AMR Global Situation and Strategy

Disease Control and Prevention Center

National Center for Global Health and Medicine

(WHO Collaboration Center)

Shinichiro Morioka, M.D.


PENICILLIN
1 000 000 I. E
Förvaras svalt
KÄRNBOLAGET
STOCKHOLM
KÄRNBOLAGET

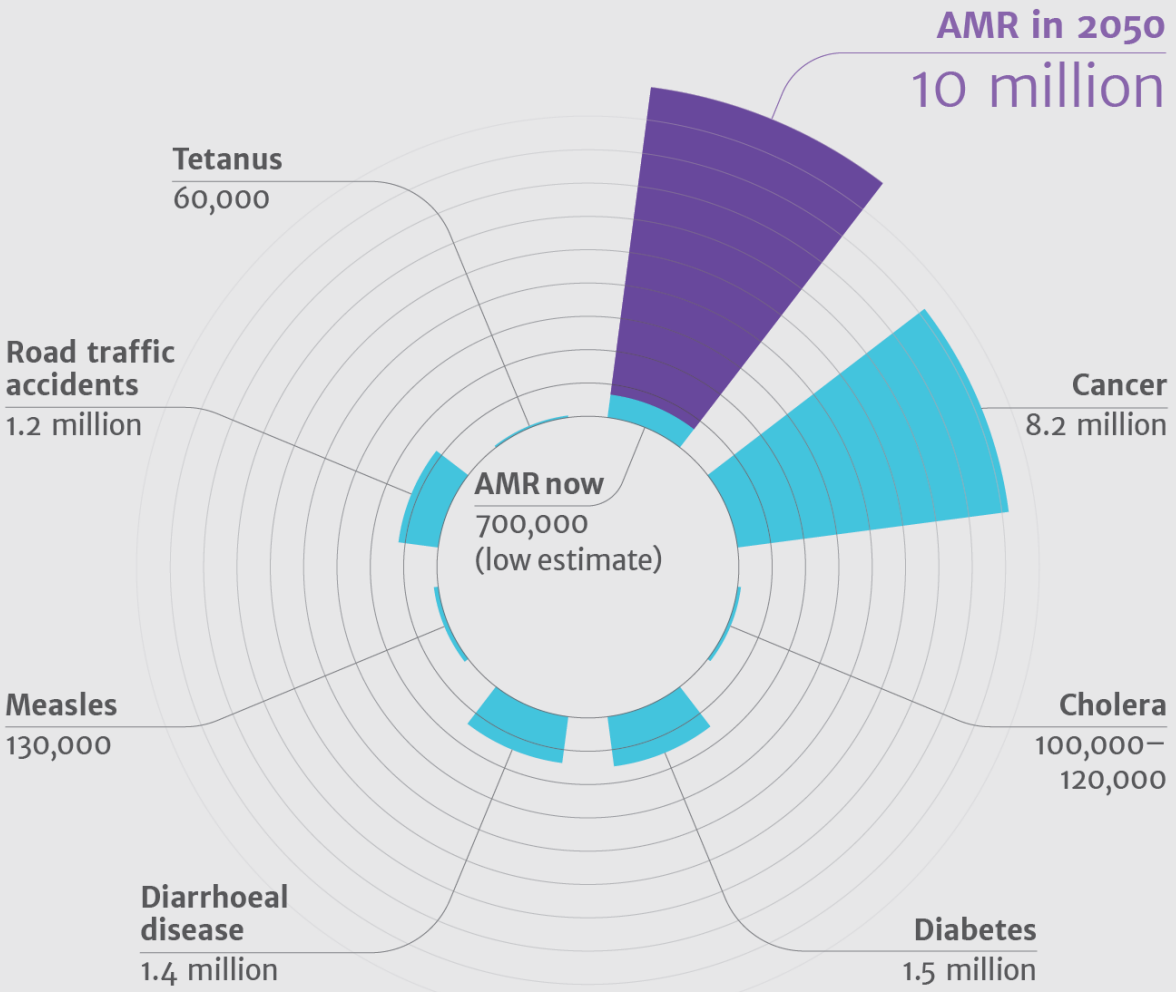
Alexander Fleming (1881-1955)

It is not difficult to make microbes resistant to penicillin in the laboratory by exposing them to concentrations not sufficient to kill them, and the same thing has occasionally happened in the body.

Nobel Lecture, December 11, 1945

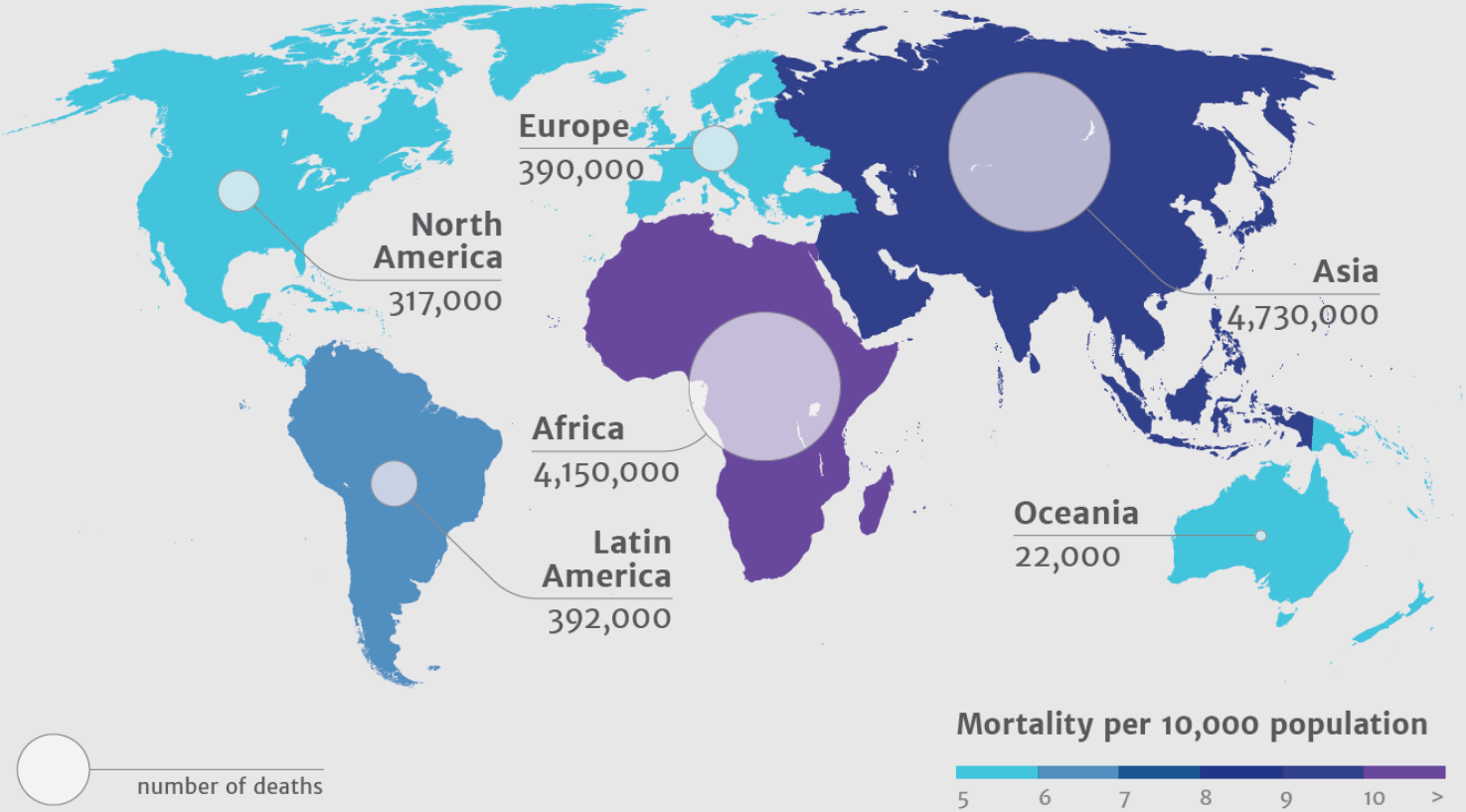
http://www.time.com/time/specials/2007/article/0,28804,1677329_1677708_1677828,00.html

