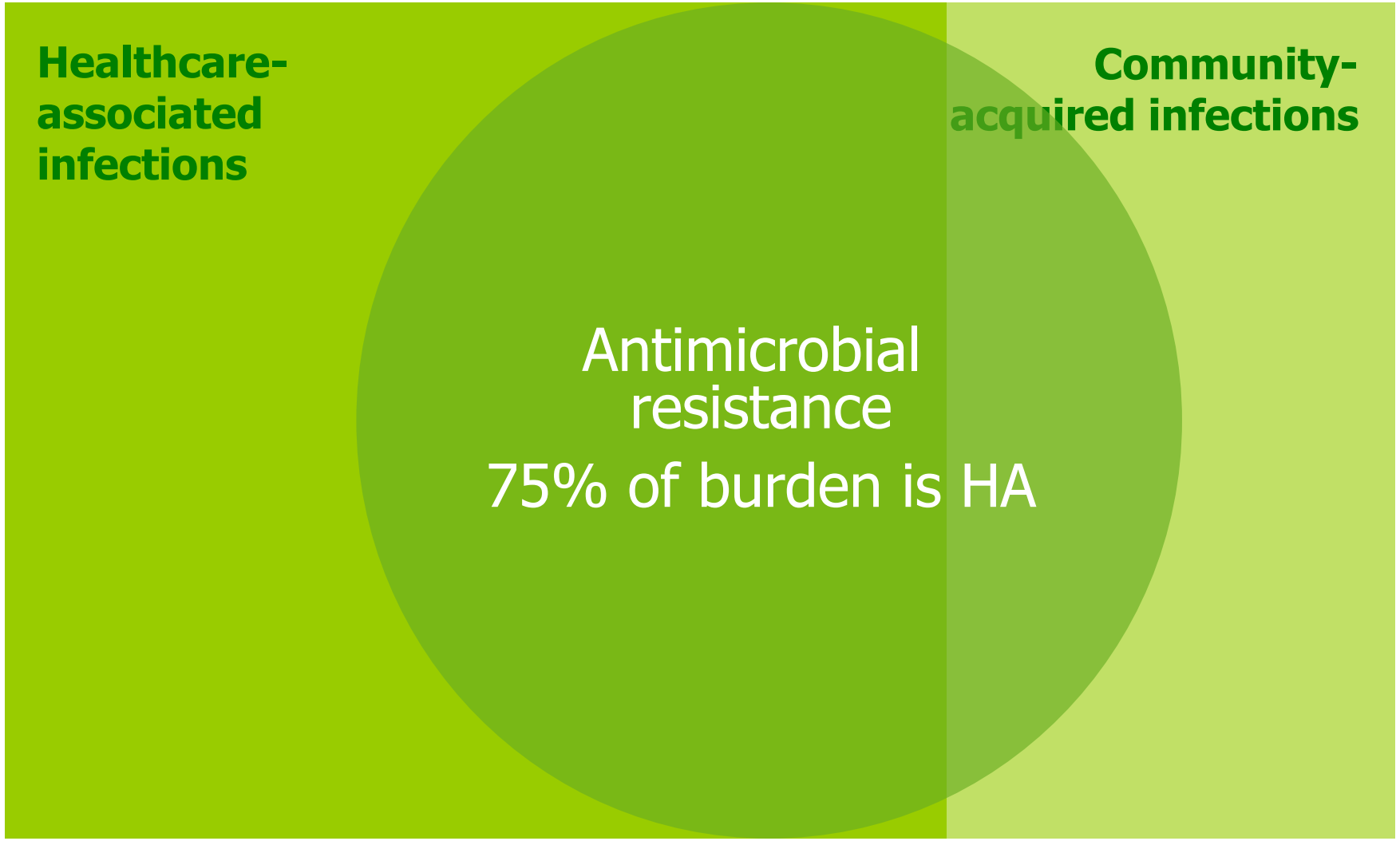
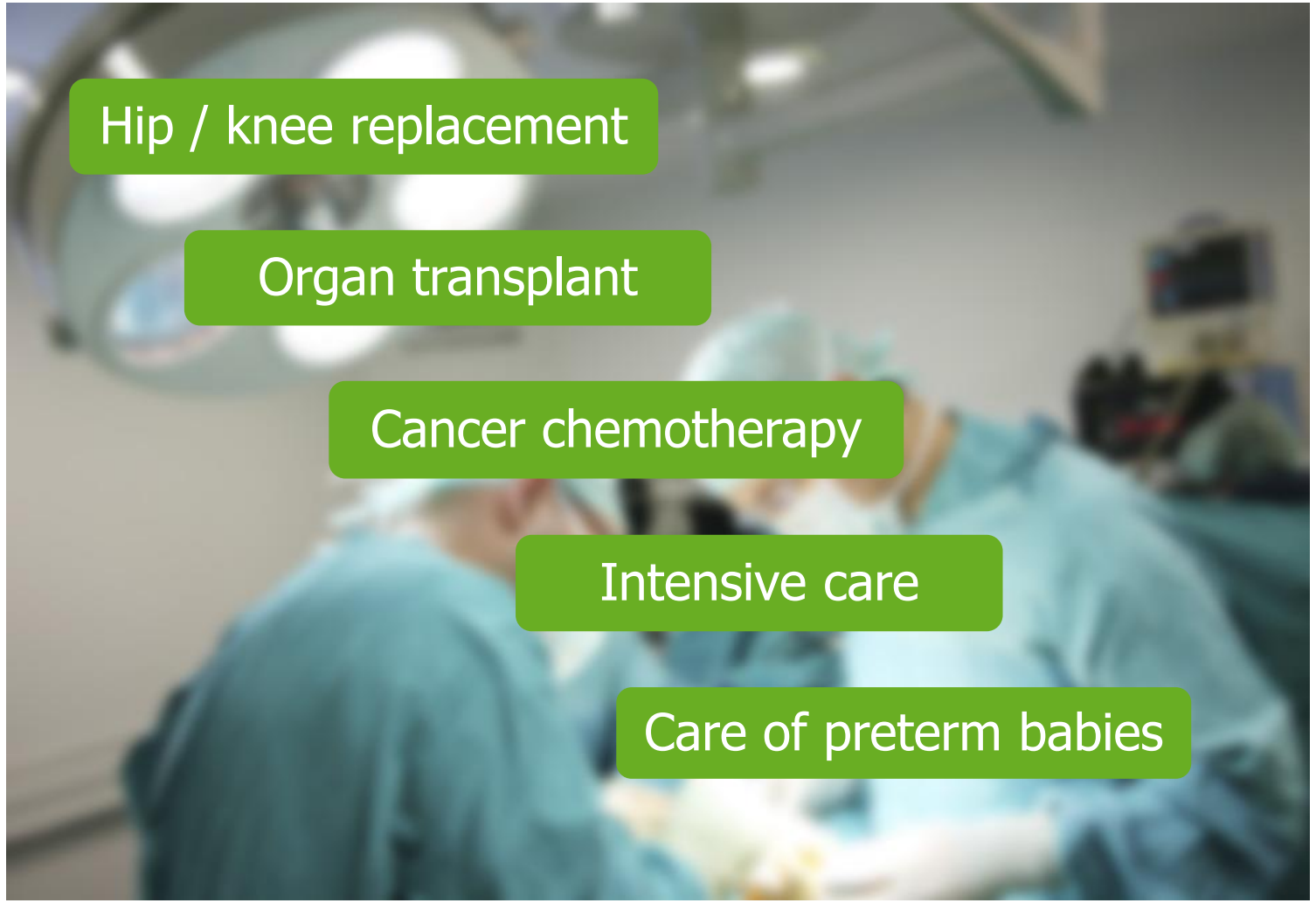
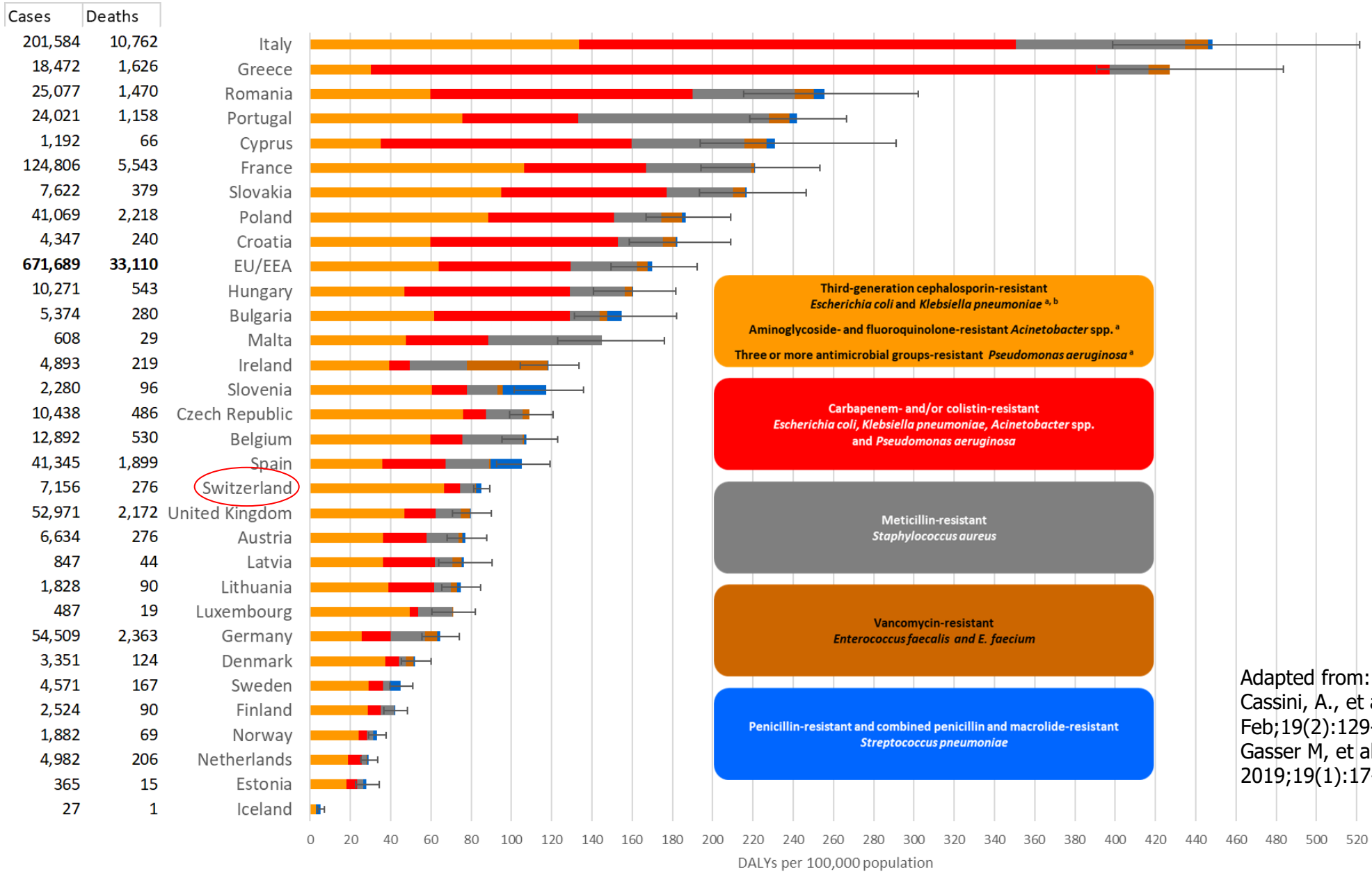
In terms of burden, HAIs have a bigger impact than community infections and AMR is mostly HA



