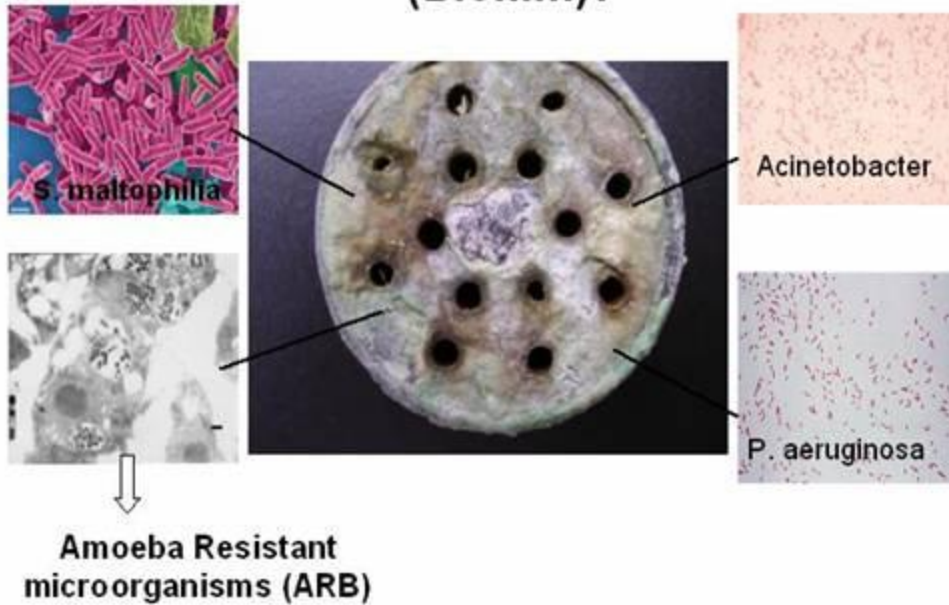


## What's in Our Water Outlets (Biofilm)?



### Waterborne Pathogens Testing Overview

*Pseudomonas aeruginosa*

*Stenotrophomonas maltophilia*

*Acinetobacter*

### Summary

- ✓ [Stenotrophomonas Culture](#)
- ✓ [Acinetobacter Culture](#)
- ✓ [P.aeruginosa Culture](#)

There are a variety of microorganisms found in the water systems of hospitals; they include bacteria (*Legionella pneumophila*, *Stenotrophomonas maltophilia*, *Pseudomonas aeruginosa*), fungi (*Aspergillus* species, *Fusarium* species), and amoebae (*Hartmanella*, *Naegleria*, *Acanthamoeba*). Microorganisms in a water environment improve their chances of survival by a number of mechanisms, including attachment and multiplication in the biofilm (slime that lines pipes and fixtures) (Figure), as well as living inside other microbes. Microorganisms living inside amoebae can survive contact with chemical disinfectants and other harsh environmental conditions. These “amoeba-resisting microorganisms” include *Legionella pneumophila* (the causative agent of Legionnaires’ disease), *Mycobacterium avium*, and *Pseudomonas aeruginosa*.

The microorganisms found in water are not generally pathogenic for healthy individuals, but may be pathogenic for the immunocompromised patient. These infections can result in significant morbidity and mortality. Mortality of waterborne *Pseudomonas aeruginosa* pneumonia was estimated at 1400 cases per year. The conditions associated with increased risk of acquiring an infection from a waterborne pathogen include patients with hematological malignancy, immunosuppression (treatment with high dose steroids, chemotherapy), transplantation, and burns. Neonates are also at increased risk of infection following exposure to waterborne microorganisms.

The types of water sources that can transmit infection vary from the simple use of tap water for drinking or rinsing medical equipment to contaminated medication vials (Table). Exposure can occur via bathing (whirlpools), showering, drinking, direct contact with contaminated medical equipment (water baths) or bath toys. One of the most interesting developments has been the recognition that water systems are a source of infection by fungi (*Aspergillus* and *Fusarium* species), which have long been associated with airborne spread.

Waterborne pathogens pose a risk of infection to hospitalized patients. Those at greatest risk are the immunocompromised. Greater effort must be made to insure a safe environment for these patients, which includes a safe water supply.

Waterborne Pathogens and Sources of Transmission within the Hospital Environment