



Digital technologies in bronchiectasis physiotherapy services: A survey of patients and physiotherapists in a UK centre

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Early View

Original research article

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Airway clearance techniques (ACTs) are central in the management strategy for patients with bronchiectasis (1). In our recent survey of 205 patients with bronchiectasis in Northern Ireland in the UK we described current practices for ACT in patients with bronchiectasis from the patient and physiotherapist perspective (2). We reported that physiotherapists are generally following the bronchiectasis guidelines and using the stepwise approach to management. Despite being a priority, accessibility and implementation of ACTs are variable in clinical settings (3). There is a need to provide more accessible care, deliver education and optimise implementation of ACT in bronchiectasis physiotherapy services, Increasingly, the role of technology in boosting effectiveness of ACT and more broadly respiratory physiotherapy management, is being explored (4). In the current healthcare environment, digital technologies are widely promoted as contributing to accessible, efficient and patient centred care (5). The behaviours of healthcare professionals and patients have changed due to the pandemic, with patients accessing services in new ways (6). Moves to digital and remote methods to deliver care have already been reported in a range of chronic respiratory diseases across a breadth of clinical management areas i.e. telerehabilitation (7), remote consultations (4), home monitoring (8), home management and monitoring treatment adherence (4) . Specifically in bronchiectasis, Congrete and Metersky detailed their experience of telemedicine and remote monitoring in a commentary including these areas of management (9). In addition, home spirometry and home monitoring of physical activity and quality of life were reported. In this commentary, the authors provided a framework to inform the tailored use of components of telemedicine to individuals, based on the evidence and availability of the necessary technologies. Physiotherapy is a central part of the main management strategy for patients with bronchiectasis (10) and clinical decision-making regarding ACT prescription can be complex (11). It is important to consider the factors that could enable physiotherapists to use digital and remote methods in their practice. Equally, it is important to ascertain patients' perceptions, barriers and enablers to such methods.

Aim

We aimed to explore how digital technology is currently used (physiotherapy survey), could be used (patient and physiotherapy surveys) and how services could be improved in order to optimise care (patient and physiotherapy survey).

Methods

Patient and physiotherapist online surveys were designed, distributed, collected and analysed as previously described (2). Responses were sought via closed and open question formats. For ranking questions, mean rank order of factors were summarised. Responses to free text questions were analysed and themes of common or repeated features of participants'

qualitative responses were categorised; first by 2 researchers independently who then met and agreed final themes.

Results

As previously reported, between January 2020 and January 2021, the online physiotherapist survey (online supplement 1) was sent to 100 physiotherapists identified as therapists with a link to bronchiectasis or respiratory services. The survey was completed by 48/100 (48%) physiotherapists from 5 sites in Northern Ireland. Respondents ranged in level of seniority (from newly qualified to senior specialised physiotherapists) and were based across a range of settings (52% (25/48) hospital based and 48% (23/48) community based). The patient survey (online supplement 2) was distributed to 398 patients with bronchiectasis from the Bronch-UK/EMBARC Registry and the survey was completed by 205 (52%) individuals between October 2020 and October 2021 (1). The total number of responses to each question is noted herein. Whilst the main results from this survey were reported in a separate publication, the specific survey question results reported in this paper have not been previously reported.

Current use of digital technology

Fifty-six percent (27/48) of responding physiotherapists reporting using some type of digital technology to facilitate clinical physiotherapy services for people with bronchiectasis, whereas 44% (21/48) reported that they had never used a digital technology in this patient group. Of those physiotherapists that did, just under half (22/48; 47%) of physiotherapy respondents reported using a platform to share data between clinicians. Smaller proportions of physiotherapist respondents reporting using a varied range of other technologies (1/48 - 8/48; 2-16%).(Figure 1a)

Future use of digital technology

When physiotherapists were asked whether they would be likely to use certain remote and/or digital options to deliver follow-up care for ACT (examples provided: telephone consultation, video consultation, patient portals, clinical decision support systems), most (between 31/48; 38/48 65-79%) indicated that they would (Figure 1b). Regarding patient responses, most reported that they would use telephone consultation (145/199, 73%). A smaller proportion of patients were likely to use video consultation (64/199, 33%), patient portals (61/199, 31%) or clinical decision support systems (13/199, 7%). Ten percent (20/199) of patients reported that they would not use digital options and in response to "other comments", 23% (45/199) of patients reported that they would prefer face to face appointments as the method of follow up.

When considering what aspects of physiotherapy care could be facilitated or delivered using digital technologies, physiotherapists rated a range of service areas from 1 – (most important) through to 6 (least important). Patient education, monitoring of patient symptoms and clinical status and monitoring of patient adherence as highest priority (ranking 2.3, 2.4, 3.5 out of 6 respectively).

Areas for service improvement

Both physiotherapists (n=40/48; 83%) and patients (n=179/205; 87%) provided further comments on how the service offered to patients with bronchiectasis could be improved. Figure 1c presents the emergent themes. Both physiotherapists and patients highlighted patient ACT training, use of technology for follow-ups, regularity of follow-ups, regularity of face to face appointments and support groups as areas for improvement. Interestingly, the most commonly mentioned theme for improvement amongst patients was follow-ups whilst improved access and quality of services and treatments was the most commonly mentioned theme amongst physiotherapists.

