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The role of organisational and cultural factors in the implementation of system-wide interventions in acute hospitals to improve patient outcomes: protocol for a systematic literature review

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The role of organisational and cultural factors in the implementation of system-wide interventions in acute hospitals to improve patient outcomes: a systematic literature review

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Contributorship: All authors contributed to the design, drafting and revision of the paper, and approved the final version to be published.

Data sharing: Data available on request from the corresponding author.

The role of organisational and cultural factors in the implementation of system-wide interventions in acute hospitals to improve patient outcomes: a systematic literature review

ABSTRACT

Introduction: To reduce preventable adverse events, there is keen interest in more sustained progress in improving patient safety. However, little is known about the role of organisational culture in the success and sustainability of the hospital-wide interventions, and how local culture affects patient outcomes in acute hospitals.

Methods and analysis: A systematic literature review will be conducted to identify organisational factors influencing hospital-wide interventions and patient outcomes. A search of English language articles will be performed in MEDLINE, CINAHL, EMBASE, Web of Science, PsychInfo and Global Health databases using Medical Subject Headings and keywords. JAMA, BMJ, BMJ Quality and Safety, New England Journal of Medicine and Implementation Science will be hand searched for the last five years. The 'grey literature' will be excluded. Randomised controlled trials, quasi-randomised trials, controlled before and after design studies and interrupted time-series analysis studies will be included. Two reviewers independently will undertake a title and abstract review using inclusion and exclusion criteria. Studies will be excluded only after discussion between at least two reviewers, who will assess and agree on the inclusion, risk of bias and quality rating of the studies. One author will extract summary descriptive data from these studies; the second author will review this documentation for accuracy and completeness. It is likely that the studies will be heterogeneous in nature and so a narrative synthesis of the findings will be conducted. We will discuss characteristics of the studies and stratify the results according to the type of hospital-wide interventions, organisational factors associated with them and outcomes measured.

Ethics and dissemination: The findings of this systematic literature review will be reported via peer-reviewed publications, conference and seminar presentations. The PRISMA checklist will be applied. No ethics approval is considered indicated, as this is a literature review only.

ARTICLE SUMMARY

Article focus

- This review aims to identify the organisational factors that affect the implementation of hospital-wide interventions in acute hospitals, and how these organisational factors and hospital-wide interventions influence patient outcomes.

Key messages

- Silos, or vertical structures within hospitals such as wards, units, and departments, are well developed in acute care hospitals, but the system may fail at the intersection between silos for patients with complications of the original illness, which are outside the expertise of the admitting clinician.
- To bridge these intersections and thereby reduce the potential preventable adverse events for an increasingly aged and ill hospital population with comorbidities, organisation-wide patient safety interventions are becoming a major focus of health care delivery.
- Little is known about the cultural and organisational determinants of hospital-wide interventions and their effects on patient outcomes.

Strengths and limitations of this project

- This study aims to increase our knowledge of organisational culture, which we believe is an important element in the success or failure of the implementation of hospital-wide interventions.
- We will investigate how the adoption of a system-wide intervention can affect patient outcomes.

- We will be including observational studies as well as controlled before and after studies in the systematic review, as it is likely they will provide valuable information.
- We include only English language studies.
- Risk of bias may occur by inclusion of non-randomised studies, but we will mitigate this risk by only accepting papers with high quality evidence and validated data.

INTRODUCTION

Despite the remarkable advances in healthcare delivery and considerable changes in hospital patient populations and expectations associated with modern medicine, the fundamental organisation of hospitals has changed little into the twenty first century. The system is constructed around the admitting doctor and patient relationship.[1] In acute hospitals, wards are able to manage the day-to-day aspects of a patient's condition, but the system can fail when the patient's condition deteriorates and the admitting doctor no longer has the skills or knowledge to neither recognise nor manage the deteriorating patient.[1-3] One of the first organisation wide and patient centred systems, known as the Medical Emergency Team (MET) or Rapid Response System (RRS) has been implemented in many hospitals around the world to address this situation.[4 5] When the criteria that define an at-risk or deteriorating patient are met, a team of clinicians with appropriate skills urgently responds to the patient. However, because of the nature of hospitals, and depending on the existence of necessary infrastructure to provide the continuity of care,[2] the effectiveness of the few-implemented hospital-wide interventions, such as an RRS, varies significantly from one health organisation to another.[6] While there is keen interest in how to optimise and implement the system, little is known about the role of organisational culture [7-10] in the success and sustainability of the hospital-wide interventions, and how the culture could affect patient outcomes in acute hospitals. Patient safety interventions working at an organisational level that include participative principles, such as the involvement of workers in design and implementation, may provide the greatest hope of improving patient safety.[11-13] This protocol details the processes of a systematic literature review that aims to identify the organisational and cultural factors [10 14] affecting the adoption and success of hospital-wide interventions in acute hospitals, and to assess the effects of those factors on patient

outcomes.

METHODS AND ANALYSIS

Search Strategy

We will search MEDLINE, CINAHL, EMBASE, Web of Science, PsychInfo, Global Health, using Medical Subject Headings and keywords, from 1946, 1991, 1947, 1934, 1967, 1910, respectively to September 2012.The general search strategy is shown in Box 1 and the subject heading will be adjusted for each database. We will use multiple terms to identify culture and intervention. We will restrict the search to English language articles and we will hand search the journals, JAMA, BMJ, BMJ Quality and Safety, New England Journal of Medicine and Implementation Science, separately for the last five years (from 2007-2012). We will also hand search the reference lists of the relevant Cochrane systematic reviews.

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3. AND (patient outcome)
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Under the review's inclusion and exclusion criteria, research must focus on a hospital-wide intervention, i.e., mere implementation in the operation theatre, a few general units or ICU is not sufficient. Other inclusion criteria include investigating the organisational factors that may affect

the implementation. Studies should also provide patient outcome data before and after the hospital-wide intervention. The review will only include interventions in an acute care setting, i.e., rehabilitation centres, primary health cares, ambulatory services, and psychiatric facilities will be excluded. Other inclusion criteria include that the study report on empirical research, in peer reviewed, English language, scholarly journals, and that abstract and full text are available. Therefore, we will not include 'grey literature'.

We will not limit our search to randomised controlled trial studies, since we believe observational studies and controlled before and after studies -- with validated data about patient outcomes -- can provide useful information to identify the organisational and cultural determinants of hospital-wide interventions.

References identified in the search will be reviewed for inclusion by two researchers. Studies will be excluded only after discussion between at least two reviewers, who will assess and agree on the inclusion and quality rating of the studies. All papers excluded by consensus will be depicted in a document explaining reason for exclusion. This process will be conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [15 16] and literature selection will be presented in a PRISMA flow chart.[15]

Participants

Participating hospitals may include any acute care facility, including metropolitan or rural, and private or public hospitals.

Type of interventions

As noted, we will only include interventions that are hospital-wide and are associated with patient outcomes through validated data collected before and after implementation of the intervention. Also, the organisational elements of the intervention should have been explained in the study to make it qualified for our review.

Comparisons

Comparisons may include acute hospitals with similar nursing-patient ratio, size and region with no intervention.

Types of outcome measures

Patient outcomes may include mortality rate, the rate of adverse events, patient satisfaction, and infection rate.

Assessment of risk of bias

Two reviewers will independently assess risk of bias in eligible studies as outlined in the Cochrane Handbook for Systematic Reviews:[17] selective outcome reporting, and blinding of the research personnel to data collection and analysis. For any non-randomised trials included in the review, the authors will assess any selection bias that may lead to confounding of the outcome. Disagreement regarding assessment of risk of bias will be resolved through discussion between two reviewers. If consensus is not reached, a third reviewer will be consulted.

