


BMJ Open Exploring views and experiences of how infections are detected and managed in practice by nurses, care workers and manager's in nursing homes in England and Sweden: a survey protocol

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ABSTRACT

Introduction In order to avoid unnecessary hospital admission and associated complications, there is an urgent need to improve the early detection of infection in nursing home residents. Monitoring signs and symptoms with checklists or aids called decision support tools may help nursing home staff to detect infection in residents, particularly during the current COVID-19 pandemic. We plan to conduct a survey exploring views and experiences of how infections are detected and managed in practice by nurses, care workers and managers in nursing homes in England and Sweden.

Methods and analysis An international cross-sectional descriptive survey, using a pretested questionnaire, will be used to explore nurses, care workers and managers views and experiences of how infections are detected and managed in practice in nursing homes. Data will be analysed descriptively and univariate associations between personal and organisational factors explored. This will help identify important factors related to awareness, knowledge, attitudes, belief and skills likely to affect future implementation of a decision support tool for the early detection of infection in nursing home residents.

Ethics and dissemination This study was approved using the self-certification process at the University of Surrey and Linköping University ethics committee (Approval 2018/514-32) in 2018. Study findings will be disseminated through community/stakeholder/service user engagement events in each country, publication in academic peer-reviewed journals and conference presentations. A LAY summary will be provided to participants who indicate they would like to receive this information.

This is the first stage of a plan of work to revise and evaluate the Early Detection of Infection Scale (EDIS) tool and its effect on managing infections and reducing unplanned hospital admissions in nursing home residents. Implementation of the EDIS tool may have important implications for the healthcare economy; this will be explored in cost-benefit analyses as the work progresses.

Strengths and limitations of this study

- This is the first study to examine the views and views and experiences of how infections are detected and managed in practice by nurses, care workers and managers in nursing homes in England and Sweden.
- This is the first stage of a plan of work to revise and evaluate the Early Detection of Infection Scale (EDIS) tool and its effect on managing infections and reducing unplanned hospital admissions in nursing home residents.
- The survey will collect data across a range of nursing home settings, both urban and rural, in varying geographical areas in England and Sweden.
- Variations of data might occur between countries based on differences on support tool use across nursing home settings and different models of health and social care.
- The study will use a convenience approach to sampling, but the extent to which this will be representative of the nursing home workforce (ie, managers, care workers and nurses) in each country is not known.

INTRODUCTION

Global level predictions indicate that as a result of increased life expectancy around the world, >2 billion people will be aged >65 years by 2050, with the number >80 years expected to reach 400 million by 2050.^{1,2} The implications for managing the increased pressure this will have on healthcare resources and ability to meet patient demand, particularly for the population aged over 65 years, are profound.

Specific concerns have been raised about the care of nursing home residents (NH) who often exhibit atypical signs and symptoms of infection,³ and are at increased risk of infection and unplanned hospital admissions resulting in clinical complications, increased



mortality and extended length of stay.⁴⁻⁹ Unplanned hospital admissions account for more than one-third of all annual hospital admissions, and cost the National Health Service (NHS) in the UK over £11 billion each year.⁶ Unplanned hospital admissions cost the NHS >£11 billion, the US healthcare economy >\$1.1 trillion a year¹⁰ and the Swedish healthcare system >SEK 36 trillion a year for people aged >65 years.¹¹

The large increase in unplanned hospital admissions over the last decade which now account for 65% of all hospital bed days^{6 8 12} have exacerbated these concerns even more. This pressure is set to intensify further in line with the projected rise in people aged over 85 years and subsequent rise in the world population of nursing home residents.^{2 13 14}

Nursing home residents around the world are at 1.4 times greater risk of emergency admission and have more than 50% unplanned hospital admissions compared with the general population aged 75 years or over.^{6 8 9 13 15} However, studies show the hospitalisation of many nursing homes residents can be avoided^{7-9 14 16} through rapid detection and more timely treatment.^{6 9 15}

There is therefore an urgent need to develop systems or tools to improve the early detection of infection (EDI), avoid unnecessary hospital admission and risk of complications in nursing home residents,^{6 9 13 17} and help mitigate the spread of COVID-19 during the current pandemic.¹⁸

Early indications suggests decision support tools (DST), which provide a systematic approach to monitoring cognitive and behavioural changes, can help ensure consistency, and more timely treatment.^{6 15} DST use for rapid EDI could prove helpful.^{3 19} Delegating DST use to nursing home staff, such as care workers, who are well positioned to recognise and communicate signs of deterioration, could reduce unplanned hospital admissions^{3 19} providing patient benefit.

