Antimicrobial Resistance in Resource-Limited Healthcare Settings
The Global Health Security Agenda

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4th IPNET-Kenya IPC conference
20 November 2015

A health threat anywhere is a health threat everywhere

Source: *The Lancet 380:9857, 1-7 Dec 2012, pp. 1946-55. www.sciencedirect.com/science/article/pii/S0140673612611519*

Healthcare Facilities, Infection Control, and Emerging Diseases

Healthcare Facilities, Infection Control, and Emerging Diseases

AFRICA

Nigeria Struggles to Cope With Ebola Outbreak

By SABRINA TAVERNISE AUG. 10, 2014

Email

Ebola, one of the world's most fatal diseases, has surfaced in Africa's most populous country.

Healthcare Facilities, Infection Control, and Emerging Diseases

Poor Hospital Practices Blamed for 2003 SARS Epidemic in Toronto

By CHRISTOPHER MASON
Published: January 10, 2007

TORONTO, Jan. 9 — A provincial commission investigating the SARS outbreak in 2003 reported Tuesday that poor hospital infection-control procedures led to the epidemic in the Toronto area that killed 44 people.

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ASIA PACIFIC

MERS Virus's Path: One Man, Many South Korean Hospitals

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By CHOE SANG-HUN JUNE 8, 2015

Healthcare Facilities, Infection Control, and Emerging Diseases

'Superbugs' Kill India's Babies and Pose an Overseas Threat

By **GARDINER HARRIS** DEC. 3, 2014

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AMRAVATI, India — A deadly epidemic that could have global implications is quietly sweeping India, and among its many victims are tens of thousands of newborns dying because once-miraculous cures no longer work.

These infants are born with bacterial infections that are resistant to most known antibiotics, and more than 58,000 died last year as a result, a recent study found. While that is still a fraction of the nearly 800,000 newborns who die annually in India, Indian pediatricians say that the rising toll of resistant infections could soon swamp efforts to improve India's abysmal infant death rate. Nearly a third of the world's newborn deaths occur in India.

A mother nursing her newborn at a hospital in Haryana, where almost every baby born in hospitals in recent years has been injected with antibiotics. Kuni Takahashi for The New York Times

ASIA

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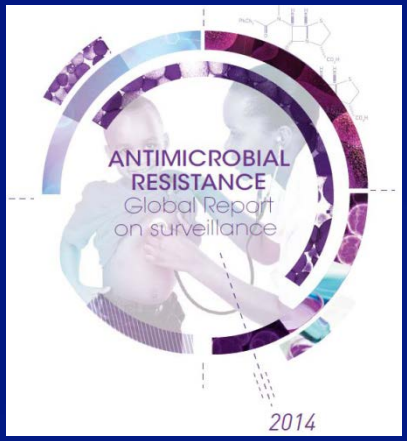
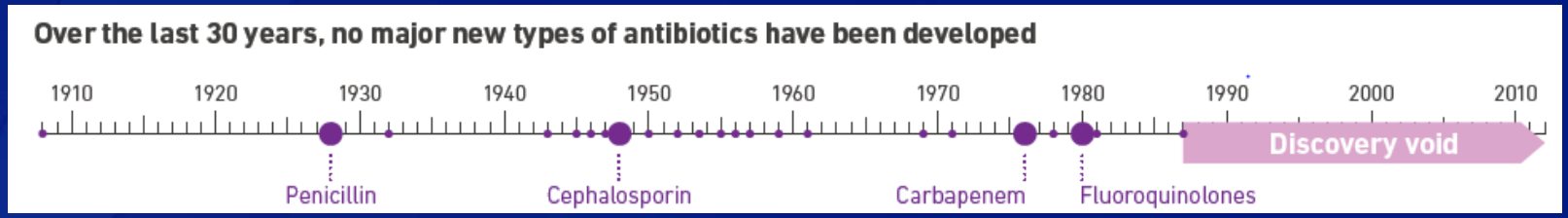
World Antibiotic Awareness Week
November 16-20, 2015

