Antimicrobial Resistance Initiative

Third Global Patient Safety Challenge

Global Antibiotic Resistance Partnership

CDDEP THE CENTER FOR Disease Dynamics, Economics & Policy WASHINGTON DC • NEW DELHI

Global Antibiotic Resistance Partnership – Kenya

KEMRI - RFF

Nairobi, 6-7 August 2009

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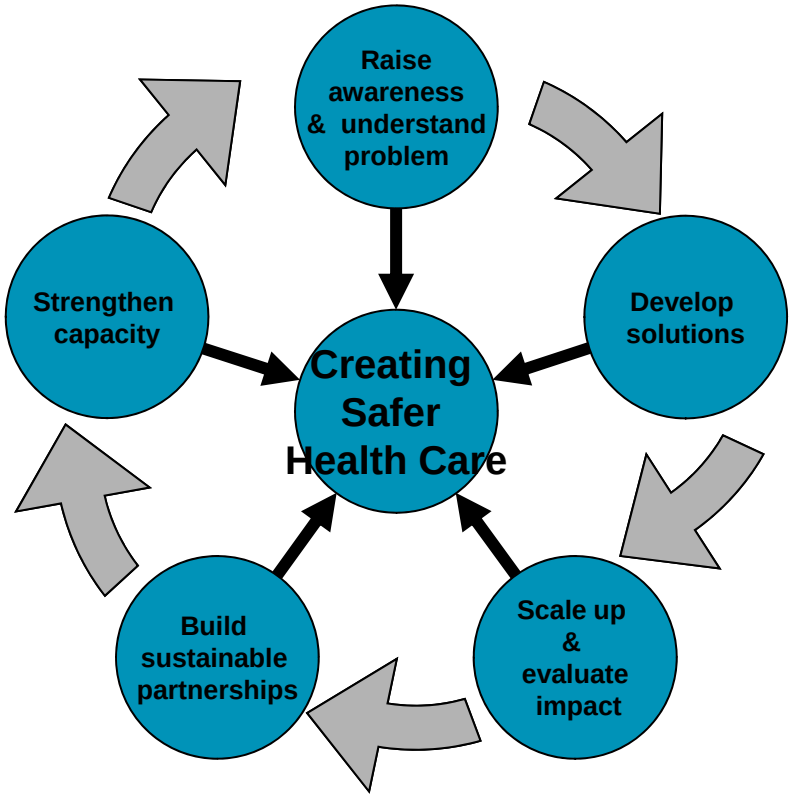
Patient Safety is a "Special WHO Programme" following WHA Resolution 55.18

Coordination, dissemination and acceleration of improvements in patient safety worldwide



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SURGICAL SAFETY CHECKLIST (FIRST EDITION)

Before induction of anaesthesia ▸▸▸▸▸▸▸▸▸ Before skin incision ▸▸▸▸▸▸▸▸▸▸▸▸▸ Before patient leaves operating room

SIGN IN

- ☐ PATIENT HAS CONFIRMED
  - IDENTITY
  - SITE
  - PROCEDURE
  - CONSENT
- ☐ SITE MARKED/NOT APPLICABLE
- ☐ ANAESTHESIA SAFETY CHECK COMPLETED
- ☐ PULSE OXIMETER ON PATIENT AND FUNCTIONING
- DOES PATIENT HAVE A:

  KNOWN ALLERGY?
  - ☐ NO
  - ☐ YES

  DIFFICULT AIRWAY/ASPIRATION RISK?
  - ☐ NO
  - ☐ YES, AND EQUIPMENT/ASSISTANCE AVAILABLE

  RISK OF >500ML BLOOD LOSS (7ML/KG IN CHILDREN)?
  - ☐ NO
  - ☐ YES, AND ADEQUATE INTRAVENOUS ACCESS AND FLUIDS PLANNED

TIME OUT

- ☐ CONFIRM ALL TEAM MEMBERS HAVE INTRODUCED THEMSELVES BY NAME AND ROLE
- ☐ SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE VERBALLY CONFIRM
  - PATIENT
  - SITE
  - PROCEDURE

ANTICIPATED CRITICAL EVENTS

- ☐ SURGEON REVIEWS: WHAT ARE THE CRITICAL OR UNEXPECTED STEPS, OPERATIVE DURATION, ANTICIPATED BLOOD LOSS?
- ☐ ANAESTHESIA TEAM REVIEWS: ARE THERE ANY PATIENT-SPECIFIC CONCERNS?
- ☐ NURSING TEAM REVIEWS: HAS STERILITY (INCLUDING INDICATOR RESULTS) BEEN CONFIRMED? ARE THERE EQUIPMENT ISSUES OR ANY CONCERNS?

