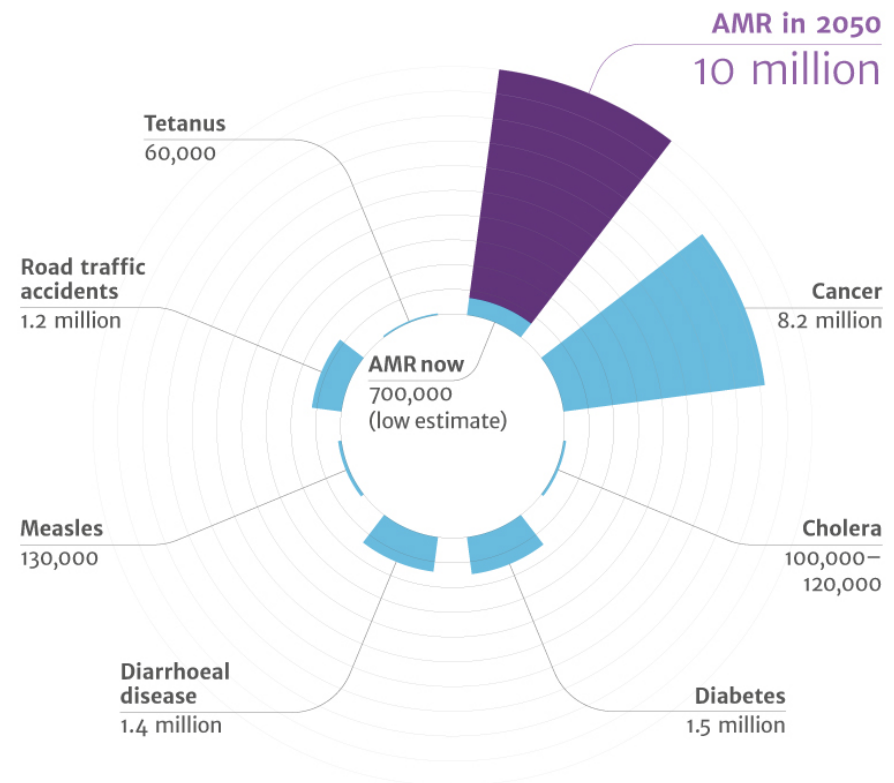


Funding for antimicrobial resistance research at Wellcome

Mike Turner
Head of Infection and
Immuno-biology



Wellcome

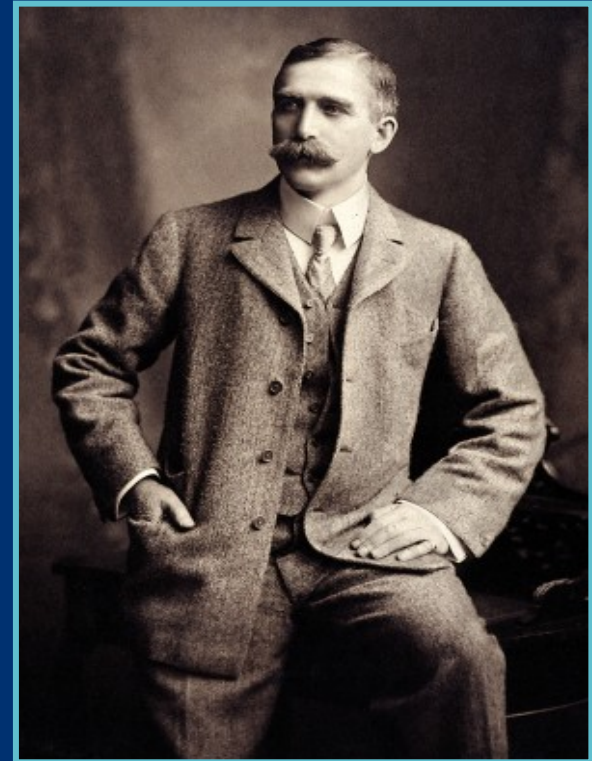
We were established in 1936

We are funded from a private endowment ~ £23 Billion

We expect to spend ~£5 billion on charitable activities over the next five years

We fund Biomedical Science

We fund lots of other things too!



