PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Evaluating Follow-Up and Complexity in Cancer Clinical Trials (EFACCT): An eDelphi study of research professionals' perspectives
AUTHORS	Jones, Helene; Curtis, Ffion; Law, Graham; Bridle, Christopher; Boyle, Dorothy; Ahmed, Tanweer

VERSION 1 - REVIEW

REVIEWER	Anna Ugalde Deakin University, Australia
REVIEW RETURNED	28-Oct-2019

GENERAL COMMENTS	This paper describes an important topic that is well presented with important implications for the development of clinical trials. I enjoyed the discussion which reflects upon the key findings in the results. I have some minor comments about the method: 1. The paper describes a target sample of 20, 33 people consenting to join the panel and 27 people completing the initial qualitative survey, with a response rate of 81.82%. I am not sure describing this as a response rate is most appropriate given this is people who had already consented to participate. How many people were approached to do the Delphi study, and can the authors provide reasons for any refusals? 2. Round 1 survey results identify 201 group statements. How were these analysed? Were they coded according to their original question presented in Table 1? How many statements were presented in each of the seven questions? 3. In Round 2, the authors state that there were 15 statements that reached consensus and a further "53 within potential range of group agreement." How was this defined?

REVIEWER	Mei Krishnasamy Department of Nursing University of Melbourne Victoria Australia
REVIEW RETURNED	29-Oct-2019

GENERAL COMMENTS	Thank you for the opportunity to review this paper. The paper set out to describe findings provided by professionals involved in clinical trials with regard to institutional impact (workforce requirements, instrumental resources and cultural affinity). Although an important focus for study, there are a number of issues that require attention to strengthen the paper Title: the title refers to EFACCT – but throughout the paper the

	reference is to TRACAT – is this the same thing – if not – what is the relationship between EFACCT and TRACAT? Abstract Objectives: To evaluate cancer research delivery – the title refers to cancer trials this confuses the focus of the work from the outset. Throughout the paper cancer research and cancer trials seem to be used synonymously. Follow-up and complexity: of what? 1) identify professional priorities _ with regard to what? 2) understand contextual challenges with regard to ? 3) define protocol acuity rating indicators: is this about acuity or complexity of a trial protocol? If acuity – how is acuity defined in this context? What is presented in table 11 are not indicators but a series of statements – several with multiple domains amenable to measurement or assessment within each statement – for example, Rank 1 – what is rank 1 an indicator of? Would a trial have to have a series of measurable criteria against treatment, intervention, tests etc to rate a trial – and would the rating have to include an assessment of all of these things or only some? Design: Why a “classic” Delphi? Setting: what is a secondary care site? This will be unfamiliar to international readers. Results: what is meant by operational efficiency - is this about operational requirements? Conclusion: The conclusion refers to enhanced communication, inter-operability, funding and capacity – how are these indicators of a specific trials’ complexity? Is that what the focus of the study was about or was it about what makes clinical trials hard to undertake in health care settings? I think the intent of the study is not clear and this makes it hard to recognise the contribution of the paper. In the strengths and limitations box on page 1- authors’ state: This study developed consensus-defined trial rating and complexity indicators (TRIs) to support objective analysis of cancer research delivery adaptable to other therapeutic areas and global settings”. It appears therefore the focus is on specific trial requirements in terms of design/test burden/costs of test/ length and type of follow up assessments/ reporting requirements/etc. The manuscript needs to be rewritten to ensure that there is a clear focus on this throughout. But it also states that : “Qualitative aspects provide in-depth contextual evidence through the ‘voices’ of patient-facing professionals, articulating human & social aspects of research”. This seems to be a very different research focus – what is the relationship of human & social aspects of research and the specific complexity of a particular research design> That would imply the paper has a more ethical/moral lens- i.e. what is the impact on patients and the system when a trial is particularly costly or burdensome? How can findings from this study be: adaptable to other therapeutic areas and global settings – when one of the findings is that there are specific contextual issues? A large comprehensive cancer centre may be able to manage a study- that in that context is low complexity- but maybe of high complexity in a resource poor organisation? Is the intent that the Trial indicator list allows a-priori assessment of whether a trial can be accommodated in a particular setting? The statement “Future operational models should test dialectic Singerian-based approaches respecting open dialogue and shared values” – This will mean very little to most clinicians. Who is the