Modern medicine: increasingly difficult without effective antibiotics



- Limited options for treatment
- Increased length of hospital stays
- Increased patient morbidity and mortality



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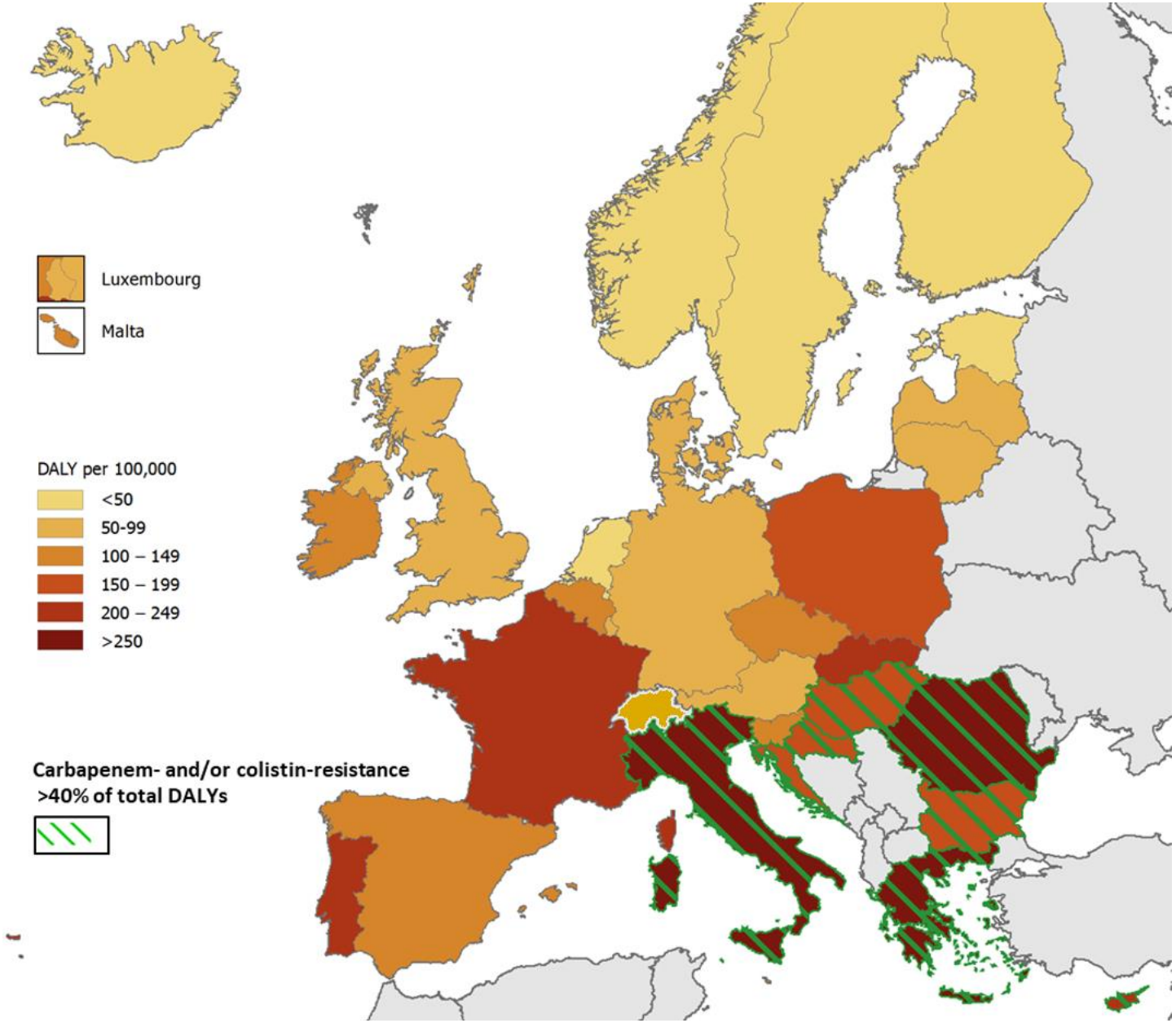
Gasser M, et al. Lancet Infect Dis. 2019;19(1):17-8.



