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Survey of current hand hygiene practices amongst doctors and attitudes on being bare below the elbow

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Abstract
Compliance with hand hygiene has always been a challenge especially amongst medical staff. There is also a reluctance to be bare below the elbow due to lack of evidence to support this practice. The aim of this survey was to assess doctors' compliance with hand hygiene and identify barriers faced including evaluation of attitudes and compliance with bare below the elbow. We conducted a doctor and patient survey on current medical staff's hand hygiene and bare below the elbow practice over a seven week period. There is generally low compliance with hand hygiene and poor reasons were given to justify this; whilst non-compliance to bare below the elbow was due to the lack of evidence. Arguments are presented to uphold the need for bare below the elbow to facilitate effective hand hygiene practices which are an essential part of patient care to prevent transmission of infections.

Keywords: Hand hygiene, health care survey, physicians, infection control, patient care, Wales

Introduction
It is recognised that medical staff are generally poorly compliant with hand hygiene and there are varying practices for being bare below the elbow. The purpose of this survey was to assess doctors' compliance to hand hygiene and identify barriers faced including evaluation of attitudes and compliance towards bare below the elbow.

Background
Hands are the most effective mode of transfer of microorganism in healthcare and can result in healthcare associated infections which are major causes of morbidity and mortality worldwide.[1] Reduction of infection by this mode of transfer can be achieved by a simple but very effective measure of performing hand hygiene at the appropriate time,

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which is one of the most fundamental principles in infection prevention and control. Along with good hand hygiene practices, the principle of bare below the elbow (BBE) has also been described in guidance documents as best practice to facilitate effective hand hygiene procedures.[1-5] Essentially the principle of BBE entails wearing short sleeved attire when providing direct patient care; hands should be free of hand or wrist accessories (other than plain wedding band), and nails should be kept short, unvarnished and without artificial fingernails. The presence of wrist and hand accessories increases carriage rates of microorganisms and can hinder effective decontamination of hands and even harbour microorganisms.[6]

Good hand hygiene practices have been shown to reduce healthcare associated infections.[7-10] However, studies have shown poor compliance of hand hygiene practices among healthcare professionals averaging at about 34%.[11] Hand hygiene audits performed by our Infection Prevention and Control Team (IPCT) consistently found that among the healthcare professionals, doctors were the least compliant group of staff. Along with poor compliance to appropriate hand hygiene, the contentious issue has been around the principle of BBE ever since it was first recommended by the UK Department of Health in 2007. Some hospitals have implemented this dictatorially despite protest for the lack of evidence, while others have included it in policies but not applied it stringently, such as in our Health Board (HB) which is located in South Wales in the UK. We found a significant proportion of doctors were not BBE during hand hygiene audits in clinical settings. There is a huge reluctance to comply with this recommendation due to the lack of evidence.[12-14]

We conducted a doctor and patient survey to analyse current hand hygiene practices among medical staff and to assess attitudes and compliances towards BBE practices. The purpose for this survey was to identify any barriers faced in performing hand hygiene so that this can be addressed to increase compliance and to explore reasons behind the low compliance to BBE. The IPCT believes that all staff should be BBE when providing clinical care to facilitate effective decontamination of hands and to reduce risk of transmission of pathogens from potentially contaminated hand accessories and cuffs of long sleeve attire.

Methods

Two separate questionnaire surveys were designed for both doctors and patients with questions relating to hand hygiene and BBE (Tables I and II). This anonymous survey was conducted over a seven-week period between January and February 2016. The doctor survey was distributed by e-mail to all doctors working in the HB and paper copies were left in the post-graduate department to encourage participation. Paper copies

