

Study suggests inadequate hand hygiene practice

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(Medical Xpress)—Gloves used commonly in general hospital wards throughout New Zealand are frequently contaminated with bacteria before coming into contact with patients, with poor glove box design and inadequate hand washing by hospital staff the likely culprits, a new University of Otago study has found.

The Otago researchers, whose study was published Sunday 30 June, 4pm NZT in the *Australasian Medical Journal*, tested non-sterile disposable gloves, finding they more than live up to their name.

Poor hand hygiene by hospital staff, coupled with a flaw in the design of the boxes, are strongly suspected as causes of the contamination by different kinds of [bacteria](#), including faecal bacteria.

The bacteria involved are responsible for some of the nosocomial (hospital-acquired) infections that are acquired by people admitted to hospital. These potentially [fatal infections](#) are known to cost New Zealand health budgets around \$136 million a year.

Lead author Dr Heather Brooks from the Department of Microbiology and Immunology says she and collaborators Dr Jon Cornwall from the Department of Anatomy, Masters student Kim Hughes and Professor Jean-Claude Theis (Department of Surgical Sciences), assessed whether the non-sterile gloves were capable of transferring potential disease-causing bacteria in a large hospital ward.

"We wanted to find out whether gloves used every day for procedures such as removing drains, catheters or removing dressings from wounds, could be a vehicle for transmission of bugs around the ward," says Dr Brooks.

"We wanted to find out how 'non-sterile', non-

sterile actually is."

The World Health Organization guidelines say proper hand hygiene must be carried out before gloves are retrieved from boxes, often located on walls in wards. However, the researchers found that hand hygiene must have been inadequate after they found several different kinds of bacteria after testing unused gloves in boxes located in one large general ward at Dunedin Hospital.

Dr Cornwall says that effective [hand hygiene](#) is a basic protective concept that has been known for a long time. He was hopeful the study would lead to a return to basics in hospitals.

"It seems there is a lot of emphasis on protecting healthcare staff from the patient, but perhaps not enough effort going into protecting the patient from the healthcare staff and potential cross-transmission of bugs," he says.

Kim Hughes, who tested 10 boxes of gloves and 38 glove samples (each sample containing three gloves) from the hospital ward, found the pathogens on the unused gloves, including a small number of faecal organisms.

"I was very surprised to see so many bacteria and different types, including pathogens," she says.

Dr Brooks believes the gloves become contaminated when medical staff search in the box for new gloves and their hands come into contact with the ones that are not selected.

Failure to properly wash their hands prior to accessing the glove boxes most likely accounted for the presence of faecal bacteria on the gloves. Reducing the contamination likely requires improved and proper [hand washing](#) technique, and a design change in the box that reduces the size of the hole through which the gloves are retrieved, allowing the gloves to come out more easily without

the need for reaching into the box to access new gloves.

"The findings highlight adherence to hand washing guidelines, common glove retrieval practice, and glove-box design as targets for decreasing bacteria transmission via [gloves](#) on hospital wards," the study concludes.

Dr Brooks says the researchers believe it is highly likely that these results would be replicated in other general wards in other hospitals should tests be carried out.

The study backs up previous international studies which have also found that hand-washing compliance by health professionals is generally poor.

Provided by University of Otago

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