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Effect of communication on willingness to adhere to initial decontamination protocols in a virtual chemical incident: a randomised controlled trial

Submission date
24/10/2018

Recruitment status
No longer recruiting

Registration date
07/11/2018

Overall study status
Completed

Last Edited
09/08/2022

Condition category
Other

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Large-scale chemical incidents pose a risk to public health. UK first responders are trained to carry out Initial Operational Response (IOR) decontamination in response to incidents involving the release of hazardous chemicals. IOR decontamination involves casualties evacuating from the source of chemical contamination, removing potentially contaminated outer clothing, and applying dry materials to their skin. Finally, casualties are required to remain in place and await the arrival of a decontamination shower so that they can undergo a more thorough form of decontamination. The aim of this study is to test six different types of message that first responders can use when communicating with multiple casualties in order to determine which approach is most likely to motivate casualties to adhere to IOR decontamination procedures.

Who can participate?
Healthy volunteers aged 18 or over

What does the study involve?
Each participant is randomly allocated to watch one of six immersive videos of an emergency situation via a virtual reality headset. Each video contains a different message that is spoken by a police officer. All videos contain instructions that casualties would be required to follow in a real incident. Messages are designed to either reassure, cause concern, or neither reassure nor cause concern about chemical contamination and to either explain or not explain that the instructions will help protect people from the effects of chemical contamination. After watching the video, participants answer questions about whether they would adhere to the decontamination instructions that they heard in the video; whether they would leave the area; and whether they would seek further information. Participants also answer questions about: the extent to which they trust the police officer who delivers the message in the video; how anxious they would feel in this situation; how severe they find the situation to be; how likely they feel that they would have been affected by the chemical; how effective they find decontamination to be at protecting them from chemical contamination; how difficult or easy they would find it to follow

instructions that they heard in the video; how much they engaged emotionally with the video; and how realistic they found the video to be. Participants are also asked demographic questions.

What are the possible benefits and risks of participating?
All participants are reimbursed for their participation with £30. It is hoped that participants will find the experience of participating in the study interesting and will benefit from knowing that the outcomes of this study will be used to inform interventions designed to protect public health in the aftermath of a major incident. Given that the video depicts an emergency situation, there will be references to potentially upsetting subject matters, but no injuries will be shown.

Where is the study run from?
Public Health England South West (UK)

When is the study starting and how long is it expected to run for?
April 2018 to March 2019

Who is funding the study?
Department of Health & Social Care (UK)

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
N/A

Study information

Scientific Title
Effect of communication on willingness to adhere to initial decontamination protocols in a virtual chemical incident: a randomised controlled trial

Acronym
COMMAND

Study objectives
Decontamination is the process of removing or neutralising hazardous materials on external surfaces to reduce the risk of inhalation; reduce or limit skin absorption; and to protect others from secondary contamination. Time is critical to the effectiveness of decontamination so decontamination should be implemented as soon as possible following exposure. In the UK, the demand for efficient decontamination that can be achieved prior to the arrival of specialist resources has been addressed with the implementation of an Initial Operational Response (IOR) decontamination protocol among the principal first responder agencies (police, ambulance, and Fire & Rescue services). IOR consists of evacuation, followed by disrobing then application of absorbent materials (improvised dry decontamination) if the chemical is non-caustic or application of water from any available clean water source (improvised wet decontamination) if symptoms indicate that the chemical is caustic. Finally, casualties are required to remain in place to await the arrival of specialist decontamination facilities.

Given the active role of the casualty in the decontamination process and the novelty of the situation to civilian casualties who do not necessarily know why the prescribed actions are necessary, an effective communication intervention is required to increase the likelihood that casualties will be willing to adhere to first responders' instructions. There is a strong theoretical rationale, based on Protection Motivation Theory and the Extended Parallel Processing Model, for framing information about the incident in a way that makes salient the severity of chemical contamination and the likelihood that members of the message audience have been contaminated, in order to improve the likelihood of message acceptance and target behaviour change, but only when information about the efficacy of decontamination is provided.

The primary research question that this study aims to address is whether the manipulation of information about the threat of chemical contamination and efficacy of decontamination affect willingness to adhere to initial decontamination protocols.

