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Using environmental engineering to increase hand-hygiene compliance

Submission date
28/02/2017

Recruitment status
No longer recruiting

Registration date
31/03/2017

Overall study status
Completed

Last Edited
23/04/2021

Condition category
Other

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
Every year over 300,000 patients in England suffer a hospital acquired infection (HAI). Many HAIs are avoidable through better hand hygiene. Unfortunately, despite its widely known importance and universal reminder notices, use of hand disinfectants is typically less than 50%. Commonly used educational methods, while effective in the short term, have not produced long-term increases in hand-hygiene compliance. The aim of this study is to increase hospital hand-hygiene through psychological primes. A psychological prime is a stimulus that can alter people's behaviour without their awareness. Two primes were demonstrated to increase hand hygiene compliance in a single hospital ward in the USA: a citrus smell, which is thought to remind people of similar smelling cleaning products, and a picture of a person’s eyes, which is thought to make people feel watched and therefore remind them to comply with hand-hygiene instructions. However, the interventions only took place over four non-consecutive days so it is unclear whether the results would be sustained over a longer time period. It is also possible that a combination of smell and eyes may be more effective. This study investigates whether similar results can be achieved in a UK hospital over a longer time period and whether a combination of smell and eyes is more effective than either alone.

Who can participate?
All people who walk into the four participating hospital wards

What does the study involve?
Over four periods of six weeks, each ward receives either a commercial aroma dispenser, a picture of a person’s eyes, both the aroma dispenser and the picture, or neither. During these periods an observer counts the number of people who enter the ward and the number of occasions on which they follow hand hygiene instructions.

What are the possible benefits and risks of participating?
It may be the case that more people clean their hands, but this is not known for sure. No risks are expected in this study. The scents are in widespread use in hotels, airports and other public buildings and are not known to have caused any problems. Additionally, there is unlikely to be any harm from people cleaning their hands with disinfectant gel.

Where is the study run from?
Heartlands Hospital (UK)

When is the study starting and how long is it expected to run for?
August 2015 to March 2018

Who is funding the study?
The Health Foundation (UK)

Who is the main contact?
Prof. Ivo Vlaev

Contact information

Type(s)
Scientific

Contact name
Prof Ivo Vlaev

Contact details
Behavioural Science Group
Warwick Business School
The University of Warwick
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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
3.1

Study information

Scientific Title
Using environmental engineering to increase hand-hygiene compliance: a cross-over study protocol

Study objectives
Objective 1 is to compare the proportion of people use the alcohol gel and soap dispensers when they walk into a ward during each of our four conditions: olfactory prime, visual prime, both primes, neither primes, and to assess whether the primes' effects change over time. Objective 2 to corroborate the findings from object 1 using the amount of gel and soap material

used from the dispensers.
Objective 3 is to assess the effectiveness of the primes for different types of people, specifically regarding their role at the hospital (Doctors, Nurses, Other-Staff, Visitors), and gender (Female, Male).
Objective 4 is to compare the number of HAIs that occur during the study each of our four conditions, and then during a three-month roll out of the most effective prime from the study.

Ethics approval required
Old ethics approval format

Ethics approval(s)
South Central – Oxford C REC Research Ethics Committee, 22/11/2016, ref: 16/SC/0554

Study design
Cross-over randomised design

Primary study design
Interventional

Secondary study design
Randomised cross over trial

Study setting(s)
Hospital

Study type(s)
Prevention

Participant information sheet
No participant information sheet available

Health condition(s) or problem(s) studied
Hand hygiene of hospital staff and visitors

Interventions
Data collection begins on 10/03/2017 and ends on the 15/09/2017. For periods of six weeks each ward will be randomised to be observed during one of four conditions (randomization method - Latin Squares design using an online tool [http://hamsterandwheel.com/grids/index2d.php]):
1. No intervention
2. Olfactory prime - a citrus scent. To display the olfactory primes, the entry way to each ward will be fitted with a commercial aroma dispenser, called a ScentDirect.
3. Visual prime - a picture of a person’s eyes. To display the visual primes, copies of the picture will be fitted above a gel and soap dispensers in each ward's entrance. The visual prime will be matte printed on an industrial laser printer and laminated.
4. Both primes (olfactory and visual)

During these periods an observer will count the number of people who enter the ward and the number of occasions on which they follow hand hygiene protocol. The proportion of people following protocol will be compared in each six week period. There are 1-week breaks between each observation period.