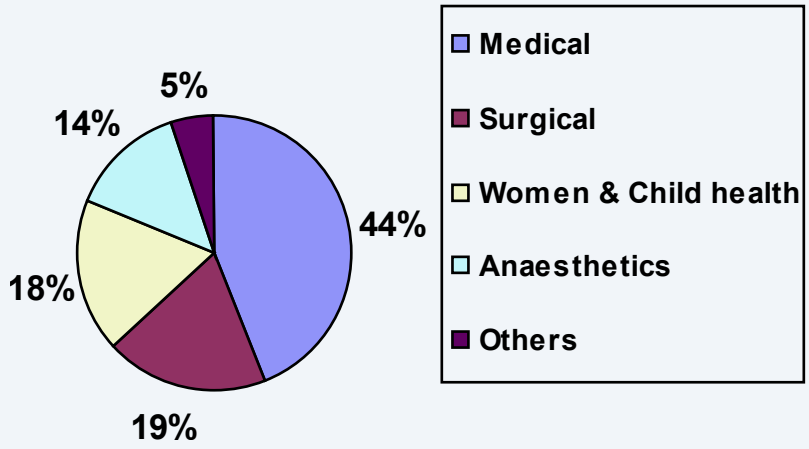

Figure 1. Breakdown of doctors surveyed by speciality and job grade*

* Job grade was defined as follows. Junior (e.g. Foundation Year/Core Trainees): up to four years post-graduate; Middle (e.g. Specialist Trainee/Associated Specialist/Staff Grade): four years and beyond post-graduate; Senior: consultant grade.

Table I. Doctors' Questionnaire

Age: Sex : ☐ Male ☐ Female Directorate :	
Grade: ☐ Junior (e.g. FY, CT) ☐ Middle (e.g. ST, Assoc spec, Staff grade) ☐ Senior (e.g. Consultant)	
Q1: Do you think hand hygiene (HH) practices are an essential part of patient care?	☐ Yes ☐ No
Q2: Have you had any training/education/teaching on HH?	☐ Yes ☐ No ☐ Don't remember
Q3: Are you aware that the HB has a HH policy?	☐ Yes ☐ No
If **Yes** to Q3: **Q4:** Do you know how or where to access this policy? **Q5:** Have you read it?	 ☐ Yes ☐ No ☐ Yes ☐ No
Q6: Are you are aware of the WHO(World Health Organisation) 5 Moments for Hand Hygiene (HH)?	☐ Yes ☐ No
Q7: Do you comply with the WHO 5 Moments for HH **OR** appropriate HH in general?	☐ Yes-Always ☐ No ☐ Majority of the time ☐ Sometimes
If **No or Sometimes** to Q7: **Q8:** Please state reason(s) why (this will help us understand the challenges/barriers that you face)	
Q9: Do you understand the principles of Bare Below the Elbow (BBE)?	☐ Yes ☐ No
If **Yes** to Q 9: **Q10:** Do you agree with the principles of BBE?	☐ Yes ☐ No
If **No** to Q10: **Q11:** Please state reason(s) why (this will help us understand your issues)	
Q12: Are you BBE during clinical duties?	☐ Yes-Always ☐No ☐ Majority of the time ☐ Sometimes
Q13: Are you happy to be challenged by patients or other members of staff if you are observed not to be compliant with good HH practices?	☐ Yes ☐ No

of the patient survey were distributed by the IPCT to patients who had been admitted into hospital on the wards for one or more days and who were mentally and physically well enough to participate. Participation was completely voluntary and consent was implied by return of survey. Data were collated and analysis performed. Ethics approval was not required for these surveys.

Results

One hundred doctors' surveys were returned (an 18% response rate) and 83 from the patient survey. Basic demographics of the participants for both the doctor and patient surveys are listed in Table III, and Figure 1 shows the breakdown of doctors by speciality and job grades. The average length of stay of patients who participated in the survey was 15 days (range: 1-180 days).

Table II. Patient Questionnaire

Age: years	Sex : ☐ Male ☐ Female Hosp & Ward :
How many days have you been in hospital? ____days	or ____weeks or ____months
The way Doctors dress	
Question 1: How do you like the Doctors who are providing your care in hospital to look?	☐ In a jacket or suit ☐ In a Dr's white coat with long sleeves ☐ Without a jacket/suit/Dr's coat & with their long sleeves rolled up ☐ Don't mind what they wear
If we explain that we **discourage** Doctors from wearing jacket, suit or Dr's coat and ask for their long sleeves to be rolled up while providing care, to help with more thorough cleaning of their hands so that they do not pass on any bacteria or infection to you; **Question 2:** Would you change your answer to Question 1? **If Yes**: which one would you now choose?	☐ Yes ☐ No ☐ In a jacket or suit ☐ In a Dr's white coat with long sleeves ☐ Without a jacket/suit/Dr's coat & with their long sleeves rolled up ☐ Don't mind what they wear
Doctors cleaning their Hands (either by hand washing or using alcohol gel)	
Question 3: Do you think it is important for doctors to clean their hands before having any contact with you, either examining or performing a procedure?	☐ Yes ☐ No ☐ Don't know
Question 4: Have you noticed whether the Doctor(s) washed their hands or used alcohol gel before examining you?	☐ I have not been examined by a doctor ☐ I have not noticed or cannot remember ☐ Always ☐ Most of the time ☐ Sometimes ☐ Never
Question 5: If you noticed that the Doctors who is going to examine you have not washed or used alcohol gel to clean their hands, would you…	☐ Not be bothered by it at all. ☐ Politely ask the doctor clean their hands ☐ Be unhappy about it & not say anything ☐ Be unhappy about it & not say anything but later complain about it