Discussion

Recent literature including the European Respiratory Society statement on ACTs in adults with bronchiectasis, emphasise the importance of considering patient and physiotherapist perceptions to facilitate implementation and adherence to ACTs (1, 10). Our survey findings report that many patients want more regular follow-up, and remote and digital methods may offer alternate ways that are acceptable to patients and physiotherapists. In alignment with these findings, a survey of bronchiectasis patients receiving remote physiotherapy consultation (telephone and video depending on preference) by McCallion and colleagues found that patient satisfaction was maintained using remote methods (12). Utilisation of remote methods may facilitate physiotherapy follow-up of a growing population with bronchiectasis in accordance with guidelines, as well as improving the convenience of access to care for patients with severe lung disease or indeed other co-morbidities that impact their mobility, and patients who live long distances away from their regional centre. Based on the evidence from studies of telemedicine, remote monitoring, home monitoring of treatment, exacerbations, physical activity and tele rehabilitation across chronic respiratory disease more broadly, Congre and Metersky's provided a framework to facilitate tailoring of available technologies to individual need, based on the supporting evidence and availability of the necessary technologies (9).

In this study, most patients indicated greater interest in follow-up for physiotherapy using telephone compared with video consultation and app-based platforms, likely due to high familiarity with this method and potential lack of confidence with other forms of technology (13). Patient-provider communication through telephone has been used previously for information, advice, reassurance or monitoring purposes in respiratory patient populations (5). Most physiotherapy respondents indicated that they would be open to using video call methods for follow-up. Video calls could be beneficial for treatments such as nebulisers and ACT as assessment and correction of technique can be facilitated using this method (14). Such methods have been employed in patients with cystic fibrosis to deliver exercise interventions (15). Physiotherapist time and capacity to employ such methods requires further careful consideration.

Physiotherapy respondents in this study also indicated a willingness to use Apps or web-based platforms to share information (e.g. monitor patient symptoms and treatment adherence), communicate and inform decision making. Such digital technologies could offer benefits such as improved surveillance of symptoms and may assist in preventing pulmonary exacerbations. A better understanding of the relationship between symptoms and treatment adherence could facilitate clinical decision-making and reinforce to patients, the importance of adhering to their treatments. In bronchiectasis specifically, understanding how to adjust ACT frequency and duration is key to the 'step-up' and 'step-down' management recommendations (1) and this is be an area of care that could be optimised with the utilisation of digital technologies e.g. patient recommendations or alerts on increasing frequency and/or duration of ACT in response to increased symptoms recorded in a patient digital diary or App. In previous research, digital monitoring of patient adherence and self-management in respiratory populations has been reported to improve the ability of healthcare professionals to target modifiable determinants of treatment adherence with behaviour-change strategies (16). Digital technologies to monitor and improve ACT quality in children with Cystic Fibrosis has been described, highlighting the importance of prescription conformant ACT to ensure clinical benefit. Exploration of technology application in this way in other disease areas may be important to better understand how and when ACTs will be useful (17). Accelerated by the COVID-19 pandemic, respiratory digital monitoring is increasing and there is a need to promote sustainable implementation in order to achieve success within routine clinical care. Successful implementation is complex requiring understanding of patient, professional and organizational perspectives (5). Lack of access to digital technologies and low digital literacy are potential obstacles (16). Despite the majority of responding physiotherapists reporting a willingness to use digital technologies in their management of people with bronchiectasis, a large proportion reported never using a digital technology. This may have been due to lack of access to technologies, knowledge, and confidence levels with technology use. The level of patient and

therapist digital literacy, as well as the feasibility and acceptability of any digital methods needs to be considered ahead of implementation and to support the enhancement of digital competency generally (18). Assessment of digital literacy in patients and clinicians is important in order to direct appropriate education and training. Tools such as the Digital Health Readiness Questionnaire have been suggested to gain insight into the care pathway, tailor digital care pathways accordingly and offer those with low digital readiness appropriate education programs in order to facilitate participation (19).

This study has a number of strengths. The ACTs used by patients surveyed in this study were similar to those reported in populations surveyed throughout the UK (Bronch-UK/EMBARC Registry), with most patients reported using ACBT, huffing and exercise and/or physical activity (3).

This study has a number of limitations. Results are based on patient survey data from one region in the UK, therefore results may not be generalizable to other regions. Subgroup analysis of patient data based on location of care (hospital vs. community care) was not possible with this data but may be important to explore to inform the design of future telehealth resources. Future studies utilising mixed methods involving both survey and qualitative methods e.g., focus group and interview should obtain more in-depth information about the patient and physiotherapist perspectives to design ACTs programmes using telehealth in this population.

The sample size of the physiotherapist survey (n=48) from a specific UK area is also a limitation. Healthcare practices can vary across UK regions and therefore these results may not accurately represent the broader landscape of physiotherapy services in the UK. Furthermore, whilst this study highlights patient and therapist digital literacy as an important factor influencing uptake of digital technologies, it was not assessed.