A single researcher is named responsible to ensure the interventions are active when and where planned. A list of succession will designate who need take over if the named researcher cannot. Before every observation session, the observers will ensure the primes are in working order and take appropriate actions if they are not (i.e., call ScentAir or put up a new visual prime).

Following this, the most effective prime will be rolled out for 3 months (15/10/2017 to 15/01 /2017) in all the wards.

Intervention Type
Behavioural

Primary outcome measure
Proportion of people who use the gel dispenser: This outcome relates to objective 1. This was selected as the primary outcome because it is the same primary outcome used in the previous trial. The number of people who use the gel dispensers will be the numerator and the total number of hand-hygiene opportunities will be the denominator. This will be recorded during the observation session.

Secondary outcome measures
1. Proportion of people who use the soap dispenser: This outcome relates to objective 1. The number of people who use the soap dispensers will be the numerator and the total number of hand-hygiene opportunities will be the denominator. This will be recorded during the observation periods
2. Gel dispenser material used: This outcome addresses objective 2. The amount of material used from the gel dispensers will be weighed and recorded by the researchers each Friday during each six-week observation period
3. Soap dispenser material used: The amount of material used from the soap dispensers will be weighed and recorded by the researchers each Friday during each six-week observation period
4. Person type: This outcome addresses objective 3. During observation sessions, researchers will record whether each person entering the ward appears to be a doctor, nurse, other staff, or visitor and whether they appear to be a male or female
5. Hospital acquired infections: This outcome addresses objective 4. The number of infections that occur when each ward during the study will be recorded by the Director of Infection Prevention and Control using hospital records. Past census data from the hospital records will be obtained to locate the number of HAI that have occurred in those wards in past 10 years

Overall study start date
01/08/2015

Completion date
31/03/2018

Eligibility

Key inclusion criteria
1. Any person who walks into the wards while the study is active may have their hand-hygiene activity recorded
2. Walking people below the age of 18 will be included because it would be unfeasible to approach people during observations sessions to ask their age, or the data is automatically recorded (i.e., gel use or soap use), but children unable to use the dispensers (i.e., a baby in a pushchair) will not be recorded

Participant type(s)
All

Age group
Mixed

Sex
Both

Target number of participants
4,800

Total final enrolment
9811

Key exclusion criteria
Anyone who is incapable of cleaning their hands when entering a ward (e.g., patients on a stretcher, children in a buggy, etc)

Date of first enrolment
13/03/2017

Date of final enrolment
15/01/2018

Locations

Countries of recruitment
England

United Kingdom

Study participating centre
Heartlands Hospital
Heart of England NHS Foundation Trust
Bordesley Green East
Birmingham
United Kingdom
B9 5SS

Sponsor information

Organisation
University of Warwick

Sponsor details
Warwick Business School
Coventry
England
United Kingdom
CV4 7AL

Sponsor type
University/education

Website
http://www2.warwick.ac.uk/

ROR
https://ror.org/01a77tt86

Organisation
Heart of England NHS Foundation Trust

Sponsor details
Bordesley Green E
Birmingham
England
United Kingdom
B9 5SS

Sponsor type
Hospital/treatment centre

Website
http://www.heartofengland.nhs.uk/

Funder(s)

Funder type
Charity

Funder Name
The Health Foundation

Results and Publications

Publication and dissemination plan

Planned publication in a high-impact peer reviewed journal by 01/03/2019.

Intention to publish date
31/12/2021

Individual participant data (IPD) sharing plan
There is no participant level data, so there is no participant level data to make public. The anonymized study data may be accessed by contacting Ivo Vlaev.

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol article	protocol	11/09/2017		Yes	No
HRA research summary			28/06/2023	No	No