HAS ANTIBIOTIC PROPHYLAXIS BEEN GIVEN WITHIN THE LAST 60 MINUTES?
- ☐ YES
- ☐ NOT APPLICABLE

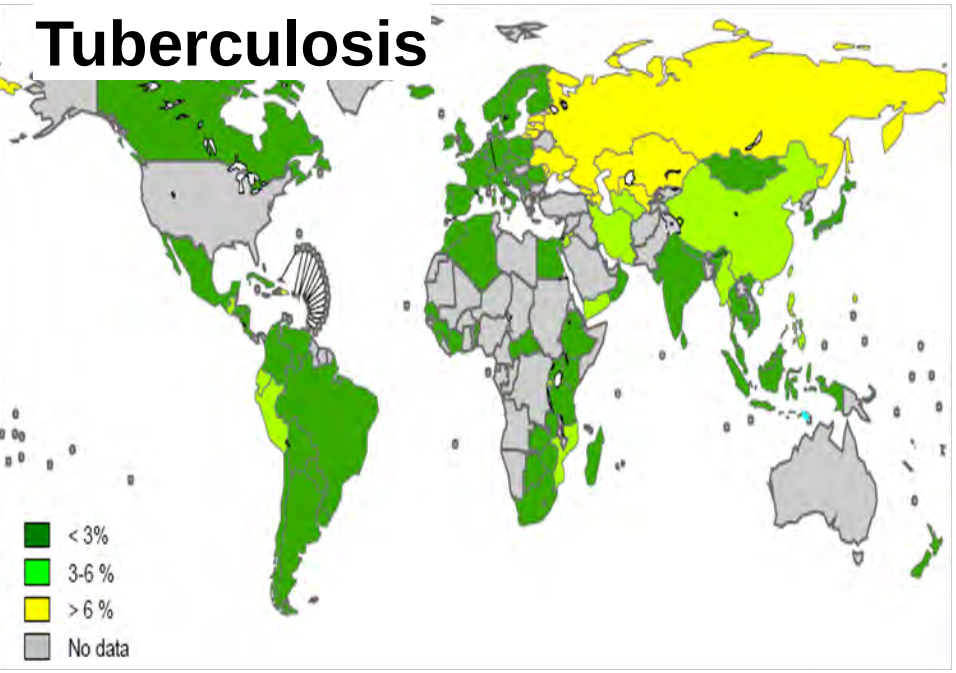
IS ESSENTIAL IMAGING DISPLAYED?
- ☐ YES
- ☐ NOT APPLICABLE

SIGN OUT

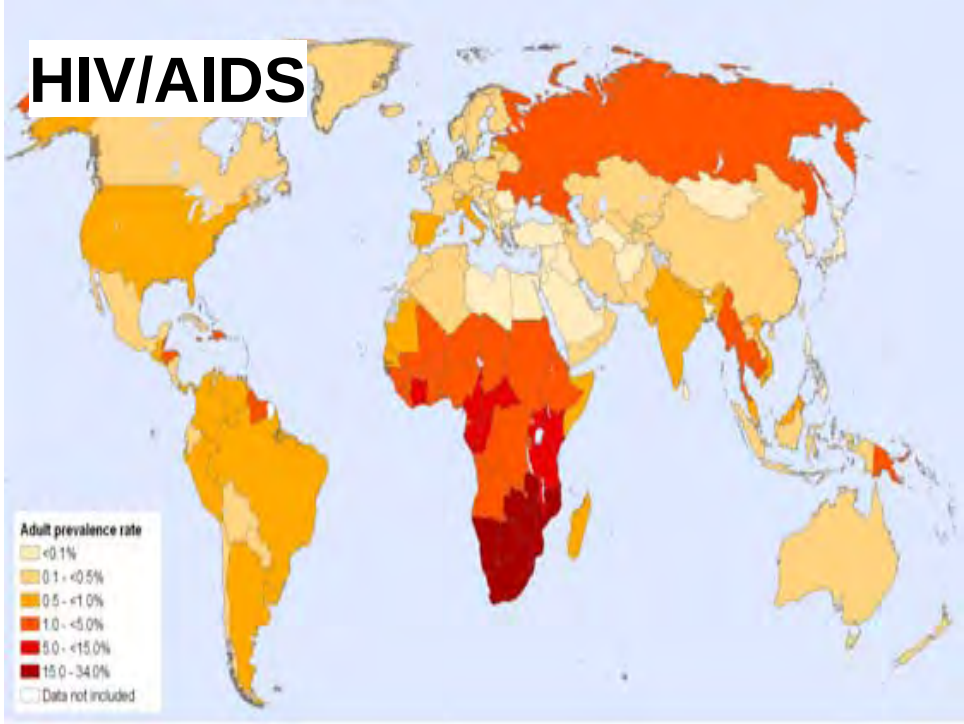
NURSE VERBALLY CONFIRMS WITH THE TEAM:

- ☐ THE NAME OF THE PROCEDURE RECORDED
- ☐ THAT INSTRUMENT, SPONGE AND NEEDLE COUNTS ARE CORRECT (OR NOT APPLICABLE)
- ☐ HOW THE SPECIMEN IS LABELLED (INCLUDING PATIENT NAME)
- ☐ WHETHER THERE ARE ANY EQUIPMENT PROBLEMS TO BE ADDRESSED
- ☐ SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE REVIEW THE KEY CONCERNS FOR RECOVERY AND MANAGEMENT OF THIS PATIENT