Nursing home-oriented DSTs such as Stop and Watch¹⁹ rely primarily on observational assessment in order to define a resident who requires closer monitoring that will result in not only more frequent observations but also more frequent recording of vital signs. Another tool, the Early Detection of Infection Scale (EDIS),^{3 20-22} designed for completion by Swedish care workers, also includes assessment of body temperature. The assessment of body temperature uses a new approach based on the difference from baseline, the so-called 'DiffTemp' instead of predecided values for fever, ie, >38°C.²³ Recording 'DiffTemp' as part of EDIS enables a more targeted approach focusing on specific aspects of behaviour and functional status. However, as EDIS is still undergoing ongoing development, it is yet to be widely adopted in Sweden. This is the first stage of a plan of work to evaluate a complex intervention,²⁴ the intervention being the use of the EDIS tool in nursing homes in England and more widely in Sweden.

Given that ensuring quality and cost effectiveness is an increasingly essential requirement of modern healthcare delivery, exploration regarding the implementation of

DSTs that support early detection of infection in nursing homes is urgently required. It is recognised that the most challenging aspect of complex intervention research is implementation and 'normalisation' of the intervention.²⁵ In this context, normalisation, as May and Finch²⁵ explain, comprises not only understanding and evaluating the process by which interventions are embedded but also how they are sustained in practice.²⁵

Therefore, this survey has an important role to play in gathering contextual information regarding how the EDIS intervention may be received and delivered in practice across diverse models of health and social care in England, and more widely in Sweden.

The aim of the study is to collect preliminary data exploring how infections are detected and managed in practice by nurses, care workers and managers in nursing homes in England and Sweden.

The study objectives are to:

1. Explore staff views on the types of infections that nursing home residents experience.
2. Explore staff views on how infection in nursing home residents is detected and managed.
3. Identify current challenges in detecting infection in nursing home residents and suggestions for improvement.
4. Explore the training and/or education of staff related to infection detection, and unmet training needs.
5. Examine knowledge, awareness and use of DSTs/checklists available in practice, including infection detection.

This study builds on a systematic review of early interventions for people with frailty completed by the authors (NC/FM/PT/MS-L) that identified an urgent need to adopt innovate approaches to improving the care of frail older people.²⁶

METHODS/ DESIGN

The 'Standard Protocol Items: Recommendations for Interventional Trials' statement,²⁷ in parallel with the 'Survey reporting Guideline (SURGE)' guidance²⁸ have been used to structure this protocol paper. Given the lack of formal register for survey research, adopting this approach supports transparency and reproducibility of the study protocol, ensuring quality and rigour in the research process.²⁹

SURVEY DESIGN

A cross-sectional study descriptive survey will be used to collect data. In order to provide participants with flexibility in their method of response, the survey is available in two formats: (1) a paper-based version with accompanying pre-paid self-addressed envelope and (2) an online version accessed via a link to Qualtrics XM,³⁰ a secure online survey platform. Given the complexity of reaching this population,³¹ and based on feedback received during survey development, it is anticipated that this approach

will encourage nursing homes to participate.³¹ Allowing respondents to complete the survey at a convenient place and time should increase survey uptake, as well as supporting low-cost widespread distribution.²⁹

PARTICIPANTS

A convenience sample of nurses, care workers and manager's employed in nursing homes in England (n=2–3) and Sweden (n=2–3) (maximum 30 staff per home; approximately 90–100 per country) will be invited to participate in the survey (n=200 total). Currently, in the UK, there are around 550 nursing homes providing care to over 400K people⁹ and 2600 nursing homes providing care to 100K people in Sweden.³² Based on a 50% response rate the sample size (n=90–100 total) is designed to ensure we collect enough data to support meaningful interpretation of the data²⁹ and answer the research question.

In order to encourage study uptake,³³ participants in England will be offered an incentive to be entered into an optional prize draw for £100 'Love 2 Shop Vouchers' if they complete the survey.