Deaths attributable to AMR every year
compared to other major causes of death



Resistance: Tackling a crisis for the health and wealth of nations
The Review on Antimicrobial Resistance Chaired by Jim O'Neill (December 2014)

Deaths attributable to AMR every year by 2050



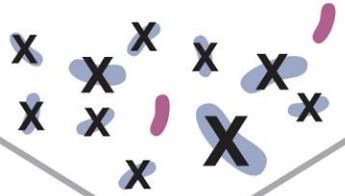
Resistance: Tackling a crisis for the health and wealth of nations
The Review on Antimicrobial Resistance Chaired by Jim O'Neill (December 2014)

Antibiotic Use in Medical Care

How Antibiotic Resistance Happens

1.
Lots of germs.
A few are drug resistant.

2.
Antibiotics kill bacteria causing the illness, as well as good bacteria protecting the body from infection.

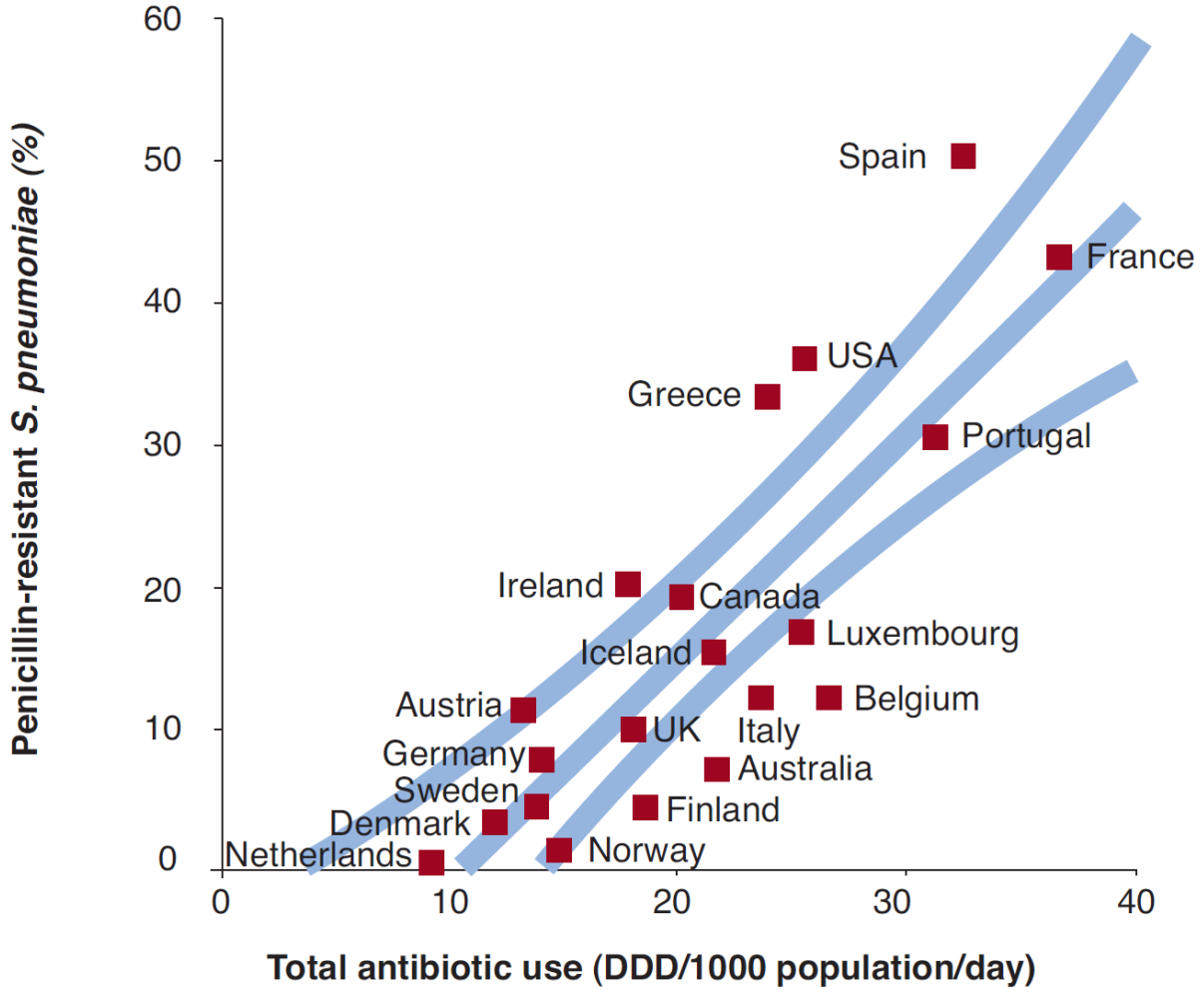


3.
The drug-resistant bacteria are now allowed to grow and take over.

4.
Some bacteria give their drug-resistance to other bacteria, causing more problems.

CDC

Antibiotic use and AMR from 1990-2000 in selected countries

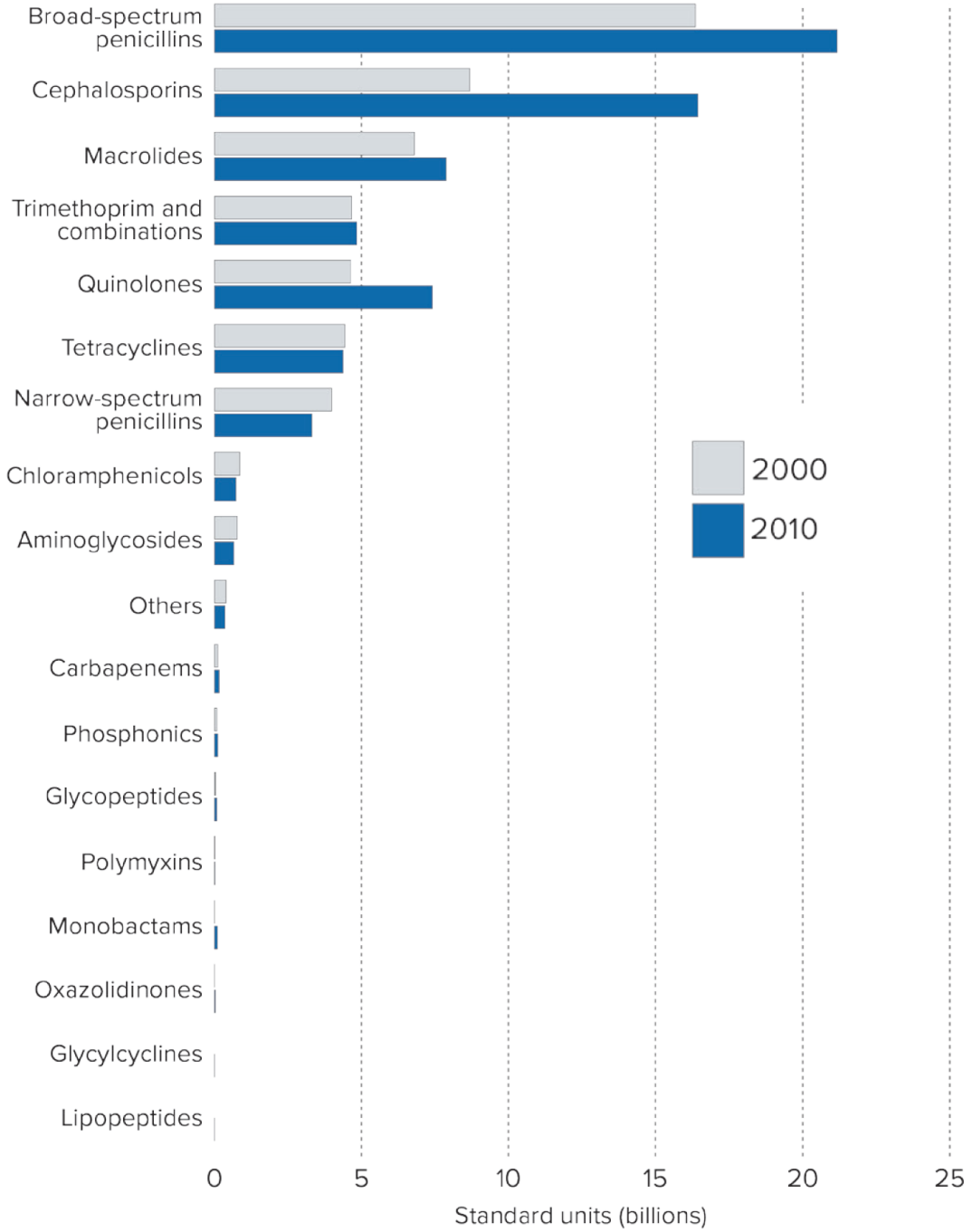


WHO: The evolving threat of antimicrobial resistance, Options for action (2012)

The more antibiotics,

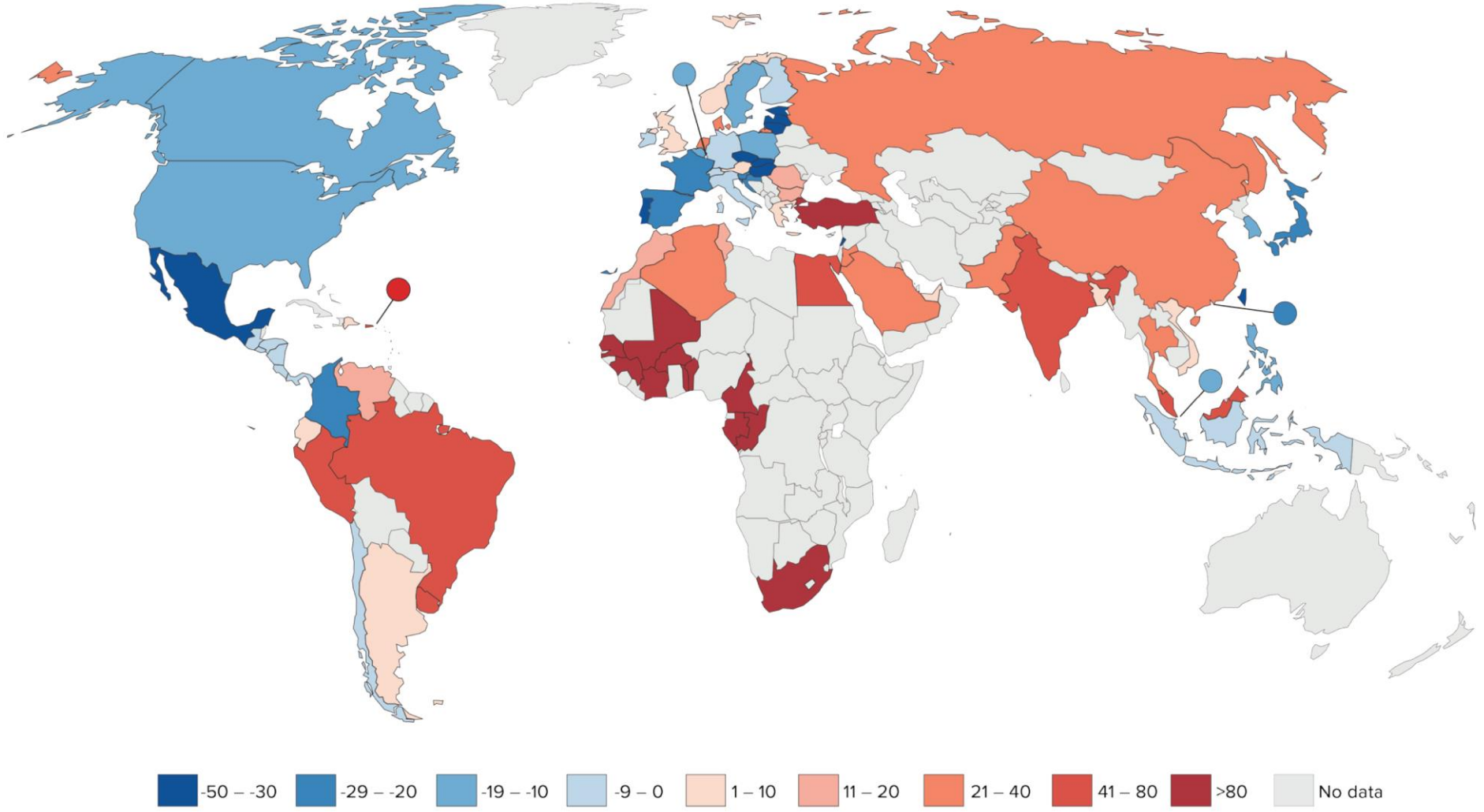
the more resistant bacteria.