How we organise our funding

‘Primary’

Funding is response-mode and competitive

Response-mode will continue at similar levels to current

Last year we received requests totalling ~£8 billion

We spent approximately £900 million in 2016-17

We fund (mainly): UK and Ireland

Low and Middle Income Countries

‘Reserve’

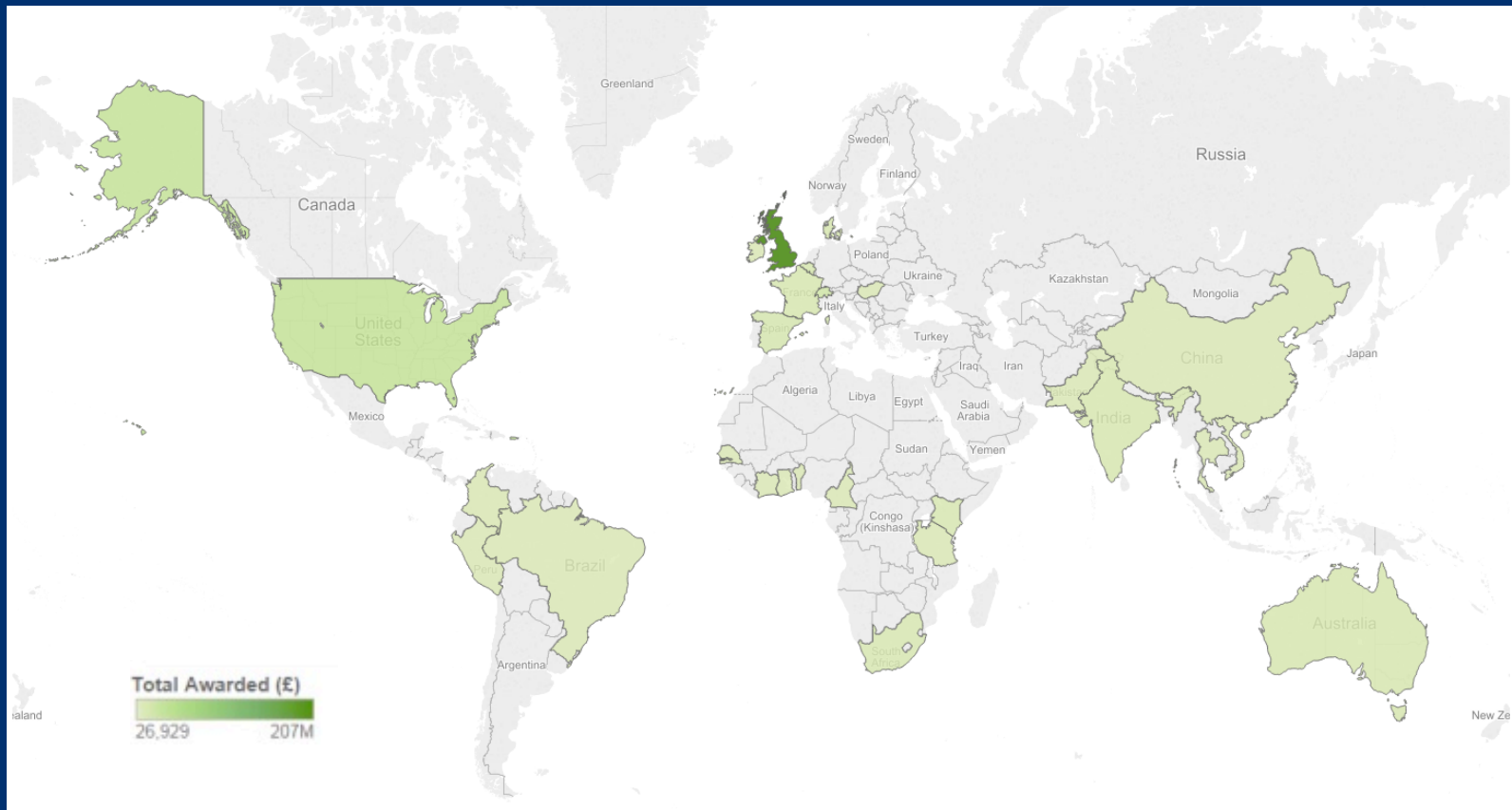
Strategic Initiatives, including Drug-Resistant Infections

DRI \equiv AMR

We term these ‘Priority Areas’

