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BMJ Open Comprehensive geriatric assessment in perioperative care: a protocol for a systematic review and qualitative synthesis

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ABSTRACT

Introduction Comprehensive geriatric assessment (CGA) is an intervention that has been deployed in the perioperative setting with the aim to improve outcomes for older patients admitted to hospital. Older patients undergoing surgery are more likely to have postoperative complications, a longer hospital stay and be discharged to a care facility. Despite the increasing application of this intervention within surgical services, the evidence for CGA remains limited in this group. The aim of this systematic review is to describe CGA as an intervention applied to surgical populations in randomised controlled trials (RCTs) as well as the outcomes assessed.

Methods and analysis A systematic search of RCTs of CGA in surgery will be run in Embase, Medline, CINAHL (Cumulative Index to Nursing and Allied Health Literature) and Cochrane library. Further articles will be identified from reference lists in relevant studies found in the search. A narrative synthesis will be undertaken outlining specialties included, detailed descriptions of the intervention and outcomes.

Ethics and dissemination No ethical approval is required. The results of this review will be published and used as the basis of work to optimise this intervention for future trials in surgical populations.

PROSPERO registration number This review is registered with PROSPERO CRD42020221797.

INTRODUCTION

Rationale

The average age of surgical patients is increasing bringing novel challenges to healthcare professionals within the perioperative pathway.^{1,2} Compared with younger patients, older people have a higher postoperative mortality and are more likely to experience significant postoperative complications, longer length of hospital stay and greater likelihood of discharge to a care facility.³ For example, according to the latest report from the National Emergency Laparotomy Audit, the 30-day mortality in patients over 65 years old and living with frailty was considerably

Strengths and limitations of this study

- This will be the first methodological, systematic review to conduct a qualitative analysis and summarise the reporting of comprehensive geriatric assessment (CGA) as an intervention in perioperative care.
- Only randomised controlled trials evaluating CGA in the perioperative period as an intervention will be included.
- This review will not report a meta-analysis of quantitative results.
- This review will describe how trials report CGA standard of care, a novel aspect.

above average at 18% compared with the overall 9.3% for this surgery.¹

Comprehensive geriatric assessment (CGA) has been employed to improve outcomes for older patients admitted to hospital. Originally described in the 1930s, descriptions and practice of CGA have varied widely in the literature.⁴ CGA is frequently defined as a ‘multidimensional diagnostic and therapeutic process that is focused on determining a frail older person’s medical, functional, mental, and social capabilities and limitations with the goal of ensuring that problems are identified, quantified, and managed appropriately’.⁵ It has been widely adopted in the care of the hospitalised older person, with an associated reduction in 1-year mortality and institutionalisation posthospital discharge.⁵ Evidence of benefit within surgical populations is more limited and have focused mainly on patients who need surgery for hip fracture.⁶ The most recent Cochrane review on perioperative CGA lacked generalisability to all surgical disciplines due to the limited populations the randomised trials included: seven trials in hip fracture, and one in elective surgical oncology.⁶ Since the search was conducted in

January 2017 further trials have been completed in other surgical specialties. While the Cochrane review focused on the health outcomes of CGA in a perioperative setting, this protocol describes a systematic review that will develop the existing knowledge by focussing on qualitative analysis of the literature, paying particular attention to the timing, components and team members involved in the intervention.

There is currently significant variation in how CGA is defined and reported in clinical research with no robustly developed consensus definitions.⁷⁻⁹ Definitions of perioperative CGA vary from which multidisciplinary team members should be included, which domains should be assessed and optimised, when is the right point of delivery (preoperatively or postoperatively) and even which patients should be selected.⁸ This provides a lack of standardisation in delivery of CGA and which aspects could be strengthened, or removed, to increase the efficacy of this complex intervention to achieve positive outcomes.¹⁰ One recent review has attempted to outline the core components of CGA in medical patients.⁸ However, no study has fully laid out the features of trial design or analysed the variation of delivery of this intervention for surgical patients.¹

This protocol is designed to systematically review and summarise the reporting of CGA as an intervention in perioperative randomised controlled trials (RCTs). It will be reported according to Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols statement (online supplemental information 1).¹¹

Aim

The aim of this systematic review is to describe CGA as an intervention applied to surgical populations in RCTs.