Global antibiotic use by class, 2000-2010



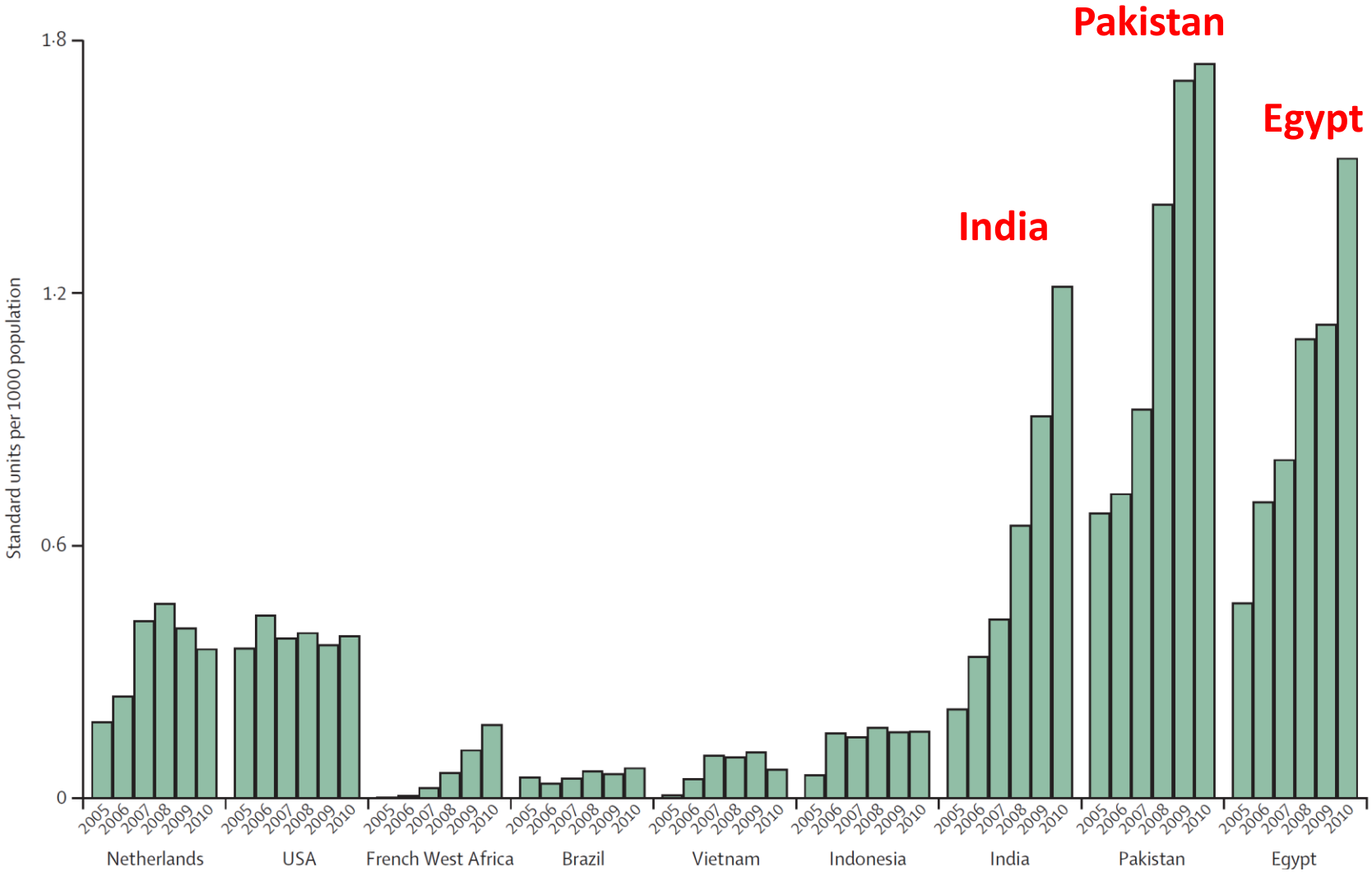
State of the World's Antibiotics, 2015.
CDDEP: Washington, D.C.