Patient and public involvement

Preliminary discussions between nursing home managers, nurses and care workers in England and Sweden, and the study team in 2018 identified a high level of interest and enthusiasm towards DSTs that are practical, consistent, and acceptable to 'real world' nurses and care workers. They were overwhelmingly positive towards the previously developed EDIS tool for nursing home residents but were unsure of its potential benefits and or how it would work in practice.

In order to ensure the challenges and experiences of living and working in a residential nursing home were accurately reflected, the authors discussed the survey during a series of encounters with nursing home residents, care workers, a care home collaborative and regional interest groups in England and Sweden between June–December 2018.

PPI was invaluable in terms of developing the survey questions, participant information sheet and determining study recruitment and procedures. These discussions will be ongoing during data analysis, and interpretation. We will continue to work with our PPI members to help disseminate the findings through community/stakeholder/service user engagement events in each country and summarise the findings prior to public dissemination.

DATA COLLECTION, MANAGEMENT AND ANALYSIS

Procedure

Managers in nursing homes in England and Sweden, where the team have established relationships, will initially be approached via telephone or email, to ascertain interest in the survey. Managers will be reassured that the location of their individual nursing home will not be reported or identifiable in the responses that participants

provide. Those who express an interest in participating will be asked to confirm survey preference, and number of paper copies if required.

If no response is received, a follow-up telephone call or email will be made 2 weeks after initial contact. Where possible a member of the team will arrange to attend a staff meeting to talk about the survey and/or distribute surveys, either hardcopy or via a link to the online version. The team will maintain telephone/email contact with each home over the next 3 weeks to support data collection. Data collection will take place June 2019–June 2020. Online data will be collected by Qualtrics XM,³⁰ an online survey platform, selected as it allows flexibility in the device that is used to complete the survey, for example, mobile devices, desktop or laptop computers, alongside real-time data storage. Hard copy questionnaires will be returned in the stamp addressed envelope provided to the local University.

A pragmatic approach will be used to expand the range and number of nursing homes, and participants in each region if required until the target number of responses in each country (n=50) is obtained.²⁹

THE QUESTIONNAIRE

Development: an iterative approach to questionnaire development began with an initial 3 days development visit to Linköping in 2018 where team members (NC/FM/PT/MS-L) worked together to combine expertise in tool development, previous work in the area,³¹⁹ and the literature.^{5 6 9 34} This event resulted in the generation of a large pool of potential survey items, enabling the team to prioritise topics for inclusion and rephrase terms (such as *pus/oozing* or *rambling*) to ensure each question adequately captured the topic.³⁵

Service users were consulted during the early stage of the development as outlined above.³⁶ To ensure questions accurately reflected the challenges and experience in nursing homes, and achieve face validity,²⁹ a pretest version of the survey was reviewed by eight key stakeholders, including a local clinical commissioning group manager, care home representative groups and academic experts in the field. At this pretest stage stakeholders were asked to consider relevance of survey items; clarity of survey instructions and sequence of items. This process was repeated twice more until final agreement regarding the terms and expressions used was achieved.

The included questions were designed to specifically answer the research objectives.³⁵ To minimise the risk of non-completion of survey items, we have aimed for fluidity of design and survey items, with largely tick box responses, and a relatively short completion time (approximately 10–15 min).^{29 35}

The draft survey was then translated in to Swedish (MS-L), back translated by an approved translation service provider (Språkservice Sverige AB) and mapped against the original English version for linguistic accuracy and consistency in meaning. Following team discussion

further final minor modifications were then made to Swedish version of the questionnaire.

QUESTIONS

The full questionnaire can be found in Additional file 1. The questionnaire comprises 29 questions over five sections.

Section 1

Section 1 comprises *information* about the survey, and a tick box to indicate consent.

Section 2: working in a nursing home

This section contains 12 questions, a mix of multiple response questions and closed questions regarding the types of infections that nursing home residents experience, frequency, actions that are taken, effect on residents' condition, level of confidence in their ability to manage infections, challenges in practice and suggested improvements.

Section 3: education and training

The third section consists of five questions exploring what if any training and or education has been undertaken, how useful this was, last training/education received; and what, if, any unmet training needs they have.