Table III. Demographics of surveyed participants.

Demographics	Doctors' Survey	Patients' Survey
Age (years): Average (range)	41 (23 - 63)	62 (21 – 93)
Male	56%	33%
Female	44%	67%

There was unanimous consensus from doctors and patients that hand hygiene practices are an essential part of patient care. Table IV summarises the findings of the survey on hand hygiene from doctors and patients. All 12% of the doctors who did not have hand hygiene training or education were doctors of senior grades (consultants).

Barriers stated for poor compliance in the survey included time pressure, forgetfulness, dry hands and accessibility or availability of hand hygiene facilities.

Table V summarises the findings of the survey on BBE from doctors, and patient preferences of doctors' attire. Of those doctors who did not agree with the principles of BBE, 71% cited the lack of evidence as the reason.

In the patient survey, following the question on patient preference of doctors' attire, a short narrative was provided to explain why the IPCT recommends that doctors be BBE. With this information, patients were then asked if this would change their preference. Of those who did not initially choose BBE as the initial answers, only 29% of patients said that they would change to BBE.

Discussion

Doctors compliance to hand hygiene has been recognised to be poor.[1,15,16] This was also reflected in the IPCT's hand hygiene audits which demonstrated an average of 46% compliance by medical staff. A similar result was reproduced in the patients' observations on doctors' hand hygiene compliance in our survey.

This survey did not highlight a big gap in education and training in hand hygiene for our organisation. Although not perfect, the majority (82%) of doctors who completed the survey had received training or education and this was also demonstrated by the high proportion (81%) of those who were aware of the World Health Organization's (WHO) 5 Moments for Hand Hygiene.[1] Hand hygiene education is included in every doctor's induction programme and in the Level 1 of the Infection Prevention and Control e-learning modules which forms part of the core skills training framework. This framework is the recognised minimum standard for statutory and mandatory training for all staff working in NHS Wales and there is a requirement to complete this module every 3 years. Doctors who may have missed the induction programme and existing senior doctors will receive hand hygiene training through this system. Moreover, the hand hygiene policy is available and easily accessible through the hospital's intranet system for reference. The document and intranet link to this policy were communicated to all medical staff to raise awareness as a result of this survey.

Only 28% of doctors surveyed admitted to be always compliant with appropriate hand hygiene practices. Barriers stated as reasons for non-compliance to hand hygiene do not sufficiently support the poor compliances observed. Accessibility and availability of hand hygiene facilities are constantly being monitored through environmental audit programmes in clinical areas and any issues found are addressed immediately. Any issues identified regarding hand hygiene facilities should be reported by users to the area manager so that this can be rectified and therefore should not be a barrier for non-compliance. Hand moisturising creams are provided at hand hygiene sinks to prevent dry hands from frequent hand washing. In addition, signs are placed strategically as reminders to perform hand hygiene in clinical areas. Time pressure as a result of high work loads which prevents good infection prevention and control practices needs to be addressed with senior management of the department.

Patients should be empowered and encouraged to challenge non-compliant staff to increase adherence to appropriate hand hygiene. Only 45% of patients were happy to challenge non-compliant doctors, however 96% of doctors were happy to be approached on this matter.

Most doctors understood the principles of BBE (96%) and agree with this principle (81.5%) but only 53% put this into practice all the times. The main reason given for non-compliance was that there was no evidence to support BBE practice. There was no other practical reason given for non-compliance with this best practice.

Patient opinions regarding doctors' attire did not change significantly even though an explanation was given as to why doctors should be BBE. This demonstrates that the majority of patients surveyed did not have any particular preferences on doctors' attire.