Percentage change in antibiotic consumption per capita 2000–2010, by country



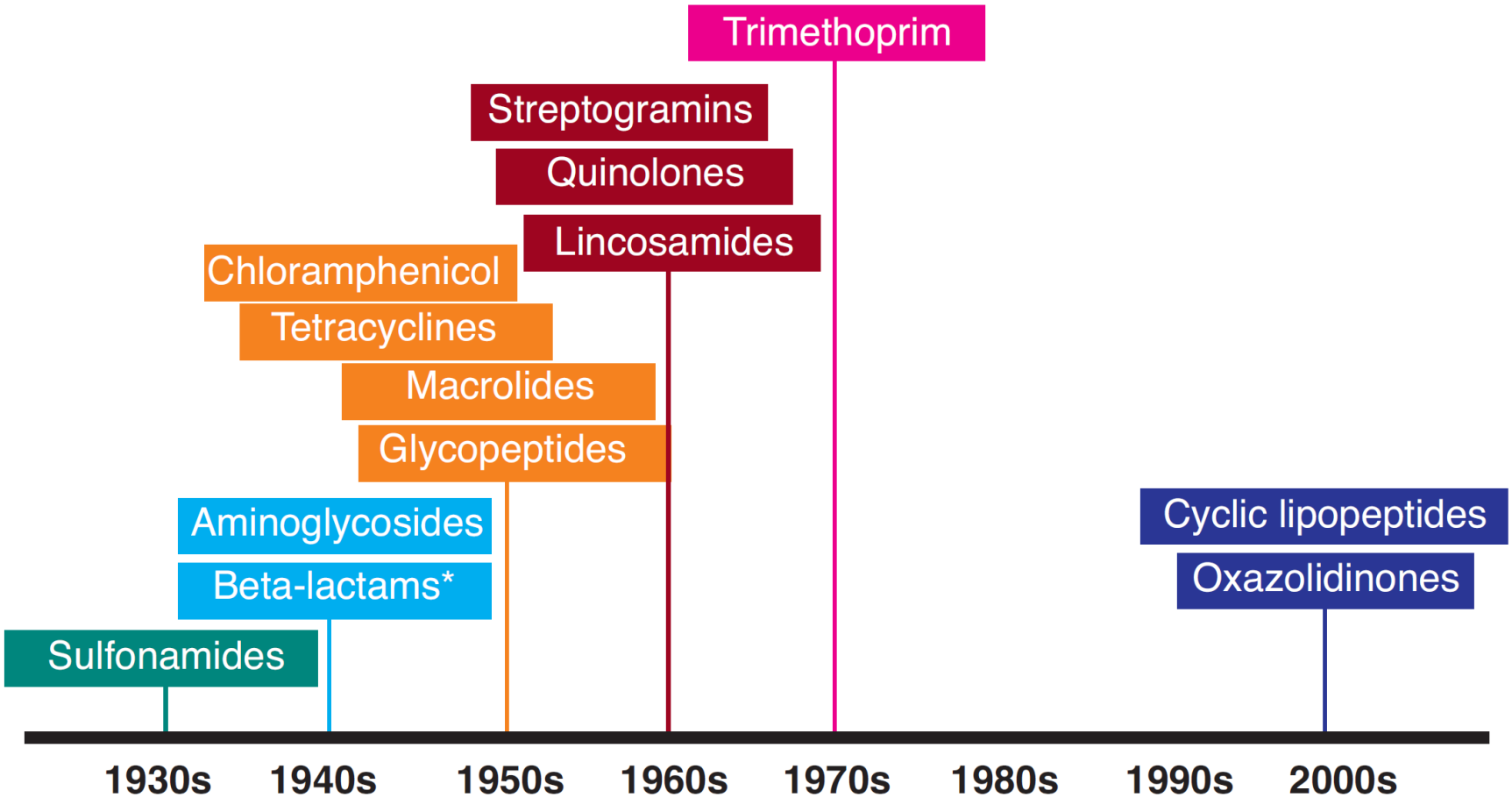
State of the World's Antibiotics, 2015. CDDEP: Washington, D.C.

Carbapenem retail sales in selected countries, 2005–2010 (per 1,000 population)



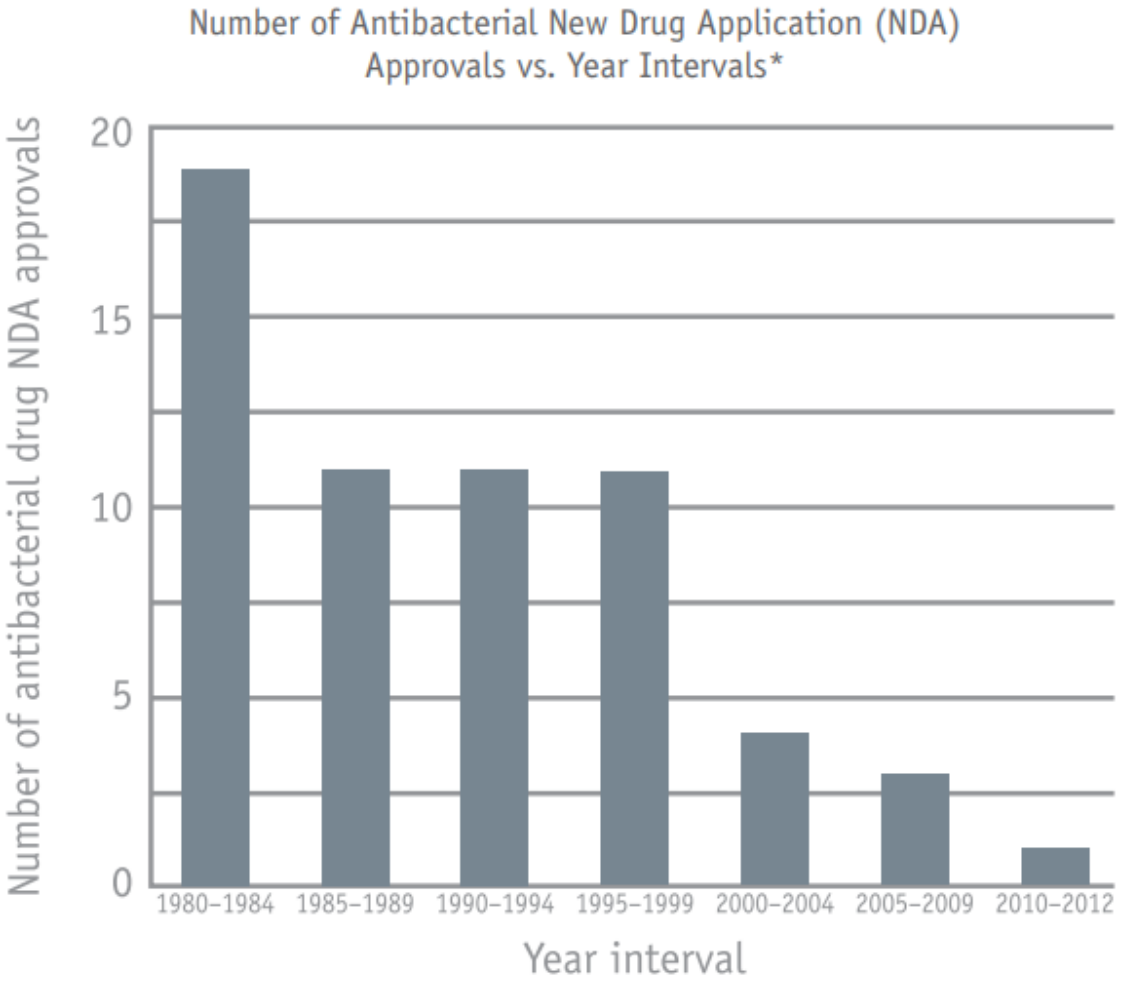
Lancet Infect Dis 2013;13:1057-98

Antibiotic pipeline



WHO “The evolving threat of antimicrobial resistance Options for action” (2012)

The number of new antibiotics developed and approved has steadily decreased in the past three decades, leaving fewer options to treat resistant bacteria.