Section 4: knowledge and awareness of DSTs

This section has six questions that explore knowledge and awareness of DSTs/checklists, use of DSTs in practice and awareness of DSTs for infection detection and perceptions about their usefulness

Section 5: general information

The final section contains six closed demographic questions regarding participants job title, working hours per week, years of employment in the current care home, years of experience, gender and age.

In this study, we will not ask respondents to state where they work thus assuring nursing homes remain anonymous. This is first to reassure respondents that they have an option to complete the questionnaire anonymously.²⁹ Second as the focus of the study is about the use of DSTs across a range of geographical areas, the team agreed it was not important to link data back to specific nursing homes²⁹ in order to answer the research question.

PRETESTING

The questionnaire was piloted in both England and Sweden between January–March 2019. Respondents were asked to comment on ease and estimated time of completion, preference in terms of paper or online version and any difficulties they experienced. Twenty pilot surveys were distributed via one nursing home in each country, of which each home returned eight completed surveys (total n=16).

Following piloting small changes were made to the ordering of questions to improve survey flow, sequencing of questions and duplicated items were removed from the multiple-choice questions. No issues arose in terms of process and/or completion, which was estimated to be 10–15 min.

Additionally, it was noted that the online version of the survey was more popular in Sweden. However, respondents from England preferred to use the paper version returned via a stamped address envelope to the University of Surrey.

Data storage

Data will be managed and processed in each country, and stored on password-protected computers, accessible only by team members and managed in line with current data protection regulations. Contact details disclosed by participants in order that they can receive a summary of study findings and/or if in England if they wish to be entered into the optional prize draw will be stored on a separate password-protected file in each country. Deidentified data from Sweden will be sent to the University of Surrey for analysis.

All files kept on the University of Surrey server, will only be accessible to the local research team. All data will be destroyed at the end of the archive period, in 10 years. Research data will be kept with strictest confidence in line with the EU General Data Protection Regulation (2018).³⁷

Data analysis

Data, from hard copy questionnaires will be processed in each country. Electronic responses from Sweden and England will be stored in Qualtrics XM in the UK. Using a predetermined coding sheet data from Sweden and England will be combined in preparation for comparative analysis on SPSSv26.³⁸ In order to minimise data inputting errors, a 10% check on data entry will be made in each country.²⁹ Demographic data will be tabulated, and descriptive statistics undertaken on the sample in each country, and as whole. Further, statistical analysis (using parametric, non-parametric tests and a general linear modelling procedure) will be conducted where appropriate. Open-ended questions and free-text comments will be grouped into themes using content analysis to provide numerical counts of categories where appropriate³⁹ and verified by a second member of the team.

ETHICS AND DISSEMINATION

Ethical considerations

This study was approved using the self-certification process at the University of Surrey⁴⁰ and by Linköping University ethics committee (Approval 2018/514-32) in 2018.

Consent to participate

Completion of the study will be entirely voluntary. Following provision of information regarding the

survey, rationale and content, participant consent will be obtained (online supplemental additional files 1 and 2). The information and consent are positioned at the start of the survey, with participants requested to complete this before progressing to the survey questions. Contact details for the research team are provided, giving further opportunity to have any questions answered. Participants can withdraw at any time and advised if they wish to withdraw their data they must notify the research team within 2 weeks of completing a questionnaire. Participants in England will be offered an incentive to be entered into an optional prize draw for £100 'Love 2 Shop Vouchers' if they complete the survey. All responses will be anonymous, unless participants disclose their contact details so they can receive a summary of the study, and/or if in England they wish to be entered into the optional prize draw.

Dissemination of findings

Study findings will be disseminated through community/stakeholder/service user engagement events in each country, publication in academic peer-reviewed journals and conference presentations. Local and regional presentations will also be made to Kent Surrey Sussex Academic Health Science Network, Surrey Healthy Aging Research Partnership (SHARP) in the UK, and SKR, Sveriges Kommuner och Regioner (Sweden's Municipalities and Regions) in Sweden. A LAY summary will be provided to participants who indicate they would like to receive this information.

DISCUSSION

This paper presents a survey protocol that is designed to explore nurses, care workers and manager's views and experiences of how infections are detected and managed in practice by nurses, care workers and manager's in nursing homes in England and Sweden.

