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Original article

## Evaluating the impact of pluridisciplinary training on proper glove use in hospital

*Évaluation de l'impact d'une formation pluridisciplinaire sur le bon usage des gants à l'hôpital*

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### Abstract

**Objective.** – The authors of this randomized study had for aim to evaluate the impact of training on proper glove use by comparing compliance to glove use recommendations between trained and untrained healthcare personnel according to healthcare professional groups.

**Patients and methods.** – A random selection of trained and untrained nurses, nurse aids, and hospital housekeepers was performed in a French University hospital, using a listing of healthcare personnel. The audits were conducted by two infection control nurses, in series of 10 observations, with a maximum time limit of two hours. The evaluation criteria were compliance or non-compliance of glove-wearing practices with internal hospital recommendations, disclosed to professionals during training.

**Results.** – Overall, 111 professionals were audited and 794 acts were observed. Hand hygiene was significantly better in trained vs. untrained healthcare professionals ( $P < 0.01$ ). Proper glove use practices were similar between trained and untrained nurses (85% of compliance), whereas the difference was statistically significant in favor of trained healthcare personnel for the other categories ( $P < 0.001$  for nurse aids and  $P = 0.02$  for housekeepers).

**Conclusion.** – We demonstrated the impact of pluridisciplinary training on proper glove use practices in hospital settings, but with different benefits found according to professional groups. The lower the initial training level, the greater the overall benefit appeared to be.

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**Keywords:** Gloves; Training; Audit; Evaluation; Care; Hand hygiene

### Résumé

**Objectif.** – Cette étude randomisée visait à évaluer l'impact de la formation sur le bon usage des gants, en comparant la conformité des pratiques d'utilisation des gants entre personnels formés et non formés selon les différents groupes de professionnels de santé.

**Patients et méthodes.** – Dans un hôpital universitaire français, en utilisant la liste des personnels de santé paramédicaux, une sélection aléatoire d'infirmières, d'aides-soignantes et d'agents de service de l'hôpital, formés et non formés, a été effectuée. Les audits ont été effectués par deux infirmières hygiénistes par série de 10 observations, d'un délai maximum de 2 heures. Les critères d'évaluation étaient la conformité ou la non-conformité des pratiques de gantage par rapport au référentiel interne de l'hôpital présenté aux professionnels lors de la formation.

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<sup>3</sup> Philippe Berthelot made the statistical analysis.

**Résultats.** – Globalement, 111 professionnels ont été audités, avec 794 actes observés. L'hygiène des mains était significativement meilleure chez les formés comparativement aux professionnels non formés ( $p < 0,01$ ). En ce qui concerne la bonne utilisation des gants, les pratiques étaient similaires entre les infirmières et infirmiers formés et non formés (85 % de conformité), alors que la différence était statistiquement significative en faveur du personnel formé pour les autres catégories ( $p < 0,001$  pour les aides-soignantes et  $p = 0,02$  pour les agents de service hospitalier).

**Conclusion.** – Cette étude démontre l'impact d'une action de formation multidisciplinaire sur la bonne utilisation des gants à l'hôpital, mais avec des bénéfices différents selon les catégories de professionnels de santé. Le bénéfice semble d'autant plus grand que le niveau initial de formation est modeste.

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**Mots clés :** Gants ; Formation ; Évaluation des pratiques ; Soins ; Hygiène des mains

## 1. Introduction

The emergence of infections in the 1980s, such as hepatitis and human immunodeficiency viruses, led to the drafting of “universal precautions” [1], which were subsequently extended to “standard precautions”, published by the Centers for Disease Control in Atlanta in 1996 [2]. These precautions restated that glove use was recommended in case of exposure to biological fluids and contact with mucous membranes. This measure was recommended to isolate the hands of healthcare professionals to ensure better protection [3]. It likewise allowed for a reinforcement of hand hygiene following the use of gloves, with the aim of minimizing the risk of transmitting infectious agents to patients [4]. Proper glove use is essential in a hospital setting so as to prevent nosocomial infections by exogenous transmission and protect healthcare personnel and patients from infectious risks [5].

These global recommendations are not easy to adhere to, especially for single-use, non-sterile gloves [6,7]. A pluridisciplinary research was undertaken at the University hospital of Saint-Etienne steered by the Hospital Infection Committee, faced with numerous questions from users about the indications for wearing gloves, the preferred choice of material [8], as well as the increase in latex allergy cases [9,10], resulting in the implementation of a training program for healthcare professionals [11]. The impact of numerous hospital hygiene-training sessions on clinical practice is still poorly assessed [11–14]. Furthermore, compliance with guidelines for hand hygiene and glove use during patient care is often poor [5,7].

We compared the compliance of glove wearing practices at our hospital, between trained and untrained personnel, according to professional healthcare groups, to evaluate the impact of training on optimal glove use in hospital.

## 2. Methods

### 2.1. Design

This study, undertaken under the guidance of the Infection Committee and the Commission on Nursing at our hospital, was a randomized clinical nursing research project aimed at evaluating the impact of professional training, according to healthcare categories.

### 2.2. Studied population and setting

Three professional categories were audited: nurses, nurse aids, and hospital housekeepers. Two groups of audited healthcare professionals of the University hospital of Saint-Etienne (France), were formed by random selection using a random-number table:

- healthcare professionals having followed the pluridisciplinary training on the proper use of gloves in hospital;
- healthcare professionals who had not followed this training.

Non-inclusion criteria were the status of referent infection control professionals (for each ward), professionals from groups other than those selected, and training within the previous year. Any refusal to participate in the audit was deemed highly unlikely since the study aimed at evaluating professional practices, and that this evaluation was expected for the position.

### 2.3. Intervention

The training included a guide to proper glove use in hospital by professional category (nurses, nurse aids, and housekeepers), a presentation of the quality standards required for gloves used in hospital settings with an explanation of the procedures to follow in case of allergy, as well as a pedagogical film [11]. 23.3 hour training sessions were held in 2002 and 2004, for approximately 1500 healthcare professionals and students.

### 2.4. Study design

A random-number table was used to select professionals to be audited for the three professional categories, according to lists of professionals having undergone training on optimal glove-use at the Saint-Etienne University Hospital. Likewise, a random-number table was used to select professionals for the three healthcare categories who did not undergo training according to the Saint-Etienne healthcare staff list. The population of infection control referents (approximately 100) was excluded from the analysis to minimize any bias regarding the type of the training given. In effect, these professionals attend information and training sessions every 45 days with the Infection Control

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