*Intervals from 1980–2009 are 5-year intervals; 2010–2012 is a 3-year interval. Drugs are limited to systemic agents.
Data courtesy of FDA' s Center for Drug Evaluation and Research (CDER).

(https://www.cdc.gov/drugresistance/pdf/11-2013-508.pdf)

HEALTH

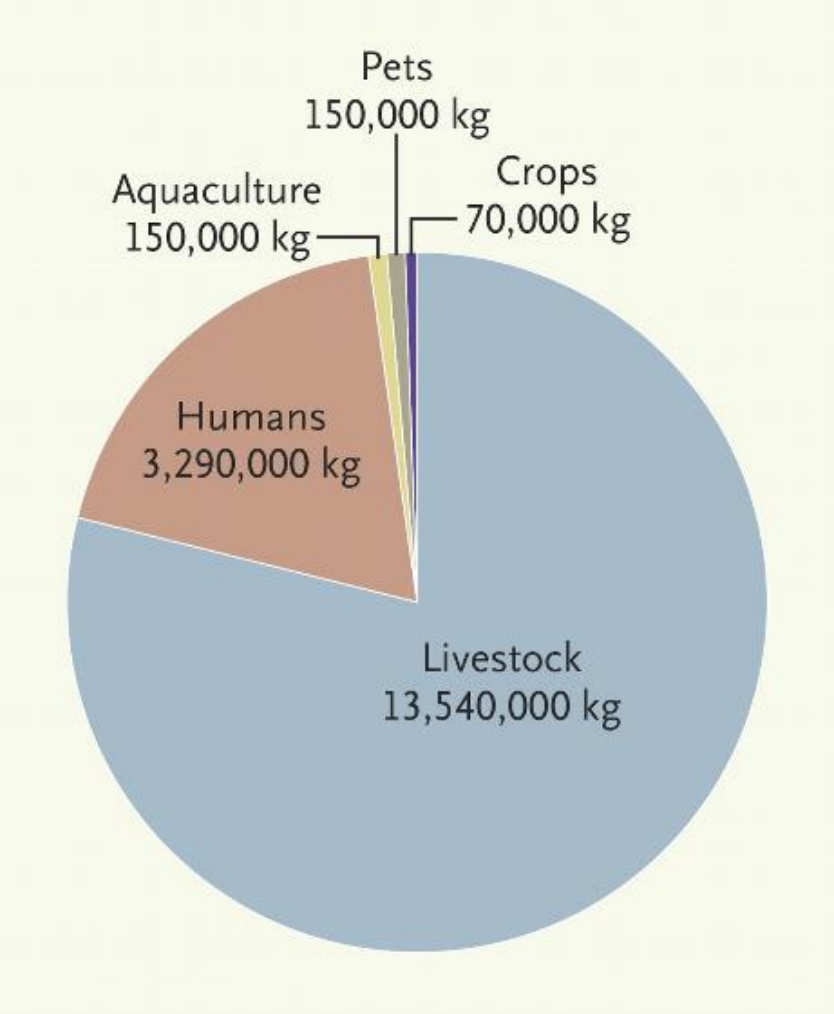
India's war against over-the-counter antibiotic abuse

By Dr Philip Mathew | June 06, 2017

http://www.theweek.in/features/lifestyle/India-war-against-over-the-counter-antibiotic-abuse.html

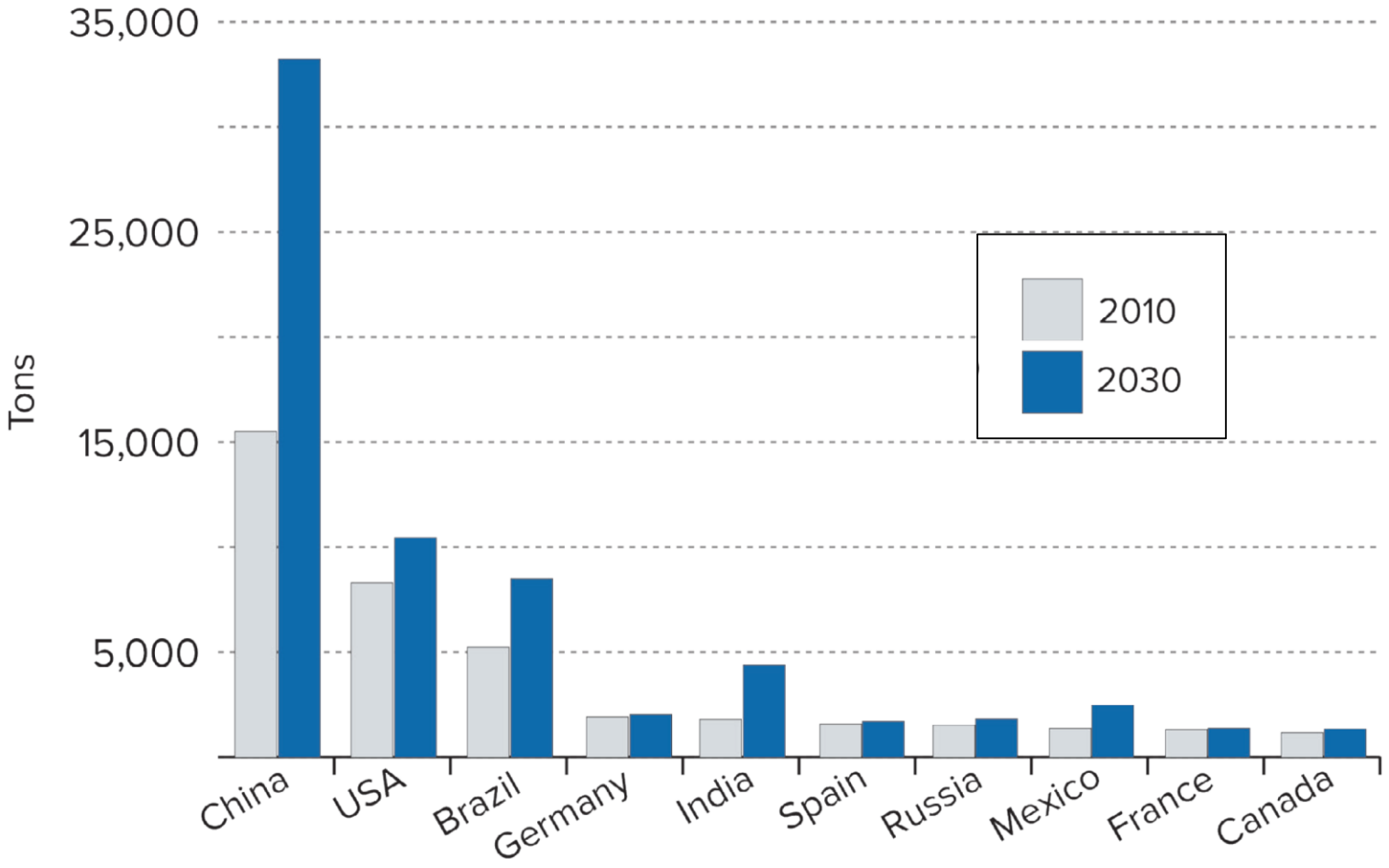
Antibiotic Use in Livestock

Estimated Annual Antibiotic Use in the United States.



