



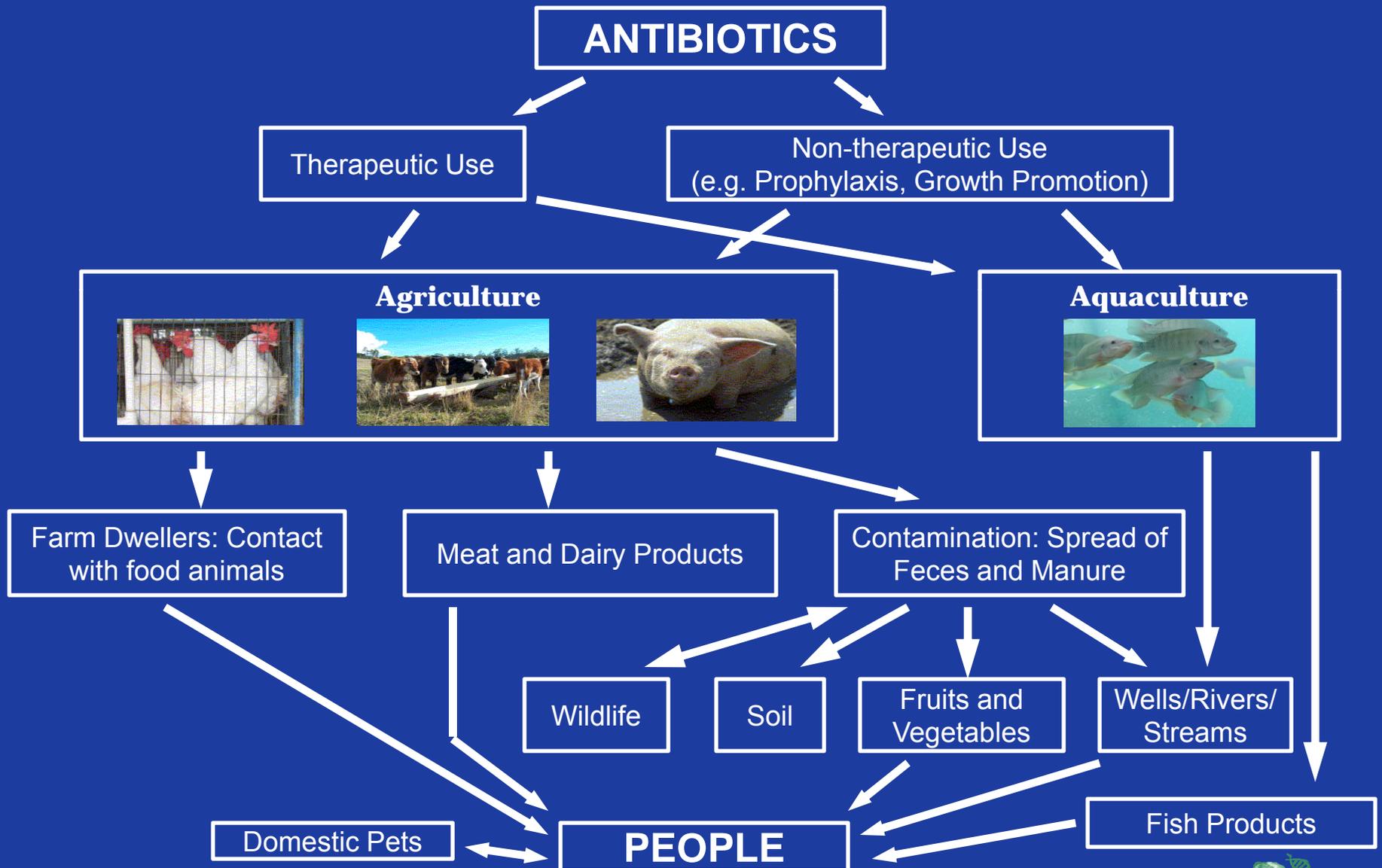
# Raising Awareness for Prudent Use of Antibiotics in Food Animals

Position paper of the global Alliance for the Prudent Use of Antibiotics (APUA)