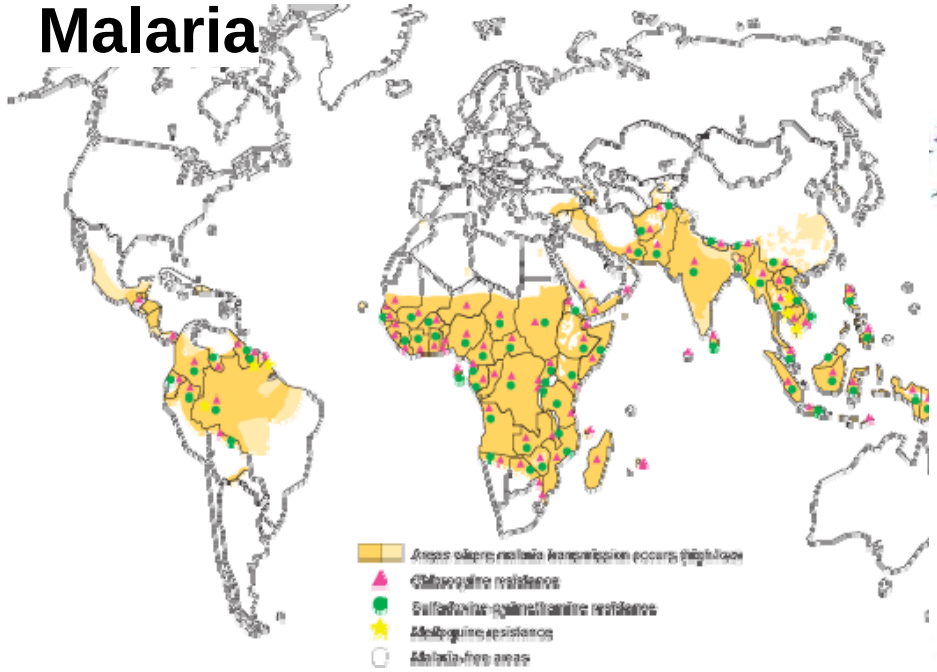
Tuberculosis



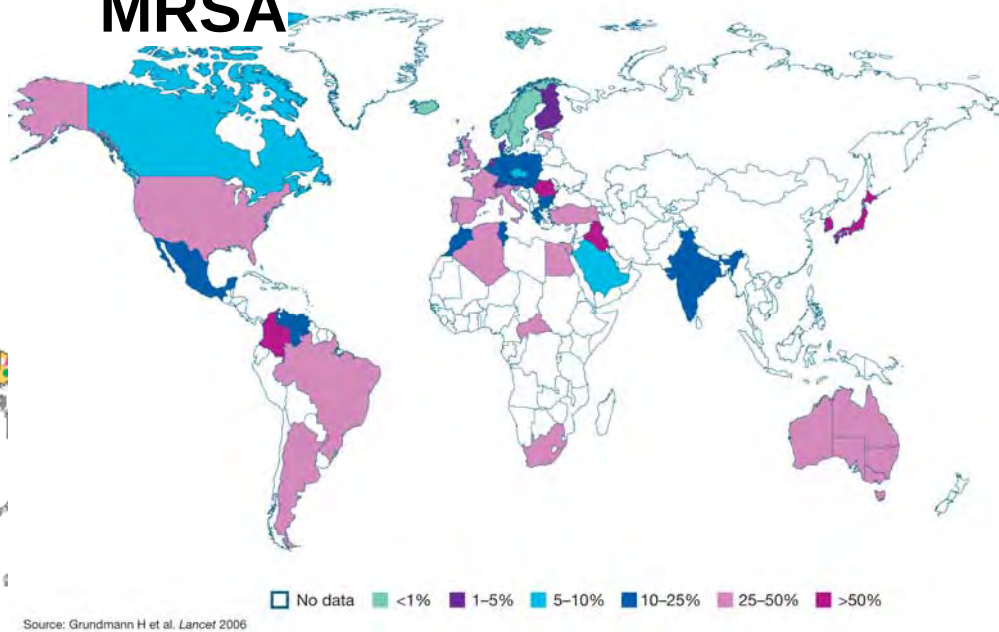
HIV/AIDS



Malaria



MRSA



Source: Grundmann H et al. *Lancet* 2006

Antibiotic use: indiscriminate use in plants, fish and animals

Overuse of antibiotics in the US
Washington Post, 2005

More than half of the antibiotics used in the United States are estimated to be used in animal feed for poultry, hogs, and cattle
In 80 percent of cases, the drugs are used to fatten the animals faster.

Between 40,000 and 50,000 pounds of tetracycline and streptomycin - both used to treat infections in humans - are sprayed to control bacterial disease among fruit trees.

In the United States nearly 150 pounds of antibiotic are applied per acre of salmon