Hypotheses for primary research question:
1. Messages in which the threat of chemical contamination is understated by the communicator (Low Threat) will result in lower expected adherence to the initial decontamination protocol than messages in which the threat is emphasised (High Threat) or there is no attempt to emphasise or understate the threat beyond stating that there is a suspected chemical release (Neutral Threat).
2. There will be no difference between Low Threat, High Threat, and Neutral Threat messages on expected engagement in alternative courses of action (going to hospital, leaving the area, and seeking further information).
3. Messages in which the communicator emphasises the efficacy of initial decontamination actions at reducing the threat of chemical contamination will result in higher expected adherence to the initial decontamination protocol than messages in which the efficacy of initial decontamination is not addressed.
4. Messages in which the communicator emphasises the efficacy of initial decontamination

actions at reducing the threat of chemical contamination will result in lower expected engagement in alternative courses of action (going to hospital, leaving the area, and seeking further information) than messages in which the efficacy of initial decontamination is not addressed.
5. High Threat and Neutral Threat messages in which the communicator emphasises the efficacy of initial decontamination actions at reducing the threat of chemical contamination will result in higher expected adherence to the initial decontamination protocol than High Threat and Neutral Threat messages in which the efficacy of initial decontamination is not addressed.
6. High Threat and Neutral Threat messages in which the communicator emphasises the efficacy of initial decontamination actions at reducing the threat of chemical contamination will result in lower expected engagement in alternative courses of action (going to hospital, leaving the area, and seeking further information) than High Threat and Neutral Threat messages in which the efficacy of initial decontamination is not addressed.
7. There will be no difference between a Low Threat message in which the communicator emphasises the efficacy of initial decontamination actions at reducing the threat of chemical contamination and a Low Threat message in which the efficacy of initial decontamination is not addressed on either expected adherence to the initial decontamination protocol or expected engagement in alternative courses of action.

Hypotheses for secondary objectives:
1. Messages in which the threat of chemical contamination is understated by the communicator (Low Threat) will result in lower perceptions of anxiety than messages in which the threat is emphasised (High Threat) or there is no attempt to emphasise or understate the threat beyond stating that there is a suspected chemical release (Neutral Threat)
2. Messages in which the threat of chemical contamination is understated by the communicator (Low Threat) will result in lower perceptions of threat severity than messages in which the threat is emphasised (High Threat) or there is no attempt to emphasise or understate the threat beyond stating that there is a suspected chemical release (Neutral Threat)
3. Messages in which the threat of chemical contamination is understated by the communicator (Low Threat) will result in lower perceptions of threat susceptibility than messages in which the threat is emphasised (High Threat) or there is no attempt to emphasise or understate the threat beyond stating that there is a suspected chemical release (Neutral Threat)
4. Messages in which the communicator emphasises the efficacy of initial decontamination actions at reducing the threat of chemical contamination will result in higher perceptions of the response efficacy of the initial decontamination protocol than messages in which the efficacy of initial decontamination is not addressed.
5. Messages in which the threat of chemical contamination is understated by the communicator (Low Threat) will result in lower perceptions of trust in the communicator than messages in which the threat is emphasised (High Threat) or there is no attempt to emphasise or understate the threat beyond stating that there is a suspected chemical release (Neutral Threat)
6. Messages in which the communicator emphasises the efficacy of initial decontamination actions at reducing the threat of chemical contamination will result in higher perceptions of trust in the communicator than messages in which the efficacy of initial decontamination is not addressed.
7. There will be no effect of communication intervention on perceptions of response costs associated with undergoing initial decontamination or perceptions of self-efficacy in adhering to the initial decontamination protocol
8. Perceived trust in the communicator will affect expected adherence to the initial decontamination protocol after taking perceived threat severity, threat susceptibility, anxiety, response efficacy, response costs and self-efficacy into account.

Ethics approval required

Old ethics approval format

Ethics approval(s)
The Psychiatry, Nursing and Midwifery Research Ethics Subcommittee at King’s College London, 20/09/2018, ref: HR-17/18-8399

Study design
Single-centre double-blind randomised controlled trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Other

Study type(s)
Prevention

Participant information sheet
Not available in web format, please use contact details to request a participant information sheet

Health condition(s) or problem(s) studied
Decontamination

Interventions
The intervention is a 360-degree immersive video, recorded from the vantage point of a casualty, depicting a chemical incident with multiple casualties. The visual content is identical across conditions. The only variation between conditions is the audio recording of the message, which was superimposed in post-production. The audio of the message in all conditions was recorded by the same voice actor who was briefed to be consistent in delivery. Statements that are present in more than one condition were recorded once and duplicated in order to minimise variability. In all conditions, the communicator is a police officer speaking through a loudhailer.

The video is exactly six minutes in length in all conditions.

The intervention will be administered to participants via a virtual reality headset.

Healthy volunteers will be randomly allocated to one of six conditions. The trialist's PhD supervisor will generate a block randomisation sequence using the randomisation application, SealedEnvelope™. They will then collate a sequence of video files that corresponds to the sequence generated by the randomisation application. Following this, they will re-label all video files using a consecutive sequence of numbers. As a result of this process, the trialist will know the order in which to administer each video without knowing the condition.

Each participant will be allocated on a consecutive basis to the next video in the sequence. To reduce the risk of human error, each video will be deleted from the sequence on viewing by the participant so that the trialist plays the first video in the list for each study session.