Global Antimicrobial Resistance (AMR)

- **AMR has reached alarming levels in many parts of the world**
  - High levels of resistance in all 6 WHO regions



- **Treatment options are limited**



- **Gaps in surveillance standards, data sharing, coordination**

* WHO “Antimicrobial Resistance: Global Report on Surveillance 2014,” who.int/drugresistance

Estimates of Burden of Antibacterial Resistance

European Union
population 500m

25,000 deaths per year

2.5m extra hospital days

Overall societal costs
(€ 900 million, hosp. days)
Approx. €1.5 billion per year

Source: ECDC 2007

Thailand
population 70m

>38,000 deaths

>3.2m hospital days

Overall societal costs
US$ 84.6–202.8 mill. direct
>US$1.3 billion indirect

Source: Pumart et al 2012

United States
population 300m

>23,000 deaths

>2.0m illnesses

Overall societal costs
Up to $20 billion direct
Up to $35 billion indirect

Source: US CDC 2013

Global information is insufficient to show complete disease burden impact and costs

The Challenge

- **Antibiotics are commonly used “just in case”**
  - *Broad coverage*
  - *Unclear criteria*
  - *Uncertain duration*
- **General perception that there is (almost) no risk and (almost) all benefit to giving an antibiotic**

Antibiotics Misused in US

- **Between 20-50% of antibiotic prescriptions in the US are either unnecessary or inappropriate**
  - *Given when they are not needed*
  - *The wrong antibiotic is chosen to treat an infection*
  - *Continued when they are no longer necessary*
  - *Given at the wrong dose*
  - *Broad spectrum agents are used to treat very susceptible bacteria*