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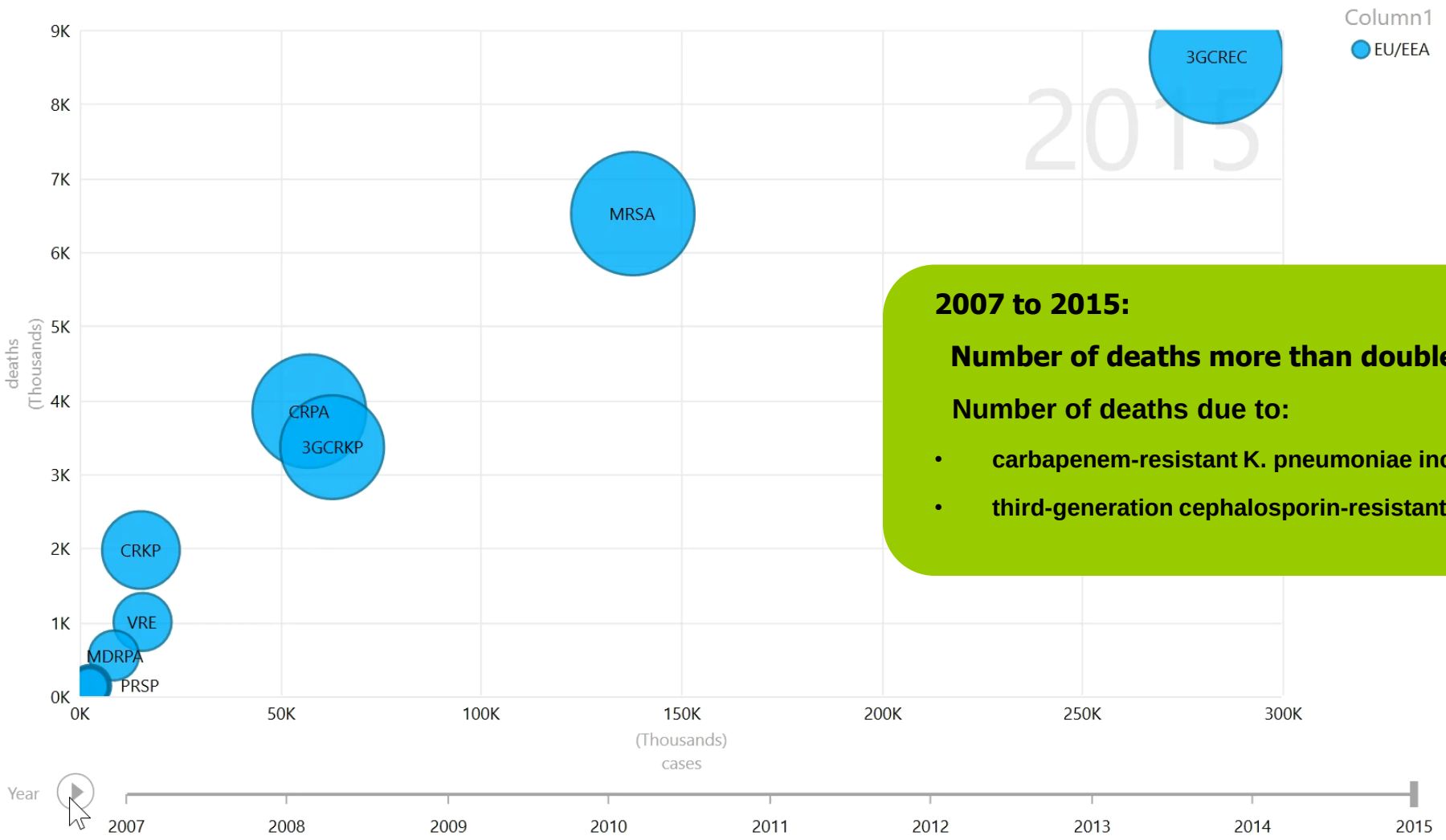
Burden of infections with antibiotic-resistant bacteria,