Conclusion

Despite the majority of physiotherapists in this survey reporting no current use of digital technology in their management of these patients, there was significant interest and willingness to do so, amongst both physiotherapists and patients. This survey highlighted a range of care areas, specifically follow-up visits, where digital and/or remote methods could be used and further studies to explore the acceptability and usage of such technologies in physiotherapy practice in this patient group is warranted.

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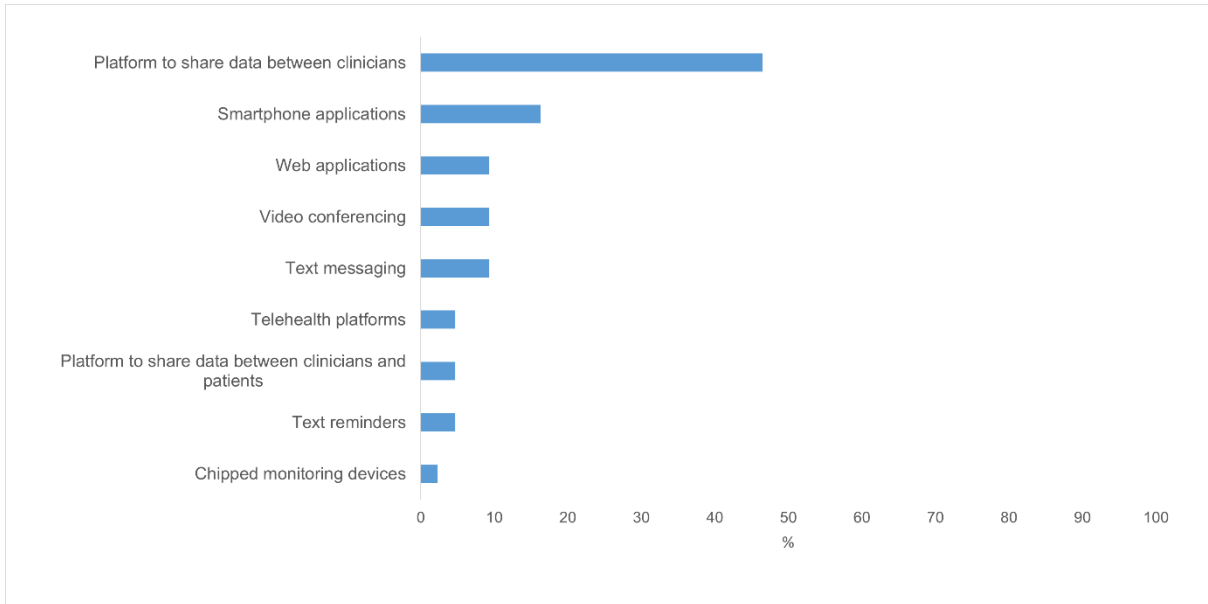