Fishman N. Am J Med. 2006 Jun;119(6 Suppl 1):S53-61

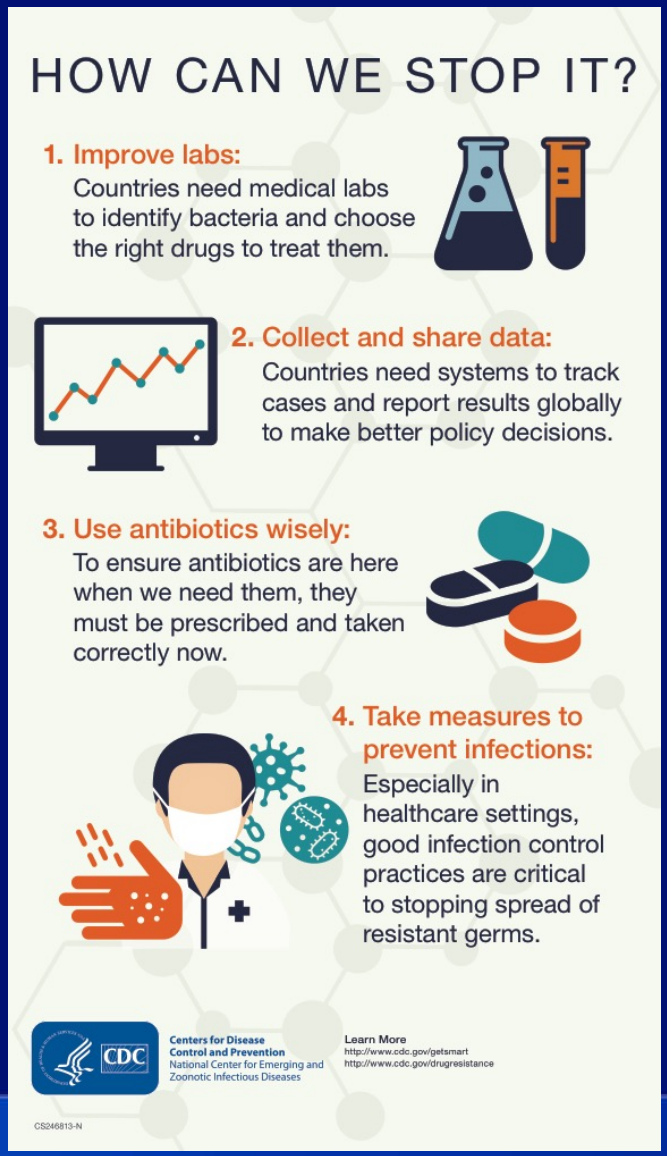
Global Antibiotic Use Widespread

- 12 country WHO survey:
  - 65% took antibiotics in the past six months,
  - 35% took within the past month
  - Highest rates in lower income countries
- General knowledge about resistance poor

http://apps.who.int/iris/bitstream/10665/194460/1/9789241509817_eng.pdf

How Can We Stop It?

- Strengthen labs
- Collect surveillance data
- Stewardship
- Infection control



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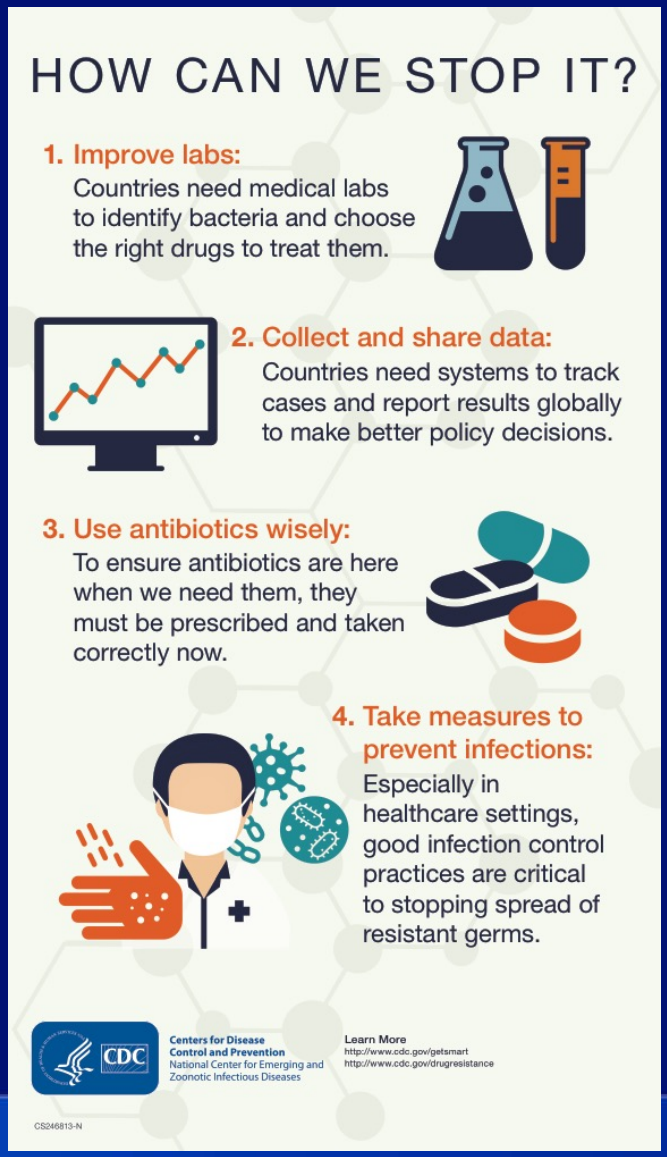
AMR = IPC



What about the SOLUTIONS?