Evidence suggests that DSTs provide an opportunity to support a consistent approach to early detection of infection, enabling prompt action and treatment, thus avoiding emergency hospital admissions.^{9 14} Improving early detection of infection could minimise distress experienced by nursing home residents and their relatives when they are moved to an unfamiliar environment, avoiding associated complications, increased mortality and extended length of stay,^{8 17} and help mitigate the spread of COVID-19 during the current pandemic.¹⁸

This is the first stage of a plan of work to evaluate a complex intervention,²⁴ the intervention being the use of the EDIS instrument in nursing homes in England and more widely in Sweden. Exploring nurses, care workers and managers' views and experiences of how infections are detected and managed in practice is an important first step to understanding enabling and reinforcing factors related to successful adoption, implementation and maintenance of the EDIS tool. This survey will identify the potential barriers, support and improve understanding

of resources needed to implement and maintain EDIS in daily clinical practice not only in England, but also more widely in Sweden.^{24 25}

Using principles of normalisation process theory, a conceptual framework to analyse implementation process, and inform recommendations to guide implementation work,²⁵ a sequential programme of work is planned. It is well recognised that the most challenging aspect of complex intervention research is implementation and 'normalisation' of the intervention; therefore, this study has an important role to play in gathering contextual information regarding how the intervention may be received and delivered in practice in each country.

Working in collaboration with key stakeholders including service users, carers, managers and care home organisations, the results of the study will be used to explore the content of the EDIS tool,³ making any necessary revisions to ensure acceptability and suitability. We then plan to test the revised EDIS tool and its effect on managing infections and reducing unplanned admissions.²⁴ It is anticipated that mixed methods including observation, focus groups and interviews will be used in future studies, assessing the impact of the EDIS tool, allowing triangulation of the data, and in-depth analysis.⁴¹ Given the important implications for the healthcare economy, cost-benefit analyses should also be considered as the work progresses.

Correction notice This article has been corrected since it was published. Affiliation updated for Dr Nouf Alkamees.

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Collaborators N/A.

Contributors NC, FM, MS-L and PT conceptualised the study. NC, FM and NA drafted the manuscript. AC, MS-L and PT reviewed and edited the manuscript. All authors read and approved the final manuscript.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Not required.

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Participant Questionnaire Version 3.0 20190122



Early Detection of Infection in Nursing Homes

PARTICIPANT QUESTIONNAIRE

Version 3 22/01/19

Instructions: this questionnaire is designed to provide information on the way care is provided when a resident is suspected of developing an infection. The questionnaire will take 10-15 minutes to complete. Please answer every question.

Participant Questionnaire Version 3.0 20190122

Participating Unit No _____

Section 1: Welcome

This questionnaire is for staff who are working in nursing homes. It should take about 15 minutes to complete. Most questions require you to tick a box to indicate your answer. If you make a mistake, just cross out the answer. Once you get to the end, please use the stamp addressed envelope to return your completed survey.

If you have any queries about the research please contact me.

Kind regards

Dr Nicola Carey,
Principal Investigator
School of health Sciences
University of Surrey
Tel. 01483 684512
Email: n.carey@surrey.ac.uk

I confirm that I have received and read the participant information sheet, and had any questions answered to my satisfaction.

I agree to take part in this study

Participant Questionnaire Version 3.0 20190122

Section 2: Working in a nursing home

The purpose of this section to consider the type of infections residents in your nursing home may experience and how they are managed.

1. Which, if any, of the following symptoms could indicate a resident in your nursing home has a suspected infection? (Please indicate all that apply)

- General condition (fever, shivering, hot or cold)
 - Respiratory (wheezing, cough, shortness of breath)
 - Urinary (often goes to toilet, smell, thick urine)
 - Wound/skin (swelling, local redness, pus/oozing)
 - Pain (tenderness, moaning, tense)
 - Other (please specify in the space below)
-

2. What, if any, of the following changes in behaviour could indicate a resident in your nursing home has a suspected infection? (Please indicate all that apply)

- Overall condition (agitation, confusion, sleepiness, needs more help)
 - Communication (rambling, inappropriate language, quiet or withdrawn)
 - Restlessness (excitable, does not sleep, anxious)
 - Mobility (less mobile, unsteady, poor balance)
 - Eating habits (loss of appetite, does not want to eat or drink)
 - Other (please specify in the space below)
-

3. How often do residents in your nursing home experience the following types of infection? (Tick all that apply and indicate their frequency).