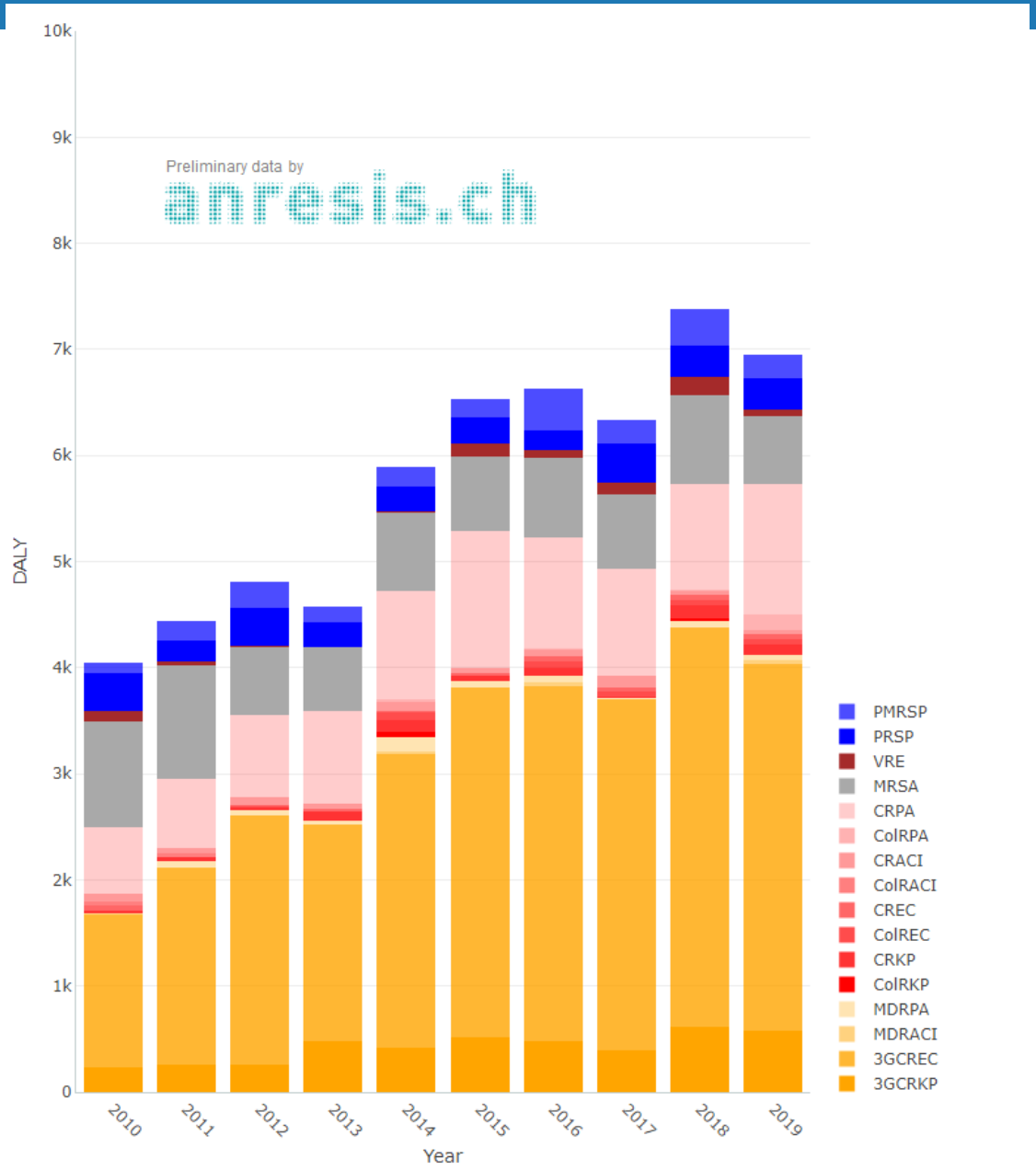
2007 to 2015:

Number of deaths more than doubled

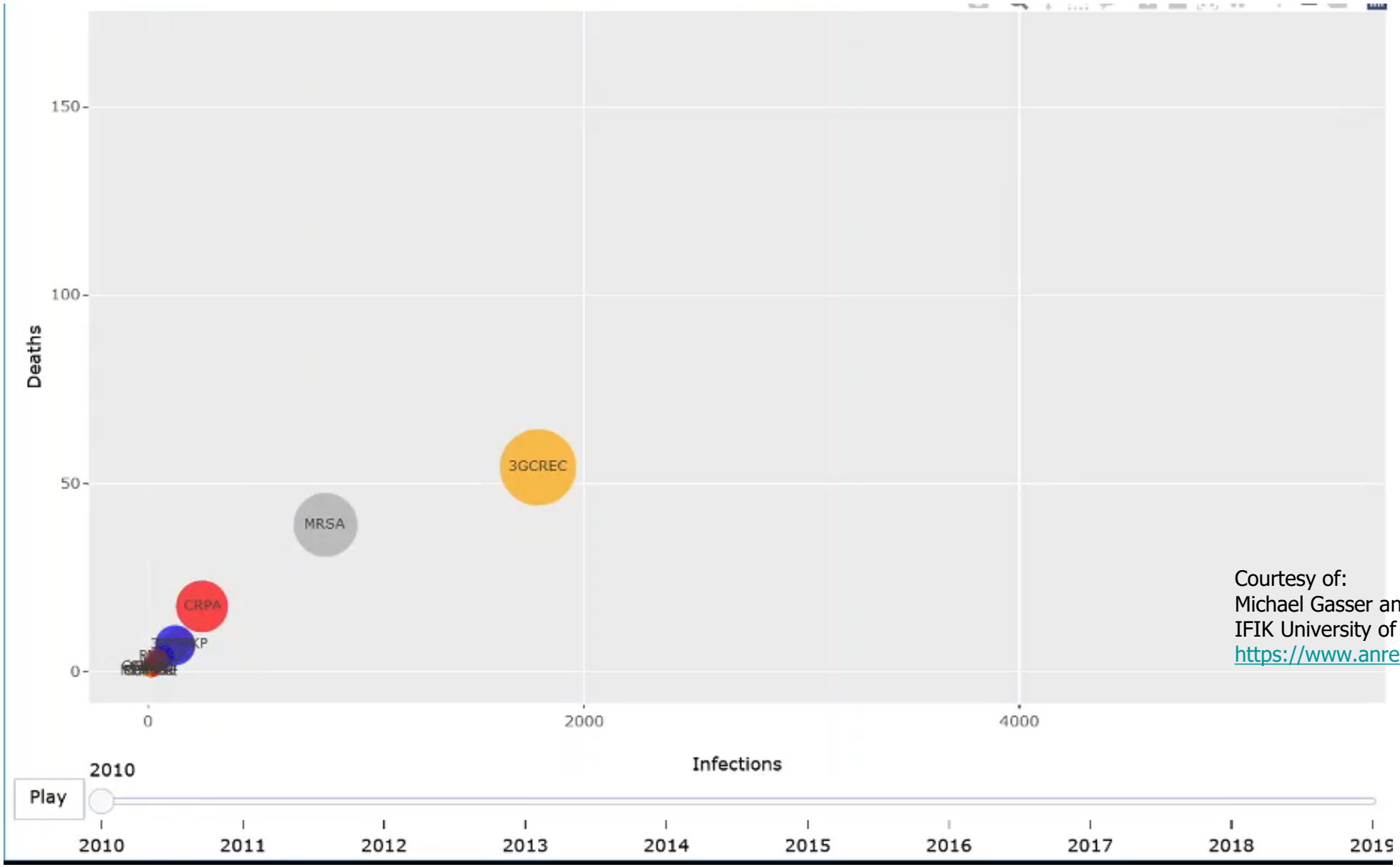
Number of deaths due to:

- **carbapenem-resistant K. pneumoniae increased six-fold**
- **third-generation cephalosporin-resistant E. coli increased four-fold**

Adapted from:
Cassini, A., et al. Lancet Infect Dis. 2019 Feb;19(2):129-130.



Courtesy of:
Michael Gasser and Andreas Kronenberg,
IFIK University of Bern



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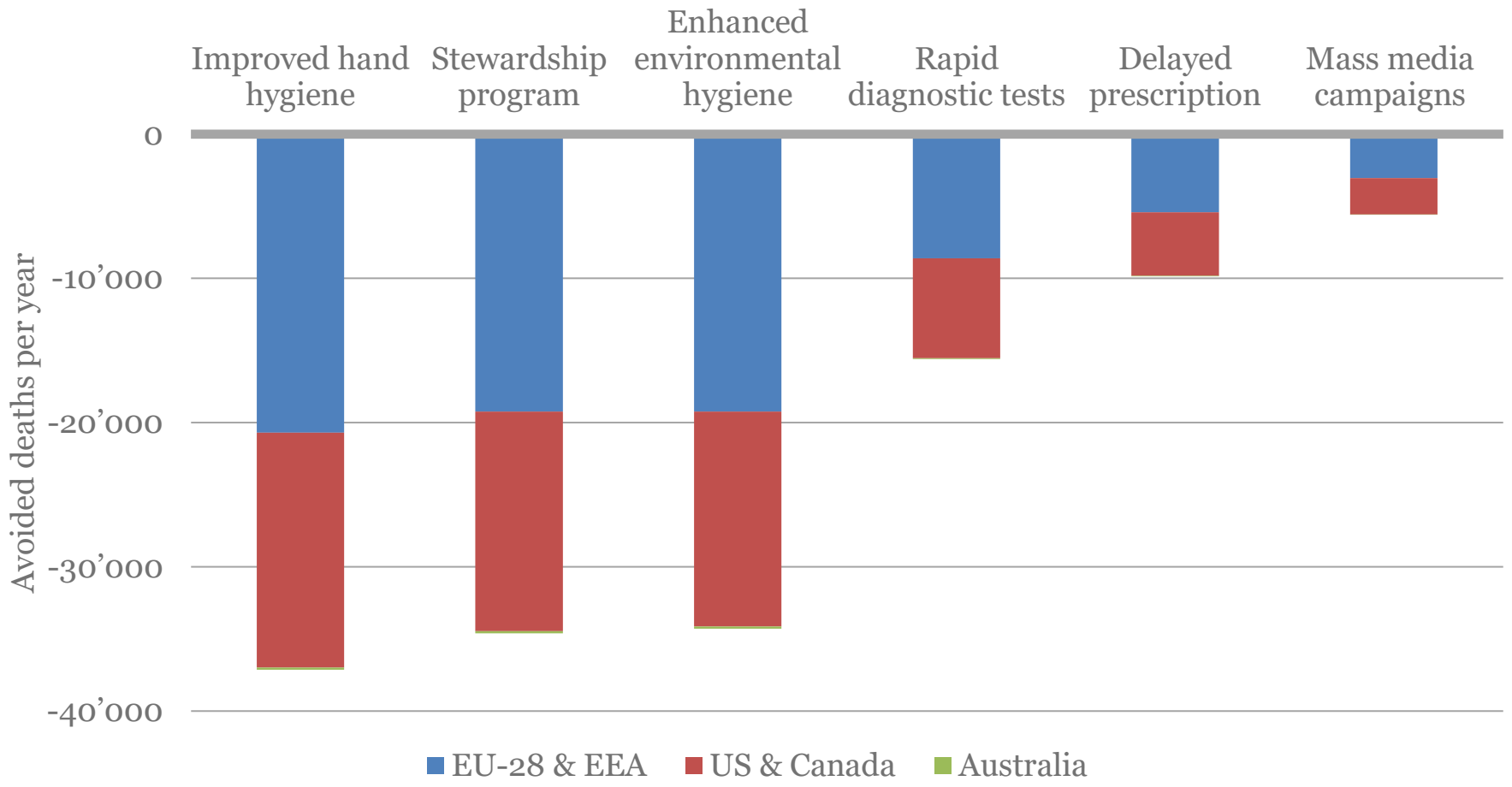
https://www.anresis.ch/#BoD