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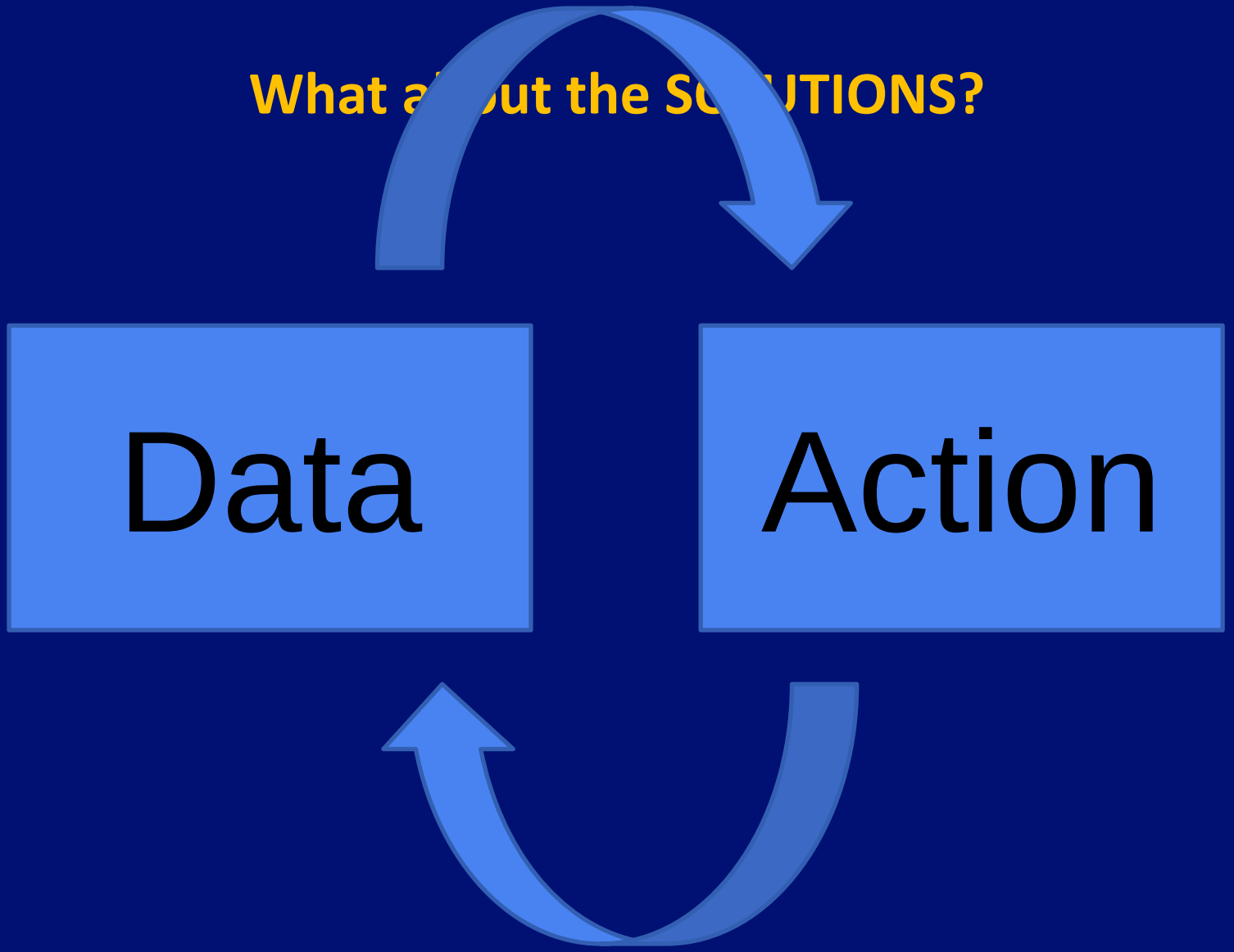