	Frequently (daily)	Regularly (weekly)	Often (monthly)	Less often (2-3 monthly)	Occasionally (4 -5 monthly)	Infrequently (6 monthly or less)	Never
a. Wound/ skin							
b. Cold/ flu							
c. Urine							
d. Chest/ pneumonia							
e. Non-specific							
f. Other (please specify below)							

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4. Do you record any physical measurements when you suspect a resident in your nursing home may have an infection?

- Yes (If YES please go to **Question 5**)
 No (If NO please go to **Question 6**)

5. If YES, please indicate which physical measurements you would record. (Please indicate all that apply)

- Pulse
 Urinalysis
 Blood pressure
 Blood Glucose
 Temperature
 Respiratory rate
 Oxygen level
 Other (please specify in the space below)
-

6. Please indicate what actions you would take when a resident in your nursing home has a suspected infection. (Please indicate all that apply)

- Talk to resident
 Report to a senior colleague/registered nurse/manager
 Discuss with a General Practitioner
 Discuss with a Paramedic
 Discuss with a relative/next of kin
 Record in resident record
 Review later in shift
 Wait and see (review in 1-2 days)
 Other (please specify in the space below)
-

7. How confident are you in your own ability to take appropriate action(s) when a resident in your nursing home has a suspected infection?

- Very confident
 Confident
 Not very confident
 Not at all confident

Participant Questionnaire Version 3.0 20190122

8. Please indicate which, if any, of the following have you experienced in residents in your nursing home who have had a suspected infection? (Please tick all that apply and indicate their frequency).

	Frequently (daily)	Regularly (weekly)	Often (monthly)	Less often (2-3 monthly)	Occasionally (4-5 monthly)	Infrequently (6 monthly or less)	Never
a. Rapid and/or unexpected deterioration in condition							
b. Delayed diagnosis							
c. Delay in receiving appropriate care/treatment							
d. Unplanned hospital admission							
e. Resident dies unexpectedly							
f. Other (please specify below)							

9. Does your nursing home have any formal guidance/instructions regarding the management of residents who have a suspected infection?

- Yes
 No

If yes, please provide details in the space below

Participant Questionnaire Version 3.0 20190122

10. How confident are you that appropriate action is taken when a resident in your nursing home has a suspected infection?

- Very confident
 Confident
 Not very confident
 Not at all confident

11. Please indicate, from the following list, any challenges you experience when you suspect a resident may have an infection. Please tick all that apply.

	Tick all that apply
a. Lack of information about the problem	
b. Lack of familiarity with resident	
c. Lack of instructions about what to do next	
d. Lack of physical measurements	
e. Lack of response from medical colleagues	
f. Lack of continuity of care	
g. Level of clinical experience	
h. Inadequate training	
i. Inadequate level of staff (i.e. number/experience)	
j. Lack of resources (e.g. dipsticks for urinalysis)	
k. Lack of cooperation from resident	
l. Other (please specify below)	

From the list of challenges you have indicated above, which do you feel are the most important?

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12. Please indicate, from the following list, what you believe could help improve the care of residents who have a suspected infection.

	Tick all that apply
a. Improved instructions about what to do next	
b. Improved instructions about which physical measurements should be taken	
c. Improved instructions about when physical measurements should be taken	
d. Increased level of support from colleagues	
e. Improved clinical knowledge	
f. Increased availability of training	
g. Improved patterns of working	
h. Improved continuity of care	
i. Adequate level of staff (i.e. number/experience)	
j. Increased resources (e.g. dipsticks for urinalysis)	
k. Improved communication with resident	
l. Other (please specify below)	

From the list you have indicated above, which do you feel are the most important?

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Section 3: Education and training.