	paper directed to? Page 3: “Currently there is no national analysis of follow-up activity (with regard to what – on trial or routine care?) or protocol acuity (is acuity being used to mean complexity?) “ No definition was set for follow up- how do the researchers know what participants were responding about? Methods: To facilitate a detailed systems evaluation sensitive to the multi-faceted nature of cancer research delivery a multimodal study was developed. The design reflects the Churchman Singerian model of Inquiring systems valuing ethics and community knowledge in complexity evaluation and decisionmaking. The adopted design combining the Delphi technique with a Singerian approach followed an initial scoping review covering subject, policy and methodological literature. The review identified key challenges for the profession directing the overall research and initial survey design. A democratic approach was needed recognising multiple perspectives combined with individual knowledge and experience, to form a comprehensive understanding of the complexities of the systems and networks in which they operate through a dialectical group consensus process, a Singerian Delphi. This is not a description of method – it is partly a theoretical or philosophical framework for the study. Delphi technique: what is meant by – “research delivery variables” “and in the analysis of complex problems within a group” – what complex problem does this refer to? Is this about delivery of a trial? “The professionals recruited to the panel performed an ethical role” _ in what way was their role ethical as survey respondents? Were they asked to provide an ethical perspective to trial requirements? “trial-rating attributes” is this the same as research delivery variables”? “contribute to designing an evaluation tool” – is this the Indicator list? Patient and public involvement Why not include patients in the Delphi? Table 2: study data largely reflect responses form trial nurses- this needs acknowledging and consideration of how results can be justified as consensus across a trial professionals. Table 4: this definition of follow up seems to be about following up what happens to trial participants after completion of a trial. Given tis the nationally agreed definition- what was the purpose of seeking consensus? Table 5: each statements contains several statements- what if people agreed with one part but not another? Similarly in Table 6 – there is considerable room for and risk of several layers of interpretation of what people may have thought they were responding to. Table 8: 5.2: how was development of biomarkers included under strategic priorities? The other priorities seems to be about organisational strategic priorities Table 9: 6.17 – is this about informed consent? Table 10: 7.3 – This statement is unclear- if the primary end point is an outcome at the last data collection time point – e.g. quality of life

	at 12 months_ what are the follow up responsibilities? Table 11: how would this ranking list be used – what is its clinical utility? The paper as presented lacks clarity of focus and operational definitions. The feedback above is offered to help address the ambiguity and strengthen the messaging for the paper.

VERSION 1 – AUTHOR RESPONSE

Reviewer 1 Feedback		
R1	Reviewer 1 Comments	Response
	This paper describes an important topic that is well presented with important implications for the development of clinical trials. I enjoyed the discussion which reflects upon the key findings in the results. I have some minor comments about the method:	Thank you for your comments which are very much appreciated. Please see below responses to specific comments.
1	The paper describes a target sample of 20, 33 people consenting to join the panel and 27 people completing the initial qualitative survey, with a response rate of 81.82%. I am not sure describing this as a response rate is most appropriate given this is people who had already consented to participate. How many people were approached to do the Delphi study, and can the authors provide reasons for any refusals?	Thank you for this observation. We have removed the term 'response' so that the rates identify the percentage of returned surveys for each of the Delphi rounds. On page 5 & 6 we have replaced 'response' with 'return'. On page 5, under the results section, the following text has been added. "44 potential participants were approached with 11 professionals declining due to limited capacity or availability to complete the surveys."
2	Round 1 survey results identify 201 group statements. How were these analysed? Were they coded according to their original question presented in Table 1? How many statements were presented in each of the seven questions?	Thank you for highlighting. We have expanded the text on page 4 & 5 under the 'First Round Survey' and 'Data Analysis' headings to describe the process in more detail. The first open round survey responses were analysed using NVivo 11 with the responses coded thematically. Similar themes were condensed into the initial 201 statements, collapsed from the 531 individual statements provided by the Delphi panellists. They were all coded within the original question categories as shown in Table 1. In Table 3 the number of statements generated under each question category are shown. We have added further clarification to highlight this in the text (Results section, p5-6). A framework analysis was undertaken to form the themes for consideration as initial categories for the TRACAT tool, with an additional question category added to round 2 (question 8). We have updated the text on page 10 to highlight this.
3	In Round 2, the authors state that there were 15 statements that reached consensus and a further "53 within potential range of group agreement." How was this defined?	Thank you for highlighting the reference to 'potential range'. This was included to illustrate that 53 statements had reached a level of consensus of 55% but below the pre-defined '70% consensus' level. As 'potential range' is not a standard term used

		in reporting Delphi studies the authors have decided to remove this statement. The purpose of its inclusion was to show that a large number of statements achieved strength of agreement above 55%. As this study pre-defined consensus as 70%, in retrospect the inclusion of 'potential range' does not add significantly to the text, in this instance, and therefore has been removed.

