



# Attitudes and practices of Irish hospital-based physicians towards hand hygiene and hand rubbing using alcohol-based hand rub: a comparison between 2007 and 2015

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## SUMMARY

**Background:** Hand hygiene is the cornerstone of infection prevention and control practices, and reduces healthcare-associated infections significantly. However, international evidence suggests that medical doctors demonstrate poor compliance.

**Aim:** To explore and compare practices and attitudes towards hand hygiene, particularly hand rubbing using alcohol-based hand rub (ABHR), among hospital-based physicians in Ireland between 2007 and 2015.

**Methods:** In 2007, a random sample of doctors in a large teaching hospital was invited to complete a postal survey using a validated questionnaire. In 2015, the study was replicated among all doctors employed in a university hospital group, including the setting of the original study, using an online survey. Data were analysed using SPSS and Survey Monkey.

**Findings:** Predominately positive and improving attitudes and practices were found, with 86% of doctors compliant with hand hygiene before patient contact in 2015, compared with 58% in 2007. Ninety-one percent of doctors were compliant after patient contact in 2015, compared with 76% in 2007. In 2015, only 39% of respondents reported that they 'almost always' used ABHR for hand hygiene. However, this represents 13.5% more than in 2007. Stated barriers to use of ABHR included dermatological issues, poor acceptance, tolerance and poor availability of ABHR products.

**Conclusion:** Greater awareness of hand hygiene guidelines and greater governance appear to have had a positive impact on practice. However, despite this, practice remains sub-optimal and there is scope for substantial improvement. Continued and sustained efforts are required in order to build on progress achieved since the World Health Organization hand hygiene guidelines were published in 2009.

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## Introduction

Patient safety is a healthcare priority and healthcare professionals globally have a responsibility to ensure that patients receive quality, safe health care. Infection prevention and control is a key component of patient safety programmes, with healthcare-associated infections (HCAI), especially those caused by multi-drug-resistant organisms, posing a significant threat to patient safety worldwide [1]. The impact of HCAI can be experienced by patients and their families, leading to increased patient morbidity and mortality, and increased healthcare costs. A point-prevalence survey conducted in Ireland, the setting for this study, reported a national prevalence rate of HCAI in acute care facilities of 5.2%, and the setting for this report has experienced considerable HCAI challenges in recent years [2–4].

The prevention of HCAI is a healthcare priority, and hand hygiene is recognized as a standard precautionary and effective measure in controlling the spread of these infections [5,6]. Hand rubbing is the preferred method of hand hygiene in most routine clinical situations, and is defined as ‘applying an antiseptic hand rub to reduce or inhibit the growth of microorganisms without the need for an exogenous source of water and requiring no rinsing or drying with towels or other devices’ [1]. However, hand hygiene compliance among healthcare professionals remains unacceptably low internationally [7–9]. In particular, poor compliance among doctors has been reported in many studies [5,10–13]. While there has been much focus internationally on exploring doctors’ attitudes and practices regarding hand hygiene and hand rubbing, research from Ireland regarding this topic has been limited [14]. As such, this study addresses the deficit of research pertaining to doctors’ hand hygiene practices from an Irish perspective.

In 2007, a study of hand hygiene practices and ABHR use among doctors in a large teaching hospital was conducted, as part of a larger study. The study was replicated in 2015 and the setting was expanded to encompass additional sites, following the formation of a university hospital group anchored by the original large teaching hospital. In the interim, World Health Organization (WHO) hand hygiene guidelines were published, and widespread implementation of the guidelines was supported nationally by governmental agencies and locally by the hospital groups’ infection prevention and control team and management team. This article will compare and contrast the results of the two studies, conducted eight years apart, concerning the attitudes and practices of hospital-based medical doctors in Ireland towards hand hygiene and hand rubbing. This article will also attempt to provide insight into the demonstrable influence of national and international guidelines in the intervening years.

## Methods

### Setting

In 2007, the study setting was a large regional teaching hospital providing major surgery, cancer treatment, emergency department services, critical care services and other medical, diagnostic and therapy services. In 2015, the expanded setting encompassed a university hospital group, comprising six hospitals functioning collectively as a single

hospital system, and included the site of the original study, the largest of the hospitals. The hospital group offers a range of inpatient, outpatient, accident and emergency, and maternity care services, serves a population of approximately 400,000 people, and provides approximately 750 acute hospital beds.

### Design

Both studies employed a quantitative, survey approach, using a validated questionnaire comprising validated Likert-ordinal-attitudinal scales as the research instrument.

Between March and April 2007, a random sample of consultants and non-consultant hospital doctors employed in the aforementioned teaching hospital was invited to participate in a postal survey. A cover letter and the questionnaire were sent via the internal hospital postal system, and participation indicated consent and was voluntary and anonymous.

Between November and December 2015, the setting was expanded to the aforementioned hospital group, and all consultants and non-consultant hospital doctors were invited to participate in the survey via staff email. They were provided a link to the online study instrument and to a concise, unbiased explanation of the survey topic. Participation indicated consent and was voluntary and anonymous. On completion of the online data collection, hard copies of the survey were also distributed at education and training seminars in order to enhance the response rate; these data were subsequently added manually to the online database.

### Study instrument and analysis

In 2007, following a literature review, a study instrument was selected for data collection. The validated questionnaire was originally developed at Colombia University, New York and was designed to assess barriers to adherence to the Centers for Disease Control and Prevention 2002 hand hygiene guidelines [15,16]. The survey was modified and contextualized to the Irish setting. A microbiologist and a statistician further reviewed the questionnaire for content validity, and a pilot test was performed ( $N = 20$ ). This helped to identify administrative and analytical issues with the research tool and process.

In 2015, the same questionnaire was used, although it was modified slightly to reflect the publication of international hand hygiene guidelines in the interim. Additional questions were added following review by two experienced researchers (microbiologists) for content validity. No questions were removed. A pilot study was conducted to improve the reliability and validity of the questionnaire, and to check completion time and allow for minor redrafting of some questions for greater clarity ( $N = 9$ ).

The survey was composed of 42 and 57 questions in 2007 and 2015, respectively, with Likert scale, multiple choice and ‘yes or no’ questions. It comprised three sections that focused on demographics, hand hygiene practices and handrubbing practices. Data were analysed using Statistical Package for Social Sciences (SPSS) Version 14 (IBM Corp., Armonk, NY, USA) in 2007, and SPSS Version 24 was used in 2015. Descriptive statistics, including frequencies and percentages, were calculated. The relationship between variables was considered where there was a rationale to do so. Parametric testing was not performed as data were ordinal and not normally distributed [17]. The Pearson Chi-squared test of independence (non-

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