Figure 1a

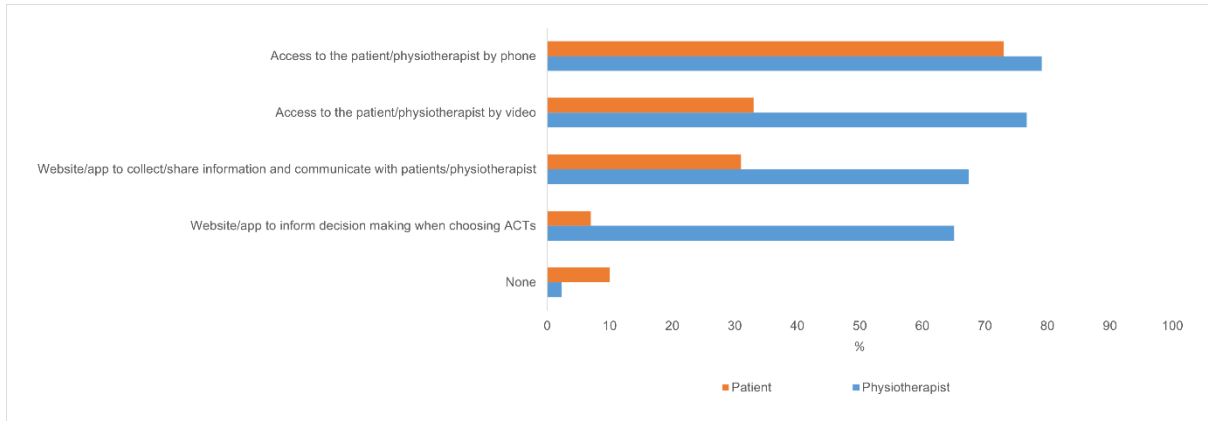


Figure 1b

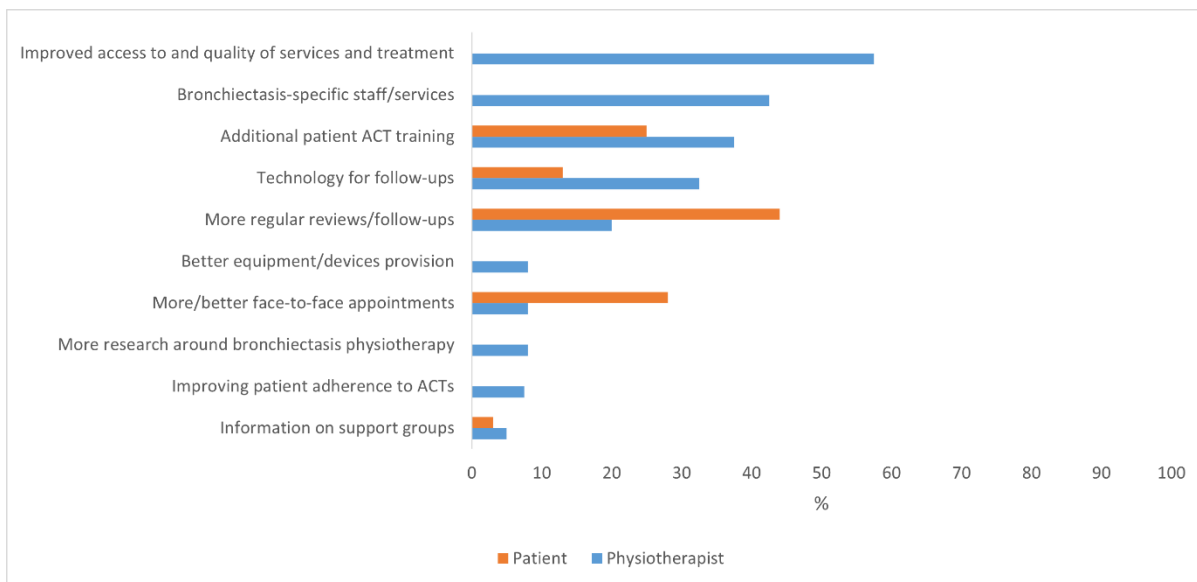


Figure 1c

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

Version 1 26/08/2019

About the study

You are being invited to participate in this survey research as you are a physiotherapist who treats people with bronchiectasis. Your participation is highly valued, and we thank you for your time. This study is being led by Queen's University Belfast (Dr Katherine O'Neill, Prof Judy Bradley) and funded by the Northern Ireland Chest Heart and Stroke.

What is this survey about?

This survey will explore airway clearance technique practice and respiratory physiotherapy services for bronchiectasis in Northern Ireland. Your information and views are very important to us as it is you who really knows how services could be improved for people with bronchiectasis. We are running a patient survey alongside this physiotherapist survey to determine what current practice is in Northern Ireland.

Who should complete this survey?

Please complete this survey if you are a physiotherapist based in Northern Ireland, who currently treats people with bronchiectasis, or has treated people with bronchiectasis in the last month. This may have been in any setting for example; outpatient, inpatient, community, domiciliary.

Do I have to take part?

Your participation in this survey research is entirely voluntary. It is up to you to decide whether or not you take part. If you participate, you can withdraw at any time by closing the page.

What will happen if I take part?

Participating involves completing an online survey which will take approximately 20 minutes. The survey questions will ask you about your current airway clearance technique practice and physiotherapy services for people with bronchiectasis.

What are the possible benefits?

While there will be no direct benefits for you as an individual by participating in this survey, we hope to use the findings to help improve physiotherapy services for people with bronchiectasis. People with bronchiectasis have said that access to chest physiotherapy is a top research priority ([EMBARC consensus statement](#)).

Confidentiality and Data Protection

The survey can be completed anonymously and your responses will not be identifiable to you. Your data will be kept confidential and will be stored securely by Queen's University Belfast and only members of the research team will have access to the information. All data stored on the Queen's University Belfast system will comply with the [University's policy](#). Your data will remain on SurveyMonkey for 24 months. This survey has been the subject of ethical review and adheres to applicable [data security standards](#). All data will be destroyed 5 years after completion of the study. Anonymous data collected from the survey may be transferred to various locations where [SurveyMonkey has offices](#) and shared with other organisations.

Queen's University Belfast is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. Queen's University Belfast will keep identifiable information about you for 5 years after the study has finished. 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. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

You can find out more about how we use your [information](#).

Who can I contact if I have more questions?

You can contact the principal investigator (Prof Judy Bradley/Dr Katherine O'Neill) on ACTBESStudy@qub.ac.uk / 00 44 (0)28 9097 6005 if you have any questions or if you do not wish to be take part. Thank you for reading this information.

This survey consists of 3 sections:

Section 1: Consent

Section 2: About you

Section 3: Questions

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

Section 1: Consent Form

* 1. I understand that my participation in this survey research study is voluntary and that I am free to withdraw at any time by closing the page.

Yes

* 2. I understand that anonymized data gathered in this study will be used in research publications.

Yes

* 3. I understand that data collected during the study may be looked at by individuals involved in the study or from regulatory authorities, where it is relevant to my participation in this research.

Yes

* 4. I understand that the data will be stored in a safe manner in Queen's University Belfast and will be destroyed after 5 years of study completion.

Yes

* 5. I confirm that I have completed this survey only once.

Yes

* Please enter your survey number as provided on the invitation email:

If you do not have your survey number please contact the research team on 0044 (0)28 9097 6005 or ACTBESurvey@qub.ac.uk

* **6. (Optional)** I am willing to be contacted by the research team to help interpret the overall survey results.

If yes, Queen's University Belfast will require your name and address, or email address to facilitate contact. Please [click here to provide your details](#) (this will open a new page, please return to this page when completed).

Yes. I have provided my contact details.