Reviewer 2 Feedback		
R2	Reviewer 2 Comments	Response
	Thank you for the opportunity to review this paper. The paper set out to describe findings provided by professionals involved in clinical trials with regard to institutional impact (workforce requirements, instrumental resources and cultural affinity).	Thank you for your comments which are very much appreciated. Please see below responses to specific comments.
1	Title: the title refers to EFACCT – but throughout the paper the reference is to TRACAT – is this the same thing – if not – what is the relationship between EFACCT and TRACAT?	Thank you for raising this point. There are two acronyms used in the study. EFACCT, as used in the title, refers to **E**valuating **F**ollow-up **A**nd **C**omplexity in cancer **C**linical **T**rials. EFACCT is the umbrella study name for a multi-site, mixed methods study which has several different studies running as part of a wider research program. The acronym TRACAT refers to a **T**rial **R**ating **A**nd **C**omplexity **A**ssessment **T**ool which is being developed as an outcome of the multiple studies and their synthesised results. EFACCT study participants include cancer clinical research professionals involved in the delivery of cancer clinical trials at NHS secondary care sites (hospital sites) across the UK, and cancer clinical trial participants who have previously or are currently taking part in a cancer clinical trial at the participating sites. We have added the following text to the abstract for clarification "conducted as the launch study to a multiphase national project (EFACCT)." On page 13 there is a reference to the wider study, but we have highlighted within the text in this section that this study forms part of wider research investigating cancer clinical trial operational delivery and its challenges, focussing on follow-up and complexity.
	Abstract	
2	Objectives: To evaluate cancer research delivery – the title refers to cancer trials this confuses the focus of the work from the outset. Throughout the paper cancer research and cancer trials seem to be used synonymously.	Thank you for your comments. We have added 'clinical' to 'cancer research delivery' in the discussion (p9) and 'cancer trials' (p10) for clarification of the focus of the stage in the research pathway that the study is reporting upon. The authors are interested in investigating the efficacy of cancer research delivery, to highlight elements which can improve the research pipeline from 'bench to bedside'. The term cancer research also covers cancer clinical trials, involving scientists, clinicians and patients. We have reviewed all references to cancer research and clinical trials throughout

		the paper for their appropriateness. Cancer research as a term incorporates 'translational research' and 'clinical research' - https://www.aacrfoundation.org/Pages/what-is-cancer-research.aspx On page 2 'laboratory advances in cancer research ….through clinical trials ' has been added to highlight that 'cancer research' is a term spanning disciplines from 'basic science' to 'clinical research', through a process of 'translational research'. The authors have also clarified the terminology for 'cancer research, cancer clinical research and cancer trials' with the following phrase on page 3 - "Cancer research is an interdisciplinary enterprise advancing patient care and therapeutic benefits through a collaborative research pathway involving scientific, translational and clinical research trials."
3	Follow-up and complexity: of what?	Thank you for identifying the ambiguity. The objectives wording has been rephrased for greater clarification. following text has been added to the aims section on page 3 for further clarification. "Cancer research forms part of a complex collaboration between scientists, clinical research professionals and patients. Evaluation of patient follow-up in cancer clinical trials and the nature of complexity, in its many forms, needs to understand the experiences and challenges of research professionals' experiences in implementing and delivering cancer clinical trials in hospital settings." All responses and statements presented in the study results are those expressed by the Delphi participants.
4	1) identify professional priorities _ with regard to what?	The study aims to identify clinical research professionals' priorities for their role and professional field and their views of challenges experienced in delivering cancer clinical trials. We have added the following text to the aims section on page 3 - "as well as highlighting their views, perceptions and priorities for their professional field"
5	2) understand contextual challenges with regard to ?	Thank you. In using the term contextual challenges, we are referring to the contextual challenges of cancer clinical trial delivery and the challenges faced by professionals, as witnessed in their own contexts, local settings, or network relations. We have changed the term to 'localised challenges' on page 2 but also added the term 'contextual' into the aims section on page 3 to highlight the need for 'grounded, contextual knowledge'.
6	3) define protocol acuity rating indicators: is this about acuity or complexity of a trial protocol? If acuity – how is acuity defined in this context? What is presented in table 11	Thank you for raising this point. The authors are interested in the correlation between complexity and the subsequent relation to workloads, and believe that protocol acuity and complexity are commensurate. We have changed the text under the objectives section on page 2 from 'protocol acuity'…to the phrase 'define study complexity and workloads', as this will hopefully clear any ambiguity. On page 3 we have changed 'trial acuity' to read 'complexities