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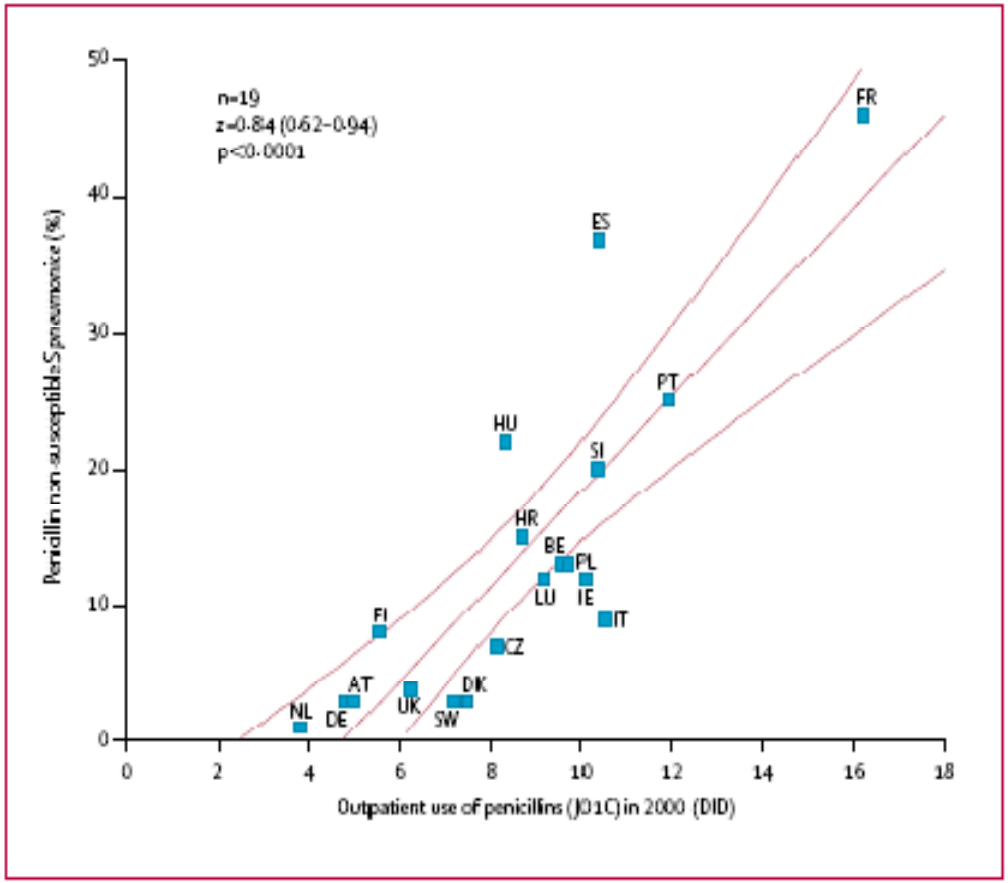
Antibiotic use: outpatient penicillin usage correlated with penicillin resistance, Europe 2005



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Source: Goossens et al. 2005

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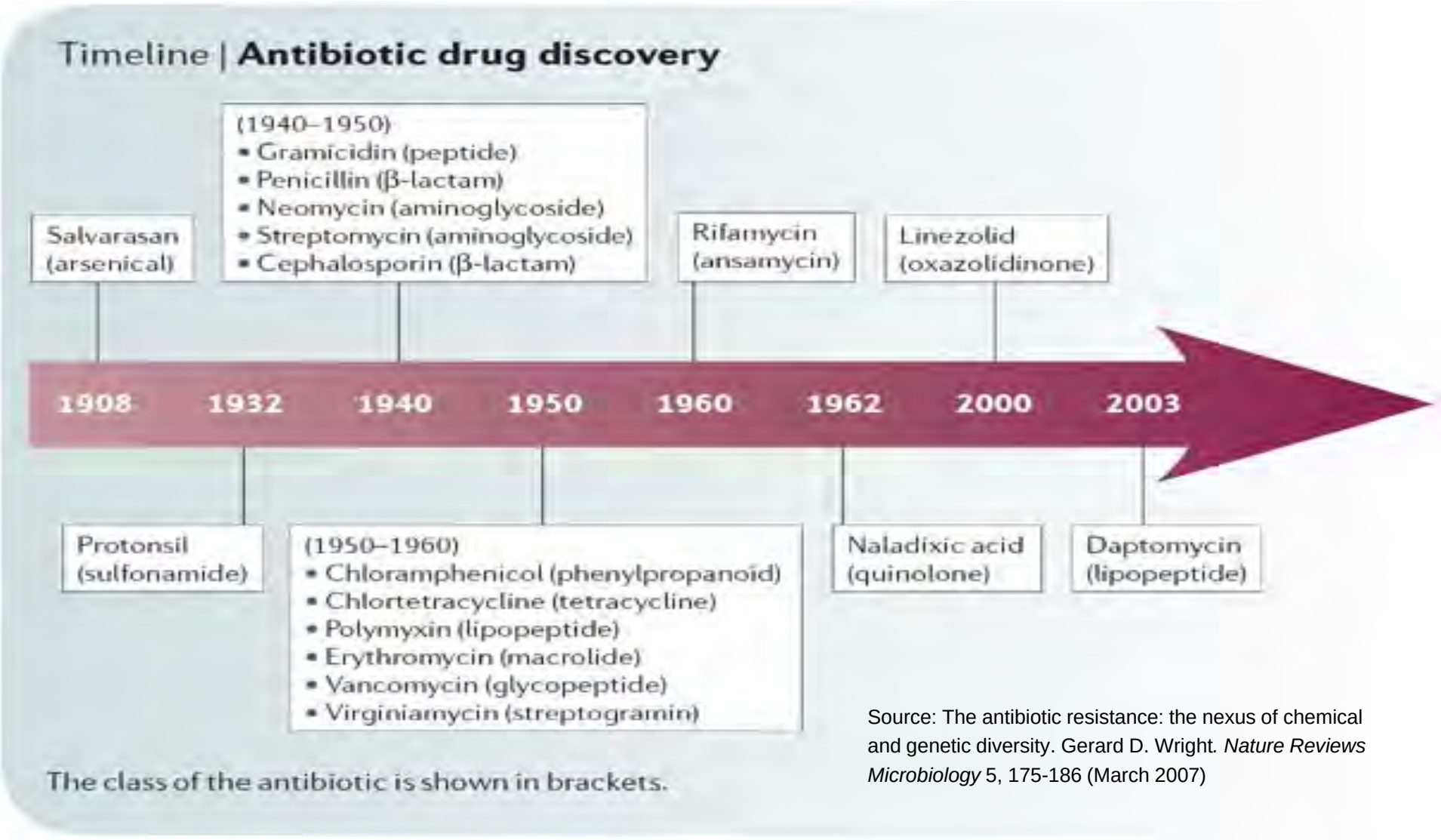
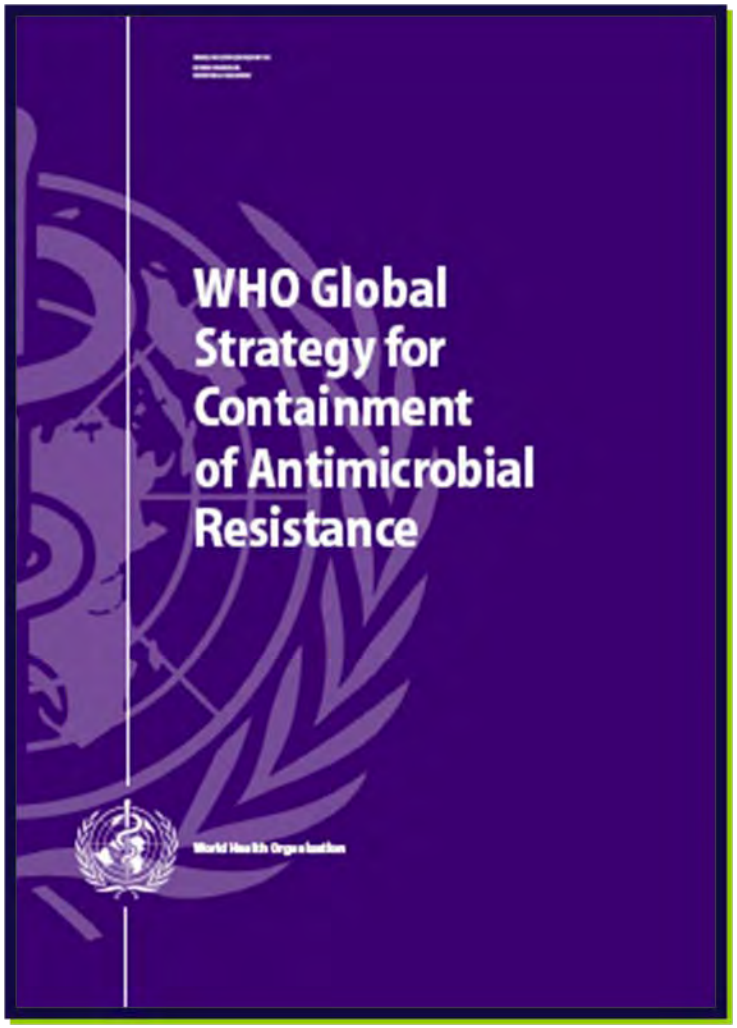
Discovery of antibiotics: a faltering pipeline