Specific objectives

1. Examine the described components of CGA as an intervention in identified trials, including how, when and by whom these are delivered.
2. Identify surgical populations where randomised controlled studies have been performed comparing CGA to any other care, in either an elective or emergency surgical population.
3. Describe how trials report 'standard care'.
4. Determine what outcomes have been used to assess effectiveness of CGA and whether these reflect a biological plausibility of how CGA affects outcomes

Methods

Data item numbers collected include:

1. Participants: sex, age, number randomised, target sample size, reasons for non-recruitment, surgical specialty, emergency/elective population.
2. Interventions: description of interventions including: components of CGA, healthcare professional delivering intervention, assessment/management tools used (if relevant), time point delivered, duration of time spent with patient, detail of assessment made, detail of

care delivered, setting of intervention (eg, clinic, separate ward).

3. Standard care: comparator description, healthcare professionals delivering care in comparator/control group.
4. Outcomes: list of reported outcomes, quantitative data for 11 key areas as defined by Core Outcome Measures in Perioperative and Anaesthetic Care—standard endpoints for perioperative medicine (COMPAC-StEP) working group where possible, including patient comfort, clinical indicators, cognition and stroke, cardiovascular, respiratory, renal, bleeding, morbidity, survival, patient centred outcomes and healthcare resource utilisation.¹²

Data sources and search strategy

A search strategy was adapted from a previous Cochrane review.⁶ It includes the themes 'geriatric care,' 'frailty,' 'surgery or trauma,' 'randomised controlled trials.' This will be performed across EMBASE, Medline, CINAHL and Cochrane library with help from an information specialist (online supplemental information 2).

Study selection, inclusion and exclusion criteria

Any RCT of CGA versus a control group (standard care) will be included. There will be no age cut-off for the purpose of this review, so that it can identify who has received the intervention, although it is anticipated that studies will include patients 60 years and over.

For the purpose of inclusion, if not otherwise identified as CGA, this study will define perioperative CGA as any review of a patient in the perioperative period by a healthcare professional with training in geriatric medicine (eg, consultant, trainee, specialist nurse). Review exclusively by any other medical professional (eg, anaesthetist or nurse) who is not reported to have received training in geriatric medicine will be excluded.

The perioperative period will be defined as any time between the 'decision to offer surgery, through to the weeks and months after the procedure'.¹³ Any CGA reported outside of this period will be excluded.

Study records

Data management

Citation management and data collection will be undertaken in Covidence.¹⁴

Selection process

Title and abstracts from all citations identified in the searches will be screened independently for eligibility by two reviewers (RLM, JDB). Screening of full texts will then be undertaken by the same two reviewers. Discrepancies or disagreements in eligibility will be resolved by a third reviewer.

Data collection process

Data will be extracted independently by two reviewers using a predefined template developed by the study team.

Any discrepancies or disagreements in data extraction will be resolved by a third reviewer.

Data items

Data items collected include:

1. Participants: sex, age, number randomised, target sample size, reasons for non-recruitment, surgical speciality, emergency/elective population.
2. Interventions: description of interventions including: components of CGA, healthcare professional delivering intervention, assessment/management tools used (if relevant), time point delivered, duration of time spent with patient, detail of assessment made, detail of care delivered, setting of intervention (eg, clinic, separate ward).
3. Standard care: comparator description, healthcare professionals delivering care in comparator/control group.
4. Outcomes: list of reported outcomes, quantitative data for 11 key areas as defined by COMPAC-StEP working group where possible, including patient comfort, clinical indicators, cognition and stroke, cardiovascular, respiratory, renal, bleeding, morbidity, survival, patient centred outcomes and healthcare resource utilisation.¹²