	are not indicators but a series of statements – several with multiple domains amenable to measurement or assessment within each statement – for example, Rank 1 – what is rank 1 an indicator of? Would a trial have to have a series of measurable criteria against treatment, intervention, tests etc to rate a trial – and would the rating have to include an assessment of all of these things or only some?	and follow-up impacts, workloads…' and also p3 'follow-up activity or protocol acuity' changed to 'follow-up or protocol complexity workloads'. We have also updated the aims section on page 3 to reflect the updated objectives text in the abstract. On page 11 we have changed 'protocol acuity' to 'trial rating and complexity score' and amended text to 'complexity and acuity'. For consistency of terminology we have amended the text as stated above. Thank you for highlighting this point. Table 11 shows the ranking of the complexity categories in response to Question 8 posed to participants in Round 2 (see page 5 Second Round Survey). Participants were asked to rank the statements from 1 (Lowest Priority to 7 (Highest Priority) - we have updated the text to make this clearer. The TRACAT tool will ultimately be developed, on conclusion of all the EFACCT study stages, as a capacity planning tool which will map and rate complex elements of studies, with the purpose of understanding the impact on site and individual workloads. We would argue that the statements developed by the panel are indicative categories, which represent the Delphi panels' views on study elements which can be quantified in terms of their workload. There are sub-domains within these which will be developed in the TRACAT tool and scored. We confirm that there will therefore be measurable criteria and have updated the text on page 12 to describe these elements in further detail. The TRACAT tool will respond to the changing needs of clinical trials and be sensitive to emergent methodologies and operational needs. Over time changes in needs and workloads of research teams evolve. As an attribute-based system, the TRACAT tool will be flexible and be developed to rate/assess core needs for research delivery teams, patients and organisations. Further research will provide ongoing updates and detailed functioning and revalidation of the trial rating and complexity assessment tool (TRACAT).
7	Design: Why a "classic" Delphi?	A classic e-Delphi defines the format of Delphi study used. A classic Delphi commences with an open round and moves to structured surveys in the second and third rounds. An e-Delphi is conducted online. A classic e-Delphi is a recognised term for the methodology. The following link provides an example of another BMJ paper which uses the definition; https://bmjopen.bmj.com/content/8/9/e024161
8	Setting: what is a secondary care site? This will be unfamiliar to international readers.	Thank you for highlighting that the term may not be familiar to all international readers. Secondary care is a recognised phrase used in multiple BMJ articles but we agree that this needs clarification if the term is not used consistently internationally for specialist care sites, such as hospital settings. The use of the phrase 'secondary care' as a hospital setting has been clarified in the text. The definition is shown in brackets on pages; 3 and 4. In the abstract we have used the phrase 'secondary care hospital sites' in place of 'secondary care sites'.