Source: The antibiotic resistance: the nexus of chemical and genetic diversity. Gerard D. Wright. *Nature Reviews Microbiology* 5, 175-186 (March 2007)

Preserving effectiveness of anti-microbial therapy: globally



Launched
9/11-2001

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Patient Safety Programme Progression in 2 Stages

Stage 1 (Foundation) ongoing

- Defining five topic areas and convening five working groups
- Develop Global AMR work plan based on 2001 Global Strategy
- Focus on Antibiotic Resistance
- Develop rough estimation of Global burden of resistance
- Initiate planning for global surveillance network

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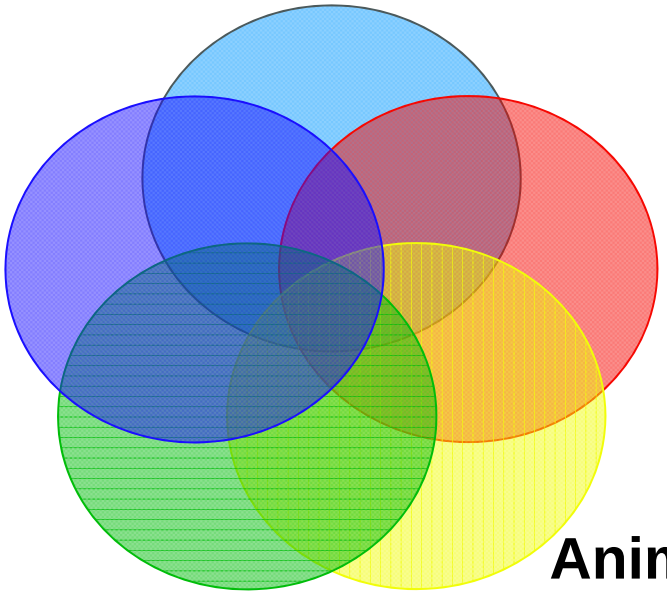
The five key areas for containment of antimicrobial resistance

