Supplemental Material

Search Strategy:

Ovid MEDLINE: Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE Daily and Ovid MEDLINE <1946-Present> Embase Classic+Embase <1947 to 2022 March 04>

exp gastroenterology/ 68833
exp colonoscopy/ 125831
*sigmoidoscopy/ 4442
colonoscopic.ti,ab,kf. 12532
sigmoidoscop*.ti,ab,kf. 13341
exp Endoscopy, Gastrointestinal/ 269167
(?esophagus or stomach or duodenum or upper).ti,ab,kf. 1388068
exp duodenum/ 100105
exp stomach/ 357507
7 or 8 or 9 1632686
6 and 10 67009
esophagogastroduodenoscop*.ti,ab,kf. 13789
egb.ab. 2550
exp sigmoidoscopy/ 19067
sigmoidoscop*.ti,ab,kf. 13341
*Cholangiopancreatography, Endoscopic Retrograde/ 20578
ERCP.ti,ab,kf. 35310
exp echography/ or exp endoscopic echography/ 1370369
Endoscopic ultrasound.ti,ab,kf. 27501
EUS.ab. 32264
Capsule Endoscopy/ 13570
Capsule Endoscop*.ti,ab,kf. 13368
endoscopic echography/ 29716
1 or 2 or 3 or 4 or 5 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 1700798
exp endoscopic retrograde cholangiopancreatography/ 62380
Cholangiopancreatograph:.ti,ab,kf. 30002
Cholangiopancreatographic.ti,ab,kf. 194
Cholangiopancreatography.ti,ab,kf. 29704
Cholangiopancreatographies.ti,ab,kf. 265
ERCP.ab. 31154
exp pancreas/ or pancreas.mp. 644641
(pancreas: or pancreatic).ti,ab,kf. 667932
31 or 32 819175
Endosonography/ 26449
endoscope.ti,ab,kf. 32008

endoscopic.ti,ab,kf. 445162
endoscopies.ti,ab,kf. 10246
endoscopy.ti,ab,kf. 219438
ultrasonograph*.ti,ab,kf. 295144
ultra sound.ti,ab,kf. 2373
ultrasound.ti,ab,kf. 732538
34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 1482308
33 and 42 66997
25 or 26 or 27 or 28 or 29 or 30 or 43 123728
exp certification/ or *"maintenance of certification"/ 50556
certification.ti,ab,kf. 43420
certif:.ti,ab,kf. 145995
exp accreditation/ 87120
credential$.ti,ab,kf. 12669
exp licensing/ 117112
licensing.ti,ab,kf. 21133
licensure.ti,ab,kf. 12861
exp curriculum/ 195159
exp international cooperation/ 374751
Internationally trained.ti,ab,kf. 117
exp foreign medical graduate/ 3933
((foreign or international*) adj5 educat*).ti,ab,kf. 8841
((foreign or international*) adj5 graduate*).ti,ab,kf. 4559
qualification.ti,ab,kf. 23991
qualified.ti,ab,kf. 77335
45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 58 or 59 or 60 936286
44 and 61 778
remove duplicates from 62 644