Key Components to Address HAIs and AMR

- **Develop evidence based policies and implement best practices**

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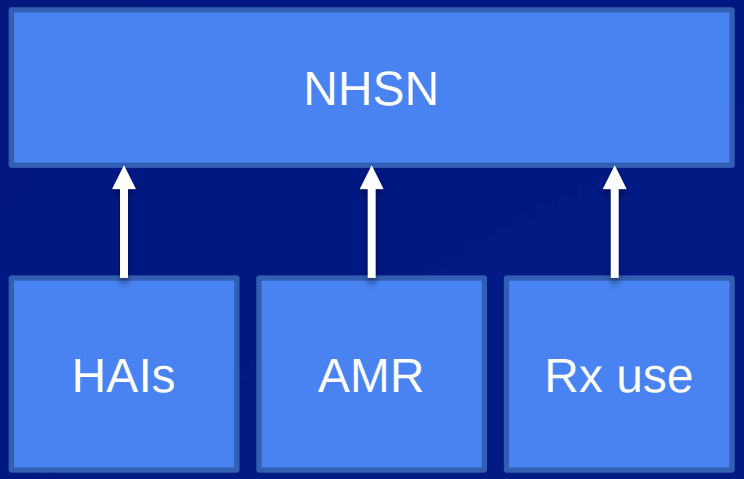
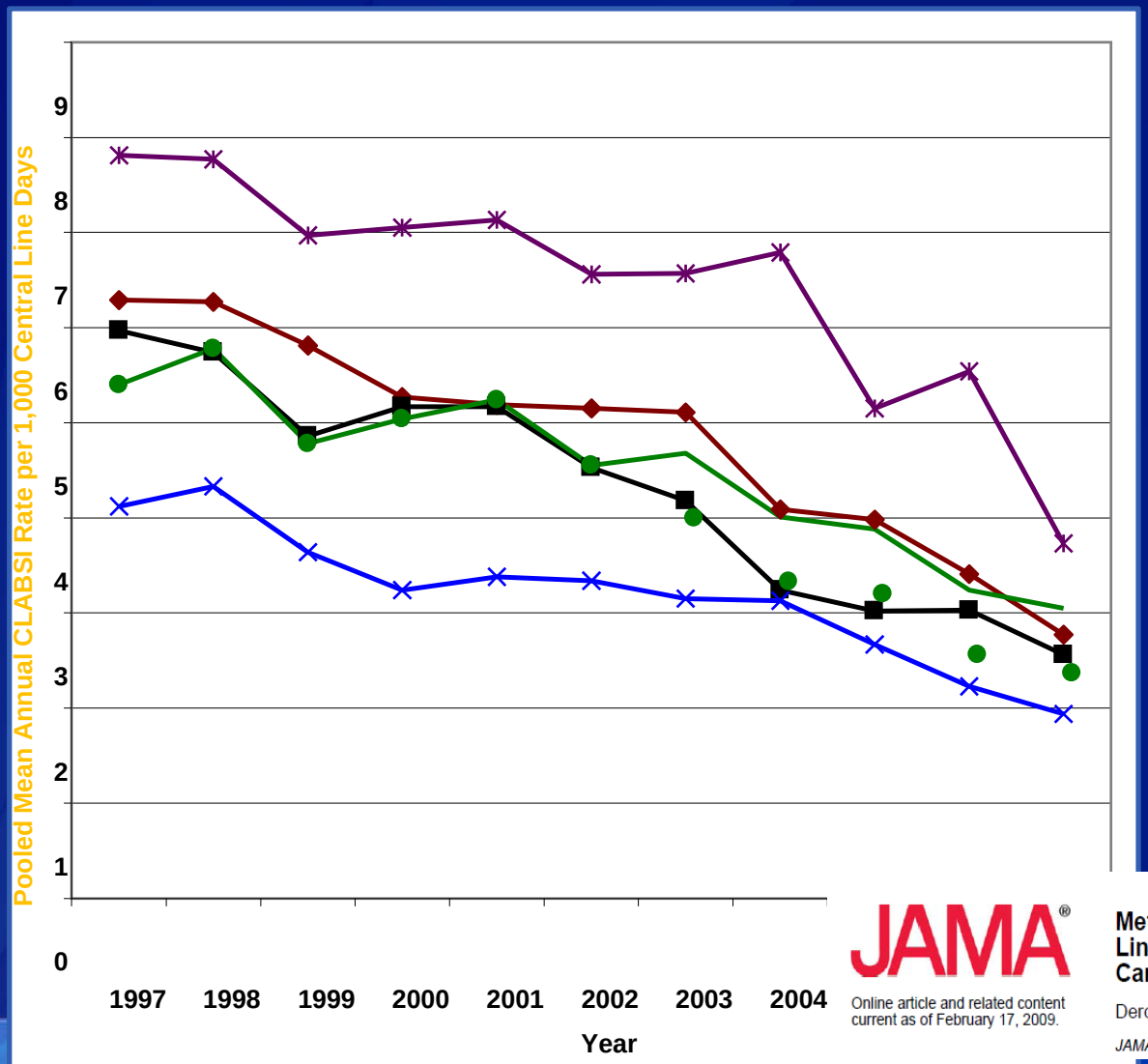
- **Address gaps in knowledge**