No

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

Section 2: About you

Please answer these questions based on your usual circumstances/service.

* 1. Who is your employer in Northern Ireland?

- Belfast Health and Social Care Trust
- South Eastern Health and Social Care Trust
- Northern Health and Social Care Trust
- Southern Health and Social Care Trust
- Western Health and Social Care Trust
- Other

*** 2. What is the approximate amount of time you spend in post, providing respiratory physiotherapist services to bronchiectasis patients (in a typical week)?**

- 0.5 day
- 1 day
- 1.5 days
- 2.0 days
- 2.5 days
- 3.0 days
- 3.5 days
- 4.0 days
- 4.5 days
- 5.0 days
- Other

*** 3. Where is your work setting? (Please select all that apply).**

Please state the approximate number of days spent in this setting, providing respiratory physiotherapist services to bronchiectasis patients in a typical week in the comments box. (e.g. Hospital based: 2.5 days, Domiciliary: 2.5 days).

- Hospital based
- Health centre in the community
- Domiciliary
- Other

*** Approximate number of days spent in each setting in a typical week:**

*** 4. What is your current Agenda for Change grade?**

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

Section 3: Questions on Airway Clearance Technique practice

Please answer these questions based on your usual circumstances/service.

- * 1. What factors influence your choice of a particular airway clearance technique for a person with bronchiectasis (when clinically stable)?

Please rank in order of importance, 1 being most important, 10 being least important.



My knowledge and experience of using the airway clearance technique



Availability/access to the airway clearance technique



The co-morbidities of the person with bronchiectasis



The understanding and competence of the person with bronchiectasis



Staff time allocated to the appointment, to see the person with bronchiectasis



The preferences of the person with bronchiectasis for one airway clearance technique versus another



The symptoms of the person with bronchiectasis



The disease stability of the person with bronchiectasis e.g. frequency of pulmonary exacerbations



The disease severity of the person with bronchiectasis e.g. mild, moderate, severe disease; microbiological status



Local tariffs or prescriptions/funding available for equipment

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

Please answer these questions based on your usual circumstances/service.

* 2. Think about the **first visit** when you see a person with bronchiectasis for airway clearance techniques.

What do you think are the most important parts of a **first visit** with a person with bronchiectasis for airway clearance techniques?

Please rank in order of importance, **1 being most important, 8 being least important.**



Providing information about airway clearance techniques and why they are important



Performing a physiotherapy chest assessment



Teaching an airway clearance technique



Setting a personal action plan for the airway clearance techniques with the patient (an action plan is a written plan that details the patient's symptoms and what to do when well and when not well)



Having enough time for the first appointment



Providing information about other physiotherapy treatments in addition to airway clearance techniques (pulmonary rehabilitation, medications for airways clearance, incontinence treatments)



Providing information about support groups



Providing contact details and instruction on how to access a physiotherapist in the future

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

Please answer these questions based on your usual circumstances/service.

* 3. Think about patient access to physiotherapy for their bronchiectasis.

For the **first follow-up visit** (first time the patient is seen after the initial consultation with the physiotherapist), what do you think is most important?

Please rank in order of importance, **1 being most important, 4 being least important.**



Patient access to a physiotherapist who is specialist in bronchiectasis



Patient access to a physiotherapist who works with respiratory patients (but not necessarily specialist in bronchiectasis)



Patient visit in a dedicated bronchiectasis clinic



Patient visit in a location of their choice

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

Please answer these questions based on your usual circumstances/service.

- * 4. Think about follow-up of people with bronchiectasis for airway clearance techniques.

What patient factors prioritise **follow-up** of people with bronchiectasis for airway clearance techniques?

Please rank in order of importance, **1 being most important, 6 being least important.**



The symptoms of the person with bronchiectasis



The co-morbidities of the person with bronchiectasis



The understanding and competence of the person with bronchiectasis with their airway clearance technique



The disease stability of the person with bronchiectasis e.g. frequency of pulmonary exacerbations



The disease severity of the person with bronchiectasis e.g. mild, moderate, severe disease; microbiological status



Local tariffs or prescriptions/funding available for equipment

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

Please answer these questions based on your usual circumstances/service.

- * 5. As the service is modernised, there may be new ways to follow-up people with bronchiectasis for airway clearance techniques.

Which of the following do you think you would use to follow-up people with bronchiectasis for airway clearance techniques, if they were available to you?

Please select all that apply.

- Access to the patient by phone
- Use of a video link or Skype to see and speak to the patient
- Use of a website and/or phone app to collect and share information about the patient's condition (e.g. information about symptoms, lung function) and communicate with the patient
- Use of a website and/or phone app to help inform your decision on which airway clearance techniques to do
- None
- Other (please specify)

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

Please answer these questions based on your usual circumstances/service.

* 6a. Potential digital health technologies in respiratory health include a broad range of different applications.

Have you ever used any of the listed forms of digital technology to facilitate clinical physiotherapy services for people with bronchiectasis?

Please select all that apply.