N Engl J Med 2013; 369:2474-2476

Antibiotic consumption in livestock, ten top countries 2010-2030



State of the World's Antibiotics, 2015. CDDEP: Washington, D.C.

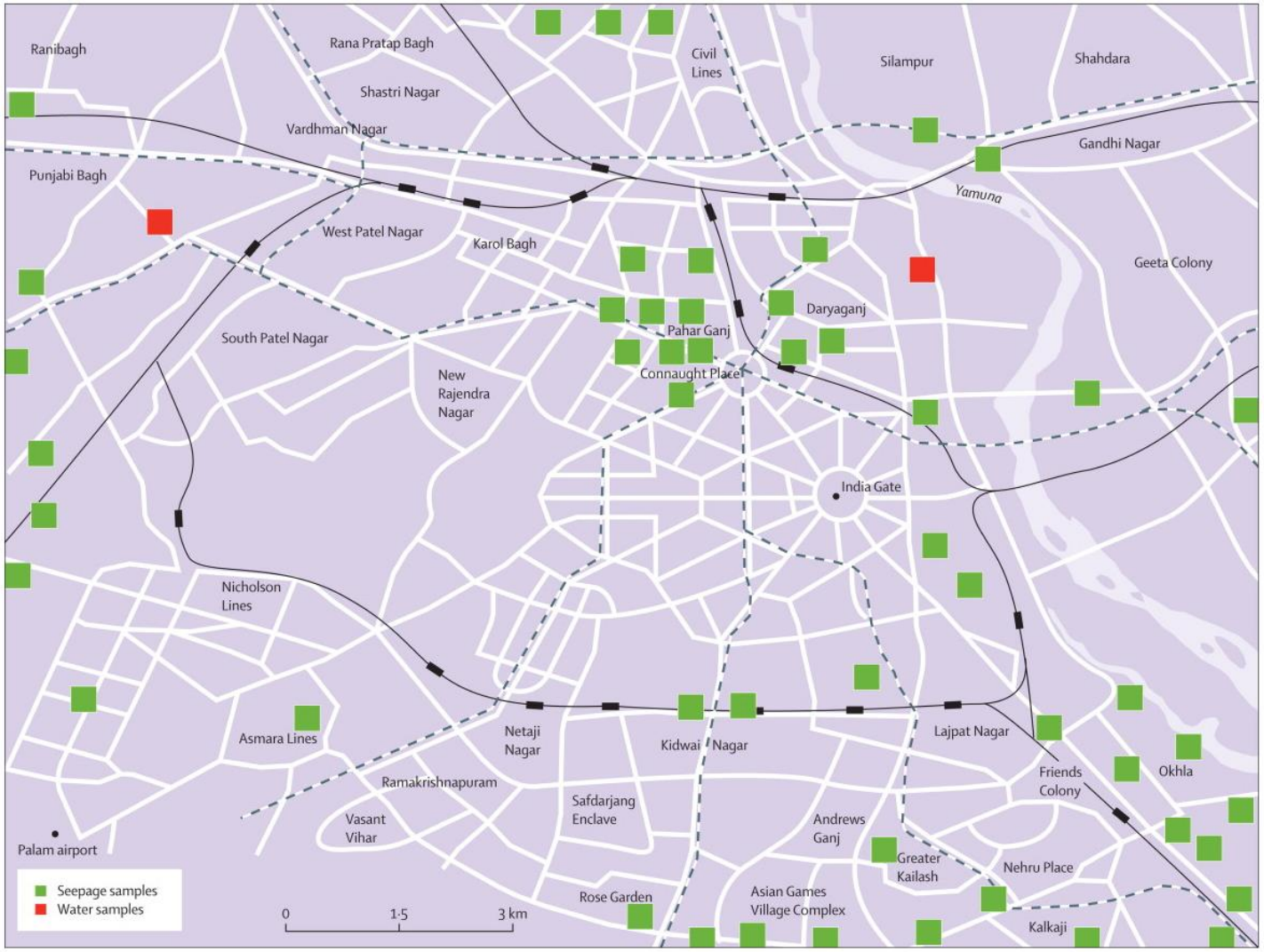
Superbugs show up in nearly 80% of supermarket meat

Melissa Breyer MelissaBreyer
June 29, 2018

© David Tadevosian

Resistant bacteria in environment

Dissemination of NDM-1 positive bacteria in the New Delhi environment



Walsh TR et al. Lancet Infect Dis. 2011;11:355-62.

RESEARCH ARTICLE Open Access

High colonization rates of extended-spectrum β-lactamase (ESBL)-producing *Escherichia coli* in Swiss Travellers to South Asia– a prospective observational multicentre cohort study looking at epidemiology, microb

Esther Kuenzli[1,2*], Veronika K Jaeger[2,3], Reno Frei[4],
Johannes Blum[2], Andreas F Widmer[1], Hansjakob F
and Christoph Hatz[2,5]

Antimicrobials Increase Travelers' Risk of Colonization by Extended-Spectrum Betalactamase-Producing *Enterobacteriaceae*

[3] Sari H. Pakkanen,[3] Jukka Ollgren,[6] Jenni Antikainen,[5]

Diseases, Department of Medicine, Helsinki University Hospital, and
el Clinic, Medical Centre Aava, [5]Department of Clinical Microbiology,
ealth and Welfare, Helsinki, Finland

RESEARCH

Extended-Spectrum β-Lactamase–producing *Enterobacteriaceae* among Travelers from the Netherlands

Sunita Paltansing, Jes
Alex

ANTIMICROBIAL AGENTS AND CHEMOTHERAPY, Sept. 2010, p. 3564–3568 Vol. 54, No. 9
0066-4804/10/$12.00 doi:10.1128/AAC.00220-10

Foreign Travel Is a Major Risk Factor for Colonization with *Escherichia coli* Producing CTX-M-Type Extended-Spectrum β-Lactamases: a Prospective Study with Swedish Volunteers[▽]

Thomas Tängdén,[1]* Otto Cars,[1] Åsa Melhus,[2]† and Elisabeth Löwdin[1]†

Sections of Infectious Diseases[1] and Clinical Bacteriology,[2] Department of Medical Sciences, Uppsala University, Uppsala, Sweden

CAUSES OF ANTIBIOTIC RESISTANCE

HANDLE ANTIBIOTICS WITH CARE

Antibiotic resistance happens when bacteria change and become resistant to the antibiotics used to treat the infections they cause.