Rational drug use and regulation

Infection prevention



Research and development

Surveillance

Animal husbandry, agriculture, aquaculture

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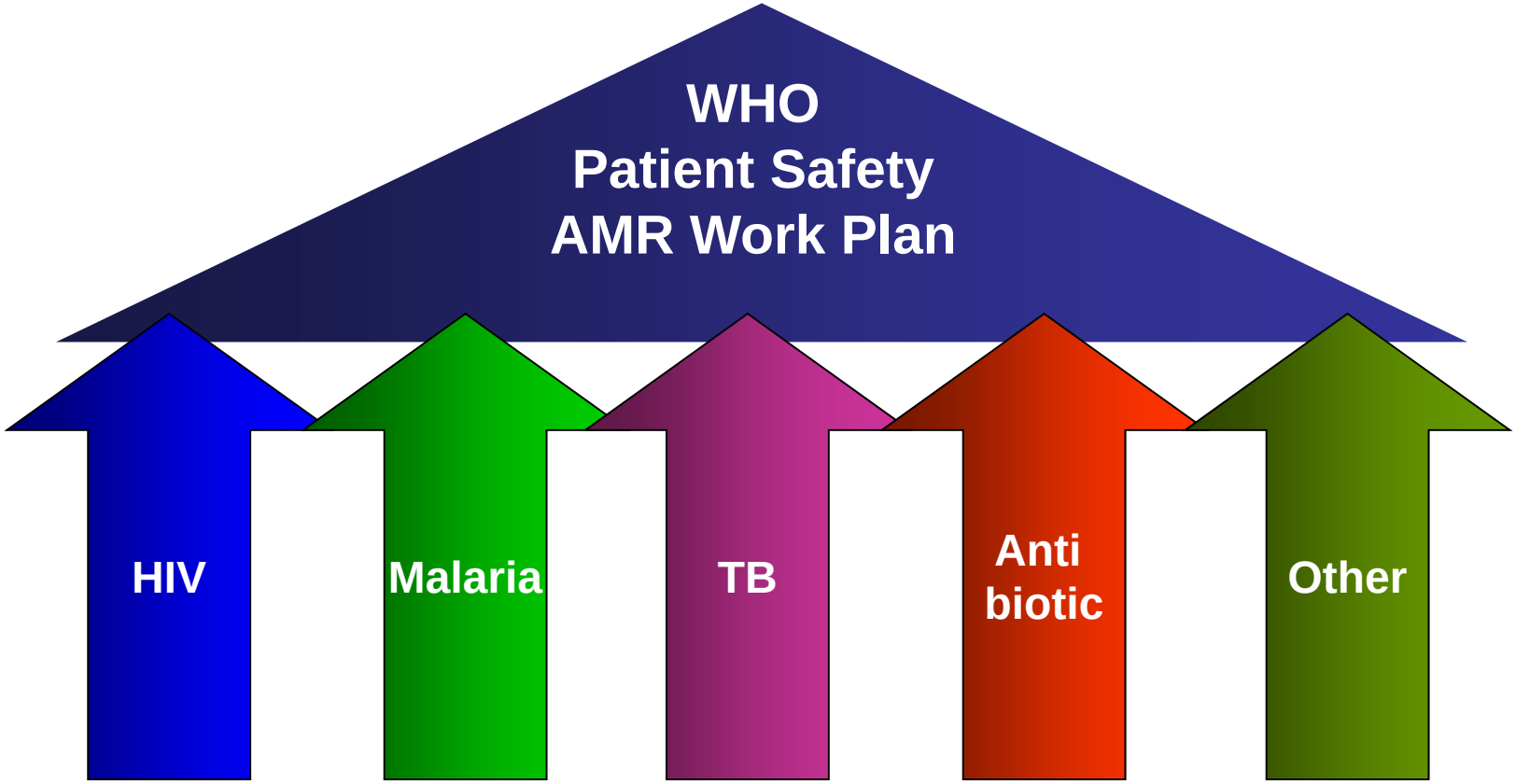
Input from different disease groups



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Surveillance

- AMR surveillance infrastructure and informatics for resource-limited areas
  - e.g. improving laboratory & information management capacity
- Ongoing surveillance of antimicrobial use in hospitals, primary healthcare and community
- Lab network building (e.g. WHOnet users, IANPHI, EARSS)