Risk of bias

Risk of bias at the outcome level for primary outcomes only will be assessed using the Cochrane risk of bias tool, V.2.¹⁵

Data synthesis

A narrative synthesis will be presented for all qualitative outcomes. Content analysis will result in detail of the intervention, assessments and outcomes presented in tabulated form, summarising each study side by side as adapted from similar studies.^{16 17} The objectives will be organised according to the definition and domains described in a 1987 conference consensus paper, supplemented with definitions and domains extracted through an iterative process from immersion in the literature.⁹

No meta-analysis will be undertaken as the primary aim of this review is to describe the CGA intervention within each of the trial settings. A simple summary of reported statistics in each trial will be presented.

Patient and public involvement

There was patient and public involvement in the development of this research question and design of the study via the geriatric perioperative care team at North Bristol National Health Service (NHS) Trust. A formal focus group will be held before publication of the final review.

ETHICS AND DISSEMINATION

No ethical approval is required for systematic reviews. The study will be disseminated through peer-reviewed manuscript published in a journal and presentation at conferences.

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Contributors RLM and JDB are joint first authors and PB and RH are joint final authors. RLM, JDB, RM, PB and RH have contributed fully to the concept and design of the review for which this protocol has been written. All authors also contributed to the writing of this protocol and reviewed the manuscript before submission. RLM wrote the literature search. No data collection or analysis has occurred for this protocol. RH is the guarantor of the review.

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Disclaimer The views expressed in this publication are those of the author(s) and not necessarily those of the NHS, the National Institute for Health Research, the Department of Health and Social Care.

Competing interests None declared.

Patient consent for publication Not applicable.

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PRISMA-P 2015 Checklist

This checklist has been adapted for use with protocol submissions to *Systematic Reviews* from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 4:1

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p1 lines 1-2
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p2 line 19
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p1 lines 10-18
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p5 lines 40-45
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p6 lines 2-4
Support					
Sources	5a	Indicate sources of financial or other support for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p6 lines 7-17
Sponsor	5b	Provide name for the review funder and/or sponsor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p6 lines 7-17
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p6 lines 7-17
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p2 line – p3 line 28
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p3 lines 30-43

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p3/4
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p4
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	supplementary material
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p4 lines 39-41
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p4 line 43 – p5 line 2
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p5 lines 4-7
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p3 line 45 – p4 line 14
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p4 lines 9-14
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p5 lines 11-13
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p5 lines 15-25
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2 , Kendall's tau)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	<input checked="" type="checkbox"/>	<input type="checkbox"/>	p5 lines 15-25
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective	<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
		reporting within studies)			
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a

CGA medline

1. Geriatric Assessment/
2. geriatric assessment*.tw,kf.
3. Health Services for the Aged/
4. (frail* or sarcopeni* or elder* or senior* or gerontolog* or geriatric* or veteran* or (old* adj (people or person* or resident* or adult* or patient*))).tw,kf.
5. 1 or 2 or 3 or 4
6. ((frail* or sarcopeni* or elder* or senior* or gerontolog* or geriatric* or veteran* or old* people or old* person* or old* resident* or old* adult* or old* patient*) adj3 (assess* or evaluat* or apprais* or function or functioning or comprehensive* or patient care team or patient* education or interprofession* or inter-profession* or interdisciplin* or inter-disciplin* or multi-disciplin* or multidisciplin* or rehab*)).tw,kf.
7. ((frail* or sarcopeni* or elder* or senior* or gerontolog* or geriatric* or veteran* or old* people or old* person* or old* resident* or old* adult* or old* patient*) adj3 (manage* care program* or Critical Pathway* or Program* Evaluation or case manag*)).tw,kf.
8. (geriatric adj3 (evaluation or management or program* or modif* or friendly or intervention or coordinat* or co-ordinat*)).tw,kf.
9. (elder* adj3 (program* or modif* or friendly or intervention* or coordinat* or co-ordinat*)).tw,kf.
10. (acute care for elders or acute care for the elderly or Nurses Improving Care for Healthsystem Elders or modified Hospital Elder Life Program or mHELP or hospitali?ed elder life program*).tw,kf.
11. (geriatrician* or geriatric specialist* or geriatric nurse* or geriatric physician*).tw,kf.
12. (geriatric unit* or geriatric ward*).tw,kf.
13. 6 or 7 or 8 or 9 or 10 or 11 or 12
14. exp Specialties, Surgical/
15. exp surgical procedures, operative/
16. su.fs.
17. Surgery Department, Hospital/
18. perioperative care/ or intraoperative care/ or perioperative nursing/ or postoperative care/ or preoperative care/
19. Trauma Centers/ or General Surgery/
20. (((surgery or surgical) adj (unit* or department* or area*)) or (operating adj (room* or theatre* or theater* or suite*))).mp.
21. (surgery or surgical or trauma or operation or operating or operative).ti,kf.
22. (surgery or surgical or trauma or operation or operating or operative).ab. /freq=2
23. (perioperative or peri operative or intraoperative or intra operative or postoperative or post-operative).ti,ab,kf.
24. hospital*.ti,ab,kf.
25. 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24
26. randomised controlled trial.pt.
27. controlled clinical trial.pt.
28. multicenter study.pt.