- I have never used digital technology to facilitate physiotherapy services for people with bronchiectasis
- Text messaging
- Text reminders
- Web-based applications (i.e. on the PC)
- Mobile applications (i.e. on the phone)
- Chipped devices to monitor use (i.e. inhalers, nebulisers)
- Platforms to share and exchange data between clinicians (i.e. electronic medical records)
- Platforms to share and exchange data between clinician and patient (i.e. web-based or mobile apps that share and exchange symptoms and lung function)
- Other

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

Please answer these questions based on your usual circumstances/service.

* 6b. Please tell us more about the digital technology used.

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

Please answer these questions based on your usual circumstances/service.

* 7. In your opinion, in what areas do you think digital technology could facilitate physiotherapy services for people with bronchiectasis?

Please rank areas in order of importance, 1 being most important, 7 being least important.



Providing patient education on bronchiectasis physiotherapy services



Delivering physiotherapy treatment



Providing patient monitoring of symptoms and clinical status



Monitoring patient adherence to physiotherapy treatment



Delivering a patient consultation



Facilitating physiotherapy clinical decision making



Facilitating multi-disciplinary clinician communication

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

Please answer these questions based on your usual circumstances/service.

- * 8. How do you think we could improve the current airway clearance technique physiotherapy service offered to patients with bronchiectasis?

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

Please answer these questions based on your usual circumstances/service.

9. Please use the comments box below to tell us anything else you think is important about airway clearance techniques and physiotherapy services for bronchiectasis:

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

- * 10. The Coronavirus situation may have caused changes to your current practice and service delivery for people with bronchiectasis. Please use the box below to tell us if your service has changed (or not), how it has changed and if any of these changes are likely to continue in the future.

Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

* 11. I wish to be entered into the iPad prize draw for completing this survey.

If yes, Queen's University Belfast will require your name and address, or email address to facilitate the iPad prize draw. Please [click here](#) to provide your details (this will open a new page, please return to this page when completed).

Yes. I have provided my details.

No



Respiratory physiotherapy airway clearance techniques and services for bronchiectasis

SURVEY COMPLETE

Thank you for completing this survey.

If you would like more information about this survey research, please contact the Principal Investigators: Prof Judy Bradley or Dr Katherine O'Neill on ACTBEstudy@qub.ac.uk /00 44 (0)28 9097 6005.

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

Version 2 14/10/2019

About the Study

You are being invited to participate in this survey research as you took part in the EMBARC (THE EUROPEAN BRONCHIECTASIS REGISTRY) study or the Bronch UK study and indicated that you would be willing to be contacted for future research. This study is being led by Queen's University Belfast (Dr Katherine O'Neill, Prof Judy Bradley) and funded by the Northern Ireland Chest Heart and Stroke.

What is this survey about?

Bronchiectasis leads to a build-up of mucus which can make infections more likely and also causes worsening of symptoms of cough and shortness of breath. Therefore, clearing the airways of mucus effectively is very important. Airway Clearance Techniques (chest physiotherapy) are exercises that help you to remove mucus from the lungs and cough it out. The purpose of this survey is to ask you about the physiotherapy services which deliver Airway Clearance Techniques in bronchiectasis.

Who should complete this survey?

Please complete this survey if you are an adult who has a diagnosis of bronchiectasis.

Do I have to take part?

Your participation in this survey research is entirely voluntary. It is up to you to decide whether or not you take part. If you participate, you can withdraw at any time by closing the page in the survey.

What will happen if I take part?

Taking part involves completing this survey which will take approximately 20 minutes. The survey questions will ask you about your experience using Airway Clearance Techniques and physiotherapy services for your bronchiectasis. You will also be asked to complete the survey a second time, after completing the first survey.

What are the possible benefits?

Whilst there will be no direct health benefits for you by participating in this survey, we hope to use the findings to help improve physiotherapy services for people with bronchiectasis. People with bronchiectasis have said that access to chest physiotherapy is a top research priority ([EMBARC consensus statement](#)). Your information and views are very important to us as it is you who really knows how services could be improved to help you and other people with bronchiectasis.

Confidentiality and Data Protection

All information collected during the course of this survey research will be kept strictly confidential, and will be stored securely at Queen's University Belfast. All data stored on the Queen's University Belfast system will comply with the [University's policy](#). All information accessed from the EMBARC registry is anonymous and not identifiable to you. This survey has been the subject of ethical review and adheres to applicable [data security standards](#). All data will be destroyed within 5 years after completion of the study. Data collected from the survey may be transferred to various locations where [SurveyMonkey has offices](#) and shared with other organisations.

Queen's University Belfast is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. Queen's University Belfast will keep identifiable information about you for 5 years after the study has finished. 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. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally identifiable information possible. You can find out more about how we use your [information](#).

Who can I contact if I have more questions?

You can contact the principal investigator (Prof Judy Bradley/Dr Katherine O'Neill) on ACTBESStudy@qub.ac.uk / 00 44 (0)28 9097 6005 if you have any questions or if you do not wish to be take part.

This survey consists of 2 sections:

Section 1: Consent

Sections 2: Questions

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

Section 1: Consent form

* 1. I understand that my participation in this survey research study is voluntary and that I am free to withdraw at any time by closing the survey page.

Yes

* 2. I understand that anonymized data gathered in this study will be used in research publications.

Yes

* 3. I understand that data collected during the study may be looked at by individuals involved in the study or from regulatory authorities, where it is relevant to my participation in this research.