Data Collection and Analysis

Using a standard form, one author will abstract summary descriptive data from these studies. The same author will compile a tabular presentation the study participants and setting, objective, design and method, type of hospital-wide intervention, organisational/cultural factors,

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Strategy for data synthesis

It is likely that included studies will be heterogeneous in nature and so we will conduct a narrative synthesis of the findings. We will discuss characteristics of the studies and stratify the results according to the type of hospital-wide interventions, organisational factors associated with them, and outcomes measured. We anticipate that we will not be able to use a quality assessment tool to formally assess the quality of the studies due to their heterogeneous nature.

ETHICS AND DISSEMINATION

Ethics is not required given the protocol is a systematic literature review. The findings of this review will be disseminated through mechanisms including peer-reviewed publications and conference presentations. The PRISMA checklist [15] will be used for writing the final review.

ACKNOWLEDGEMENTS: We acknowledge Dr. Isla Hains from the Centre for Health Systems and Safety Research in the Australian Institute of Health Innovation who provided guidance regarding the search strategy.

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AUTHORS' CONTRIBUTIONS: All authors contributed to the design, drafting and revision of the paper, and approved the final version to be published.

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ABSTRACT

Introduction: Little is known about the role of organisational culture in the success and sustainability of the hospital-wide interventions, and how local culture affects patient outcomes in acute hospitals.

Methods and analysis: A systematic literature review will be conducted to identify organisational factors influencing hospital-wide interventions and patient outcomes. A search of English language articles will be performed in MEDLINE, CINAHL, EMBASE, Web of Science, PsychInfo and Global Health databases using Medical Subject Headings and keywords. Randomised controlled trials, quasi-randomised trials, controlled before and after design studies and interrupted time-series analysis studies will be included. 'Grey literature' will be excluded, however peer reviewed journals that are likely to publish relevant studies (JAMA, BMJ, BMJ Quality and Safety, New England Journal of Medicine and Implementation Science) will be hand searched for the last five years. Two reviewers independently will undertake a title and abstract review using inclusion and exclusion criteria. Studies will be excluded only after discussion between at least two reviewers, who will assess and agree on the inclusion, risk of bias and quality rating of the studies. One author will extract summary descriptive data from these studies; the second author will review this documentation for accuracy and completeness. It is likely that the studies will be heterogeneous in nature, therefore a narrative synthesis of the findings will be conducted. We will discuss characteristics of the studies and stratify the results according to the type of hospital-wide interventions, organisational factors associated with them and outcomes measured.

Ethics and dissemination: Findings will be reported via peer-reviewed publications, conference and seminar presentations. The PRISMA checklist will be applied. No ethics approval was required, as this is a literature review only. The protocol has been registered in the international prospective register of systematic reviews, PROSPERO (Registration No: CRD42013003050).

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Article focus

- This review aims to identify the organisational factors that affect the implementation of hospital-wide interventions in acute hospitals, and how these organisational factors and hospital-wide interventions influence patient outcomes.

Key messages

- Silos, or vertical structures within hospitals such as wards, units, and departments, are well developed in acute care hospitals, but the system may fail at the intersection between silos for patients with complications of the original illness, which are outside the expertise of the admitting clinician.
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INTRODUCTION

Despite the remarkable advances in healthcare delivery and considerable changes in hospital patient populations and expectations associated with modern medicine, the fundamental organisation of hospitals has changed little into the twenty first century. The system is constructed around the admitting doctor and patient relationship.[1] In acute hospitals, wards are able to manage the day-to-day aspects of a patient's condition, but the system can fail when the patient's condition deteriorates and the admitting doctor no longer has the skills or knowledge to neither recognise nor manage the deteriorating patient.[1-3] One of the first organisation wide and patient centred systems, known as the Medical Emergency Team (MET) or Rapid Response System (RRS) has been implemented in many hospitals around the world to address this situation.[4 5] When the criteria that define an at-risk or deteriorating patient are met, a team of clinicians with appropriate skills urgently responds to the patient. However, because of the nature of hospitals, and depending on the existence of necessary infrastructure to provide the continuity of care,[2] the effectiveness of the few-implemented hospital-wide interventions, such as an RRS, varies significantly from one health organisation to another.[6] Ultimately, we are interested in determining why interventions such as MET are successful in some settings but not in others. By examining hospital-wide interventions in acute care systems (including non-MET interventions) via this systematic literature review, we hope to shed some light on the problem.

While there is keen interest in how to optimise and implement the system, little is known about the role of organisational culture[7-10] in the success and sustainability of the hospital-wide interventions, and how the culture could affect patient outcomes in acute hospitals. Patient safety interventions working at an organisational level that include participative principles, such as the involvement of workers in design and implementation, may provide the greatest hope of

improving patient safety.[11-13] We note the identification of limitations in the literature such as those identified by Kaplan et al. 2010,[14] including the lack of a practical conceptual model, the lack of clear definitions of contextual factors and the lack of well-specified measures. This protocol details the processes of a systematic literature review that aims to identify the organisational and cultural factors[10 15] affecting the adoption and success of hospital-wide interventions in acute hospitals, and to assess the effects of those factors on patient outcomes.

METHODS AND ANALYSIS

Search Strategy

We will search MEDLINE, CINAHL, EMBASE, Web of Science, PsychInfo, Global Health, using Medical Subject Headings and keywords, from 1946, 1991, 1947, 1934, 1967, 1910, respectively to September 2012.The general search strategy is shown in Box 1 and the subject heading will be adjusted for each database. We will use multiple terms to identify culture and intervention. The search will be restricted to English language articles (the authors do not have resources for translation) and we will hand search the journals, JAMA, BMJ, BMJ Quality and Safety, New England Journal of Medicine and Implementation Science, separately for the last five years (from 2007-2012). The peer reviewed journals were chosen as the most likely to publish studies that meet inclusion criteria. We will also hand search the reference lists of the relevant Cochrane systematic reviews.

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We will not limit our search to randomised controlled trial studies, since we believe observational studies and controlled before and after studies -- with validated data about patient outcomes -- can provide useful information to identify the organisational and cultural determinants of hospital-wide interventions.

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Participants

Participating hospitals may include any acute care facility, including metropolitan or rural, and private or public hospitals.

Type of interventions

As noted, we will only include interventions that are hospital-wide and are associated with patient outcomes through validated data collected before and after implementation of the intervention. Also, the organisational elements of the intervention should have been explained in the study to make it qualified for our review.

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Strategy for data synthesis

If suitable data are available, a meta-analysis will be completed; however it is likely that included studies will be heterogeneous in nature. Where trial data cannot be combined, two of the authors will conduct a narrative synthesis of the findings in accordance with the review objectives. We will discuss characteristics of the studies and stratify the results according to the type of hospital-wide interventions, organisational factors associated with them, and outcomes measured. We anticipate that we will not be able to use a quality assessment tool to formally assess the quality of the studies due to their heterogeneous nature.

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COMPETING INTERESTS: The authors have no conflict of interest to declare.

AUTHORS' CONTRIBUTIONS: All authors contributed to the design, drafting and revision of the paper, and approved the final version to be published.

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Data sharing: Data available on request from the corresponding author.

The role of organisational and cultural factors in the implementation of system-wide interventions in acute hospitals to improve patient outcomes: a systematic literature review

ABSTRACT

Introduction: ~~To reduce preventable adverse events, there is keen interest in more sustained progress in improving patient safety. However, little~~Little is known about the role of organisational culture in the success and sustainability of the hospital-wide interventions, and how local culture affects patient outcomes in acute hospitals.