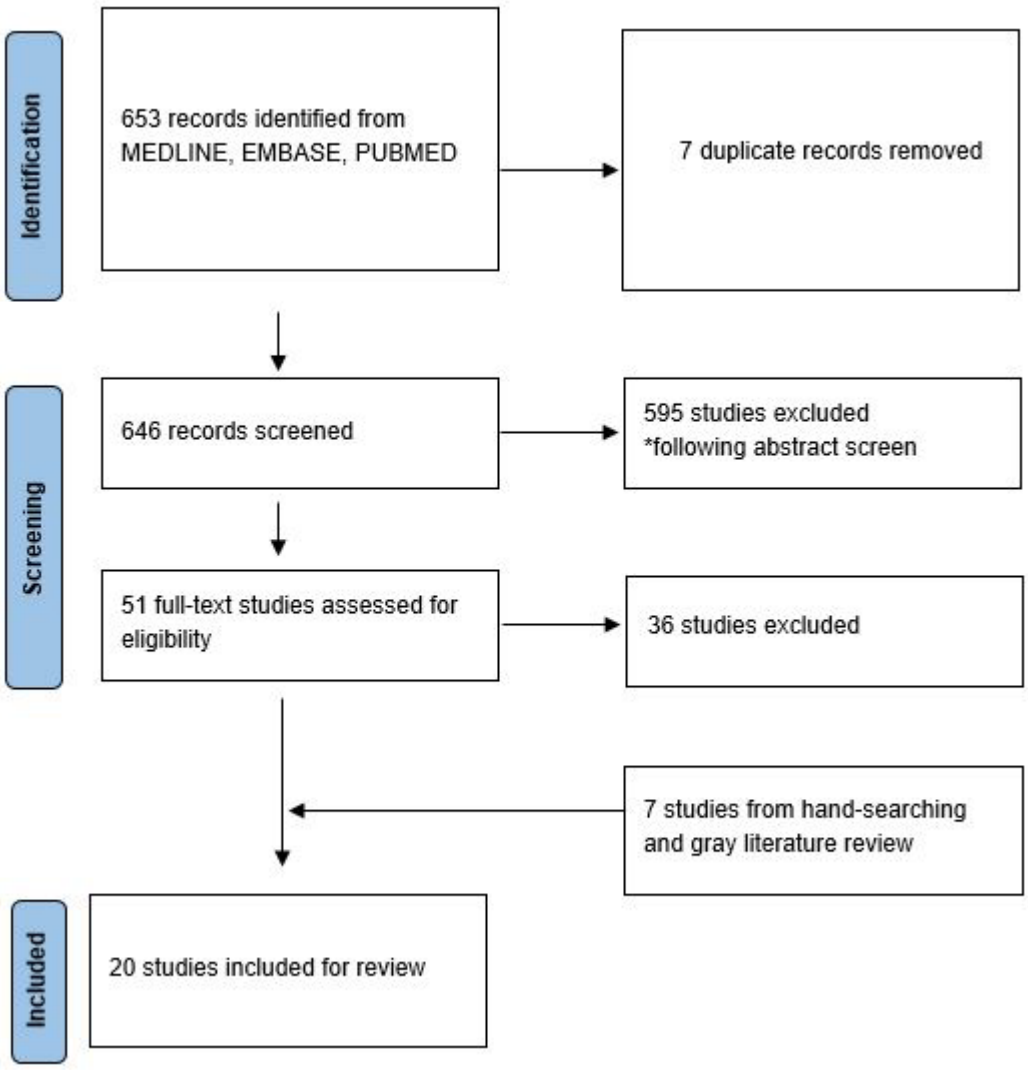
PRISMA Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Page 1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Page 2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Page 3
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Page 3
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Page 4
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Page 4
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Page 18
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Page 4
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Page 4
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Page 4
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Page 4
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Page 5
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Page 5
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Page 5

Section and Topic	Item #	Checklist item	Location where item is reported
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Page 5
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Page 5
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	N/A
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	N/A
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	N/A
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Page 5
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	N/A
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Page 5
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	N/A
Study characteristics	17	Cite each included study and present its characteristics.	Page 5
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	N/A
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Page 5
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	N/A
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	N/A
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	NA
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	N/A
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	NA
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	N/A

Section and Topic	Item #	Checklist item	Location where item is reported
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Page 7
	23b	Discuss any limitations of the evidence included in the review.	Page 8
	23c	Discuss any limitations of the review processes used.	Page 8
	23d	Discuss implications of the results for practice, policy, and future research.	Page 8
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Page 3
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Prospero
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	N/A
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Page 1
Competing interests	26	Declare any competing interests of review authors.	Page 1
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	N/A

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097



Supplemental figure 1. From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

Table S1: Key performance indicators for endoscopic ultrasound (EUS)

Society or Training Committee, Country/Region (Year)	Assessment Tool	Key Performance Indicators	
		Minimum Procedures	Minimum number of EUS-guided Fine Needle Aspirations (FNA)
ESGE, Europe (2021)	DOPS and TEESAT recommended to track competency	250 cases with visualization of key anatomical landmarks in > 90% of cases, first 25 supervised by experienced operator	75 supervised (with >85% accuracy)
ASGE, United States (2017)	-	-	50 supervised
ASGE, United States (2001)	-	150 supervised (incl. 75 pancreaticobiliary cases)	50 supervised
FOCUS, Canada (2015)	-	250 supervised (incl. 25 rectal cases, 10 celiac blocks/neurolysis, 100 pancreatic cases)	50 supervised
Conjoint Committee, Australia* (2015)	-	200 (incl. 100 for gastro-esophageal lesions & 100 for pancreato-biliary investigations)	50 (at least 25 pancreatobilliary cases)
Academy of Medicine, Singapore (2010)	-	-	50 supervised

