

Review protocol

Operating room initial best practice for the coronavirus covid-19 pandemic: A protocol for a rapid systematic review of the literature, rapid iterative collaborative evaluation (RICE), and rapid consensus process.

Research Group: Welsh Surgical Research Initiative

Summary

Background:

Guidance on operating room (OR) practice in the presence of suspected or proven coronavirus infection is lacking. A rapid systematic review of the literature will be conducted, but an initial scoping search confirms an anticipated paucity of relevant literature. It is therefore necessary to combine this with a novel approach to identifying and collating global practice and evidence and achieving early consensus on appropriate OR practice in the context of the COVID-19 pandemic.

Methods:

Standard methodology (PRISMA) rapid systematic review of operating room practices and guidance in relation to COVID-19.

Development and employment of novel methodology – Rapid Iterative Collaborative Evaluation (RICE). This involves the use of social media to bring together as many stakeholders as possible to engage in the four phases of RICE:

Phase 1 – Collate questions. What questions do stakeholders need the answers to?

Phase 2 – Answer questions. Using the literature, including scientific principles and borrowing from similar fields; also seeking answers from the stakeholders themselves.

Phase 3 – Initial consensus. Rapid modified Delphi process to determine which questions reach consensus to influence practice and, importantly, identifying those which are not answered to consensus. This identifies the relevant unanswered research questions for future work to address important gaps in knowledge.

Phase 4 – Iterative development. The project remains open to iterative evidence collation as the field rapidly evolves.

2. INTRODUCTION

Guidance on operating room (OR) practice in the presence of suspected or proven coronavirus infection is lacking. Our rapid systematic review of the literature is underway, but the initial search demonstrates the expected paucity of relevant literature, identifying just 35 items. It is therefore necessary to combine this with a novel approach to identifying and collating global practice and evidence and achieving early consensus on appropriate OR practice in the context of the COVID-19 pandemic.

3. OBJECTIVES

3.1 Primary

To develop initial consensus guidance on operative room practice during the COVID-19 pandemic

3.2 Secondary

To identify the most relevant research questions to be taken forward regarding operative room practice in relation to the COVID-19 pandemic.

4. METHODS

4.1. Data sources, search methods and selection criteria.

A rapid systematic review of published work will be conducted using standard rapid review methodology, as outlined by Schünemann and Moja¹ and in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) guidelines (*Fig. 1*)².

MEDLINE will be searched via PubMed (no date restriction), for studies either describing specific practices, or providing recommendations or guidance relating to emergency operating room practice in the context of the COVID-19 pandemic. No limitation will be placed on language or publication type, but non-English language studies without extractable data will be excluded. Relevant studies will be identified using terms in any field relating to coronavirus (e.g. coronavirus, COVID-19, SARS-CoV-2), and the operating room (e.g. operating room, theatre, surgery), and operating room practice (e.g. preparation, procedures, guidance, advice, practice, recommend). The full search algorithm is shown in Table 1. Further articles will be identified by hand searching of references and using the PubMed related articles function. Levels of evidence will be determined according to Oxford levels of evidence³.

In light of the short timeline for delivery to be of greatest utility, and the limited literature base relating to this recently emerging and rapidly evolving subject, a novel methodological approach has been developed for use in this project. Rapid Iterative Collaborative Evaluation (RICE) comprises 4-phases and will be applied as follows:

Phase 1 – Collate questions. Identify the questions that stakeholders require answers to, using a pre-determined social media strategy to identify high-influence stakeholders. Delivered with support from the CovidSurg Group to optimise capture of actively participating target stakeholders in the field. Authors will organise the questions into the 5 themes this project seeks to cover: 1. Physical resources; 2. Personnel; 3. Patients; 4. Procedures; 5. Other considerations.

Phase 2 – Answer questions. Authors will determine the relevance of questions posed and will seek to answer those deemed within the scope of the project by interrogating the literature, including basic scientific principles and borrowing from similar fields. Answers and opinions will also be sought from stakeholders themselves and the wider scientific community through social media engagement and sharing of resources and experiences. This will also be delivered using the social media strategy.

Phase 3 – Initial consensus. Answers will be used to inform the development of a series of recommendations, which will be presented to Delphi participants in a single stage rapid modified Delphi questionnaire using a 3-point Likert scale. Where questions achieve consensus, they will be incorporated into a guidance document to influence practice. Importantly, identifying those which are not answered to consensus will highlight the relevant unanswered research questions, informing the direction of future research.

Phase 4 – Iterative development. The project will remain open to iterative evidence collation and updates to the initial guidance as the field rapidly evolves. Further consensus rounds may become appropriate.

4.2. Data extraction

Data will be extracted independently by at least two authors. The following details will be extracted from each study: authors, journal, date of publication, study design, country, region, oxford level of evidence, and any description of specific practices,

recommendations or guidance in relation to emergency operating room practice in the context of the COVID-19 pandemic. Five domains have been identified a priori for data capture relating to operating room practices: the physical operating room, staff, patients, procedures, post-operative considerations.

4.3. Inclusion and exclusion criteria

In the systematic review, studies reporting specific practices, recommendations or guidance in relation to emergency operating room practice in the context of the COVID-19 pandemic will be included.

4.4. Rapid modified Delphi interpretation

The distribution of answers on a 3-point Likert scale, where 1 = agree, 2 = unsure, 3 = disagree, will be calculated for each item. “Consensus appropriate” (consensus that the statement should be applied to initial guidance) will be defined as greater than 70 percent of items scoring as 1 AND less than 25 percent of participants scoring as 3. “Consensus inappropriate” (consensus that the statement should not be applied to initial guidance) will be defined as greater than 70 percent of participants scoring as 3 AND less than 25 percent of participants scoring as 1. “Disagreement” will occur when 33 percent or more score 1 AND 33 percent or more score 3 for a particular outcome. All other combinations will be considered “Equivocal.” All questions will be designated into one of these four categories. “Consensus appropriate” items will be accepted and “Consensus inappropriate” and “Equivocal” items will be discarded or highlighted as such in the produced guidance. Definitions designated “Disagreement” will undergo further analysis: mean scores will be calculated, and depending whether the mean is above or below 2 (i.e. tending towards “consensus appropriate” or “consensus inappropriate”) the definition will be accepted or discarded, respectively.

5. ETHICAL APPROVAL

Ethical approval is not needed for this research project as it does not involve direct contact with patients or direct reporting of identifiable or individual patient level outcome data.

6. FUNDING

No funding has been received for this study.

7. AUTHOR CONTRIBUTION

AB conceived the study. All authors contributed to study design, methodological development, and writing. All authors approved the final manuscript.

8. CONFLICTS OF INTEREST

No conflicts of interest are declared.

9. GUARANTOR

Mr. Andrew Beamish, Honorary Clinical Senior Lecturer, Swansea University.

10. RESEARCH REGISTRATION NUMBER

This study has been registered a priori on the PROSPERO international prospective register of systematic reviews (www.crd.york.ac.uk/prospero); registration number: [to follow]

REFERENCES

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3. Oxford Levels of Evidence Group. The Oxford 2011 Levels of Evidence. 2011.