Antibiotic Resistance in India

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Resources for the Future
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Antibiotic Resistance: A Global Problem

- Antibiotics and antimalarials are non-renewable resources
- Once resistance evolves, it can spread very rapidly across borders and around the world
- Drug resistance threatens to erase gains made in disease treatment and control in developing countries
The Global Antibiotic Resistance Partnership

• Short-term goal: To gather data on levels of antibiotic resistance in target countries (India, China, Kenya, S. Africa, Vietnam)

• Long-term goal: to identify and implement the most effective solutions to the problem of drug resistance in developing countries
Aggregated Antibiograms

- Antibiogram: summary of antimicrobial susceptibility intended for clinical use
- Method of surveillance especially suited to resource-constrained settings
- Can approximate local levels of resistance
Trends in Antibiotic Resistance

• Resistance to new drugs arises rapidly as they are introduced

• Mostly hospital-acquired infections; community-acquired resistance is becoming more common

• Resistant bacteria become dominant
Antibiotic Use and Antibiotic Resistance

- Overall use of antibiotics is increasing rapidly
- Irrational drug combinations are often dispensed, particularly in pharmacies
- Increasing drug pressure increases the rate of evolution of resistance, but removing drug pressure does not always lead to a decrease in resistance; this depends on fitness cost
- Transmissible resistance (on plasmids) is especially problematic
Antibiotic Resistance in India

- A paradox: regions where antibiotics are unavailable and regions with high levels of resistance coexist in the same country
- Little or no regulation of antibiotics, particularly at pharmacies
- Susceptibility testing and drug regulation are difficult in rural settings
Potential Solutions

- Increase prescription auditing
- Partner with pharmaceutical industry to increase drug regulation
- Setting up national surveillance networks to track the evolution and spread of resistant pathogens
- Increasing number of certified labs nationwide
Reflections

- Resource-constrained settings face a unique set of healthcare related problems; these demand a unique set of solutions
- Need for interdisciplinary collaboration
- Need for awareness of and sensitivity to cultural norms