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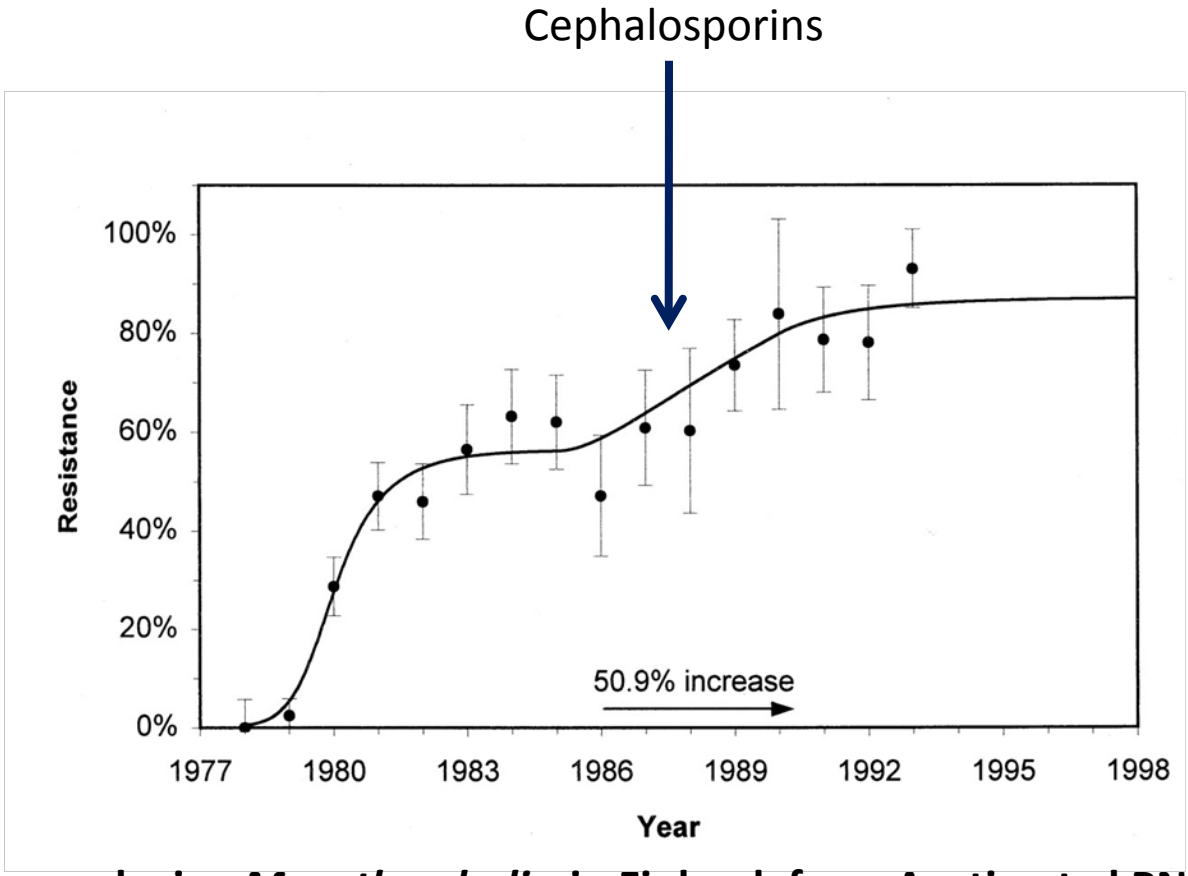
Time trends in resistance: effects of drug usage



β-lactamase producing *M. catharrhalis* in Finland, from Austin et al PNAS 1999

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Appropriate use of AB in animals, fish and plants

- Control of veterinary drug use
- Integrated surveillance in people & animal (e.g. AGISAR)
- Critical antibiotics for human health restricted in animal production
- Antibiotics not used as growth promoters

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Infection prevention

- Country situation analysis leading to specific goals
- Infection Control capacity & infrastructure building
  - Prioritizing the control of specific alert organisms
- Adopting 1st and 2nd PS Challenges principles
  - Hand Hygiene, peri-operative AB prophylaxis

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Research and Development

- Setting priorities for R&D in health technologies
  - Public financing to bring products to market, including fair return to the public
- Programme to support firms in developing countries (lower opportunity costs, better economies of scale)
  - small biotech firms, academic institutions, local capacity building
- Build open source collaboration
  - e.g. access to compound libraries, open access repositories of data and open source drug discovery; financed publicly

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Rational drug use and regulation

- In-depth situation analysis in countries
- Mandated, multidisciplinary group to coordinate national activities
- Adopt regulatory measures to promote rational use at national and international levels
  - *e.g. restrict access of certain antibiotics, regulation of licensing and accreditation of providers*
- Easy-to-use algorithms for antibiotic stewardship
  - *prescription audit, e.g. peri-operative antibiotic prophylaxis, duration of antibiotic treatment, improved diagnosis*

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Burden of AMR

- Immediate: rough estimation of the current burden of mortality, morbidity, and cost caused by resistant pathogens
- Longer term: building of refined burden estimation methodology & disease modelling

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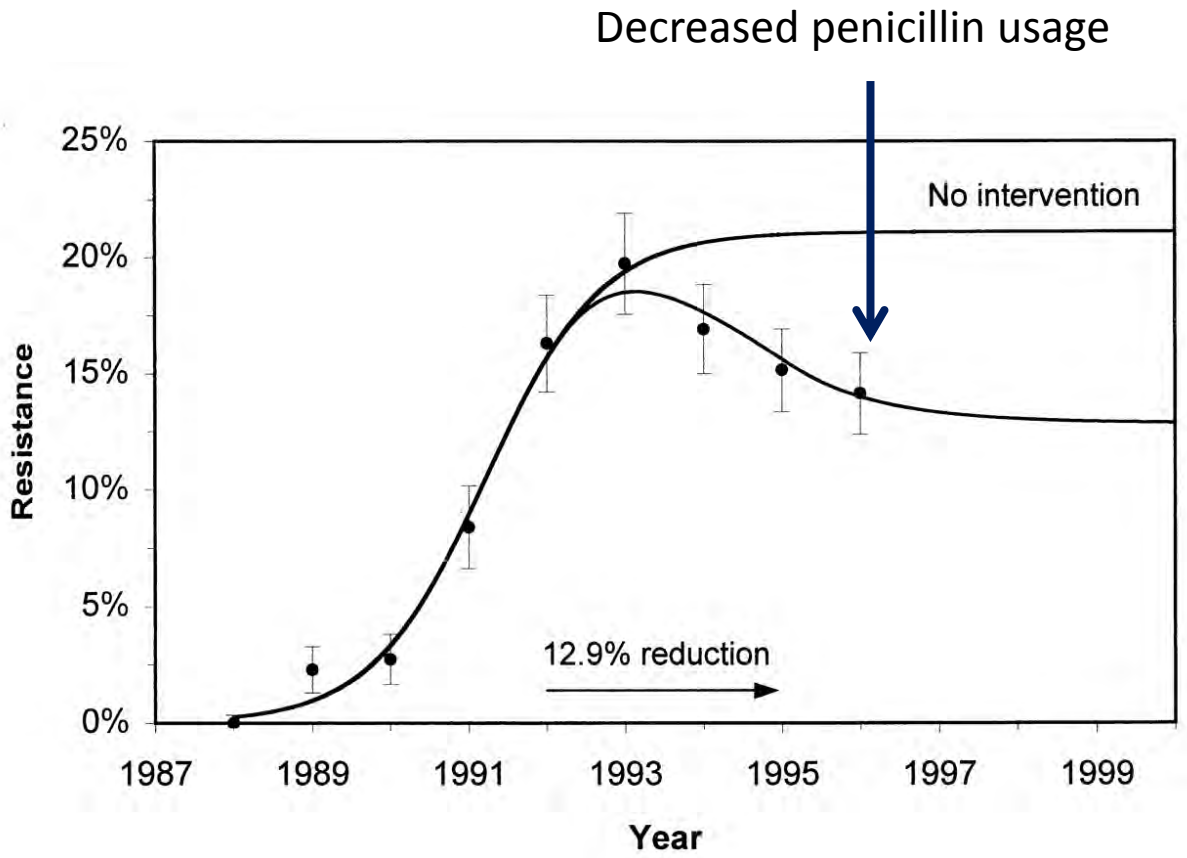
Imperial College London