29. (randomis* or randomiz* or randomly).ti,ab.
30. groups.ab.
31. (trial or multicenter or multi center or multicentre or multi centre).ti.
32. (intervention? or effect? or impact? or controlled or control group? or (before adj5 after) or (pre adj5 post) or ((pretest or pre test) and (posttest or post test)) or quasiexperiment* or quasi experiment* or pseudo experiment* or pseudoexperiment* or evaluat* or time series or time point? or repeated measur*).ti,ab.
33. 26 or 27 or 28 or 29 or 30 or 31 or 32
34. review.pt.
35. meta analysis.pt.
36. news.pt.
37. comment.pt.
38. editorial.pt.
39. cochrane database of systematic reviews.jn.
40. comment on.cm.
41. (systematic review or literature review).ti.
42. 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41
43. exp Animals/ not Humans/
44. (animal model* or rat or rats or mouse or mice or rodent* or sheep or lambs or murine or pigs or piglets or swine or porcine or rabbit or rabbits or cat or cats or feline or dog or dogs or canine or cattle or bovine or marmoset* or monkey or monkeys or trout or zebra fish*).ti.
45. 42 or 43 or 44
46. 5 and 13 and 25 and 33
47. 46 not 45

CGA embase

1. exp geriatrics/
2. geriatric*.mp.
3. geriatric care/
4. exp geriatrician/
5. esp gerontology/
6. gerontol*.mp.
7. exp frail elderly/
8. aged hospital patient/
9. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10. exp geriatric assessment/

11. "geriatric" assessment".mp.
12. "comprehensive geriatric" assessment".mp.
13. "multicomponent assessment".mp.
14. "multi-component assessment".mp.
15. "multi-component evaluation".mp.
16. "multi-component evaluation".mp.
17. "multidisciplinary assessment".mp.
18. "multi-disciplinary assessment".mp.
19. "multidisciplinary evaluation".mp.
20. "multi-disciplinary evaluation".mp.
21. (liaison not psychiatry).mp.
22. "hospital" elder life program".mp.
23. "proactive care of older people".mp.
24. exp geriatric nursing/
25. 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24
26. exp general surgery/
27. exp surgery/ or exp major surgery/
28. exp geriatric surgery/
29. surg*.mp.
30. laparotomy.mp. or exp laparotomy/
31. preoperative.mp. or exp preoperative evaluation/ or exp preoperative care/ or exp preoperative period/
32. perioperative.mp. or exp perioperative period/
33. esp postoperative care/ or postoperative.mp. or exp postoperative period/
34. 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33
35. 9 and 25 and 34
36. limit 35 to human
37. limit 36 to english language
38. remove duplicates from 37