9	Results: what is meant by operational efficiency - is this about operational requirements?	Thank you. We have updated the text in the abstract on page 2 Results section to read 'operational performance'. Operational efficiency refers to the overall effectiveness and efficiency of how research is delivered within an organisation and how the resources, facilities and performance of the team, department, hospital is optimised. In delivering clinical research, especially where workload is high, and resources are limited it is important to understand challenges faced by teams and individuals and how efficient the operational processes are in addressing these barriers. This does then translate to identifying operational requirements, where insufficiency of resource is identified or making adjustments to adopted processes and models where these do not address the problems.
10	Conclusion: The conclusion refers to enhanced communication, inter-operability, funding and capacity – how are these indicators of a specific trials' complexity? Is that what the focus of the study was about or was it about what makes clinical trials hard to undertake in health care settings? I think the intent of the study is not clear and this makes it hard to recognise the contribution of the paper. In the strengths and limitations box on page 1- authors' state: This study developed consensus-defined trial rating and complexity indicators (TRIs) to support objective analysis of cancer research delivery adaptable to other therapeutic areas and global settings". It appears therefore the focus is on specific trial requirements in terms of design/test burden/costs of test/ length and type of follow up assessments/ reporting requirements/etc. The manuscript needs to be rewritten to ensure that there is a clear focus on this throughout.	Thank you for highlighting points on focus and clarity and providing recommendations, which the authors have reviewed in detail, giving careful consideration to all points. The revised manuscript has been amended to provide greater clarity, highlighting the focus of the research. In the conclusion the results of the study are discussed. The focus of the study is an evaluation of follow-up and complexity in cancer clinical trial delivery. The results show the responses of the Delphi expert panel and consensus statements in relation to the questions asked in Round 1. The conclusions point to failures in communication, inter-operability and limitations in funding and capacity which add to the complexity of delivery clinical trials (not a singular trial). These highlight the more qualitative elements of the research, which provide actionable managerial and operational insights into the effective delivery of clinical trials. The trial rating indicators which form quantifiable, measurable elements are being developed as part of the TRACAT tool. A Delphi study is a process which deals with both qualitative and quantitative data. The intention in the study was to undertake in-depth analysis of research professionals' perspectives in relation to their experiences and knowledge of delivering cancer clinical trials. The authors had no influence on the responses of the Delphi panellists to the open-ended questions posed in the opening round. The questions posed to panellists were clear questions and directed at achieving the objectives detailed in the abstract. The high percentage level set for consensus in the study provides a very strong indication of shared opinion on the questions posed to the panel in the first round. This provides a strong operational and strategic focus for policy makers and healthcare organisations, which we have covered in detail in the results and conclusions. We have also added to the strengths and limitations on page 2 to focus on the methods of the study. We have strengthened the text in the study aims section on page 3 to ensure that the focus of the research is clear to readers of the article.

11	But it also states that: "Qualitative aspects provide in-depth contextual evidence through the 'voices' of patient-facing professionals, articulating human & social aspects of research". This seems to be a very different research focus – what is the relationship of human & social aspects of research and the specific complexity of a particular research design> That would imply the paper has a more ethical/moral lens- i.e. what is the impact on patients and the system when a trial is particularly costly or burdensome?	Thank you for your comments. A Delphi study has both qualitative and quantitative elements. The focus of this 'Singerian Delphi' is predominantly qualitative, and adopts the principles of Singerian Inquiring systems, as referenced on page 3-4. In the Participant Information Sheets the contributory role of research professionals was described. We have updated the text on p13 to highlight that study documents explained the roles of participants. The study invitation letter, PIS and further Delphi panel communications throughout the study emphasise the importance of research professional participants' knowledge and their experience in delivering research. The study design did not limit participants to describing complexity just in terms of protocol designs but allowed them the opportunity to describe any elements, interactions and environments which form part of the process of delivering clinical trials, which covers many aspects from the patient-centred elements of delivering research, to technical and contextual challenges. A classic Delphi study commences with an open round, which allows the panel to describe their experiences, and limits researcher bias. The ethical aspects of the research are described in the study protocol, which was made available to participants, should they wish to further understand the focus of the research before participating. The PIS and study invitations provided a link to the study website ; www.efacct.com In the study protocol (p13), the research team reference the ethical nature of including research professionals in evaluative studies
12	How can findings from this study be: adaptable to other therapeutic areas and global settings – when one of the findings is that there are specific contextual issues? A large comprehensive cancer centre may be able to manage a study- that in that context is low complexity- but maybe of high complexity in a resource poor organisation?	There are global as well as site specific findings. The consensus items with a high level of consensus show the replicability of issues across wider settings. The non-consensus items are also important and are being studied in the wider research as the challenges faced locally or globally all still have an impact on the efficiency of research delivery. Non-consensus items will be made available on the study website following publication. In understanding the challenges of sites at different geographical locations and sites differing in scale it is possible to determine the social, operational and clinical contexts which recognise broader challenges and that there are elements within research which are 'measurable' and therefore events are predictable, but there are also other elements 'yet to be observed' which exist but are not observable. Only when they are defined do they become quantifiable. The nature of clinical research is evolving and therefore the process of TRACAT and operational review is emergent. The data will build and be enhanced over time. Where there is a high level of consensus on operational issues, these results can be applied and tested in global settings or other therapeutic areas. For example, the nature of follow-up work volumes can be tested in other settings and disease sites, such as