Yes

* 4. I understand that the data collected will be stored in a safe manner in Queen's University Belfast and will be destroyed 5 years after completion of the study.

Yes

* 5. I understand that I need to provide my unique study ID (as provided on my invitation) in order to link my survey responses to my anonymous clinical data from the EMBARC registry.

Yes

* Please enter your unique study ID as provided on the invitation letter:

If you so not have your unique study ID please contact the research team on 0044 (0)28 9097 6005 or ACTBESstudy@qub.ac.uk

* **6. (Optional)** I agree to complete the survey a second time, 12 months from now. I am providing my contact email or home address so that the survey can be sent directly to me, by the Queen's University Belfast research team.

My details will only be used for this purpose. If you agree, [please click here to provide your contact email or home address](#) (this will open a new page, please return to this page once completed).

Yes, I have provided my contact details

No

* **7. (Optional)** I am willing to be contacted by the research team to help interpret the overall survey results.

If you agree, [please click here to provide your contact email or home address](#) (this will open a new page, please return to this page once completed).

Yes, I have provided my contact details

No

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

Section 2: Questions on your Airway Clearance Technique practice

* 1. Think about the first time you found out about airway clearance techniques.

How were you first taught airway clearance techniques for your bronchiectasis?

Please select only one.

- By a physiotherapist whilst an outpatient at a hospital clinic appointment
- By a physiotherapist whilst an in-patient at a hospital
- By a physiotherapist in a health centre in the community
- By a physiotherapist in my home
- Through a support group
- Through someone else with bronchiectasis
- I found out on my own
- Don't know/ don't recall
- I have never been taught airway clearance techniques
- Other (please specify)









Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 2. Think about the **first visit** when you saw a physiotherapist about airway clearance techniques for your bronchiectasis.

Think about **who you see and where you are seen** for airway clearance techniques for your bronchiectasis.

What do you think is most important for a **first visit** for airway clearance techniques?

Please rank in order of importance, **1 being most important, 4 being least important.**

		Seeing a physiotherapist who is a specialist in bronchiectasis
		Seeing a physiotherapist who works with respiratory patients (but is not a necessarily specialist in bronchiectasis)
		Having the visit in a dedicated bronchiectasis clinic
		Having the visit in a location of my choice

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 3. Think about the **first visit** when you saw a physiotherapist about airway clearance techniques for your bronchiectasis.

What do you think are the most important parts of the **content of a first visit** with a physiotherapist for airway clearance techniques for your bronchiectasis?

Please rank in order of importance, **1 being most important, 8 being least important.**

<input type="checkbox"/>	<input type="checkbox"/>	Receiving information about the importance of airway clearance techniques
<input type="checkbox"/>	<input type="checkbox"/>	A physiotherapist performing an assessment of my chest
<input type="checkbox"/>	<input type="checkbox"/>	Being taught to do an airway clearance technique
<input type="checkbox"/>	<input type="checkbox"/>	Setting a personal action plan for my airway clearance techniques (an action plan is a written plan that details your symptoms and what to do when well and when not well)
<input type="checkbox"/>	<input type="checkbox"/>	A physiotherapist having enough time for my first appointment
<input type="checkbox"/>	<input type="checkbox"/>	Receiving information about other physiotherapy treatments in addition to airway clearance techniques (for example; pulmonary rehabilitation, medications for airways clearance, incontinence treatments)
<input type="checkbox"/>	<input type="checkbox"/>	Receiving information about support groups
<input type="checkbox"/>	<input type="checkbox"/>	Receiving contact details and instruction on how to access a physiotherapist in the future

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 4. What parts of your bronchiectasis condition do you think airway clearance techniques help with?

Please select all that apply.

- Preventing a chest infection
- Managing a chest infection
- Sticky sputum
- Excess sputum
- Persistent and increased cough
- Ineffective cough
- Shortness of breath
- Other, please detail

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 5. What type/s of airway clearance techniques do you use when you are well? You may use more than one.

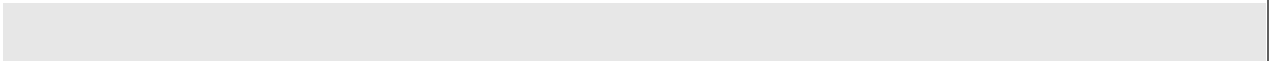
Please select all that apply.

- None
- Postural Drainage
- Active Cycle of Breathing Techniques (cycle of deep breaths, breathing control, huff and cough)
- Autogenic Drainage
- Clapping/Percussion
- Huff (forced expiration technique)
- Cough (please select if you use cough as part of other techniques)
- Positive Expiratory Pressure Mask
- Acapella device
- Flutter device
- Aerobika device
- High Frequency Chest Wall Oscillation device
- ELTGOL (Efficacité de l'expiration lente totale glotte ouverte en décubitus latéral / Slow expiration with the glottis opened in the lateral posture)
- Exercise and/or physical activity
- Non-invasive ventilation device
- Cough assist device
- Intrapulmonary Positive Pressure / Bird device
- Other (please specify)

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 6. Do you change the type/s of airway clearance technique you use when you have an increase in symptoms or are unwell with a chest infection?