US System:
National Healthcare Safety Network (NHSN)

- Secure, internet-based surveillance system
- Includes information about infections, microorganisms including AMR
- Over 2200 hospitals from 50 States currently report to NHSN
- Reporting mandated by payor (CMS)
  - Compensation tied to performance (HAI rates)



Trends in Bloodstream Infections* by ICU Type, NHSN hospitals, 1997–2007



JAMA®

Online article and related content current as of February 17, 2009.

Methicillin-Resistant Staphylococcus aureus Central Line Associated Bloodstream Infections in US Intensive Care Units, 1997-2007

Deron C. Burton; Jonathan R. Edwards; Teresa C. Horan; et al.

JAMA. 2009;301(7):727-736 (doi:10.1001/jama.2009.153)

Why Care About Global Health Security

PROBLEM

DISEASES SPREAD

Faster and farther

NOT PREPARED

At least 70% of countries not prepared

ECONOMIC IMPACT

SARS: $40B Globally
Ebola: >$30B Globally

Less than 1/3 of the world is prepared to respond

- All 194 countries of the world committed to International Health Regulations in 2005
- **By 2014, only 30% of countries were fully prepared to detect and respond to an outbreak**

Source: Report to the Director-General of the Review Committee on Second Extensions for Establishing National Public Health Capacities and on IHR Implementation, November 2014

GHSA is the roadmap for IHR

Global Health Security – *"...the activities required, both proactive and reactive, to minimize vulnerability to acute public health events that endanger the collective health of populations living across geographical regions and international boundaries"*

(World Health Assembly Report, 2007)