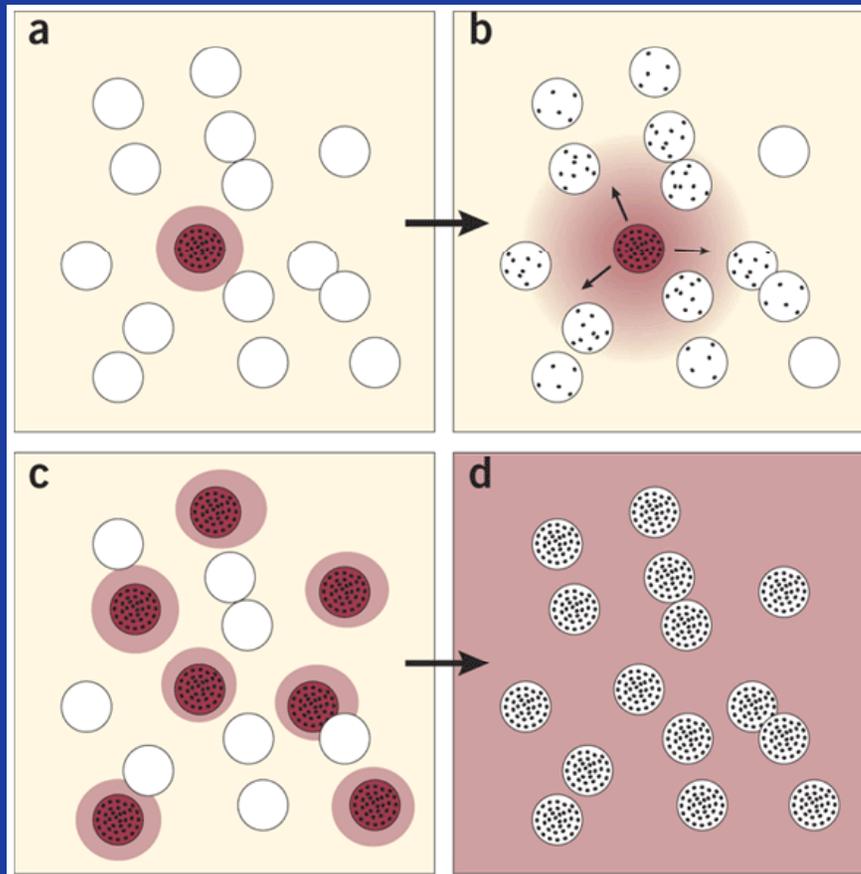
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Presented at WHO Expert Meeting: Development of a Policy-oriented Guidance Booklet for the European Countries on Antimicrobial Resistance in a Food Safety Perspective  
Rome, Italy, 11-12 November 2010

# Ecological Impact of Antibiotic Use in Food Animals: The Flow of Antibiotic Resistance Bacteria



# Selection Density Impacts Antibiotic Resistance Frequency



**Figure 1 Post-therapeutic effects of antibiotic dispersion.**

**(a)** While on antimicrobial therapy, the individual (*e.g.* person or animal) is a focal point for a high concentration of both antibiotic (red shading) and resistant bacteria (black dots) that are selected and generated from its use.

**(b)** Over time, resistant bacteria spread to local contacts and antibiotic enters the environment through waste and water disposal (for example, from animals) or sewage (from people). If several individuals are treated, however

**(c)**, a higher density of antimicrobial and resistant organisms is established in the same environment

**(d)**. The selective process is continuous, occurring both during and after therapy.

Antibiotic resistance genes have spread to more than a quarter of the world's infectious bacterial species.\*

Countries with higher rates of antibiotic use also have more antibiotic resistance bacteria.\*\*

\*Lester, S.C., et al. (1990). "The carriage of Escherichia coli resistant to antimicrobial agents by healthy children in Boston, in Caracas, Venezuela, and in Qin Pu, China." *N Engl J Med* **323**(5): 285-9.

\*\*Goossens, H. (2009). "Antibiotic consumption and link to resistance." *Clin Microbiol Infect* **15** (Supplement 3): 12-5.



# Human Health Consequences of Antibiotic Overuse in Food Animals

- Increased vulnerability to infections
- Increased severity of illness
- Increased likelihood of treatment failure