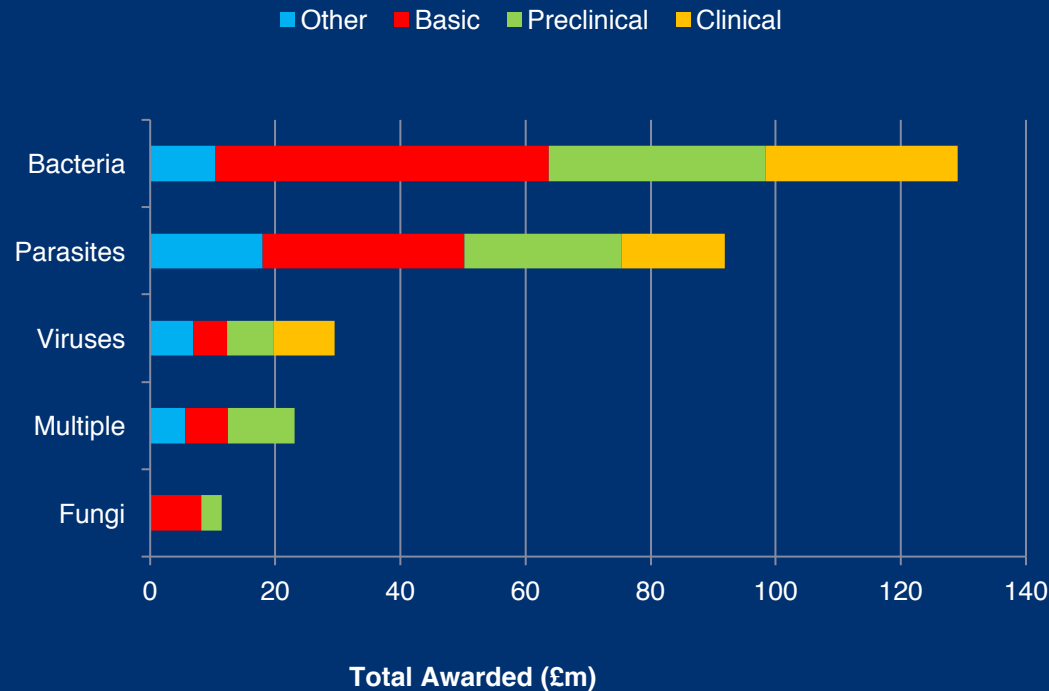
Funding research globally to tackle AMR

£287m in AMR since 2004, including: basic science (£108)
translation (£122m)
epidemiology (£34m)



Funding 2004-15

Pathogen type and stage of development



Significant investment in translational research for therapeutics in a smaller number of projects compared to basic science.

Little support for diagnostics or public engagement.

Outcomes not captured so difficult to assess impact

Africa and Asia Programmes (AAPs)



Drug Resistant Infections

Why a priority area?

‘The thoughtless person playing with penicillin is morally responsible for the death of the man from penicillin-resistant organism. I hope this evil can be averted.’

Alexander Fleming 1945

‘Drug-resistant infections are a challenge on the scale of climate change’.

Jeremy Farrar 2016

‘Antimicrobial resistance is a slow-motion tsunami. It is a global crisis that must be managed with the utmost urgency.’

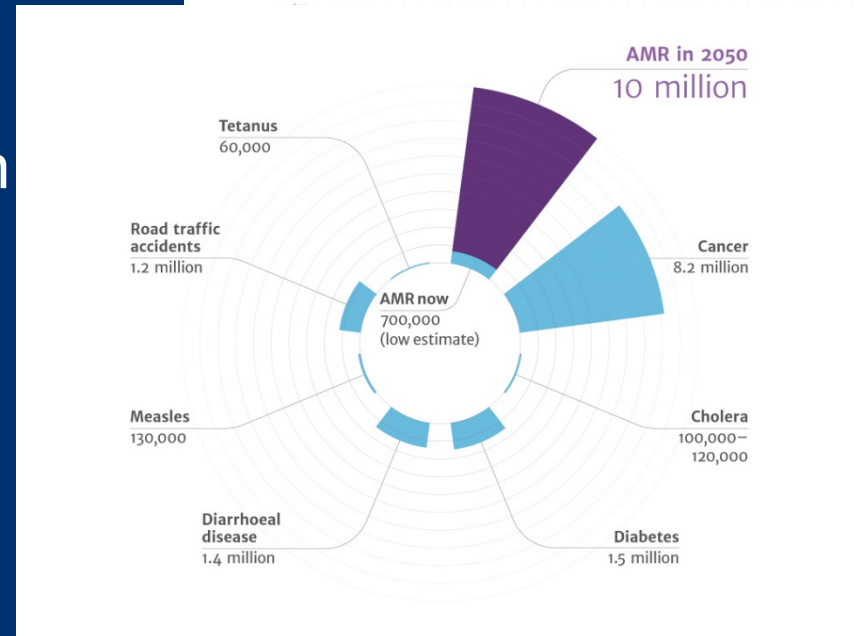
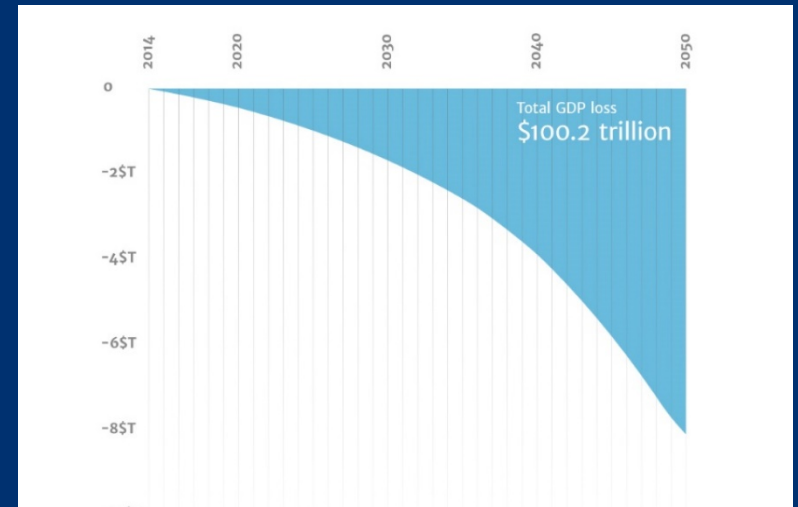
Margaret Chan 2016

