

# Staphylococcal Carriage in Man

## An Attempt at a Quantitative Survey

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*The author reviews the published findings on the carriage of Staphylococcus pyogenes var. aureus during the last two decades, dealing mainly with observations made in British Commonwealth countries, Scandinavia and the USA. The importance of the role played by staphylococcal carriers in the spread of infection both in hospitals and among adults and children in the general population is clearly brought out and is of particular interest in view of the current increase in resistance of staphylococcal strains to antibiotics.*

*There does not appear to have been any well-defined trend towards either an increase or a decrease in staphylococcal carriage in the past twenty years; annual variations have been quite considerable and the precipitate drop in the carriage rate in hospitals in 1949 (perhaps due to the extensive use of penicillin) has since been made up. A particularly high carriage rate was found among hospital staff and twice as high a rate among children born in hospitals as among those delivered at home.*

*Closer study and better control of staphylococcal infections in hospital wards are clearly necessary. It is appreciated, however, that, before more effective control measures can be taken, there must be improvements in the present methods of sampling, in the testing of strains for pathogenicity and in other techniques.*

Staphylococcal carriage rate in man, not associated with clinical signs, has received considerable attention during the last two decades. Here an attempt is made to evaluate the published findings, especially with a view to determining whether this rate is higher now than it was twenty years ago.

The term "carriage rate of staphylococci" has never been properly defined. Thus, the site or sites to be examined to determine it are not universally accepted; the frequency and mode of sampling, the method of demonstrating the presence of the staphylococci and the characteristics that may be accepted for potentially pathogenic strains have not been defined and commonly accepted. Finally, no method of proving that a given staphylococcal culture is pathogenic to man is yet available, although circumstantial evidence is therefore commonly accepted, e.g., the results of tests for coagulase or haemolysis, results of phage typing or resistance to antibiotics.

This contribution is based on findings of *Staphylococcus pyogenes* var. *aureus* in various sites of

man, but not associated with clinical signs. Most of the results published and used here were based on one sample from one sampling site. Generally a positive coagulase test (usually of one colony) and sometimes haemolysis or presence of golden pigment were required for the culture to be accepted by the original author as *S. pyogenes*. Reports dealing only with the finding of antibiotic-resistant staphylococci have not been included in this survey. Incidentally, the name (if any) given to the staphylococcal culture has also varied in the published reports, e.g., *S. pyogenes* or *S. aureus*, or variants of these.

Most of the data included here have come from countries with a fairly high degree of similarity of attitude to and practice of public health and hospitalization, medical treatment and medication, such as Australia, Canada, New Zealand, the Scandinavian countries, the United Kingdom and the USA; very few are from countries with less well developed social welfare systems.

### RESULTS

The sources of the staphylococcal cultures are shown in the accompanying table.

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