Over-prescribing of antibiotics

Patients not finishing their treatment

Over-use of antibiotics in livestock and fish farming

Poor infection control in hospitals and clinics

Lack of hygiene and poor sanitation

Lack of new antibiotics being developed

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www.who.int/drugresistance

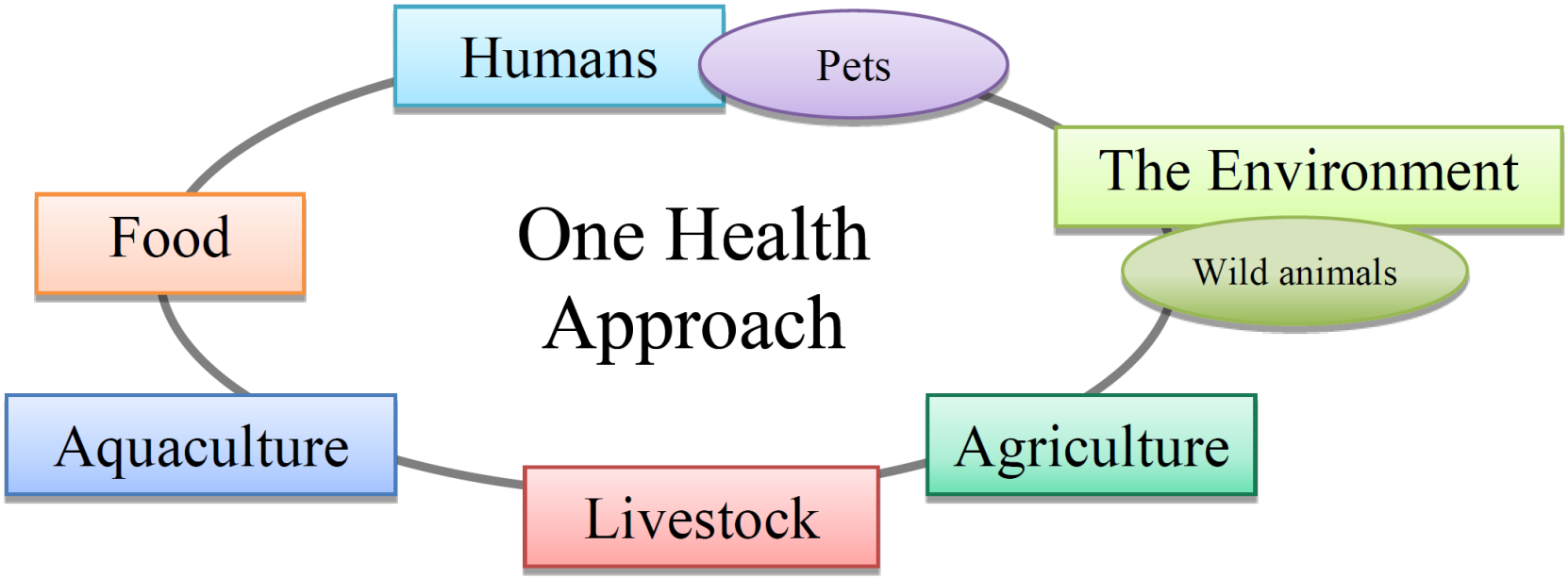
#AntibioticResistance

World Health Organization


GLOBAL ACTION PLAN
ON ANTIMICROBIAL
RESISTANCE
World Health
Organization

2015

Collaboration under One Health Approach



National Action Plan on Antimicrobial resistance (AMR) 2016-2020

National Action Plan on Antimicrobial Resistance (AMR)

2016-2020

April 5, 2016

The Government of Japan

	Field
1	Public awareness/education
2	Surveillance/monitoring
3	Infection prevention/control
4	Proper use of antimicrobial agents
5	Research & development/drug development
6	International cooperation

National Action Plan on Antimicrobial resistance (AMR) 2016-2020

Numeral targets

Proportion of resistant isolates of specific indicator microorganisms			
	Indicator	**2014**	**2020 (target)**
Human	Proportion of penicillin-resistance in *Streptococcus pneumoniae*	48%	**15% or less**
	Proportion of fluoroquinolone resistance in *Escherichia coli*	45%	**25% or less**
	Proportion of methicillin resistance in *Staphylococcus aureus*	51%	**20% or less**
	Proportion of carbapenem resistance in *Pseudomonas aeruginosa*	17%	**10% or less**
	Proportion of carbapenem resistance in *Escherichia coli/Klebsiella pneumoniae*	0.1-0.2%	**0.2% or less** **(same level as of 2014)**

National Action Plan on Antimicrobial resistance (AMR) 2016-2020

Surveillance is important.
No measurement, no management.

AMR Clinical Reference Center

- Established in National Center for Global Health and Medicine Hospital in April 2017
- Working on projects and researches based on National Action Plan on Antimicrobial Resistance in Japan
  - Clinical Surveillance Division
  - Information and Education Division

NCGM
National Center for Global Health and Medicine

AMR
Clinical Reference Center

AMR臨床リファレンスセンター

AMR
Clinical Reference Center
厚生労働省委託事業

かしこく治して、明日につなぐ
～抗菌薬を上手に使ってAMR対策～

サイト内検索 検索

国立国際医療研究センター病院

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「私たちができること」

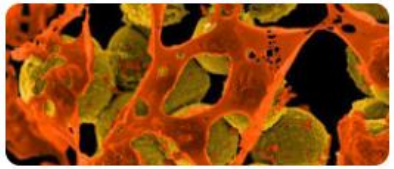
薬剤耐性(AMR)が拡大すると
抗菌薬の効かない感染症が増加し
感染症の予防や治療が難しくなります。
AMRの拡大を防ぐために
私たちができることを考えましょう。

詳しくはこちら▶

一般の方へ

感染症の基本

薬剤耐性菌について



日本の薬剤耐性菌の状況

http://amr.ncgm.go.jp/

COMBAT DRUG RESISTANCE

No action today, no cure tomorrow

7 APRIL 2011 **WORLD HEALTH DAY**

World Health Organization