3 Risks

- Emerging organisms
- Drug resistance
- Intentional creation

3 Opportunities

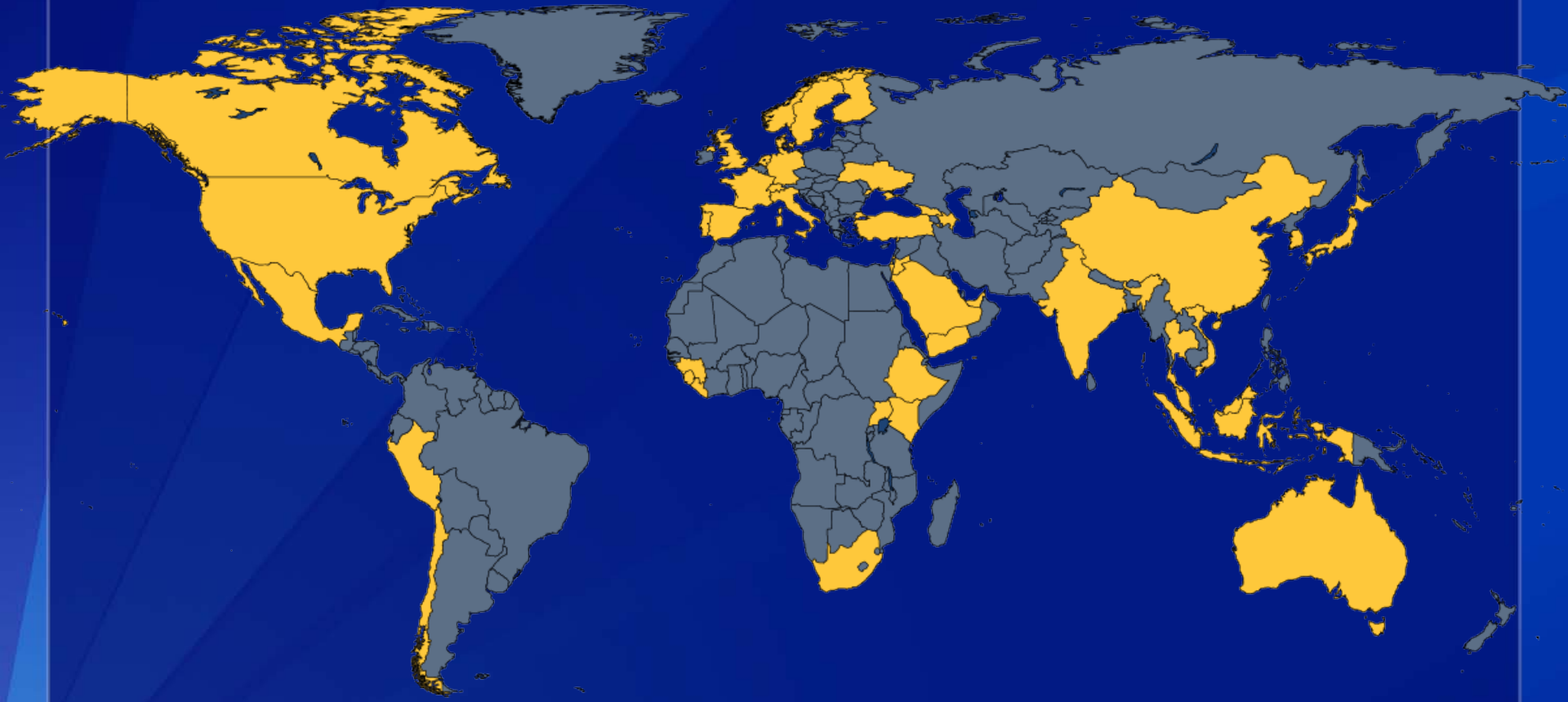
- Societal commitment
- New technologies
- Success leads to success