		cardiology. We have emphasised this in the text in the 'implications for practice' on page 14, to clarify this point.
13	Is the intent that the Trial indicator list allows a-priori assessment of whether a trial can be accommodated in a particular setting?	The trial complexity rating will be applied to studies to support sites in feasibility assessment and during the lifecycle of the study. It may be used a-priori as part of the capacity and capability assessment process but it can also support workforce planning of research staff, to analyse their workloads and study portfolios for running studies, and as an element for operational review for funding allocation and strategic planning. Due to the high level of trial amendments in clinical trials the initial evaluation of a study may differ from the eventual complexity at closure. Through mapping of the study's complexity during the study's lifecycle any change in rating and augmented workload or complexity can be tracked, which will support funding or support discussions with funders/sponsors. We have added to the text on page 12 of the discussion to provide additional detail on the nature of the rating indicators.
14	The statement "Future operational models should test dialectic Singerian-based approaches respecting open dialogue and shared values" – This will mean very little to most clinicians. Who is the paper directed to?	The BMJ Open is accessible to clinical trial methodologists, business strategists, and a variety of research professionals as well as clinicians. Given the inter-disciplinary nature of clinical trial delivery there are elements identified within this study which appeal to different professionals within the translational delivery framework for cancer research. We have updated the text on page 3 to highlight the interdisciplinary nature of research. There is a growing body of work that supports the development of dialogue and shared values and the authors wish to encourage this approach across all disciplines. We have added a more detailed description of the nature of Singerian inquiry on page 4, so that all readers have a better understanding of this important approach to advancing effective management and inter-disciplinary working.
15 (a) (b) (c)	Page 3: "Currently there is no national analysis of follow-up activity (with regard to what – on trial or routine care?) or protocol acuity (is acuity being used to mean complexity?) "No definition was set for follow up"- how do the researchers know what participants were responding about?	The study is focussing on the follow-up activity of research teams. Within the operational management of research sites there is currently no national analysis of patient follow-up activity on clinical trials. We have added 'trial' to clarify this on page 3. In this context 'protocol acuity' is referring to the associated workloads of the clinical trial, which is intrinsically linked to complexity. The participants were asked to provide their own definitions for the term 'follow-up', which was one of the key questions of the study. Question 1 in the first open Delphi round asked participants to provide definitions (see Table 1). We have updated the description of the first round survey on page 4 and the results on page 5 to clarify the design and responses of participants to question 1.
16	"*Methods: To facilitate a detailed systems evaluation sensitive to the multi-faceted nature of cancer research delivery a multimodal study was developed. The design reflects the Churchman Singerian model of Inquiring systems valuing ethics and community*	The authors wish to clarify that the methods highlighted in the text extract describe; Systems evaluation and Singerian Delphi are methods and inquiring strategies. In a qualitative study it is important to ensure that the methodological underpinning of the research is clear, a point which is highlighted in the BMJ guidelines for authors as a consideration. The democratic nature and dialectical approach, link the

	knowledge in complexity evaluation and decision making. The adopted design combining the Delphi technique with a Singerian approach followed an initial scoping review covering subject, policy and methodological literature. The review identified key challenges for the profession directing the overall research and initial survey design. A democratic approach was needed recognising multiple perspectives combined with individual knowledge and experience, to form a comprehensive understanding of the complexities of the systems and networks in which they operate through a dialectical group consensus process, a Singerian Delphi." This is not a description of method – it is partly a theoretical or philosophical framework for the study.	methods to the methodology (which does define the underpinning theoretical framework). We have further added to the description of the qualities of Churchman-Singerian Inquiry which this novel Singer-Delphi design is developed from. We have added a reference on reference on page 4 to Singerian-Churchmanian Inquiry Systems from the literature as a method for addressing complex and 'wicked' problems and as a meta-method as an approach to 'sensemaking' and knowledge generation. The authors have reviewed the text in the methods section and made amendments on page 3-4 to ensure that the Delphi study methods section is reported appropriately in line with the study design, highlighting the key characteristics of this innovative Delphi methodology approach.
	Delphi technique:	
17	what is meant by – "research delivery variables"	In the context of this study 'research delivery variables' (p3) relates to the different elements (variables) involved in delivering clinical trials. We have expanded the text on page 4 to describe research delivery further.
18	"and in the analysis of complex problems within a group" – what complex problem does this refer to? Is this about delivery of a trial?	Thank you for raising this. We have added a description of the nature of complexity following this phrase in the Delphi technique section on page 4, highlighting its use as a theme of inquiry and the use of Singerian-Churchmanian Inquiring Systems. The quotation relates to the practical applications of the Delphi methodology, as described by Linstone & Turoff (2002). One of the key focuses of the study is the study of complexity in the delivery of cancer clinical trials (not necessarily a single trial). In question 3 panellists were asked to provide their "analysis of complexity in delivering cancer clinical trials" - see Table 1.
19	"The professionals recruited to the panel performed an ethical role" _ in what way was their role ethical as survey respondents? Were they asked to provide an ethical perspective to trial requirements?	Thank you. As you have identified in your comment (noted in section 10 above) the study has an ethical focus through the role of the Delphi panellists in describing 'the human and social aspects of research delivery'. The nature of the Delphi panellists' involvement in the study was described in the participant information sheets, and the study protocol. We have updated the Methods section on page 4 to reference that the roles of participants and their ethical contribution were detailed in the study information sheets and documents provided to participants who consented to join the 'expert panel'.
20	"trial-rating attributes" is this the same as research delivery	'Trial-rating attribute' is not a definition of the term 'research delivery variable' but is formed from different quantifiable