Condition 1: High Threat, Efficacy (communicator makes salient the severity and likelihood of chemical contamination and makes salient the efficacy of preventative action)

Condition 2: High Threat, No Efficacy (Control) (Communicator makes salient the severity and likelihood of chemical contamination and does not make salient the efficacy of preventative action)

Condition 3: Low Threat, Efficacy (Communicator understates the severity and likelihood of chemical contamination and makes salient the efficacy of preventative action as a precautionary measure)

Condition 4: Low Threat, No Efficacy (Control) (Communicator understates the severity and likelihood of chemical contamination and does not make salient the efficacy of preventative action)

Condition 5: Neutral Threat (Control), Efficacy: (The communicator states that there has been a suspected chemical release, without specifying any further information beyond the fact that investigations are ongoing, and makes salient the efficacy of preventative action as a precautionary measure)

Condition 6: Neutral Threat (Control), No Efficacy (Control): (The communicator states that there has been a suspected chemical release, without specifying any further information beyond the fact that investigations are ongoing, and does not make salient the efficacy of preventative action).

Intervention Type
Behavioural

Primary outcome measure
Behavioural expectations will be assessed by a series of 7-point Likert scale items (with response options ranging from strongly disagree to strongly agree) administered via computer-based survey immediately post-intervention. Likert scales will measure the extent to which participants agree with statements pertaining to their perceived likelihood of engaging in each of the following behaviours:
1. Adherence:
1.1. Remaining in place until the arrival of a shower
1.2. Disrobing
1.3. Undergoing dry decontamination
2. Alternative courses of action:
2.1. Going to a hospital without following any of the police officer's instructions
2.2. Leaving the area without following any of the police officer's instructions
2.3. Seeking further information before taking any action
For each of the above behaviours, there will be three items pertaining to the extent to which people: would be likely to; would try; or would want to engage in each behaviour. Scores for all three items will be summed to provide an overall behavioural expectation score for each behaviour.
Measured immediately post-intervention.

Secondary outcome measures
Secondary outcome measures will be administered in the order presented below immediately following primary outcome measure assessment. Measures will be administered via the same

computer-based survey through which participants report their responses to primary outcome measures. All secondary outcome measures will consist of 7-point Likert scale items unless otherwise stated:
1. Anxiety, measured using STAI-6 (4-point scale)
2. Perceived threat severity
3. Perceived threat susceptibility
4. Perceived response efficacy
5. Self-efficacy
6. Perceived response costs
7. Trust, measured using adapted version of Trust in Government scale (4-point scale)
8. Emotional engagement with video
9. Perceived realism of scenario
10. Demographic questions pertaining to age, gender, occupation, and highest educational qualification to date
Measured immediately post primary outcome measurement.

Overall study start date
23/04/2018

Completion date
01/03/2019

Eligibility

Key inclusion criteria
1. 18 years of age or older
2. Fluent in written and spoken English

Participant type(s)
Healthy volunteer

Age group
Adult

Lower age limit
18 Years

Sex
Both

Target number of participants
132

Total final enrolment
132

Key exclusion criteria
Participants:
1. With hearing impairments
2. With active ear infections

3. With visual impairments that cannot be corrected with glasses or contact lenses
4. With professional experience or expertise in emergency response and/or toxicology

Participants will be required to consult their GP before deciding whether or not to participate if:
1. They are pregnant
2. They have a pre-existing binocular vision disorder
3. They have a heart condition
4. They previously have had a seizure, loss of awareness, or other symptom linked to an epileptic condition

The participant's study session will be rearrangeed if, on the day, they:
1. Feel over-tired or unwell (including cold, flu, headaches, migraines, and earaches)
2. Are under the influence of drugs (including alcohol but not including nicotine, caffeine, and prescribed medication)
3. Under emotional stress and anxiety

Date of first enrolment
08/10/2018

Date of final enrolment
05/12/2018

Locations

Countries of recruitment
England

United Kingdom

Study participating centre
Public Health England South West
2 Rivergate,
Temple Quay
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Sponsor information

Organisation
King's College London

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Sponsor type
University/education

ROR
https://ror.org/0220mzb33

Funder(s)

Funder type
Government

Funder Name
Department of Health & Social Care (UK)

Results and Publications

Publication and dissemination plan
Research findings will be disseminated in the trialist's PhD thesis and in an internal report submitted to the funding organisation (Department of Health & Social Care). The trialist will apply to publish findings from this research in a peer-reviewed journal and to present findings at industry and academic conferences, workshops and/or seminars. No additional documents are publicly available.

Intention to publish date
31/12/2020

Individual participant data (IPD) sharing plan
At present the datasets generated during and/or analysed during the current study are not expected to be made available because this use of data was not outlined in the ethics application and participants were not informed that raw data would be shared with anyone outside the research team.

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	27/09/2020	28/09/2020	Yes	No
Protocol file	version 1.0	29/10/2018	09/08/2022	No	No