3 Priorities

- Prevent wherever possible
- Detect rapidly
- Respond effectively

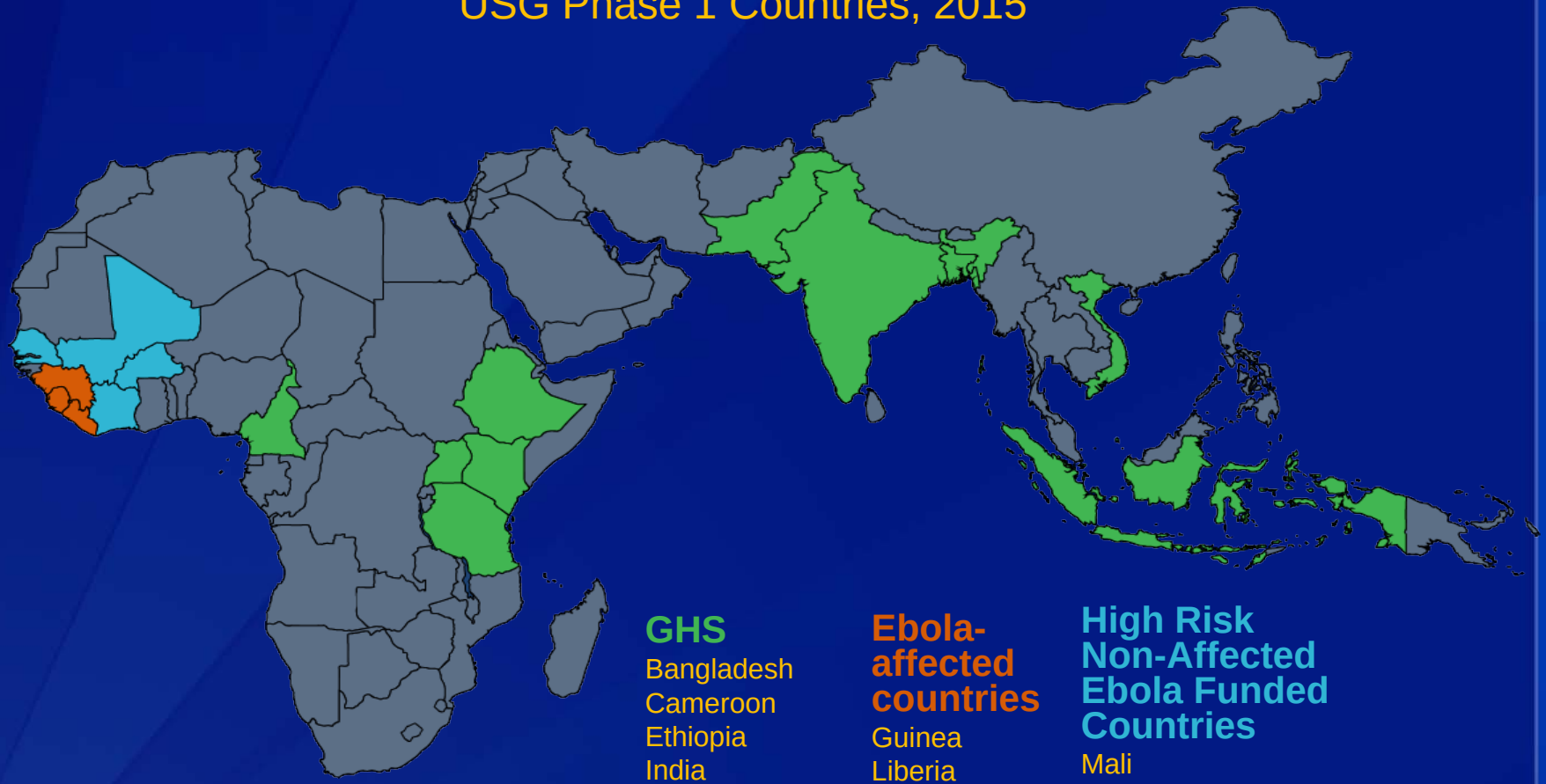
Global Health Security

44 countries that have committed to the Global Health Security Agenda (GHSA)



Global Health Security

USG Phase 1 Countries, 2015



GHS
Bangladesh
Cameroon
Ethiopia
India
Indonesia
Kenya
Pakistan
Tanzania
Uganda
Vietnam

Ebola-affected countries
Guinea
Liberia
Sierra Leone

High Risk Non-Affected Ebola Funded Countries
Mali
Senegal
Cote d'Ivoire
Burkina Faso

Global Health Security Agenda

Prevent avoidable catastrophes

Detect threats early

Respond rapidly and effectively

Action Packages to Achieve Targets

Antimicrobial Resistance

National Laboratory Systems

Emergency Operations Centers

Zoonotic Diseases

Surveillance

Linking Public Health with Law Enforcement and Multisectoral Rapid Response

Biosafety/Biosecurity

Reporting

Immunization

Workforce Development

Medical Countermeasures and Personnel Deployment

Action Packages to Achieve Targets

Prevent avoidable catastrophes

Antimicrobial Resistance

5-Year Target:

- Integrated and global package of activities to combat AMR

Desired Impact:

- Enhance infection prevention and control
- Prevent the emergence and spread of AMR, especially among drug-resistant bacteria
- Strengthen surveillance and laboratory capacity

Leading and Contributing

Prevent avoidable catastrophes

Antimicrobial Resistance

Leading	Contributing
• Canada • Germany • Netherlands • Sweden	• Australia • India • Indonesia • Italy • Japan • Norway • Portugal • Switzerland • Thailand • United States

Thank you!

CDC/Division of Healthcare Quality and Promotion

For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov Web: www.cdc.gov