

Fact sheet

FROM OBSERVATION TO INNOVATION

IPC has never stood still — and it never will



- **1846-47 Ignaz Semmelweis: Hand hygiene**

Hungarian physician Ignaz Semmelweis demonstrated that hand hygiene could dramatically reduce deaths from childbed fever. He observed that doctors moving between autopsies and maternity care could transfer infectious material and introduced handwashing with a chlorinated solution.

- **1854 John Snow: Epidemiology**

During a cholera outbreak in London, physician John Snow mapped cases and identified a common source—the Broad Street water pump. His work demonstrated how patterns of disease could be investigated to identify sources and routes of transmission.

- **1850s Florence Nightingale: Sanitation and nursing**

Florence Nightingale transformed nursing and hospital care by emphasising cleanliness, ventilation, sanitation, nutrition and environmental conditions. Her use of statistics helped demonstrate the relationship between hospital conditions and patient outcomes.

- **1860s Louis Pasteur: Germ theory**

French scientist Louis Pasteur provided evidence that microorganisms were responsible for fermentation and helped establish the scientific basis of germ theory. This fundamentally changed understanding of how infection occurs.

- **1867 Joseph Lister: Antiseptic surgery**

Building on germ theory, surgeon Joseph Lister introduced antiseptic techniques into surgery, including the use of carbolic acid to reduce contamination of wounds and surgical instruments.

- **1876-84 Robert Koch: Providing causation**

Identified the tuberculosis and cholera organisms and set out criteria for linking a specific microbe to a specific disease

- **1879-1890s Sterilisation and disinfection: Charles Chamberland and Ernst von Bergmann**

The development of steam sterilisation and the autoclave transformed the ability to reliably sterilise surgical instruments and medical equipment. Charles Chamberland developed an early autoclave in 1879, while Ernst von Bergmann promoted steam sterilisation in surgical practice.

- **1840s-1900s Environmental and water sanitation: John Snow, Edwin Chadwick and public health engineers**

The work of John Snow and Edwin Chadwick helped demonstrate the importance of clean water, sewage management and environmental sanitation in preventing disease. These principles became increasingly embedded in public health systems during the 20th century.

INFECTION PREVENTION & CONTROL WEEK
18-24 October 2026



ACIPC
Australasian College
for Infection Prevention and Control

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- **1890s–1970s Vaccination and immunisation: Edward Jenner, Louis Pasteur and Maurice Hilleman**

Building on Edward Jenner's smallpox vaccination work in 1796 and Louis Pasteur's development of laboratory-based vaccines in the 1880s, the 20th century saw Maurice Hilleman's groundbreaking work, which shaped modern vaccination. He developed or contributed to more than 40 vaccines, including those for measles, mumps, rubella, hepatitis and influenza.

- **1928–1945 Antibiotics and antimicrobial therapy: Alexander Fleming, Howard Florey and Ernst Chain**

Alexander Fleming discovered penicillin in 1928. Howard Florey, Ernst Chain and their colleagues subsequently developed methods for producing and using penicillin therapeutically, helping usher in the antibiotic era.

- **1940s–present Antimicrobial resistance**

Resistance appeared before penicillin was in general use. MRSA, VRE and C. difficile followed; stewardship is now core practice.

- **1950s–1970s Healthcare-associated infection surveillance: Alexander Langmuir, CDC and hospital epidemiologists**

Alexander Langmuir played a foundational role in developing modern disease surveillance and applied epidemiology in the 20th Century. Hospitals increasingly established systems to monitor healthcare-associated infections, identify trends and investigate outbreaks.

- **1959s–1980s Infection control programs and specialist roles: CDC and infection control nurses**

Dedicated hospital infection control programs emerged, supported by specialist infection control nurses and hospital epidemiologists. Infection prevention became recognised as a distinct area of professional practice, with dedicated systems for surveillance, education, outbreak investigation and prevention.

- **1970s–1990s Standardised infection prevention practices: CDC and infection prevention professionals**

Infection prevention practices became increasingly standardised, including hand hygiene, isolation, sterilisation, disinfection and the use of protective equipment. HIV drove Universal Precautions in the 1980s, consolidated into Standard and transmission-based precautions in 1996. These practices evolved into the evidence-based precautions used in healthcare today.

- **2000s–present WHO hand hygiene**

The 5 Moments, alcohol-based hand rub and auditing turned hand hygiene into a measured behaviour, 160 years after Semmelweis.

- **2000s–present Genomic surveillance: Advances in genomic sequencing**

Whole-genome sequencing and other genomic technologies have enabled microorganisms to be compared at an unprecedented level of detail. Genomic surveillance can help identify related strains, investigate transmission and support outbreak detection and response.

- **2010s–present AI-assisted outbreak detection: Artificial intelligence and data science**

Artificial intelligence and machine learning are increasingly being explored to analyse large and complex datasets and identify unusual patterns that may signal an outbreak. These technologies can support earlier detection, investigation and response while complementing clinical and epidemiological expertise.

- **2019–23 COVID-19**

Refocused attention on airborne transmission, ventilation, respiratory protection and PPE supply at scale.

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