

antibioticsbook

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Preface

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1 Antibiotic testing in the laboratory

2 History of Antibiotic Development

Learning objectives

- Compare and contrast natural, semisynthetic, and synthetic antimicrobial drugs
- Describe the historically important individuals and events that led to the development of antimicrobial drugs
- Identify the key challenges in development of future antibiotics

The impact of antibiotics on human health

Until the 20th Century, influenza, pneumonia, tuberculosis, and enteric infections ranked among the leading causes of death. The average lifespan for adults in Western Europe was around 50 years, with a 2% mortality rate for children under the age of 5 due to premature deaths primarily caused by infectious diseases.

Industrialization and increasing wealth during the 19th century brought improvements in drinking water and sanitation in many countries, leading to reductions in communicable enteric infections and improved in life expectancy Figure ?? . By the early 20th century, vaccines for pertussis, diphtheria, yellow fever and tuberculosis were introduced. However, common bacterial infections remained a serious medical threat. Streptococcal throat infections were sometimes fatal, ear infections could progress to deafness, mastoiditis or meningitis. Minor surgeries were associated with risk of life-threatening infections. Maternal mortality during childbirth approached 2%.

Figure 2.1: Changes in life expectancy over 500 years. Source: World in Data

The introduction of effective antibiotic therapy played a crucial role in further reducing mortality rates associated with common infectious diseases. This breakthrough not only improved the safety of childbirth and common surgical procedures but also paved the way for supportive care during chemotherapy for cancer and transplantation. **Thus the discovery of antibiotics can be considered one of the most significant health-related events of modern times.**(Davies and Davies 2010)