	variables"?	elements involved in the delivery of research studies. We have expanded the text describing TRACAT on page 3.
21	"contribute to designing an evaluation tool" – is this the Indicator list?	That is correct. The evaluation tool is TRACAT and will include the complexity indicators that were identified by the panel of research professionals. We have updated the aims to provide further clarification on TRACAT and its function as a decision-support tool.
22	Patient and public involvement Why not include patients in the Delphi?	A separate Delphi patient study has been conducted nationally as part of the wider EFACCT study. The questions in the patient Delphi were relevant to patient experiences and therefore required a separate study. The overall results of all six EFACCT studies will be synthesised and published at a later date. The wider study is referenced on page 13.
23	Table 2: study data largely reflect responses form trial nurses- this needs acknowledging and consideration of how results can be justified as consensus across a trial professionals.	Thank you for your comment. Heterogeneity in Delphi studies is an important part of the process. Further text has been added to page 4 to describe the nature of the panel. In line with other Delphi studies, the breakdown of professions is reported. The percentages shown in Table 2 highlight the percentages by profession, and as such acknowledges the contribution of research nurses (as they are a key role involved in trial delivery). Research delivery is a collaborative field and there are shared responsibilities, knowledge and experiences across the research delivery professionals. The level of consensus highlights the levels of agreement across al the panel.
24	Table 4: this definition of follow up seems to be about following up what happens to trial participants after completion of a trial. Given this the nationally agreed definition- what was the purpose of seeking consensus?	A nationally agreed definition of follow-up was not defined in this study. The purpose of the questions relating to follow-up was to understand how participants defined follow-up. It was an important finding that there was no consensus but that the panel felt there was a need for a national definition. In the 'implications for practice section ' on page 14 we recommend the need for further work to define a national/global definition so that operationally all dialogue and review on the subject is undertaken on a like-for-like agreed terminology. For this to take place it is important to involve a wider demographic including funding bodies and commissioning services, who are key stakeholders in the establishment of such an agreed terminology.
25	Table 5: each statements contains several statements- what if people agreed with one part but not another?	Thank you for highlighting. We have updated the text on page 6 to describe the broad nature of statements, and acknowledge that the nature of highly qualitative Delphi studies can produce 'descriptive statements' and this is one of the considerations in designing a Singerian Delphi. It is also a feature of complex systems. The update in the Delphi technique section on complexity also supports the concept of complexity and the nature of multiple concepts and their interaction. Participants were able to provide textual responses to the panel developed statements where they had any concerns or queries to their nature. Courtney at al. (2008) argue that reductionist approaches in traditional scientific thinking "often sacrifices as much as it gains by losing the richness of context in which the object exists" [23].We have referenced on page 6 under 'summary of panel responses and discourse' the importance of the depth and richness of the combined elements in these statements, or where there an omission of certain phrases or sentiments, there is a potential for the loss of nuances of participants' expressions.
26	Similarly, in Table 6 – there is	Participants were provided with the opportunity to provide