Methods and analysis: A systematic literature review will be conducted to identify organisational factors influencing hospital-wide interventions and patient outcomes. A search of English language articles will be performed in MEDLINE, CINAHL, EMBASE, Web of Science, PsychInfo and Global Health databases using Medical Subject Headings and keywords. ~~JAMA, BMJ, BMJ Quality and Safety, New England Journal of Medicine and Implementation Science will be hand searched for the last five years.~~ Randomised controlled trials, quasi-randomised trials, controlled before and after design studies and interrupted time-series analysis studies will be included. 'G~~The 'g~~rey literature' will be excluded, however~~,~~ peer reviewed journals that are likely to publish relevant studies (JAMA, BMJ, BMJ Quality and Safety, New England Journal of Medicine and Implementation Science) will be hand searched for the last five years. ~~Randomised controlled trials, quasi-randomised trials, controlled before and after design studies and interrupted time-series analysis studies will be included.~~ Two reviewers independently will undertake a title and abstract review using inclusion and exclusion criteria. Studies will be excluded only after discussion between at least two reviewers, who will assess and agree on the inclusion, risk of bias and quality rating of the studies. One author will extract summary descriptive data from these studies; the second author will review this documentation

for accuracy and completeness. It is likely that the studies will be heterogeneous in nature, ~~and so~~therefore a narrative synthesis of the findings will be conducted. We will discuss characteristics of the studies and stratify the results according to the type of hospital-wide interventions, organisational factors associated with them and outcomes measured.

Ethics and dissemination: ~~The findings of this systematic literature review~~Findings will be reported via peer-reviewed publications, conference and seminar presentations. The PRISMA checklist will be applied. No ethics approval ~~is considered indicated~~was required, as this is a literature review only. The protocol has been registered in the international prospective register of systematic reviews, PROSPERO (Registration No: CRD42013003050).

ARTICLE SUMMARY

Article focus

- This review aims to identify the organisational factors that affect the implementation of hospital-wide interventions in acute hospitals, and how these organisational factors and hospital-wide interventions influence patient outcomes.

Key messages

- Silos, or vertical structures within hospitals such as wards, units, and departments, are well developed in acute care hospitals, but the system may fail at the intersection between silos for patients with complications of the original illness, which are outside the expertise of the admitting clinician.
- To bridge these intersections and thereby reduce the potential preventable adverse events for an increasingly aged and ill hospital population with comorbidities, organisation-wide patient safety interventions are becoming a major focus of health care delivery.
- Little is known about the cultural and organisational determinants of hospital-wide interventions and their effects on patient outcomes.

Strengths and limitations of this project

- This study aims to increase our knowledge of organisational culture, which we believe is an important element in the success or failure of the implementation of hospital-wide interventions.
- We will investigate how the adoption of a system-wide intervention can affect patient outcomes.

- We will be including observational studies as well as controlled before and after studies in the systematic review, as it is likely they will provide valuable information.
- We include only English language studies.
- Risk of bias may occur by inclusion of non-randomised studies, but we will mitigate this risk by only accepting papers with high quality evidence and validated data.

INTRODUCTION

Despite the remarkable advances in healthcare delivery and considerable changes in hospital patient populations and expectations associated with modern medicine, the fundamental organisation of hospitals has changed little into the twenty first century. The system is constructed around the admitting doctor and patient relationship.[1] In acute hospitals, wards are able to manage the day-to-day aspects of a patient's condition, but the system can fail when the patient's condition deteriorates and the admitting doctor no longer has the skills or knowledge to neither recognise nor manage the deteriorating patient.[1-3] One of the first organisation wide and patient centred systems, known as the Medical Emergency Team (MET) or Rapid Response System (RRS) has been implemented in many hospitals around the world to address this situation.[4 5] When the criteria that define an at-risk or deteriorating patient are met, a team of clinicians with appropriate skills urgently responds to the patient. However, because of the nature of hospitals, and depending on the existence of necessary infrastructure to provide the continuity of care,[2] the effectiveness of the few-implemented hospital-wide interventions, such as an RRS, varies significantly from one health organisation to another.[6] Ultimately, we are interested in determining why interventions such as MET are successful in some settings but not in others. By examining hospital-wide interventions in acute care systems (including non-MET interventions) via this systematic literature review, we hope to shed some light on the problem.

While there is keen interest in how to optimise and implement the system, little is known about the role of organisational culture[7-10] in the success and sustainability of the hospital-wide interventions, and how the culture could affect patient outcomes in acute hospitals. Patient safety interventions working at an organisational level that include participative principles, such as the involvement of workers in design and implementation, may provide the greatest hope of

improving patient safety.[11-13] We note the identification of limitations in the literature such as those identified by Kaplan et al. 2010,[14] including the lack of a practical conceptual model, the lack of clear definitions of contextual factors and the lack of well-specified measures. This protocol details the processes of a systematic literature review that aims to identify the organisational and cultural factors[10 15] affecting the adoption and success of hospital-wide interventions in acute hospitals, and to assess the effects of those factors on patient outcomes.

METHODS AND ANALYSIS

Search Strategy

We will search MEDLINE, CINAHL, EMBASE, Web of Science, PsychInfo, Global Health, using Medical Subject Headings and keywords, from 1946, 1991, 1947, 1934, 1967, 1910, respectively to September 2012.The general search strategy is shown in Box 1 and the subject heading will be adjusted for each database. We will use multiple terms to identify culture and intervention. ~~We will restrict the~~The search will be restricted to English language articles (the authors do not have resources for translation) and we will hand search the journals, JAMA, BMJ, BMJ Quality and Safety, New England Journal of Medicine and Implementation Science, separately for the last five years (from 2007-2012). The peer reviewed journals were chosen as the most likely to publish studies that meet inclusion criteria. We will also hand search the reference lists of the relevant Cochrane systematic reviews.

Box 1. General search strategy

1. Organisational culture OR organisational climate OR organisational context OR organisational characteristics OR workplace culture OR organisational goal OR organisational value
2. AND [(adopting organisation) OR (adherence to protocol) OR (organisational innovation) OR (diffusion of innovation) OR (intervention) OR (diffusion) OR (organisational change) OR (protocol change) OR (practice change) OR (structure change) OR (adoption) OR (leadership)]
3. AND (patient outcome)
4. AND [healthcare organisation OR hospital OR healthcare facility]

Study Selection and exclusion criteria

Under the review's inclusion and exclusion criteria, research must focus on a hospital-wide intervention, i.e., mere implementation in the operation theatre, a few general units or ICU is not sufficient. Other inclusion criteria include investigating the organisational factors that may affect the implementation. Studies should also provide patient outcome data before and after the hospital-wide intervention. The review will only include interventions in an acute care setting, i.e., rehabilitation centres, primary health cares, ambulatory services, and psychiatric facilities will be excluded. Other inclusion criteria include that the study report on empirical research, in peer reviewed, English language, scholarly journals, and that abstract and full text are available. The 'grey literature' will be excluded as it is unlikely to yield study designs that meet inclusion criteria. ~~Therefore, we will not include 'grey literature'.~~

We will not limit our search to randomised controlled trial studies, since we believe observational studies and controlled before and after studies -- with validated data about patient outcomes -- can provide useful information to identify the organisational and cultural determinants of hospital-wide interventions.

References identified in the search will be reviewed for inclusion by two researchers. Studies will be excluded only after discussion between at least two reviewers, who will assess and agree

on the inclusion and quality rating of the studies. All papers excluded by consensus will be depicted in a document explaining reason for exclusion. This process will be conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines[16 17] and literature selection will be presented in a PRISMA flow chart.[16]

The selection criteria may limit the generalisability of study findings, however the scope of the search is appropriate to identify the majority of articles published in the peer review literature and meeting the study criteria.

Participants

Participating hospitals may include any acute care facility, including metropolitan or rural, and private or public hospitals.

Type of interventions

As noted, we will only include interventions that are hospital-wide and are associated with patient outcomes through validated data collected before and after implementation of the intervention. Also, the organisational elements of the intervention should have been explained in the study to make it qualified for our review.

Comparisons

Comparisons may include acute hospitals with similar nursing-patient ratio, size and region with no intervention.

