# NHMRC: IMPACT CASE STUDY

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Australian Government
National Health and Medical Research Council

NHMRC

# Phage typing and infection control

During the mid-20th century, epidemics of hospital-based and antibiotic resistant Staphylococcus aureus – or golden staph – were causing serious illness and death in hospitals internationally and were a particular problem in maternity hospitals. NHMRC-funded bacteriologists working at the Royal Prince Alfred Hospital (RPA) in Sydney made important contributions to knowledge about how to identify strains of golden staph and how to control its spread.

## Origin

In 1945, when antibiotics started to become broadly available, it seemed as if hospital acquired infection might no longer be a problem. However, existing strains of golden staph and other bacteria quickly evolved into new strains that were antibiotic resistant. It was the job of hospital pathologists to determine what strains of bacteria were causing an outbreak, which antibiotics worked against them and how to conserve their effectiveness.

## Investment

In 1947, supported by an NHMRC grant, Dr Phyllis Rountree travelled to the UK to learn a technique known as 'phage typing' – using viruses (called 'bacteriophages') to identify bacteria.

NHMRC funded Rountree and the RPA pathology team from 1947 to 1967. The team studied staph infections and epidemiology, and phage bacterium relationships, including how phages were absorbed by and disintegrated within bacteria and how this affected bacterial replication.

## Research

Using phage typing, Rountree and her team identified a cycle of infection involving hospital staff, who carried staph from ward to ward on their hands, in their nasal passages and – most dangerously – on infected lesions.

Direct contact, and droplets from infected noses, contaminated the air and infected hospital surfaces, clothing, dressings and particularly blankets. Staph on blankets contaminated mothers, babies, surgical patients and their wounds, leading to clinical infections.

## Translation

In 1956, an NHMRC committee led by Rountree published a report titled *System of control of staphylococcal infections in maternity hospitals*.

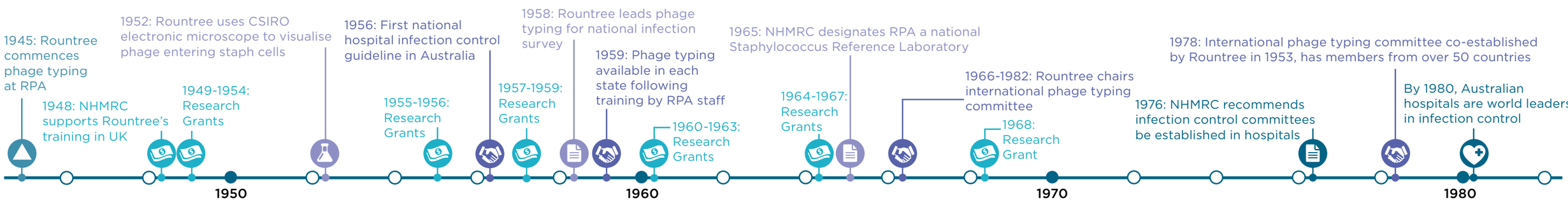
This document was the first national hospital infection control guideline produced in Australia and 15,000 copies were circulated to the medical and nursing professions.

The guideline provided detailed hygiene instructions to prevent/reduce staph infection including for the cleaning of operating theatres, the hospital nursery and hospital linen.

## Impact

Through the use of infection control measures the golden staph epidemic in maternity hospitals was halted.

NHMRC's Council recommended the establishment of infection control committees and infection control officers in hospitals. By 1980, at least 14 major Sydney hospitals and many large hospitals in other states had appointed infection control professionals. Hospitals in Australia were world leaders in this regard.




## Researchers

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