# Defining Prudent Use

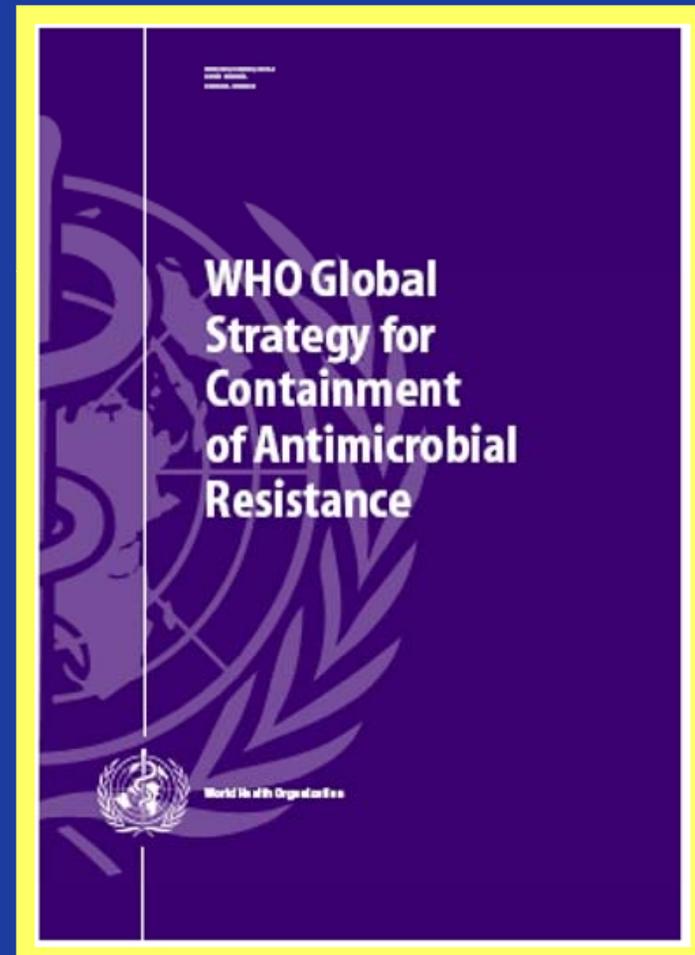
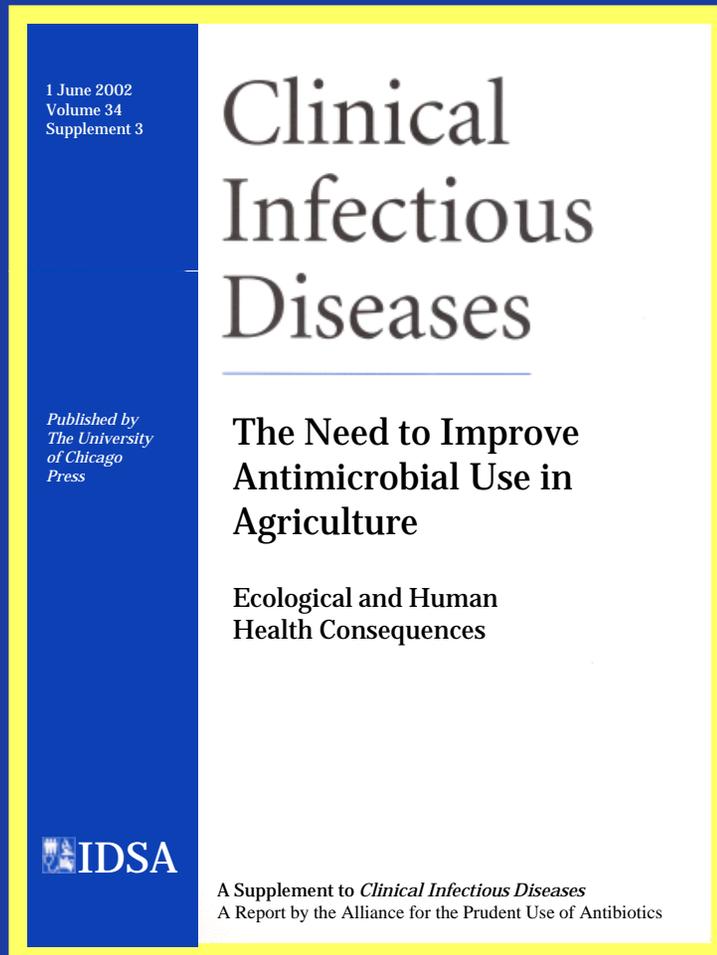
“the cost-effective use of antimicrobials which

- maximizes clinical therapeutic effect
- minimizes drug-related toxicity and
- minimizes the development of antimicrobial resistance.”

(World Health Organization, 2001)

The right antibiotic for the right condition for  
the right amount of time.

# Ensuring Prudent Use: APUA and WHO Policy Recommendations



# Ensuring Prudent Use: Recommendations for Policymakers

- Antimicrobial agents should **not** be used in agriculture **in the absence of disease**.
- Use of antimicrobials for economic purposes such as **growth promotion** or **feed efficiency** should be **discontinued**.
- Antimicrobials should be administered to animals only when **prescribed by a veterinarian**.



# Ensuring Prudent Use: Recommendations for Policymakers

- **National-level quantitative data on antimicrobial use** in agriculture should be made available to inform public policy.
- **New risk assessment models** should be developed. **Regulatory agencies** should consider the **ecology of antimicrobial resistance** in assessing human health risk associated with antimicrobial use in agriculture.
- **National surveillance programs** to track antibiotic use and antibiotic resistance in food animal production should be improved and expanded.

# Ensuring Prudent Use: Recommendations for Policymakers

- **Alternative infection prevention methods** should be instituted to reduce the need for antibiotics.
  - Improved hygiene and health management on farms
  - Use of probiotics or competitive exclusion products
  - Vaccination



# Ensuring Prudent Use: Recommendations for Policymakers

- Introduce **pre-licensing safety evaluation** of antimicrobials.
- **Monitor resistance** to identify emerging health problems.



# Antibiotics Should Be Given Their Own Drug Category

- Antibiotics are like no other drug category due to broad impact on the environment
- Individual misuse has consequences on society at large
- Allows special considerations for these drugs in terms of:
  - Incentives to industry to develop new drugs, e.g. extended patent life
  - Post-marketing surveillance to curb resistance, e.g. tax reliefs
  - Preservation of their efficacy through combined efforts of producers and consumers



# Urgent Need for Action

Improved surveillance and national regulation is needed in both human medicine and food animal production to ensure that antibiotics are used prudently.

Because animals far outnumber humans worldwide, the misuse and overuse of antibiotics in food animal production has a broad impact on the environment.

National authorities, veterinarians, physicians, and farmers all have a role in “preserving the power of antibiotics®.”