CHALLENGES (OPPORTUNITIES)

GLOBAL AMR STUDIES

DO GENOME-WIDE STUDIES OF MULTIPLE BACTERIA FIND RESISTANCE MARKERS

Complexity of microbial genetics

Understanding what to measure desirable outcomes

Join-up ALL available data

New "long read" sequencing technologies (MinION) to resolve the genetic structure of AMR genes

Identifying contribution of agriculture to AMR

Consumption in Animals + Humans

Farming → use in animals

ABs in farming impact

GM FOODS, LESS MASS-SCALE FARMING, LESS RESISTANCE

DATA + TECHNOLOGY TO HELP

Engineering a product analysing drug resistance in STDs

DATA MINING

Data collection + Quality

"BIG DATA" BENCH → BEDSIDE → PUBLIC + COMMUNITY

Data: What is the current situation?

DATA LINKING

HOW TO USE ANECDOTAL/INFORMAL KNOWLEDGE IN CARE

SURVALENCE

Quality of data Data collection & linkage

Identifying emerging + potential threats before they're a problem

TRANSMISSION + RESERVOIRS

MODELLING OF STI SPREAD (GONORRHOEA IN MSM)

INFECTION CONTROL IN GP/HOSP. WAITING ROOMS

TO IS MOST LIKELY TO TRANSMIT THEIR AMR INFECTION

TRANSMISSION OF AMR

WHERE DO AMR INFECTIONS COME FROM? HOME? WORK? FAMILY MEMBER HAVING TREATMENT

Role of gut microbiome – treat infection, maintain antibiotic sensitive "reservoir"

USE OF INFECTION CONTROL METHODS

Increase AMR Guidance Studies

Transmission/Transmission models – studies – services

WHERE IS RESISTANCE BUILT IN HOSPITAL ENVIRONMENT SEWAGE

Where is the main reservoir for AMR?

Heterogeneity of risk – repeated treatments of same people/patients – what is the impact?

Predicting spread + emergence

Controlling the spread of resistance

AMR spread STDs, Lifestyle, Internat...

AMR DATA ABOUT GENERAL PUBLIC

Linking data – Correctly anonymised so be accessible easily

UNDERSTANDING THE SCALE OF THE AMR PROBLEM

Effect of treatment on AMR emergence

DIAGNOSTICS + PRESCRIBING

Evidence based prescribing/adhering to guidelines

Better Diagnostics → faster

Manage current anti-biotics better

Prescribe more efficiently → Type → Route

Diagnosing where contamination occurs in hospitals – educating

Point of Care Diagnostics in GP surgeries

Delivery of best practice

Using big data to produce intelligent abx guidelines

Underuse of Expertise (eg Pharmacists)

INDIVIDUALISED APROACH.

Effect of patient perceptions on antibiotic use

Deeper Understanding of how ABs work

Lack of Education on ABs.

Education on AMR in undergraduate Medical Curriculum

Education Awareness Engagement at ALL levels

Cross-Disciplinary Education.

Effecting behavioural change

Promotion of Studies to pediatrics and members of the public

How to do stewardship in animals + humans

Empowering infection control from Doctors to patients/healthcare workers

LACK OF ANTIMICROBIAL STEWARDSHIP IN ANIMALS.

REGULATION + POLICY

Do we need more regulation? Global

Different policies for ABs in diff countries

Obtaining information globally + using it locally

REGULATION.

IS NICE GUIDANCE SUFFICIENT for NEEDS?

EDUCATION

Complacency

RAPID LEARNING

PUBLIC PERCEPTIONS

Change the mentality (alternatives to traditional antibiotics)

EDUCATION + TRAINING FOR STAFF/PATIENTS

Changing culture – expectations (patients) – prescribing (doctors)

Change AT THE PATIENT (objective: cure) TO WITH THE PATIENT (Co-plan in 30 ...)

BEHAVIOUR OF CLINICIANS Knowledge

ALTERNATIVES

"complete" AMR activity Solution Pressure ?

alternative strategies

Changing through societal means attitude towards antibiotics

Alternative methods of treat need of infection

FEAR preventing treatments

Evidence for symptom relievers instead of antibiotics

CLINICIAN'S EGOS.

CO-INFECTION & COMPLEXITY

COSTS

Less investment in ABs by Pharma

Cost: accurate diagnosis vs. standard antibiotics

Awareness of Biological costs of use of ABs

COST

Clinical Trials (Time/Cost)

HOW MUCH (£) IS TOO MUCH?

Treat vs Sepsis

Expense of Development → Diagnostics → DRUGS etc.

DRUGS

Drug/Polymer Delivery

Discovering New Antimicrobials.

Identifying the target

Evaluation of Diagnostics

Specificity

Infrastructure/Support

Connections/networks between research groups lacking

Forum for Research Qs → NHS staff → Dissemination of ideas

Implementation of solutions (particularly in developing)

Lack of development & support for NHS staff to do research

Lack of support/context for small scale NHS & PH research

Providing support for "informal" health care workers

TECHNOLOGY TO SUPPORT CARERS?

NHS PRESSURES
- FUNDING
- BED CAPACITY.
- WAITING LISTS

Dealing resistance to in feed system – more microfloras.

We're being too clean?

RESILIENCE

?

PREAGREED I.G. MOVE.

?

What does it mean to be carrying a resistant bug? Risks to your? Risks to others?

Population Control