Types of outcome measures

Patient outcomes may include mortality rate, the rate of adverse events, patient satisfaction, and infection rate.

Assessment of risk of bias

Two reviewers will independently assess risk of bias in eligible studies as outlined in the Cochrane Handbook for Systematic Reviews:[18] selective outcome reporting, and blinding of the research personnel to data collection and analysis. For any non-randomised trials included in the review, the authors will assess any selection bias that may lead to confounding of the outcome. Disagreement regarding assessment of risk of bias will be resolved through discussion between two reviewers. If consensus is not reached, a third reviewer will be consulted.

Data Collection and Analysis

Using a standard form created for the review, one author will ~~abstract~~ extract summary descriptive data from these studies. The same author will compile a tabular presentation the study participants and setting, objective, design and method, type of hospital-wide intervention, organisational/cultural factors, patient/process outcomes, and findings. The second author will independently review this documentation for accuracy and completeness.

Strategy for data synthesis

If suitable data are available, a meta-analysis will be completed; however i~~I~~t is likely that included studies will be heterogeneous in nature. ~~and so we will conduct~~Where trial data cannot be combined, two of the authors will conduct a narrative synthesis of the findings in accordance with the review objectives. We will discuss characteristics of the studies and stratify the results according to the type of hospital-wide interventions, organisational factors associated with them, and outcomes measured. We anticipate that we will not be able to use a quality assessment tool to formally assess the quality of the studies due to their heterogeneous nature.

ETHICS AND DISSEMINATION

Ethics is not required given the protocol is a systematic literature review. The findings of this review will be disseminated through mechanisms including peer-reviewed publications and conference presentations. The PRISMA checklist[16] will be used for writing the final review.

ACKNOWLEDGEMENTS: We acknowledge Dr. Isla Hains from the Centre for Health Systems and Safety Research in the Australian Institute of Health Innovation who provided guidance regarding the search strategy.

COMPETING INTERESTS: The authors have no conflict of interest to declare.

AUTHORS' CONTRIBUTIONS: All authors contributed to the design, drafting and revision of the paper, and approved the final version to be published.

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The role of organisational and cultural factors in the implementation of system-wide interventions in acute hospitals to improve patient outcomes: a systematic literature review

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The role of organisational and cultural factors in the implementation of system-wide interventions in acute hospitals to improve patient outcomes: a systematic literature review

ABSTRACT

Introduction: Little is known about the role of organisational culture in the success and sustainability of the hospital-wide interventions, and how local culture affects patient outcomes in acute hospitals.

Methods and analysis: A systematic literature review will be conducted to identify organisational factors influencing hospital-wide interventions and patient outcomes. A search of English language articles will be performed in MEDLINE, CINAHL, EMBASE, Web of Science, PsychInfo and Global Health databases using Medical Subject Headings and keywords. Randomised controlled trials, quasi-randomised trials, controlled before and after design studies and interrupted time-series analysis studies will be included. 'Grey literature' will be excluded, however peer reviewed journals that are likely to publish relevant studies (JAMA, BMJ, BMJ Quality and Safety, Lancet, New England Journal of Medicine and Implementation Science) will be hand searched for the last five years. Two reviewers independently will undertake a title and abstract review using inclusion and exclusion criteria. Studies will be excluded only after discussion between at least two reviewers, who will assess and agree on the inclusion, risk of bias and quality rating of the studies. One author will extract summary descriptive data from these studies; the second author will review this documentation for accuracy and completeness. It is likely that the studies will be heterogeneous in nature, therefore a narrative synthesis of the findings will be conducted. We will discuss characteristics of the studies and stratify the results according to the type of hospital-wide interventions, organisational factors associated with them and outcomes measured.

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- We will be including observational studies as well as controlled before and after studies in the systematic review, as it is likely they will provide valuable information.
- We include only English language studies.
- Risk of bias will be assessed using standard Cochrane criteria.

INTRODUCTION

Despite the remarkable advances in healthcare delivery and considerable changes in hospital patient populations and expectations associated with modern medicine, the fundamental organisation of hospitals has changed little into the twenty first century. The system is constructed around the admitting doctor and patient relationship.[1] In acute hospitals, wards are able to manage the day-to-day aspects of a patient's condition, but the system can fail when the patient's condition deteriorates and the admitting doctor no longer has the skills or knowledge to neither recognise nor manage the deteriorating patient.[1-3] One of the first organisation wide and patient centred systems, known as the Medical Emergency Team (MET) or Rapid Response System (RRS) has been implemented in many hospitals around the world to address this situation.[4 5] When the criteria that define an at-risk or deteriorating patient are met, a team of clinicians with appropriate skills urgently responds to the patient. However, because of the nature of hospitals, and depending on the existence of necessary infrastructure to provide the continuity of care,[2] the effectiveness of the few-implemented hospital-wide interventions, such as an RRS, varies significantly from one health organisation to another.[6] Ultimately, we are interested in determining why interventions such as MET are successful in some settings but not in others. By examining hospital-wide interventions in acute care systems (including non-MET interventions) via this systematic literature review, we hope to shed some light on the problem.

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1. Organisational culture OR organisational climate OR organisational context OR organisational characteristics OR workplace culture OR organisational goal OR organisational value
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Participating hospitals may include any acute care facility, including metropolitan or rural, and private or public hospitals.

Type of interventions

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Strategy for data synthesis

If suitable data are available, a meta-analysis will be completed; however it is likely that included studies will be heterogeneous in nature. Where trial data cannot be combined, two of the authors will conduct a narrative synthesis of the findings in accordance with the review objectives. We will discuss characteristics of the studies and stratify the results according to the type of hospital-wide interventions, organisational factors associated with them, and outcomes measured. We anticipate that we will not be able to use a quality assessment tool to formally assess the quality of the studies due to their heterogeneous nature.

Limitations

The review findings will be limited by the number and quality of studies identified by the search strategy. In particular, limiting the hand search to restricted access general medicine publications that are likely to publish studies with validated patient outcomes places reliance on the search engines to deliver relevant papers from open access online publications such as BMJ Open and PLOS Medicine.

ETHICS AND DISSEMINATION

Ethics is not required given the protocol is a systematic literature review. The findings of this review will be disseminated through mechanisms including peer-reviewed publications and conference presentations. The PRISMA checklist[16] will be used for writing the final review.

ACKNOWLEDGEMENTS: We acknowledge Dr. Isla Hains from the Centre for Health Systems and Safety Research in the Australian Institute of Health Innovation who provided guidance regarding the search strategy.

COMPETING INTERESTS: The authors have no conflict of interest to declare.

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Data sharing: Data available on request from the corresponding author.

The role of organisational and cultural factors in the implementation of system-wide interventions in acute hospitals to improve patient outcomes: a systematic literature review

ABSTRACT

Introduction: Little is known about the role of organisational culture in the success and sustainability of the hospital-wide interventions, and how local culture affects patient outcomes in acute hospitals.

Methods and analysis: A systematic literature review will be conducted to identify organisational factors influencing hospital-wide interventions and patient outcomes. A search of English language articles will be performed in MEDLINE, CINAHL, EMBASE, Web of Science, PsychInfo and Global Health databases using Medical Subject Headings and keywords. Randomised controlled trials, quasi-randomised trials, controlled before and after design studies and interrupted time-series analysis studies will be included. 'Grey literature' will be excluded, however peer reviewed journals that are likely to publish relevant studies (JAMA, BMJ, BMJ Quality and Safety, Lancet, New England Journal of Medicine and Implementation Science) will be hand searched for the last five years. Two reviewers independently will undertake a title and abstract review using inclusion and exclusion criteria. Studies will be excluded only after discussion between at least two reviewers, who will assess and agree on the inclusion, risk of bias and quality rating of the studies. One author will extract summary descriptive data from these studies; the second author will review this documentation for accuracy and completeness. It is likely that the studies will be heterogeneous in nature, therefore a narrative synthesis of the findings will be conducted. We will discuss characteristics of the studies and stratify the results according to the type of hospital-wide interventions, organisational factors associated with them and outcomes measured.

