COVID-19 and AMR—why health issue matters now and what we can do?

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Antimicrobial resistance (AMR) occurs when microbes – bacteria, viruses, fungi and parasites – no longer respond to the drugs designed to kill them. – UK Medical Research Council
Why do we care?

- Global health and development threat
- A top 10 global public health threat facing humanity
- Massive economic cost
- Major threat to modern medicine/surgery
Scary projections

Source: Review on AMR, 2016
Bacteria
• Methicillin-resistant *Staphylococcus aureus* (MRSA)
• Vancomycin-resistant enterococci (VRE)

Viruses
• Oseltamivir-resistant influenza
• HIV resistant to non-nucleoside reverse-transcriptase inhibitors

Parasites
• Artemisinin-resistant *Plasmodium falciparum* (malaria)

Fungi
• Fluconazole-resistant *Candida auris*
THE WORLD OF DRUG RESISTANCE

Bacteria are exposed to antibiotics in all parts of the environment. They accumulate genes to survive in a vicious cycle that means medicines must keep getting stronger to fight disease.

1. STEALTH
Drug-sensitive bugs are killed by antibiotics, enabling resistant germs to multiply.

2. ANIMALS
Antibiotics on farms produce drug-resistant bacteria that taint animal products and spread in dust and water.

3. SANITATION
Germs from untreated human waste foul water and food ingested by people and animals. Poor hygiene spreads them to others.

4. HEALTH CARE
Antibiotic use and poor infection control spread resistant germs among hospital patients. Effluent releases drug residue into the community.

5. SEWAGE
Antibiotics in raw effluent and from pharmaceutical manufacturing collide with a diverse population of germs.

Source: Bloomberg