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Antibiotic Resistance in the Watersheds of the Philippines

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Antibiotic resistance in rivers and streams is an invisible, yet growing, problem in the Philippines. This occurs when bacteria that resist antibiotics spread through water used for drinking, farming, and fishing. When rivers carry these resistant bacteria, people and animals can be exposed. This risks public health and affects the safety of food and water.

Research conducted in Metro Manila found that Escherichia coli resistant to many antibiotics appeared in irrigation water. These same resistant bacteria were also found in soil and vegetables grown with that water. Scientists warned that using this polluted water could spread resistant bacteria through the food system (Zara et al., 2018). This means that bacteria that cannot be easily killed with medicine can flow from farm to table.

Another study in Laguna's Seven Crater Lakes discovered E. coli that produce enzymes capable of destroying common antibiotics, including beta-lactam drugs (Mamawal et al., 2023). These lakes feed into rivers used for drinking and washing. The study warns that communities may unwittingly consume or come into contact with resistant bacteria.

Multiple sources contribute to this problem. Hospitals, homes, poultry farms, and even hospitals discharge antibiotic residues and resistant bacteria into waterways. One study tracked the poultry antibiotic sulfamethazine flowing from farms into the Agusan River watershed before reaching coastal areas (Entradas et al., 2023). This shows how antibiotics released on land can travel through watersheds.

Wider studies in the Philippines indicate that many people use antibiotics without prescriptions, and do not complete their full course of treatment (Mallari-Abella, 2022). This behavior allows bacteria to survive antibiotic treatment and multiply. When people discard unused drugs down the drain, those residues enter rivers and streams where wastewater treatment is not equipped to remove them.

Poultry farms also play a role in spreading resistance. A 2019 study in Pampanga found antibiotic-resistant bacteria in pond sediment used in farming operations (Reyes et al., 2019). When farm waste is dumped or washed into rivers, resistant genes spread in the environment.

Some approaches promise improvement. In Laguna, health experts, researchers, and local officials are working together under a "One Health" framework. This model connects health, environment, and agriculture to address antibiotic pollution (IDRC, 2023). Hospitals are encouraged to limit antibiotic use and manage their waste carefully. Farmers are urged to adopt better practices, and local residents are becoming aware of the risks.

Despite these efforts, much remains to be done. Water quality standards in the country must include testing for antibiotic resistance. Farmers must limit antibiotic use, follow safer practices, and treat their waste. Hospitals and clinics must improve wastewater treatment before discharge into rivers. Keeping antibiotics out of the environment is essential to keep them working when people need them.

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Antibiotic resistance in Philippine watersheds is already a real threat. Rivers, lakes, and streams carry dangerous resistant bacteria into homes, farms, and food markets. This issue requires urgent, cooperative action among health workers, watershed managers, farmers, and citizens. If the problem is ignored, the rivers that sustain life may become paths for disease-causing bacteria that cannot be treated. Safeguarding these waters is essential for the health of people and the environment today and in the future.

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