Ethics and dissemination: Findings will be reported via peer-reviewed publications, conference and seminar presentations. The PRISMA checklist will be applied. No ethics approval was required, as this is a literature review only. The protocol has been registered in the international prospective register of systematic reviews, PROSPERO (Registration No: CRD42013003050).

ARTICLE SUMMARY

Article focus

- This review aims to identify the organisational factors that affect the implementation of hospital-wide interventions in acute hospitals, and how these organisational factors and hospital-wide interventions influence patient outcomes.

Key messages

- Silos, or vertical structures within hospitals such as wards, units, and departments, are well developed in acute care hospitals, but the system may fail at the intersection between silos for patients with complications of the original illness, which are outside the expertise of the admitting clinician.
- To bridge these intersections and thereby reduce the potential preventable adverse events for an increasingly aged and ill hospital population with comorbidities, organisation-wide patient safety interventions are becoming a major focus of health care delivery.
- Little is known about the cultural and organisational determinants of hospital-wide interventions and their effects on patient outcomes.

Strengths and limitations of this project

- This study aims to increase our knowledge of organisational culture, which we believe is an important element in the success or failure of the implementation of hospital-wide interventions.
- We will investigate how the adoption of a system-wide intervention can affect patient outcomes.

- We will be including observational studies as well as controlled before and after studies in the systematic review, as it is likely they will provide valuable information.
- We include only English language studies.
- Risk of bias ~~may occur by inclusion of non-randomised studies, but we will mitigate this risk by only accepting papers with high quality evidence and validated data~~will be assessed using standard Cochrane criteria.

INTRODUCTION

Despite the remarkable advances in healthcare delivery and considerable changes in hospital patient populations and expectations associated with modern medicine, the fundamental organisation of hospitals has changed little into the twenty first century. The system is constructed around the admitting doctor and patient relationship.[1] In acute hospitals, wards are able to manage the day-to-day aspects of a patient's condition, but the system can fail when the patient's condition deteriorates and the admitting doctor no longer has the skills or knowledge to neither recognise nor manage the deteriorating patient.[1-3] One of the first organisation wide and patient centred systems, known as the Medical Emergency Team (MET) or Rapid Response System (RRS) has been implemented in many hospitals around the world to address this situation.[4 5] When the criteria that define an at-risk or deteriorating patient are met, a team of clinicians with appropriate skills urgently responds to the patient. However, because of the nature of hospitals, and depending on the existence of necessary infrastructure to provide the continuity of care,[2] the effectiveness of the few-implemented hospital-wide interventions, such as an RRS, varies significantly from one health organisation to another.[6] Ultimately, we are interested in determining why interventions such as MET are successful in some settings but not in others. By examining hospital-wide interventions in acute care systems (including non-MET interventions) via this systematic literature review, we hope to shed some light on the problem.

While there is keen interest in how to optimise and implement the system, little is known about the role of organisational culture[7-10] in the success and sustainability of the hospital-wide interventions, and how the culture could affect patient outcomes in acute hospitals. Patient safety interventions working at an organisational level that include participative principles, such as the involvement of workers in design and implementation, may provide the greatest hope of

improving patient safety.[11-13] We note the identification of limitations in the literature such as those identified by Kaplan et al. 2010,[14] including the lack of a practical conceptual model, the lack of clear definitions of contextual factors and the lack of well-specified measures. This protocol details the processes of a systematic literature review that aims to identify the organisational and cultural factors[10 15] affecting the adoption and success of hospital-wide interventions in acute hospitals, and to assess the effects of those factors on patient outcomes.

METHODS AND ANALYSIS

Search Strategy

We will search MEDLINE, CINAHL, EMBASE, Web of Science, PsychInfo, Global Health, using Medical Subject Headings and keywords, from 1946, 1991, 1947, 1934, 1967, 1910, respectively to September 2012.The general search strategy is shown in Box 1 and the subject heading will be adjusted for each database. We will use multiple terms to identify culture and intervention. The search will be restricted to English language articles (the authors do not have resources for translation) and we will hand search the journals, JAMA, BMJ, BMJ Quality and Safety, Lancet, New England Journal of Medicine and Implementation Science, separately for the last five years (from 2007-2012). The peer reviewed journals were chosen as the most likely to publish studies that meet inclusion criteria, in particular validated patient outcomes. Although PLOS Medicine and BMJ Open are also likely to publish studies that meet our criteria, both are open access online journals with all articles linked to PubMed at time of publication, therefore we expect that the online search engines will capture relevant papers from these journals. We will also hand search the reference lists of the relevant Cochrane systematic reviews.

Box 1. General search strategy

1. Organisational culture OR organisational climate OR organisational context OR organisational characteristics OR workplace culture OR organisational goal OR organisational value
2. AND [(adopting organisation) OR (adherence to protocol) OR (organisational innovation) OR (diffusion of innovation) OR (intervention) OR (diffusion) OR (organisational change) OR (protocol change) OR (practice change) OR (structure change) OR (adoption) OR (leadership)]
3. AND (patient outcome)
4. AND [healthcare organisation OR hospital OR healthcare facility]

Study Selection and exclusion criteria

Under the review's inclusion and exclusion criteria, research must focus on a hospital-wide intervention, i.e., mere implementation in the operation theatre, a few general units or ICU is not sufficient. Other inclusion criteria include investigating the organisational factors that may affect the implementation. Studies should also provide patient outcome data before and after the hospital-wide intervention. The review will only include interventions in an acute care setting, i.e., rehabilitation centres, primary health cares, ambulatory services, and psychiatric facilities will be excluded. Other inclusion criteria include that the study report on empirical research, in peer reviewed, English language, scholarly journals, and that abstract and full text are available. The 'grey literature' will be excluded as it is unlikely to yield study designs that meet inclusion criteria.

We will not limit our search to randomised controlled trial studies, since we believe observational studies and controlled before and after studies -- with validated data about patient outcomes -- can provide useful information to identify the organisational and cultural determinants of hospital-wide interventions.

References identified in the search will be reviewed for inclusion by two researchers. Studies will be excluded only after discussion between at least two reviewers, who will assess and agree

on the inclusion and quality rating of the studies. All papers excluded by consensus will be depicted in a document explaining reason for exclusion. This process will be conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines[16 17] and literature selection will be presented in a PRISMA flow chart.[16] The selection criteria may limit the generalisability of study findings, however the scope of the search is appropriate to identify the majority of articles published in the peer review literature and meeting the study criteria.

Participants

Participating hospitals may include any acute care facility, including metropolitan or rural, and private or public hospitals.

Type of interventions

As noted, we will only include interventions that are hospital-wide and are associated with patient outcomes through validated data collected before and after implementation of the intervention. Also, the organisational elements of the intervention should have been explained in the study to make it qualified for our review.

Comparisons

Comparisons may include acute hospitals with similar nursing-patient ratio, size and region with no intervention.

Types of outcome measures

Patient outcomes may include mortality rate, the rate of adverse events, patient satisfaction, and infection rate.

Assessment of risk of bias

Two reviewers will independently assess risk of bias in eligible studies as outlined in the Cochrane Handbook for Systematic Reviews:[18] selective outcome reporting, and blinding of the research personnel to data collection and analysis. For any non-randomised trials included in the review, the authors will assess any selection bias that may lead to confounding of the outcome. Disagreement regarding assessment of risk of bias will be resolved through discussion between two reviewers. If consensus is not reached, a third reviewer will be consulted.