Public Health Policies to Tackle AMR Save Lives…



Courtesy of Michele Cecchini, OECD (Michele.CECCHINI@oecd.org)

Source: OECD. Stemming the Superbug Tide: just a few dollars more. 2018. oe.cd/amr-2018

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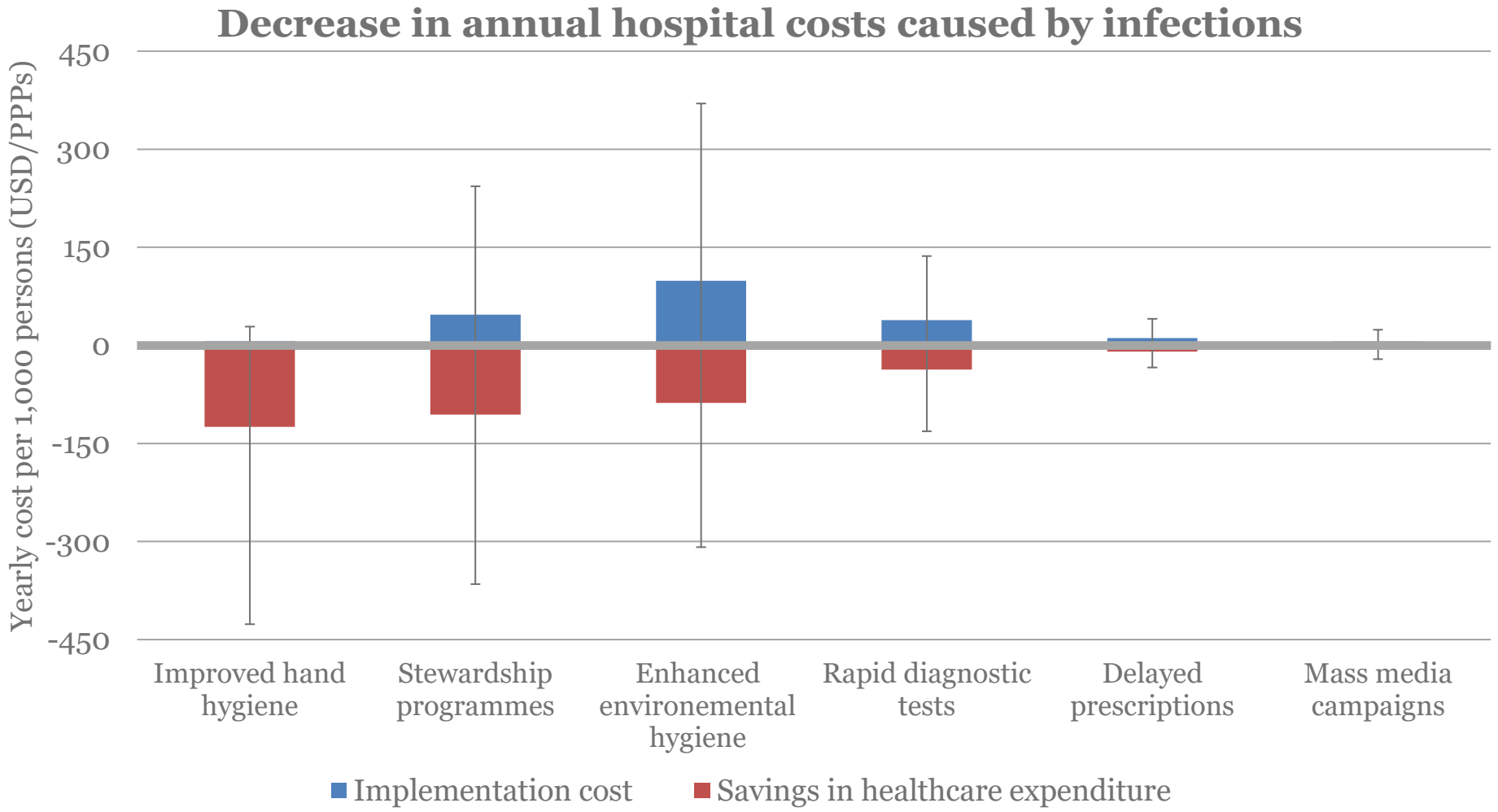
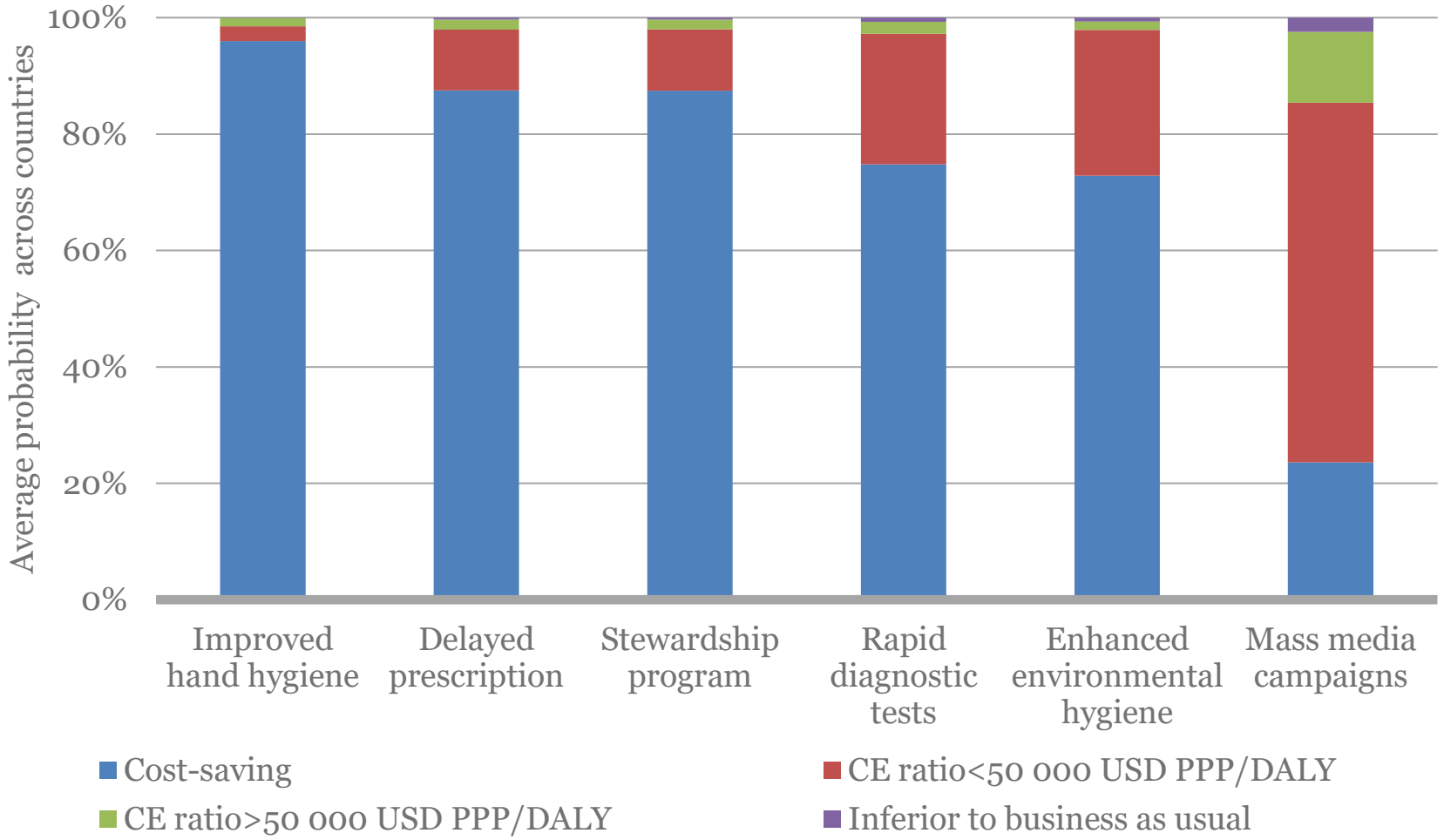
… And Decrease Healthcare Expenditure



Note: columns show the median value across 33 OECD and EU countries; whiskers show min and max values

Tackling AMR is a Very Good Investment for OECD and EU Countries



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Source: OECD. Stemming the Superbug Tide: just a few dollars more. 2018. oe.cd/amr-2018

"Although some policies require major investments and involve complex implementation, a number of policies such as hygiene interventions can be effectively implemented in resource-constrained settings."

"The first intervention would be to improve hygiene in healthcare facilities, including promotion of hand hygiene and better hospital hygiene."

Thank you

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