Framing AMR in economic terms

O'Neill Review, commissioned by UK government and Wellcome

Three objectives:

- Advance the evidence base regarding economic impact of AMR
- Engage with policymakers
- Establish global support for action



Framing AMR in Social Science terms

What do members of the public understand by the term antimicrobial resistance (AMR)?

Second most common finding:

'My body is becoming resistant to the effects of the drug'

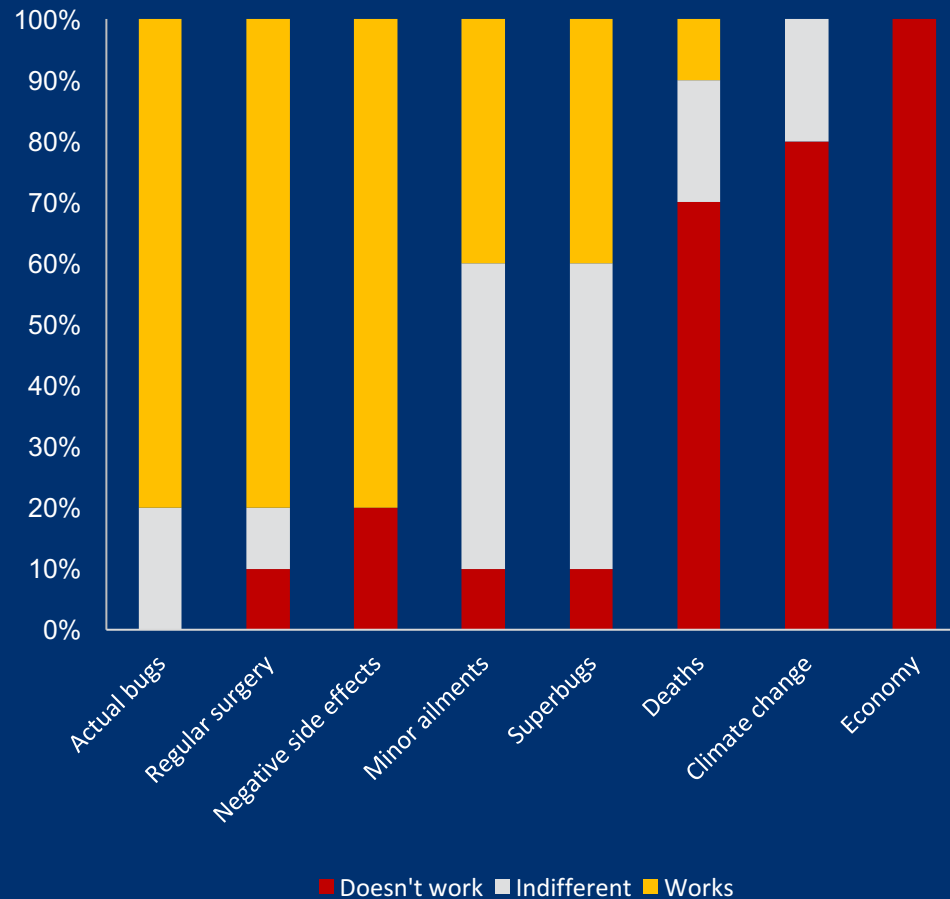
Most common finding:

'No idea'

What they do NOT understand:

That bacteria causing infection are no longer killed by drugs

So how do we improve understanding?