Data Collection and Analysis

Using a standard form created for the review, one author will extract summary descriptive data from these studies. The same author will compile a tabular presentation the study participants and setting, objective, design and method, type of hospital-wide intervention, organisational/cultural factors, patient/process outcomes, and findings. The second author will independently review this documentation for accuracy and completeness.

Strategy for data synthesis

If suitable data are available, a meta-analysis will be completed; however it is likely that included studies will be heterogeneous in nature. Where trial data cannot be combined, two of the authors will conduct a narrative synthesis of the findings in accordance with the review objectives. We will discuss characteristics of the studies and stratify the results according to the type of hospital-wide interventions, organisational factors associated with them, and outcomes measured. We anticipate that we will not be able to use a quality assessment tool to formally assess the quality of the studies due to their heterogeneous nature.

Limitations

The review findings will be limited by the number and quality of studies identified by the search strategy. In particular, limiting the hand search to restricted access general medicine publications that are likely to publish studies with validated patient outcomes places reliance on the search engines to deliver relevant papers from open access online publications such as BMJ Open and PLOS Medicine.

ETHICS AND DISSEMINATION

Ethics is not required given the protocol is a systematic literature review. The findings of this review will be disseminated through mechanisms including peer-reviewed publications and conference presentations. The PRISMA checklist[16] will be used for writing the final review.

ACKNOWLEDGEMENTS: We acknowledge Dr. Isla Hains from the Centre for Health Systems and Safety Research in the Australian Institute of Health Innovation who provided guidance regarding the search strategy.

COMPETING INTERESTS: The authors have no conflict of interest to declare.

AUTHORS' CONTRIBUTIONS: All authors contributed to the design, drafting and revision of the paper, and approved the final version to be published.

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The role of organisational and cultural factors in the implementation of system-wide interventions in acute hospitals to improve patient outcomes: a systematic literature review

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Introduction: Little is known about the role of organisational culture in the success and sustainability of the hospital-wide interventions, and how local culture affects patient outcomes in acute hospitals.

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- Silos, or vertical structures within hospitals such as wards, units, and departments, are well developed in acute care hospitals, but the system may fail at the intersection between silos for patients with complications of the original illness, which are outside the expertise of the admitting clinician.
- To bridge these intersections and thereby reduce the potential preventable adverse events for an increasingly aged and ill hospital population with comorbidities, organisation-wide patient safety interventions are becoming a major focus of health care delivery.
- Little is known about the cultural and organisational determinants of hospital-wide interventions and their effects on patient outcomes.

Strengths and limitations of this project

- This study aims to increase our knowledge of organisational culture, which we believe is an important element in the success or failure of the implementation of hospital-wide interventions.
- We will investigate how the adoption of a system-wide intervention can affect patient outcomes.

- We will be including observational studies as well as controlled before and after studies in the systematic review, as it is likely they will provide valuable information.
- We include only English language studies.
- Risk of bias will be assessed using standard Cochrane criteria.

INTRODUCTION

Despite the remarkable advances in healthcare delivery and considerable changes in hospital patient populations and expectations associated with modern medicine, the fundamental organisation of hospitals has changed little into the twenty first century. The system is constructed around the admitting doctor and patient relationship.[1] In acute hospitals, wards are able to manage the day-to-day aspects of a patient's condition, but the system can fail when the patient's condition deteriorates and the admitting doctor no longer has the skills or knowledge to neither recognise nor manage the deteriorating patient.[1-3] One of the first organisation wide and patient centred systems, known as the Medical Emergency Team (MET) or Rapid Response System (RRS) has been implemented in many hospitals around the world to address this situation.[2] When the criteria that define an at-risk or deteriorating patient are met, a team of clinicians with appropriate skills urgently responds to the patient. However, because of the nature of hospitals, and depending on the existence of necessary infrastructure to provide the continuity of care,[4 5] the effectiveness of the few-implemented hospital-wide interventions, such as an RRS, varies significantly from one health organisation to another.[6] Ultimately, we are interested in determining why interventions such as MET are successful in some settings but not in others. By examining hospital-wide interventions in acute care systems (including non-MET interventions) via this systematic literature review, we hope to shed some light on the problem.

While there is keen interest in how to optimise and implement the system, little is known about the role of organisational culture[7-10] in the success and sustainability of the hospital-wide interventions, and how the culture could affect patient outcomes in acute hospitals. Patient safety interventions working at an organisational level that include participative principles, such as the involvement of workers in design and implementation, may provide the greatest hope of

improving patient safety.[11-13] We note the identification of limitations in the literature such as those identified by Kaplan et al. 2010,[14] including the lack of a practical conceptual model, the lack of clear definitions of contextual factors and the lack of well-specified measures. This protocol details the processes of a systematic literature review that aims to identify the organisational and cultural factors[9 15] affecting the adoption and success of hospital-wide interventions in acute hospitals, and to assess the effects of those factors on patient outcomes.

METHODS AND ANALYSIS

Search Strategy

We will search MEDLINE, CINAHL, EMBASE, Web of Science, PsychInfo, Global Health, using Medical Subject Headings and keywords, from 1946, 1991, 1947, 1934, 1967, 1910, respectively to September 2012.The general search strategy is shown in Box 1 and the subject heading will be adjusted for each database. We will use multiple terms to identify culture and intervention. The search will be restricted to English language articles (access to translation services is not available for the review), however we note that a recent systematic review of empirical studies on the effect of English-language restriction on systematic reviews found "no evidence overall of a systematic bias from the use of language restrictions in systematic review-based meta-analyses in conventional medicine."[16] In addition to searching the specified databases, to check that the database searches have not missed any studies that may be relevant to our review we will hand search the journals, JAMA, BMJ, BMJ Quality and Safety, Lancet, New England Journal of Medicine and Implementation Science, separately for the last five years (from 2007-2012). The topic of hospital-wide interventions is broad and complex, and it is possible that relevant articles may be classified differently to the review search terms. The hand search will serve to check that our search criteria are broad enough, and that an extension of the

search criteria is not required. These peer-reviewed journals were chosen as the most likely to publish studies that meet the inclusion criteria, in particular, validated patient outcomes. We will also hand search the reference lists of the relevant Cochrane systematic reviews. Two researchers will conduct the hand search; if disagreement about inclusion of a study occurs a third researcher will arbitrate.

Box 1. General search strategy

1. Organisational culture OR organisational climate OR organisational context OR organisational characteristics OR workplace culture OR organisational goal OR organisational value
2. AND [(adopting organisation) OR (adherence to protocol) OR (organisational innovation) OR (diffusion of innovation) OR (intervention) OR (diffusion) OR (organisational change) OR (protocol change) OR (practice change) OR (structure change) OR (adoption) OR (leadership)]
3. AND (patient outcome)
4. AND [healthcare organisation OR hospital OR healthcare facility]

Study Selection and exclusion criteria

Under the review's inclusion and exclusion criteria, research must focus on a hospital-wide intervention, i.e., mere implementation in the operation theatre, a few general units or ICU is not sufficient. Other inclusion criteria include investigating the organisational factors that may affect the implementation. Studies should also provide patient outcome data before and after the hospital-wide intervention. The review will only include interventions in an acute care setting, i.e., rehabilitation centres, primary health cares, ambulatory services, and psychiatric facilities will be excluded. Other inclusion criteria include that the study report on empirical research, in peer reviewed, English language, scholarly journals, and that abstract and full text are available. The 'grey literature' will be excluded as it is unlikely to yield study designs that meet inclusion criteria.

We will not limit our search to randomised controlled trial studies, since we believe observational studies and controlled before and after studies -- with validated data about patient outcomes -- can provide useful information to identify the organisational and cultural determinants of hospital-wide interventions.