Table IV. Summary of findings from survey on hand hygiene issues from doctors and patients

Hand Hygiene Issues	Results
Doctors who had hand hygiene training/teaching:	
• Yes	82%
• Don't remember	6%
• No	12%
From doctor Survey:	
Awareness of existence of Health Board's Hand Hygiene policy	85%
Know where to access the Hand Hygiene Policy	63%
Proportion of doctors who have read the policy	35%
Awareness of the *WHO's 5 Moments for Hand Hygiene	81%
Doctor's self assessment of the compliance to the *WHO's 5 Moments or appropriate Hand Hygiene:	
• Always compliant	28%
• None compliance	6%
• Majority of the time	53%
• Sometimes	13%
Patient's observation of doctors performing hand hygiene:	
• Have not been examined by a doctor	5%
• Have not noticed or cannot remember	17%
• Always	46%
• Most of the time	20%
• Sometimes	10%
• Never	2%
What patient would do if they noticed doctor's none compliance to hand hygiene:	
Not be bothered by it at all	
Politely ask the doctor to clean their hands	15%
Be unhappy about it and not say anything	45%
Be unhappy about it and not say anything but later make a complain	38%
	2%
Doctor's response on being challenged by patients or other members of staffs if they were observed to be non compliant with good hand hygiene practices:	
• Happy to be challenged	
• Not happy to be challenged	94%
	6%

*WHO = World Health Organisation

Table V. Summary of findings from survey on bare below the elbow issues.

From Doctor Survey	Results
Understand the principles of bare below the elbows:	
• Yes	96%
• No	4%
Agree with the principles of bare below the elbows:	
• Yes	81.5%
• No	18.5%
Actually being bare below the elbow in clinical practice:	
• Always	53%
• No	8%
• Majority of the time	28%
• Sometimes	11%
From Patient Survey	**Results**
Patient's preference on doctor's attire who are providing care in hospital:	
• in a jacket or suit	6%
• in a doctor's white coat with long sleeves	8.5%
• without a jacket/suit/doctor's white coat and with their long sleeves rolled up (BBE)	8.5%
• have no preference of their attire at work	77%

This survey is limited by doctors' self-assessment and honesty. There may also be an element of inaccuracy in patient recall of observation of the hand hygiene practices, and responses may have been based on impression and views. In addition, doctors' knowledge of the WHO 5 Moments of Hand Hygiene and understanding of BBE were not formally evaluated in this survey.

Being BBE facilitates the effectiveness of good hand hygiene. Are there any real reasons why healthcare staff should not be bare below the elbow to facilitate this? We would argue not.

Seventy seven percent of patients surveyed in our HB did not have any opinion on doctors' attire, hence refuting the argument that a professional image must be maintained in a long sleeved suit, jacket or a doctor's white coat.[17-19] Studies have also shown that patient opinion on this matter is malleable.[20,21] Being BBE does not mean not dressing smartly.

Furthermore, there are no additional cost implications to implement this principle, only engagement by clinical staff and efforts to police this. Moreover, implementing this principle causes no harm to patients and can only serve to benefit and improve patient care by reducing transmission of infection coupled with effective hand hygiene practices.

Conclusions

Compliance with hand hygiene has always been a challenge. Reasons given for poor compliance in this survey did not provide a good basis to explain poor practices. All healthcare workers are responsible for the prevention of infections and the most effective method is to maintain good hand hygiene practices at all times and being BBE facilitates this.

It is virtually impossible to design a well randomised controlled trial on this subject where there are multiple factors which cannot be controlled in a clinical trial such as personal behaviours, personalities, believes,

attitudes, social pressures, perceptions and knowledge which influences individual's hand hygiene practices. Being BBE does not necessary mean that the individual washes their hands appropriately and effectively, and vice versa. The emphasis is not just about being BBE but also on appropriate hand hygiene techniques and importantly when it should be done. The two goes hand in hand and should not be treated as separate entities. BBE should always be coupled with effective and appropriate hand hygiene practices.

The lack of evidence to support BBE due to the impossibility of a good study design does not mean that we cannot practice sensible and logic based medicine. We would like to put this argument to rest and convince those who practice evidence based medicine to reconsider their practices.

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