Supplementary material 1

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	3
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	4
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	N/A
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	5
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	4, figure 1
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Supplementary material 2
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	4,5
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	5
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	4,5
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	N/A

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	5,6
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	6, Figure 1
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Supplementary material 4 & 5
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	N/A
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	6,9,10,12, Tables 3 & 4, Supplementary material 4 & 5
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	6,9,10,12, Tables 2-4
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	12, 14-16
Limitations	20	Discuss the limitations of the scoping review process.	16
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	16
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	17

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.

Supplementary material 2

Search strategies MEDLINE

1	sepsis/ or neonatal sepsis/ or shock, septic/ or Systemic Inflammatory Response Syndrome/
2	("systemic inflammatory response syndrome*" or sepsi* or SIRS or septi* or "septic shock").ti,ab.
3	or/1-2
4	Mobile Applications/
5	exp Internet/
6	exp cell phone/
7	exp Computers, Handheld/
8	Medical Informatics Applications/
9	Therapy, Computer-Assisted/
10	(app or apps).ti,ab.
11	(online or web or internet or digital*).ti.
12	((online or web or internet or digital*) adj3 (based or application* or intervention* or program* or therap*)).ab.
13	(phone* or telephone* or smartphone* or cellphone* or smartwatch*).ti.
14	((phone* or telephone* or smartphone* or cellphone* or smartwatch*) adj3 (based or application* or intervention* or program* or therap*)).ab.
15	(mobile health or mhealth or m-health or ehealth or e-health or emental or e-mental).ti.
16	((mobile health or mhealth or m-health or ehealth or e-health or emental or e-mental) adj3 (based or application* or intervention* or program* or therap*)).ab.
17	(mobile* adj3 (based or application* or intervention* or device* or technolog*)).ti,ab.
18	4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17
19	3 and 18
20	exp animals/ not humans.sh.
21	19 not 20
22	Limit 21 to english language

Embase

1	sepsis/ or systemic inflammatory response syndrome/ or newborn sepsis/ or exp septic shock/ or exp septicemia/
2	("systemic inflammatory response syndrome*" or sepsi* or SIRS or septi* or "septic shock").ti,ab.
3	or/1-2
4	exp mobile application/
5	Internet/
6	exp mobile phone/
7	text messaging/
8	personal digital assistant/

9	computer assisted therapy/
10	(app or apps).ti,ab.
11	(online or web or internet or digital*).ti.
12	((online or web or internet or digital*) adj3 (based or application* or intervention* or program* or therap*)).ab.
13	(phone* or telephone* or smartphone* or cellphone* or smartwatch*).ti.
14	((phone* or telephone* or smartphone* or cellphone* or smartwatch*) adj3 (based or application* or intervention* or program* or therap*)).ab.
15	(mobile health or mhealth or m-health or ehealth or e-health or emental or e-mental).ti.
16	((mobile health or mhealth or m-health or ehealth or e-health or emental or e-mental) adj3 (based or application* or intervention* or program* or therap*)).ab.
17	(mobile* adj3 (based or application* or intervention* or device* or technolog*)).ti,ab.
18	4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17
19	3 and 18
20	(exp animal/ or nonhuman/) not exp human/
21	19 not 20
22	limit 21 to english language
23	limit 22 to remove MEDLINE records

CINAHL

1	(MH “Shock, Septic”) OR (MH “Toxic Shock Syndrome”) OR (MH “Neonatal Sepsis”) OR (MH “Sepsis”) OR (MH “Systemic Inflammatory Response Syndrome”)
2	TI(“systemic inflammatory response syndrome*” or sepsi* or SIRS or septi* or “septic shock”) OR AB(“systemic inflammatory response syndrome*” or sepsi* or SIRS or septi* or “septic shock”)
3	S1 OR S2
4	(MH “Telemedicine” OR “smartphone” OR “mobile applications” OR “mHealth”)
5	(TI((mhealth or mobile or smartphone or “cell phone” or ipad or iphone or android)N2 app*)) OR (AB((mhealth or mobile or smartphone or “cell phone*” or ipad or iphone or android)N2 app*))
6	S4 OR S5
7	S3 AND S6

COHRANE

1	("systemic inflammatory response syndrome*" or sepsi* or SIRS or septi* or "septic shock"):ti,ab,kw
2	MeSH descriptor: [Sepsis] this term only 3430
3	MeSH descriptor: [Neonatal Sepsis] this term only
4	MeSH descriptor: [Shock, Septic] this term only
5	#1 or #2 or #3 or #4
6	MeSH descriptor: [Telemedicine] this term only
7	MeSH descriptor: [Smartphone] this term only
8	MeSH descriptor: [Mobile Applications] this term only
9	((mhealth or mobile or smartphone or cell phone or ipad or iphone or android) NEAR/2 app*):ti,ab,kw

10	#6 OR #7 OR #8 OR #9
11	#5 AND #10

Scopus

((TITLE-ABS-KEY (sepsis OR "septic shock" OR "neonatal sepsis" OR "newborn sepsis" OR sirs OR "systemic inflammatory response syndrome")) AND (TITLE-ABS-KEY (mhealth OR "mobile health" OR "mobile application*" OR "smartphone" OR "cell phone" OR “ipad” OR “iphone” OR “android”)))

Web of Science

Topic - (sepsis OR "septic shock" OR "neonatal sepsis" OR "newborn sepsis" OR sirs OR "systemic inflammatory response syndrome")
AND – Topic - (mhealth OR "mobile health" OR "mobile application*" OR "smartphone" OR "cell phone" OR “ipad” OR “iphone” OR “android”)

Supplementary material 3

Outcome groupings for Table 3

Completeness of data capture + coverage = Completeness of data capture, coverage of admissions, discharges, and deaths