The purpose of this section to consider the educational and training preparation you have undertaken to help you care for residents who have a suspected infection

13. Have you received education/training to help you care for residents who have a suspected infection?

- Yes (If YES please go to **Question 14**)
 No (If NO please go to **Question 16**)

14. Please indicate which, if any, of the following types of education or training you have undertaken to help you care for residents with suspected infection. (Please tick all that apply)

- Certificate level NVQ or QCF – Level 3 or 4
 Diploma level NVQ or QCF – Level 5
 Degree level or higher
 Experiential learning / in-house or local training
 Self-directed study
 Informal supervision
 Study days (accredited or otherwise)
 Other (please specify in the space below)

15. How useful was the education or training you received in preparing you to care for residents who have a suspected infection?

- Very useful
 Somewhat useful
 Not very useful
 Not at all useful

16. When did you last receive education or training on caring for residents with a suspected infection?

- Less than 6 months ago
 6-11 months
 1-2 years
 More than 2 years

Participant Questionnaire Version 3.0 20190122

17. Do you have any unmet education or training needs with respect to caring for residents who have a suspected infection?

- Yes
 No

If **YES** please provide details about your unmet training needs in the space below

Section 4: Knowledge and awareness of decision-support tools/checklists

18. Are you aware of decision-support tools/checklists that are used in practice to help assess patients? (E.g. pain, nutrition, falls, pressure sores, oral health)

- Yes
 No

19. Do you use any decision-support tools/checklists in your nursing home?

- Yes (If **YES** please go to **Question 20**)
 No (If **NO** please go to **Question 22**)

20. Please indicate the areas of care where decision-support tools/checklists are used to assess residents in your nursing home? (Please indicate all that apply)

- Pain
 Nutrition
 Falls
 Pressure sores
 Oral health
 Other (please specify in the space below)
-

21. How useful do you find these types of decision-support tools/checklists?

- Very useful
 Somewhat useful
 Not very useful
 Not at all useful

Participant Questionnaire Version 3.0 20190122

22. Are you aware of any decision-support tools/checklists to help identify infection?

- Yes
 No

If YES please specify the decision-support tools/checklists you are aware of use in the space below:

23. If NO, how useful do you think a decision-support tools/checklist to help identify suspected infections in nursing home residents would be?

- Very useful
 Somewhat useful
 Not very useful
 Not at all useful

Section 5: General information

The purpose of this section to collect general information on your job role.

24. What is your job title? (Please indicate in the space below)

25. How many hours on average do you work per week? (Please indicate in the space below)

26. How many years have you worked with in your current nursing home?

- Less than 1 year
 1-5 years
 6-10 years
 11-20 years
 21 or more years

Participant Questionnaire Version 3.0 20190122

27. How many years have you worked with elderly residents in the nursing home setting?

- Less than 1 year
- 1-5 years
- 6-10 years
- 11-20 years
- 21 or more years

28. What is your gender?

- Male
- Female
- Rather not say

29. What is your age? (Please indicate in the space below)

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End of Questionnaire

Thank you for completing this questionnaire, your help with this study is very much appreciated.

If you have any comments to make about management of suspected infections please write these below:

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Please indicate if you would like to receive a summary of the overall results of this survey

Yes No

If yes, please provide your contact details in the space provided.

This information will be kept separately from the answers to the survey that you provided above and will be processed in the strictest confidence in line with the EU General Data Protection Regulation (2018)

Name: _____

Address: _____

Address: _____

City: _____

County: _____

Postal code: _____

Email: _____

4: Participant Information sheet version 1: EDI survey – 21st January 2019

School of Health Sciences
Faculty of Health and Medical Sciences
University of Surrey
Guildford
GU2 7TE

Information Sheet**Exploration of nurses, care workers, and manager's views and opinions about the use of decision support tools/ checklists for early detection of infection in UK nursing homes**

Dear Sir/Madam,

We would like to invite you to take part in a study. Your participation in the project is entirely voluntary. Before you decide you need to understand why the work is being done and what it will involve for you. Please take the time to read the following information carefully. Talk to others about the project if you wish.

This study is being undertaken by a team of researchers from the University of Surrey.

What is the purpose of the study?

There is a need to improve the early detection of infection in nursing home residents at high risk of rapid deterioration and unplanned hospital admission, clinical complications and general deterioration, from which they do not always fully recover. Decision support tools/check lists provide an opportunity to improve the early detection of infection and ensure a consistent approach to infection detection, prompt action and treatment, thus avoiding emergency hospital admissions. However the potential benefits, or indeed how easily they could be used within UK nursing homes has not been explored. The aim of the study, which focuses on views and opinions regarding the use of decision support tools/check lists for the early detection of infection in UK nursing homes, is the first stage of a schedule of work that would seek to establish such benefits.