Time trends in resistance: effects of drug usage



Penicillin resistant *S. pneumoniae* in Iceland, from Austin et al PNAS 1999

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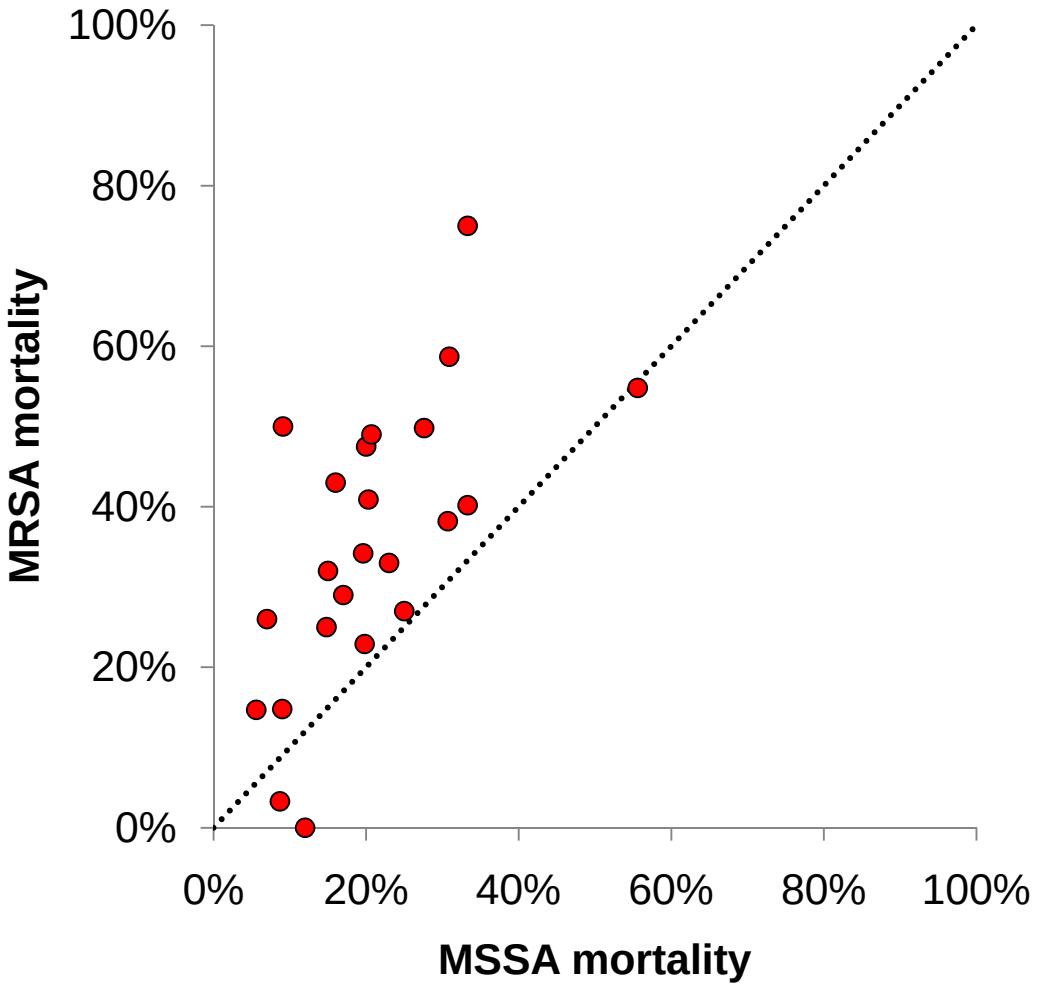
MRSA: All-Cause Mortality



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Patient Safety Programme Progression in 2 stages

Stage 2

- Global launch 2010
- Develop 3rd Challenge intervention (package)
  - Focus on antibiotic resistance
- Develop robust methodology for Burden of AMR estimation & modelling
- Develop surveillance network

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Thank you

http://www.who.int/patientsafety