References identified in the search will be reviewed for inclusion by two researchers. Studies will be excluded only after discussion between at least two reviewers, who will assess and agree on the inclusion and quality rating of the studies. The methodological quality of the reported research will be assessed in accordance with Cochrane Collaboration guidelines.[17] The quality of the reporting of the identified studies will be assessed using appropriate critical appraisal tools, such as CONsolidated Standards of Reporting Trials (CONSORT),[18] Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)[19] or Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).[20] All papers excluded by consensus will be depicted in a document explaining reason for exclusion. Our review will be conducted according to PRISMA guidelines[20 21] and literature selection will be presented in a PRISMA flow chart.[20] The selection criteria may limit the generalisability of study findings, however the scope of the search is appropriate to identify the majority of articles published in the peer review literature and meeting the study criteria.

Participants

Participating hospitals may include any acute care facility, including metropolitan or rural, and private or public hospitals.

Type of interventions

As noted, we will only include interventions that are hospital-wide and are associated with patient outcomes through validated data collected before and after implementation of the intervention. Also, the organisational elements of the intervention should have been explained in the study to make it qualified for our review.

Comparisons

Comparisons may include acute hospitals with similar nursing-patient ratio, size and region with no intervention.

Types of outcome measures

Patient outcomes may include mortality rate, the rate of adverse events, patient satisfaction, and infection rate.

Assessment of risk of bias

Two reviewers will independently assess risk of bias in eligible studies as outlined in the Cochrane Handbook for Systematic Reviews:[17] selective outcome reporting, and blinding of the research personnel to data collection and analysis. For any non-randomised trials included in the review, the authors will assess any selection bias that may lead to confounding of the outcome. Disagreement regarding assessment of risk of bias will be resolved through discussion between two reviewers. If consensus is not reached, a third reviewer will be consulted.

Data Collection and Analysis

Using a standard form created for the review, one author will extract summary descriptive data from these studies. The same author will compile a tabular presentation the study participants and setting, objective, design and method, type of hospital-wide intervention,

organisational/cultural factors, patient/process outcomes, and findings. The second author will independently review this documentation for accuracy and completeness.

Strategy for data synthesis

If suitable data are available, a meta-analysis will be completed; however it is likely that included studies will be heterogeneous in nature. Where trial data cannot be combined, two of the authors will conduct a narrative synthesis of the findings in accordance with the review objectives. We will discuss characteristics of the studies and stratify the results according to the type of hospital-wide interventions, organisational factors associated with them, and outcomes measured.

Limitations

The review findings will be limited by the number and quality of studies identified by the search strategy. A potential limitation is in selection of the search terms. The concept of a 'hospital-wide intervention' is subject to classification, and it is possible that studies could be published that would meet our inclusion criteria, but are not identified by the search engines due to use of alternate terms or categorisation. We have attempted to ameliorate this with a hand search over the last five years of six prominent general medical journals that we believe are likely to publish studies relevant to our review. The hand searching provides an additional check on the reliability of the search strategy of the electronic databases and will serve to check that an extension of the search criteria is not required. By restricting the search to English language articles we are also potentially eliminating relevant studies from inclusion in our review.

ETHICS AND DISSEMINATION

Ethics is not required given the protocol is a systematic literature review. The findings of this

review will be disseminated through mechanisms including peer-reviewed publications and conference presentations. The PRISMA checklist[20] will be used for writing the final review.

ACKNOWLEDGEMENTS: We acknowledge Dr. Isla Hains from the Centre for Health Systems and Safety Research in the Australian Institute of Health Innovation who provided guidance regarding the search strategy.

COMPETING INTERESTS: The authors have no conflict of interest to declare.

AUTHORS' CONTRIBUTIONS: All authors contributed to the design, drafting and revision of the paper, and approved the final version to be published.

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The role of organisational and cultural factors in the implementation of system-wide interventions in acute hospitals to improve patient outcomes: a systematic literature review

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The role of organisational and cultural factors in the implementation of system-wide interventions in acute hospitals to improve patient outcomes: a systematic literature review

ABSTRACT

Introduction: Little is known about the role of organisational culture in the success and sustainability of the hospital-wide interventions, and how local culture affects patient outcomes in acute hospitals.

Methods and analysis: A systematic literature review will be conducted to identify organisational factors influencing hospital-wide interventions and patient outcomes. A search of English language articles will be performed in MEDLINE, CINAHL, EMBASE, Web of Science, PsychInfo and Global Health databases using Medical Subject Headings and keywords. Randomised controlled trials, quasi-randomised trials, controlled before and after design studies and interrupted time-series analysis studies will be included. 'Grey literature' will be excluded, however peer reviewed journals that are likely to publish relevant studies (JAMA, BMJ, BMJ Quality and Safety, Lancet, New England Journal of Medicine and Implementation Science) will be hand searched for the last five years. Two reviewers independently will undertake a title and abstract review using inclusion and exclusion criteria. Studies will be excluded only after discussion between at least two reviewers, who will assess and agree on the inclusion, risk of bias and quality rating of the studies. One author will extract summary descriptive data from these studies; the second author will review this documentation for accuracy and completeness. It is likely that the studies will be heterogeneous in nature, therefore a narrative synthesis of the findings will be conducted. We will discuss characteristics of the studies and stratify the results according to the type of hospital-wide interventions, organisational factors associated with them and outcomes measured.

Ethics and dissemination: Findings will be reported via peer-reviewed publications, conference and seminar presentations. The PRISMA checklist will be applied. No ethics approval was required, as this is a literature review only. The protocol has been registered in the international prospective register of systematic reviews, PROSPERO (Registration No: CRD42013003050).

ARTICLE SUMMARY

Article focus

- This review aims to identify the organisational factors that affect the implementation of hospital-wide interventions in acute hospitals, and how these organisational factors and hospital-wide interventions influence patient outcomes.

Key messages

- Silos, or vertical structures within hospitals such as wards, units, and departments, are well developed in acute care hospitals, but the system may fail at the intersection between silos for patients with complications of the original illness, which are outside the expertise of the admitting clinician.
- To bridge these intersections and thereby reduce the potential preventable adverse events for an increasingly aged and ill hospital population with comorbidities, organisation-wide patient safety interventions are becoming a major focus of health care delivery.
- Little is known about the cultural and organisational determinants of hospital-wide interventions and their effects on patient outcomes.

Strengths and limitations of this project

- This study aims to increase our knowledge of organisational culture, which we believe is an important element in the success or failure of the implementation of hospital-wide interventions.
- We will investigate how the adoption of a system-wide intervention can affect patient outcomes.

- We will be including observational studies as well as controlled before and after studies in the systematic review, as it is likely they will provide valuable information.
- We include only English language studies.
- Risk of bias will be assessed using standard Cochrane criteria.

INTRODUCTION

Despite the remarkable advances in healthcare delivery and considerable changes in hospital patient populations and expectations associated with modern medicine, the fundamental organisation of hospitals has changed little into the twenty first century. The system is constructed around the admitting doctor and patient relationship.[1] In acute hospitals, wards are able to manage the day-to-day aspects of a patient's condition, but the system can fail when the patient's condition deteriorates and the admitting doctor no longer has the skills or knowledge to neither recognise nor manage the deteriorating patient.[1-3] One of the first organisation wide and patient centred systems, known as the Medical Emergency Team (MET) or Rapid Response System (RRS) has been implemented in many hospitals around the world to address this situation.[2] When the criteria that define an at-risk or deteriorating patient are met, a team of clinicians with appropriate skills urgently responds to the patient. However, because of the nature of hospitals, and depending on the existence of necessary infrastructure to provide the continuity of care,[4 5] the effectiveness of the few-implemented hospital-wide interventions, such as an RRS, varies significantly from one health organisation to another.[6] Ultimately, we are interested in determining why interventions such as MET are successful in some settings but not in others. By examining hospital-wide interventions in acute care systems (including non-MET interventions) via this systematic literature review, we hope to shed some light on the problem.