Why have I been invited to take part in the study?

You have been chosen to take part because you are involved in caring for nursing home residents. The information we gain from you will help us understand views and opinions about the use of decision support tools/ checklists for the early detection of infection and used to inform their future use in UK nursing homes.

4: Participant Information sheet version 1: EDI survey – 21st January 2019**Do I have to take part?**

No, you do not have to participate. If you do participate, you are free to withdraw at any time without giving a reason. Once submitted, you will be able to withdraw from the study, if you provide your contact details and inform us within two weeks of completing the survey. All withdrawn data will be destroyed.

There will be no impact on your employment status if you decide not to participate.

What will happen to me if I take part?

If you decide to take part you will be asked for voluntary consent to complete either an online or paper based questionnaire. At the start of the questionnaire you will be asked to indicate that you consent to participate. The questionnaire takes about 15 minutes to complete. At the end of the questionnaire you will be asked if you would like to receive a summary of the results and/ or to be entered into a prize draw for £100 'Love 2 Shop Vouchers' and if so to provide your contact details.

Will my taking part in this study be confidential?

All information collected during the course of the study will be kept strictly confidential by the researcher and personal data will be managed in line with current Data Protection Regulations. Your name and where you work will not be linked or identified within the findings of the research. Identification codes will be assigned to the data collected to maintain your anonymity. All project data related to the administration of the project (e.g. consent form), will be held for at least 6 years and all research data for at least 10 years in accordance with University of Surrey policy who are custodians of the data.

What are the advantages and disadvantages of my taking part?

There are no disadvantages other than the time it takes you to complete the questionnaire. With your consent your name will be entered into a prize-draw for £100 'Love 2 Shop Vouchers'. The findings will also be used to inform the future use of decision support tools/ checklists for early detection of infection in UK nursing homes.

What will happen to the results of the study?

A summary of the survey results will be sent to participants who provide contact details. At the end of the study, findings will be published in a study report, academic journals and presented at appropriate conferences.

4: Participant Information sheet version 1: EDI survey – 21st January 2019**Ethical Review**

This study has been approved using the self-certification process at the University of Surrey.

What if there is a problem?

The University has in force the relevant insurance policies which apply to this study. Any complaint or concern about any aspect of the way you have been dealt with during the course of study will be addressed; please contact either Dr Nicola Carey on the details below; or Professor Emma Ream on Tel 01483-686708 or email e.ream@surrey.ac.uk

Who is Handling My Data?

The University of Surrey, as the sponsor, will act as the 'Data Controller' for this study. We will process your personal data on behalf of the controller and are responsible for looking after your information and using it properly. This information will include your name and contact details, which is regarded as 'personal data'. We will use this information as explained above.

What will happen to my data?

As a publicly-funded organisation, we have to ensure when we use identifiable personal information from people who have agreed to take part in research, this data is processed fairly and lawfully and is done so on the basis of public interest. This means that when you agree to take part in this research study, we will use your data in the ways needed to conduct and analyse the research study.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. You will be able to withdraw from the study, if you provide your contact details and inform us within two weeks of completing the survey. All withdrawn data will be destroyed. To safeguard your rights, we will use the minimum personally-identifiable information possible.

You can find out more about how we use your information <https://www.surrey.ac.uk/information-management/data-protection> and/or by contacting dataprotection@surrey.ac.uk

What if I want to complain about the way data is handled?

If you wish to raise a complaint on how we have handled your personal data, you can contact our Data Protection Officer Mr James Newby who will investigate the matter. If you are not satisfied with our response or believe we are processing your personal data

4: Participant Information sheet version 1: EDI survey – 21st January 2019

in a way that is not lawful you can complain to the Information Commissioner's Office (ICO) (<https://ico.org.uk/>)

For contact details of the University of Surrey's Data Protection Officer please visit: <https://www.surrey.ac.uk/information-management/data-protection>

Contact for further information

If you have any questions regarding this study please contact me using the details below.

Thank you for taking the time to read this information.

Yours Sincerely

**Nicola Carey**

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