NO: Big numbers - financial cost, numbers of deaths
YES: When it feels relevant 'to me'

Wellcome's DRI/AMR priority area

Is:

£175M over 5 years

Targeted, outcome/objective led

Commissioning work and inviting requests for proposals

Influencing & advocating

Building partnerships

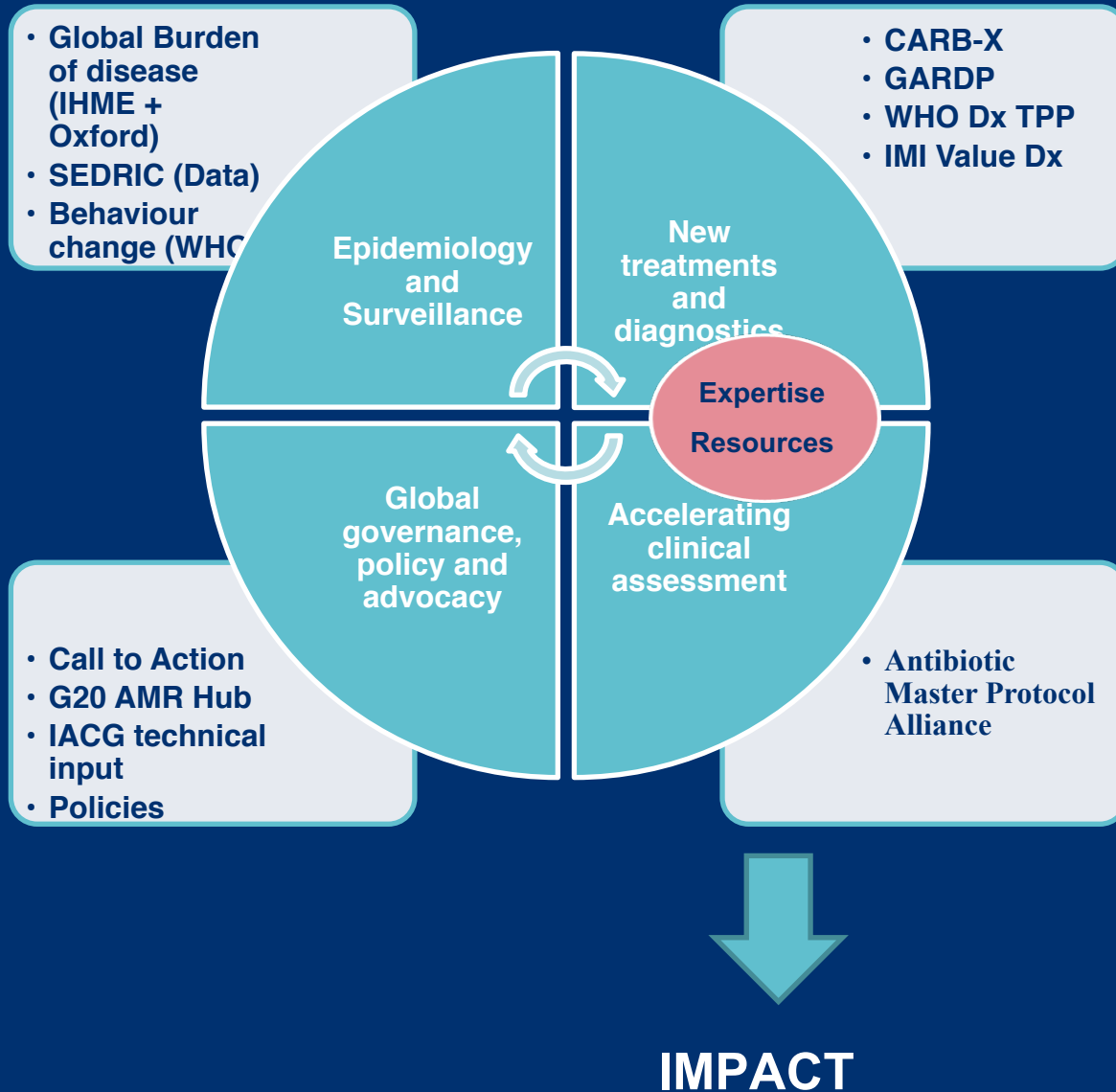
Is not:

A broad funding scheme for AMR

Pulling all AMR activities under one umbrella

Response-mode funding will still support AMR research as it always has

Wellcome's DRI/AMR Priority Area



Evidence for decision making

Surveillance and Epidemiology of Drug Resistant Infections Consortium (SEDRIC)

Global burden of AMR mapping project: IHME (Seattle) and Big Data Institute (Oxford)

Making industry antibiotic surveillance data open access: Open Data Institute

Behaviour change (joint with WHO)



New treatments

CARB-X Drug discovery pipeline

£125m in 5 years, 34 projects to date in 7 countries

Global Antibiotic Research and Development Partnership (GARDP) to work in partnership with the public and private sectors to develop and deliver new treatments for bacterial infections for which inadequate treatment exists

Diagnostics Innovative Medicines Initiative to support the development of diagnostics

Target Product Profiles for diagnostics (joint with WHO)

Accelerating projects globally

CARB-X

Xccelerating global antibacterial innovation



Updated 3/21/17

CARB-X Antibacterial Treatment and Prevention Product Portfolio – Novelty Screen

Sponsor	Product	New Class ?	New Target ?	Novelty	Non-traditional alternative?	Priority		Development Stage			
						CDC	WHO	Hit to Lead	Lead Optimization	Pre-Clinical	Phase I
Tetraphase Pharma	TP-6076			Next-generation tetracycline				Acinetobacter + Enterobacteriaceae			
Cidara Therapeutics	CD201			Bifunctional immunotherapy				Acinetobacter + P. aeruginosa. + Enterobacteriaceae			
Microbiotix	T3SS			Virulence modifier				P. aeruginosa			
Spero Therapeutics	SPR741			Potentiator				Gram-Negative activity			
Entasis Therapeutics	ETX0282			Oral BL/BLI				Gram-Negative activity			
Forge Therapeutics	FG-LpxC			Inhibitor of LpxC				Gram-negative activity			
Oppilotech	LPS			Targets synthesis of LPS				Gram-Negative Activity			
ContraFect	Gram-negative lysins			Recombinant lysin protein				P. aeruginosa			
Redx Pharma	NBTI			Dual-acting topoisomerase inhibitor				Acin. + P. aerug + Ent'bacteriaceae			
Visterra	VIS705			Antibody-drug conjugate				P. aeruginosa			

Powered by **CARB-X**



Faster clinical trials

Accelerated clinical development of new drugs and improved use of existing drugs

- Antibiotic Master Protocol Alliance (AMPA) to accelerate registration of new treatments
- Global clinical trial networks (GCTN) to support design, operation and interpretation

How a network could make clinical trials more efficient

Spend months finding hospitals, signing contracts and creating own grouping of sites

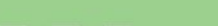
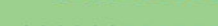


Typically 1/3 hospitals won't enrol any patients

Trial enrolls patients slowly at the start as hospitals and clinicians get used to the protocol.



Half the patients must be assigned to the control group, meaning that more are required which will increase the cost and time of the trial.

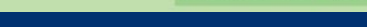
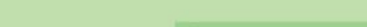
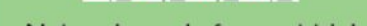
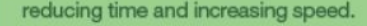
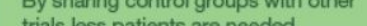
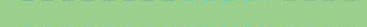
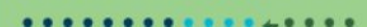
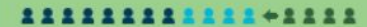


Connection between hospitals disappears

Plug straight into existing network



Network able to enrol patients quickly and reliably as it's well honed.



Network ready for next trial

- Treatment group
- Control group
- Shared control group

Global governance, policy and advocacy

Objectives:

- Helping governments develop and implement effective policies to limit the spread of drug-resistant infections
- Advocating for ambitious, sustained action by policy-makers, combining political and public support for action

NEED for effective global
GOVERNANCE framework
And **COORDINATION**

Activities:

- 'Call to Action' conference – October 2017
- Engage with the G20 process – including foundation of a Global AMR R&D Hub
- Work with the UN and WHO - the Interagency Coordination Group
- Advance dialogue on key policy issues – access, stewardship, new development incentives



Summary

Response mode funding for DRI/AMR will continue in its traditional form

We also have a priority initiative to take forward very specific components within the AMR field

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