- No, I do not change the type/s of airway clearance technique(s) when I have an increase in symptoms or are unwell with a chest infection.
- Yes, I change the type/s of airway clearance technique(s) when I have an increase in symptoms or are unwell with a chest infection.



Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 7. How often do you do airway clearance techniques when you are well?

Please select only one.

- More than twice daily
- Twice daily
- Daily
- 2 times per week or more
- Weekly
- Monthly
- Other (please state how often)

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 8. Do you change how often you do your airway clearance techniques when you have an increase in symptoms or are unwell with a chest infection?

- No, I do not change how often I do my airway clearance technique(s) when I have an increase in symptoms or when I am unwell with a chest infection.
- Yes, I change how often I do my airway clearance technique(s) when I have an increase in symptoms or when I am unwell with a chest infection.

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 9. How long, on average, does each airway clearance session last when you are well?

Please select one.

- Less than 10 minutes
- 10 minutes
- Greater than 10 minutes

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

*** 10. Do you change how long you do your airway clearance techniques when you have an increase in symptoms or are unwell with a chest infection?**

- No, I do not change how long I do my airway clearance technique(s) when I have an increase in symptoms or when I am unwell with a chest infection.
 - Yes, I change how long I do my airway clearance technique(s) when I have an increase in symptoms or when I am unwell with a chest infection.
-

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 11. What is the **main thing** that guides how often and how long you do your airway clearance technique session?

Please select one.

- What the physiotherapist told me to do
- A set length of time that I decide
- Depending on how much sputum I have
- Until I feel that my chest is clear
- Until I feel too tired/fatigued to continue
- Until another symptom stops me from continuing e.g. wheeze, shortness of breath, light head
- Other, please detail

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 12. How do you currently receive **follow-up** for your airway clearance techniques?

Follow-up is when you see the physiotherapist again.

Please select all that apply.









- I have not been followed-up
- I am followed-up by a physiotherapist at hospital
- I am followed-up by a physiotherapist at a community health centre
- I am followed-up by a physiotherapist in my home
- I receive telephone follow-up from a physiotherapist
- Other, please detail

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 13. Think about **who you see and where you are seen** for airway clearance techniques for your bronchiectasis.

What do you think is most important for a **first follow-up** for airway clearance techniques?

Please rank in order of importance, **1 being most important, 4 being least important.**

		Seeing a physiotherapist who is a specialist in bronchiectasis
		Seeing a physiotherapist who works with respiratory patients (but is not a necessarily specialist in bronchiectasis)
		Having the visit in a dedicated bronchiectasis clinic
		Having the visit in a location of my choice

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 14. As the physiotherapy service for people with bronchiectasis is modernised, there may be new ways for a physiotherapist to follow you up for your airway clearance techniques.

Which of following do you think you would use?

Please select all that apply.

- Access to the physiotherapist by phone
- Use of a website and/or phone app to see a physiotherapist (e.g. Skype)
- Use of a website and/or phone app to collect and share information about your condition (e.g. information about your symptoms, lung function) and communicate with a physiotherapist
- Use of a website and/or phone app to help you decide which airway clearance techniques to use
- None
- Other, please detail

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 15. Do you currently take any medication to help you with your airway clearance (for example, carbocysteine, hypertonic saline, isotonic saline, Dnase, Mannitol, bronchodilators)?

Yes

No

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 16. Which medication do you currently take to help you with your airway clearance?

Please select all that apply.

- Carbocisteine (for example, Mucodyne)
- Hypertonic Saline (for example, 3%, 5% or 7% hypertonic saline)
- Isotonic Saline (for example, 0.9% isotonic saline)
- DNase (for example, Pulmozyme)
- Mannitol
- Bronchodilator (for example, Short acting bronchodilators, Long acting bronchodilators, combination bronchodilators)
- Other

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

* 17. How do you time this medication with your current airway clearance technique?

	I take it before my airway clearance technique	I take it after my airway clearance technique	I take it during my airway clearance technique	I don't time this medication around my airway clearance technique
Carbocisteine (for example, Mucodyne)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hypertonic Saline (for example, 3%, 5% or 7% hypertonic saline)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Isotonic Saline (for example, 0.9% isotonic saline)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
DNase (for example, Pulmozyme)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mannitol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bronchodilator (for example, Short acting bronchodilators, Long acting bronchodilators, combination bronchodilators)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

- * 18. How do you think we could improve the current airways clearance technique physiotherapy service offered to people with bronchiectasis?

Please provide your comments:

- * 19. Please use the comments box below to tell us anything else you think is important about airway clearance techniques and physiotherapy services for your bronchiectasis.

- * 20. I wish to be entered into the iPad prize draw for completing this survey.

If yes, Queen's University Belfast will require your name and address, or email address to facilitate the iPad prize draw. Please [click here](#) to provide your details (this will open a new page, please return to this page once completed).

- Yes. I have provided my details.
- No

Airway Clearance Techniques (chest physiotherapy) for people with Bronchiectasis

SURVEY COMPLETE

Thank you for completing this survey.

If you would like more information about bronchiectasis or airway clearance techniques, please contact Prof Judy Bradley or Dr Katherine O'Neill on
ACTBEstudy@qub.ac.uk / 00 44 (0)28 9097 6005