	considerable room for and risk of several layers of interpretation of what people may have thought they were responding to.	additional comments to each section. If they felt that they could not agree to a statement because it included multiple elements, they could feed back their thoughts on this. On page 6, as mentioned above, the participants were able to provide feedback and reflection on statements developed by the panel.
27	Table 8: 5.2: how was development of biomarkers included under strategic priorities? The other priorities seems to be about organisational strategic priorities	5.2 - This statement was developed by the Research Professional Delphi panel in response to question 5 which asked participants the following; "*Please suggest your top 3 strategic priorities for the future delivery of cancer clinical trials in the NHS."* The responses of the Delphi panellists and the statements created did not have any input from the researchers. In this instance the statement, which achieved consensus, focussed on the clinical aspects of cancer clinical trials and not just on the operational delivery aspects. This is a valuable insight into research professional interests and perspectives, whether it be clinical or organisational, and highlights the multi-faceted nature of interests and involvement of professionals in research delivery.
28	Table 9: 6.17 – is this about informed consent?	6.17 - The researchers had no input into the development of panel statements. All the statements shown in the results tables were created by the Delphi panellists and reflected their views in response to each question section. This statement was developed by the Delphi panel in response to the question 6: ''*Please provide your views on existing elements of cancer clinical research practice within the NHS, which contribute to or demonstrate efficient trial delivery and practice*.''
29	Table 10: 7.3 – This statement is unclear- if the primary end point is an outcome at the last data collection time point – e.g. quality of life at 12 months_ what are the follow up responsibilities?	7.3 - The researchers had no input into the development of panel statements. All the statements shown in the results tables were created by the Delphi panellists and reflected their views in response to each question section. This statement was developed by the Delphi panel in response to the question 7: '*Please add any additional elements you feel should be considered by the Delphi panel in relation to reviewing the operational delivery, follow-up and complexity of cancer clinical trials.'*
30	Table 11: how would this ranking list be used – what is its clinical utility?	TRACAT has an operational utility, with the ability to capture the clinical complexities for research. It supports the feasibility assessment of studies prior to study approval at sites. Following set-up TRACAT allows for the continual assessment of the delivery of clinical trials and site, mapping the complexity (and linked workload or acuity) of conducting the study during its life-cycle. Patterns in the nature of the complexities and workloads of study types, designs and sponsor studies are mapped over time, developing a quantifiable measure of cancer clinical trial complexities and workloads, and their implications for different sites. TRACAT will allow for global mapping and trends with local adaption for differences in site delivery, complexities, variables etc. Patterns will therefore have multiple levels and the emerging nature of these will build over time, creating longitudinal data sets which provide actionable insights and inform strategic decisions at multiple levels. This is described

		further on page 11.
31	The paper as presented lacks clarity of focus and operational definitions. The feedback above is offered to help address the ambiguity and strengthen the messaging for the paper.	Thank you for your recommendations in relation to clarity of focus and operational definitions. The authors believe that all reviewer comments have been covered in the updated manuscript and provide further clarity. The purpose of the paper is to develop in-depth understanding of the experiences of research professionals involved in the delivery of cancer clinical trials, which is both qualitative and quantitative. The research questions posed to the participants are illustrated in Table 1. The results of the study could not be predicted and reflect the broad and complex nature of delivering cancer clinical trials in hospital settings. The aims of the study and the questions posed are focussed but the nature of the results are broad-ranging. The study has identified clear consensus and actionable insights which will be of interest to policy makers, methodologists, strategists and a wide range of the multi-disciplinary professions involved in the delivery of cancer clinical research. Hopefully, we have addressed any concerns around focus and through further clarification of terms and the intentions of the study, have effectively described the study's original Singerian Delphi research methodology design and purpose in the evaluation of cancer clinical trial delivery.

VERSION 2 – REVIEW

REVIEWER	Anna Ugalde Deakin University, Australia
REVIEW RETURNED	05-Jan-2020

GENERAL COMMENTS	Thank you for responding to my concerns. I believe this paper is suitable for publication.

REVIEWER	Mei Krishnasamy University of Melbourne
REVIEW RETURNED	20-Dec-2019

GENERAL COMMENTS	The authors are to be congratulated for responding so constructively and fully to the previous feedback. The manuscript reads much more clearly and I have no substantive additional feedback that requires attention. The paper offers interesting and clinically relevant insights for cancer clinicians involved in clinical trials and I am happy to recommend publication. Thank you for the opportunity to re-review.