While there is keen interest in how to optimise and implement the system, little is known about the role of organisational culture[7-10] in the success and sustainability of the hospital-wide interventions, and how the culture could affect patient outcomes in acute hospitals. Patient safety interventions working at an organisational level that include participative principles, such as the involvement of workers in design and implementation, may provide the greatest hope of

improving patient safety.[11-13] We note the identification of limitations in the literature such as those identified by Kaplan et al. 2010,[14] including the lack of a practical conceptual model, the lack of clear definitions of contextual factors and the lack of well-specified measures. This protocol details the processes of a systematic literature review that aims to identify the organisational and cultural factors[9 15] affecting the adoption and success of hospital-wide interventions in acute hospitals, and to assess the effects of those factors on patient outcomes.

METHODS AND ANALYSIS

Search Strategy

We will search MEDLINE, CINAHL, EMBASE, Web of Science, PsychInfo, Global Health, using Medical Subject Headings and keywords, from 1946, 1991, 1947, 1934, 1967, 1910, respectively to September 2012.The general search strategy is shown in Box 1 and the subject heading will be adjusted for each database. We will use multiple terms to identify culture and intervention. The search will be restricted to English language articles (access to translation services is not available for the review), however we note that a recent systematic review of empirical studies on the effect of English-language restriction on systematic reviews found "no evidence overall of a systematic bias from the use of language restrictions in systematic review-based meta-analyses in conventional medicine."[16] In addition to searching the specified databases, to check that the database searches have not missed any studies that may be relevant to our review we will hand search the journals, JAMA, BMJ, BMJ Quality and Safety, Lancet, New England Journal of Medicine and Implementation Science, separately for the last five years (from 2007-2012). The topic of hospital-wide interventions is broad and complex, and it is possible that relevant articles may be classified differently to the review search terms. The hand search will serve to check that our search criteria are broad enough, and that an extension of the

search criteria is not required. These peer-reviewed journals were chosen as the most likely to publish studies that meet the inclusion criteria, in particular, validated patient outcomes. ~~The search will be restricted to English language articles (the authors do not have resources for translation) and we will hand search the journals, JAMA, BMJ, BMJ Quality and Safety, Lancet, New England Journal of Medicine and Implementation Science, separately for the last five years (from 2007-2012). The peer reviewed journals were chosen as the most likely to publish studies that meet inclusion criteria, in particular validated patient outcomes. Although PLOS Medicine and BMJ Open are also likely to publish studies that meet our criteria, both are open access online journals with all articles linked to PubMed at time of publication, therefore we expect that the online search engines will capture relevant papers from these journals.~~ We will also hand search the reference lists of the relevant Cochrane systematic reviews. Two researchers will conduct the hand search; if disagreement about inclusion of a study occurs a third researcher will arbitrate.

Box 1. General search strategy

1. Organisational culture OR organisational climate OR organisational context OR organisational characteristics OR workplace culture OR organisational goal OR organisational value
2. AND [(adopting organisation) OR (adherence to protocol) OR (organisational innovation) OR (diffusion of innovation) OR (intervention) OR (diffusion) OR (organisational change) OR (protocol change) OR (practice change) OR (structure change) OR (adoption) OR (leadership)]
3. AND (patient outcome)
4. AND [healthcare organisation OR hospital OR healthcare facility]

Study Selection and exclusion criteria

Under the review's inclusion and exclusion criteria, research must focus on a hospital-wide intervention, i.e., mere implementation in the operation theatre, a few general units or ICU is not

sufficient. Other inclusion criteria include investigating the organisational factors that may affect the implementation. Studies should also provide patient outcome data before and after the hospital-wide intervention. The review will only include interventions in an acute care setting, i.e., rehabilitation centres, primary health cares, ambulatory services, and psychiatric facilities will be excluded. Other inclusion criteria include that the study report on empirical research, in peer reviewed, English language, scholarly journals, and that abstract and full text are available. The 'grey literature' will be excluded as it is unlikely to yield study designs that meet inclusion criteria.

We will not limit our search to randomised controlled trial studies, since we believe observational studies and controlled before and after studies -- with validated data about patient outcomes -- can provide useful information to identify the organisational and cultural determinants of hospital-wide interventions.

References identified in the search will be reviewed for inclusion by two researchers. Studies will be excluded only after discussion between at least two reviewers, who will assess and agree on the inclusion and quality rating of the studies. The methodological quality of the reported research will be assessed in accordance with Cochrane Collaboration guidelines.[17] The quality of the reporting of the identified studies will be assessed using appropriate critical appraisal tools, such as CONsolidated Standards of Reporting Trials (CONSORT),[18] Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)[19] or Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).[20] All papers excluded by consensus will be depicted in a document explaining reason for exclusion. Our review~~his process~~ will be conducted according to PRISMA guidelines[20 21] and literature selection will be presented in a PRISMA flow chart.[20] The selection criteria may limit the generalisability of study findings, however the

scope of the search is appropriate to identify the majority of articles published in the peer review literature and meeting the study criteria.

Participants

Participating hospitals may include any acute care facility, including metropolitan or rural, and private or public hospitals.

Type of interventions

As noted, we will only include interventions that are hospital-wide and are associated with patient outcomes through validated data collected before and after implementation of the intervention. Also, the organisational elements of the intervention should have been explained in the study to make it qualified for our review.

Comparisons

Comparisons may include acute hospitals with similar nursing-patient ratio, size and region with no intervention.

Types of outcome measures

Patient outcomes may include mortality rate, the rate of adverse events, patient satisfaction, and infection rate.

Assessment of risk of bias

Two reviewers will independently assess risk of bias in eligible studies as outlined in the Cochrane Handbook for Systematic Reviews:[17] selective outcome reporting, and blinding of the research personnel to data collection and analysis. For any non-randomised trials included in the review, the authors will assess any selection bias that may lead to confounding of the outcome. Disagreement regarding assessment of risk of bias will be resolved through discussion between two reviewers. If consensus is not reached, a third reviewer will be consulted.

Data Collection and Analysis

Using a standard form created for the review, one author will extract summary descriptive data from these studies. The same author will compile a tabular presentation the study participants and setting, objective, design and method, type of hospital-wide intervention, organisational/cultural factors, patient/process outcomes, and findings. The second author will independently review this documentation for accuracy and completeness.

Strategy for data synthesis

If suitable data are available, a meta-analysis will be completed; however it is likely that included studies will be heterogeneous in nature. Where trial data cannot be combined, two of the authors will conduct a narrative synthesis of the findings in accordance with the review objectives. We will discuss characteristics of the studies and stratify the results according to the type of hospital-wide interventions, organisational factors associated with them, and outcomes measured. ~~We anticipate that we will not be able to use a quality assessment tool to formally assess the quality of the studies due to their heterogeneous nature.~~[2021~~17~~]

Limitations

The review findings will be limited by the number and quality of studies identified by the search strategy. A potential limitation is in selection of the search terms. The concept of a 'hospital-wide intervention' is subject to classification, and it is possible that studies could be published that would meet our inclusion criteria, but are not identified by the search engines due to use of alternate terms or categorisation. We have attempted to ameliorate this with a hand search over the last five years of six prominent general medical journals that we believe are likely to publish studies relevant to our review. The hand searching provides an additional check on the reliability of the search strategy of the electronic databases and will serve to check that an extension of the search criteria is not required. By restricting the search to English language articles we are also potentially eliminating relevant studies from inclusion in our review.~~In particular, limiting the hand search to restricted access general medicine publications that are likely to publish studies with validated patient outcomes places reliance on the search engines to deliver relevant papers from open access online publications such as BMJ Open and PLOS Medicine.~~

ETHICS AND DISSEMINATION

Ethics is not required given the protocol is a systematic literature review. The findings of this review will be disseminated through mechanisms including peer-reviewed publications and conference presentations. The PRISMA checklist[20] will be used for writing the final review.

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