- : Not Reported
ASGE: American Association of Gastroenterology
ESGE: European Association of Gastrointestinal Endoscopy
FOCUS: The Forum on Canadian Endoscopic Ultrasound

*Conjoint committee for recognition of training in gastrointestinal endoscopy (including the Royal Autralasian College of Surgeons, Gastroenterological Society of Australia and Royal Australasian College of Physicians)

Table S2: Key performance indicators for capsule endoscopy

Society or Training Committee, Country/Region (Year)	Key Performance Indicators	
	Assessment Tool	**Minimum Procedures and Training**
JAG, United Kingdom	5 capsule endoscopy and capsule endoscopy reporting DOPS	15 cases, double reading of videos with feedback via DOPS from an expert in CCE
ASGE, United States (2017)	-	20 supervised
ASGE, United States (2005)	-	1) Formal training in capsule endoscopy during GI fellowship OR 2) Completion of a hands-on course with a minimum of 8 hours CME credit, endorsed by a national or international GI or surgical society and review of first 10 capsule studies by a credentialed capsule endoscopist
KSGE, Korea (2008)	-	20 (incl. 10 supervised)
Conjoint Committee, Australia* (2015)	-	50 supervised with at least 25 abnormal and 5 studies where trainee is wholly responsible for entire procedure. Attendance at a recognised capsule endoscopy training workshop.

- : Not Reported
ASGE: American Association of Gastroenterology
JAG: Joint Advisory Group on Gastrointestinal Endoscopy
KSGE: Korea Association of Gastrointestinal Endoscopy

*Conjoint committee for recognition of training in gastrointestinal endoscopy (including the Royal Autralasian College of Surgeons, Gastroenterological Society of Australia and Royal Australasian College of Physicians

Table S3: Key performance indicators for flexible sigmoidoscopy

Society or Training Committee, Country/Region (Year)	Assessment Tool	Key Performance Indicators	
		Minimum Procedures	Depth of Insertion
JAG, United Kingdom	>20 lower GI DOPS, competent as per 5 most recent	100 (15 in last 3 months)	-
ASGE, United States (2017)	-	30 (incl. 20 supervised)	Consistent depth of >50cm
CAG, Canada (2009)	-	25 supervised, 30 unassisted	Must be able to evaluate the rectum and sigmoid

- : Not Reported
CAG: Canadian Association of Gastroenterology
ASGE: American Association of Gastroenterology
JAG: Joint Advisory Group on Gastrointestinal Endoscopy

Table S4: Guideline characteristics

Guideline ID	Society or Training Committee, Country/Region	Journal	Funding	Conflict of Interest
Johnson et. al (2021)	ESGE, Europe	Endoscopy	NR	Conflicts reported
NR	JAG, United Kingdom	Website	NR	NR
Siau et. al (2022)	JAG, United Kingdom	Endoscopy International Open	NR	No Conflicts
Siau et. al (2022)	JAG, United Kingdom	Frontline Gastroenterology	NR	No Conflicts
Faulx et al. (2017)	ASGE, United States	Gastrointestinal Endoscopy	NR	NR
Eisen et. al (2001)	ASGE, United States	Gastrointestinal Endoscopy	NR	NR
Faigel et. al (2005)	ASGE, United States	Gastrointestinal Endoscopy	NR	NR
Seok Moon et. al (2017)	KSGE, Korea	Clinical Endoscopy	NR	No Conflicts
Jeong Lim et. al (2008)	KSGE, Korea	Korean Journal of Gastrointestinal Endoscopy	NR	NR
NR	PSG, Poland	Website	NR	NR
NR (2013)	SSG, Switzerland	Website	NR	NR
Ponich et. al (2008)	CAG, Canada	Canadian Journal of Gastroenterology	NR	NR
Enns et. al (2009)	CAG, Canada	Canadian Journal of Gastroenterology	NR	NR
Springer et. al (2008)	CAG, Canada	Canadian Journal of Gastroenterology	NR	NR
Romagnuolo et at. (2008)	CAG, Canada	Canadian Journal of Gastroenterology	NR	NR
Arya et. al (2015)	FOCUS, Canada	Endoscopic Ultrasound	NR	NR
NR (2015)	Conjoint Committee, Australia*	Website	NR	NR
NR (2022)	NZCCRTGE , New Zealand$^{\Phi}$	Website	NR	NR

Ang T L et. al (2011)	ERCP working group (under the auspices of the Academy of Medicine, Singapore)	Singapore Medical Journal	NR	NR
Mesenas et. al (2010)	Academy of Medicine, Singapore	Annals Academy of Medicine	NR	NR

NR – Not Reported
ASGE – American Association of Gastroenterology
JAG – Joint Advisory Group on Gastrointestinal Endoscopy
KSGE – Korea Association of Gastrointestinal Endoscopy
ESGE – European Association of Gastrointestinal Endoscopy
CAG – Canadian Association of Gastroenterology
SSG – Swiss Society of Gastroenterology
NZCCRTGE: New Zealand Conjoint Committee for Recognition of Training in Gastrointestinal Endoscopy
PSG – Polish Society of Gastroenterology
FOCUS – The Forum on Canadian Endoscopic Ultrasound

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ΦNew Zealand Conjoint Committee for Recognition of Training in Gastrointestinal Endoscopy (including the New Zealand Society of Gastroenterology, the New Zealand Committees of the Royal Australasian College of Physicians and Royal Australasian College of Surgeons)

Table S5: Credentialing guidelines by GI endoscopy societies and affiliated training committees

Society, Country/Region	Colonoscopy	EGD	Flex. Sig.	ERCP	EUS	Capsule Endoscopy
ESGE, Europe	-	-	-	Johnson (2021)[μ]	Johnson (2021)[μ]	-
JAG, United Kingdom[γ]	JAG (NR)	JAG (NR) | Siau (2022)	JAG (NR)	JAG (NR) | Siau (2022)	-	JAG (NR)
ASGE, United States	Faulx (2017)	Faulx (2017)	Faulx (2017)	Faulx (2017)	Faulx (2017) | Eisen (2001)	Faulx (2017) | Faigel (2005)
KSGE, Korea	Seok Moon (2017)	Seok Moon (2017)	-	Seok Moon 2017)	Seok Moon (2017)	Jeong Lim (2008)
PSG, Poland[γ]	-	-	-	PSG (NR)	-	-
SSG, Switzerland[γ]	-	SSG (2013)	-	SSG (2015)	-	-
CAG, Canada	Romagnuolo (2008)	Ponich (2008)	Enns (2009)	Springer (2008)	-	-
FOCUS, Canada	-	-	-	-	Arya (2015)	-
Conjoint Committee, Australia*[γ]	CC (2015)	CC (2015)	-	CC (2015)	CC (2015)	CC (2015)
NZCCRTGE, New Zealand[Φγ]	NZCCRTGE (NR)	NZCCRTGE (NR)	-	NZCCRTGE (NR)	-	-
Academy of Medicine, Singapore	-	-	-	-	Mesenas (2010)	-
ERCP working group^	-	-	-	Ang T L (2011)	-	-

NR – Not Reported
ASGE – American Association of Gastroenterology
JAG – Joint Advisory Group on Gastrointestinal Endoscopy
KSGE – Korea Association of Gastrointestinal Endoscopy
ESGE – European Association of Gastrointestinal Endoscopy
CAG – Canadian Association of Gastroenterology
SSG – Swiss Society of Gastroenterology

NZCCRTGE–New Zealand Conjoint Committee for Recognition of Training in Gastrointestinal Endoscopy
CC – Conjoint Committee
PSG – Polish Society of Gastroenterology
FOCUS – The Forum on Canadian Endoscopic Ultrasound

*Conjoint committee for recognition of training in gastrointestinal endoscopy (including the Royal Australasian College of Surgeons, Gastroenterological Society of Australia and Royal Australasian College of Physicians)
ΦNew Zealand Conjoint Committee for Recognition of Training in Gastrointestinal Endoscopy (including the New Zealand Society of Gastroenterology, the New Zealand Committees of the Royal Australasian College of Physicians and Royal Australasian College of Surgeons)
^ Society is under the auspices of the Academy of Medicine, Singapore
γ Authorship not available
μ Competing interest reported