Mortality = 7-day mortality, in-hospital mortality, total mortality, 30-day mortality

User acceptance = acceptability, usability, user satisfaction, influence on clinician decision making

Feasibility & cost = cost effectiveness, feasibility, program cost

Timely treatment = Antibiotics received within appropriate time, receipt of a timely sepsis bundle, time to antibiotic administration, time to first treatment, time to IV antibiotics from OPD arrival, treatment rate

Admission, readmission and length of stay = admission rate, LOS, readmission rate

Bundle & bundle elements completion = sepsis 6 completion, antibiotics completion, catheter completion, cultures completion, FBC completion, IV fluid completion, Lactate completion, Oxygen completion

App usage = usage patterns, cumulative prior metric hits per site

Usability = Usability, user attitudes

Mortality & length of stay = mortality, LOS

Sepsis or infection morbidity = sepsis, septic shock, severe sepsis, superficial SSI, deep incisional SSI, organ space SSI, pneumonia, UTI

Non-infection morbidity = 30-day morbidity, stroke, acute renal failure, AKI, ARDS, bleeding requiring transfusion, cardiac arrest requiring CPR, DVT, myocardial infarction, ventilator >48 hours, overall morbidity, progressive renal insufficiency, pulmonary embolism, unplanned intubation, wound disruption

Supplementary material 4

Study characteristics & Outcome

		Author (Year)	Country	Type of Publication	Study Design	Outcomes Measured
Education and awareness		Otu et al. (2024)	Nigeria	Journal article	Pre-post study	User satisfaction, post-test score
		Kim & Jeong (2020)	South Korea	Journal article	Pre-post study	Knowledge of sepsis, accurate sepsis assessment, self-efficacy of nursing care
		Limeira et al. (2023)	Brazil	Journal article	Survey/interview	Content validation
Biomarker orpathogen detection		Alba-Patino et al. (2020)	NR	Journal article	Testing & Development	Optimisation of protocol, detection of interleukin-6
		Barnes et al. (2018)	US	Journal article	Testing & Development	Detection of bacteria, time to measurement
		Kim et al. (2017)	NR	Journal article	Testing & Development	Optimisation of protocol & proof of concepts, detection of procalcitonin, c-reactive protein, and lactate
		Russell et al. (2019)	NR	Journal article	Testing & Development	Optimisation of protocol & proof of concepts, detection of procalcitonin in blood
		Samson et al. (2016)	Denmark	Journal article	Testing & Development	Identification of microorganism, successful use & function of app, time to analyse sample and enter results, usability
Clinical assistance	Data Collection	Crehan et al. (2020)	Malawi	Abstract	Cohort study	Completeness of data capture, coverage of admissions, discharges, and deaths
		Gannon et al. (2021)	Zimbabwe	Journal article	Cohort study	Completeness of data capture, blood culture result turnaround time, data provision for local quality improvement projects
	Digital Triage	Ansermino et al. (2024)	Kenya & Uganda	Pre-print article	Interrupted time series	Time to intravenous antibiotics from outpatient department arrival, treatment rate, admission rate, readmission rate, length of stay, 7-day mortality
		Choosri & Kungsuwan (2023)	Thailand	Journal article	Testing & Development	User (clinician) satisfaction, validity of diagnosis, influence on clinician decision
		Lee et al. (2020)	Uganda	Journal article	Interrupted time series	Time to antibiotic administration, antibiotics received within an appropriate time
		Li et al. (2023)	Uganda	Journal article	Pre-post study	Cost effectiveness, total mortality, 7-day mortality, in-hospital mortality, timely sepsis bundle receipt, program cost
		Novakowski et al. (2022)	Uganda	Journal article	Survey/interview	Usability , feasibility, acceptability
		Pillay et al. (2022)	Uganda	Abstract	Pre-post study	Time to first treatment
	Guidelines or clinical pathway	Kerns et al. (2019)	US	Journal article	Pre-post study	Metric hits per case, cumulative metric hits per site, association between app usage and changes in outcomes
		Lefchak et al. (2024)	US	Journal article	Survey/interview	Patterns of clinical decision support system use, user attitudes, specific guideline use
		Leitch et al. (2015)	NR	Abstract	Pre-post study	Sepsis-6 completion, oxygen completion, intravenous fluid completion, culture completion, antibiotic completion, lactate completion, full blood count completion, catheter completion

		MacKinnon et al. (2023)	Canada	Journal article	Interrupted time series	Optimal choice of antimicrobial prescribing, mortality, length of stay
		McCulloh et al. (2018)	US	Journal article	Cohort study	Number of downloads, number of use sessions, usage patterns, usability
	Alerts	Joshi et al. (2022)	UK	Journal article	Cohort study	Time to acknowledgement from alert, alert acknowledgement, alert actions taken
	Prediction Tool	Bertsimas et al. (2018)	NR (ACS-NSQIP)	Journal article	Cohort study	30-day mortality, 30-day morbidity (pulmonary embolism, wound disruption, deep vein thrombosis, progressive renal insufficiency, myocardial infarction, unplanned intubation, stroke, cardiac arrest requiring CPR, bleeding requiring transfusion, acute renal failure, ventilator >48 hours, superficial surgical site infection (SSI), deep incisional SSI, organ space SSI, sepsis, urinary tract infection, pneumonia, septic shock)
		Gebran et al. (2022)	NR (ACS-NSQIP)	Journal article	Cohort study	Intensive care unit admission
		Maurer et al. (2021)	NR (ACS-TQIP)	Journal article	Cohort study	In-hospital mortality, morbidity (acute kidney injury, acute respiratory distress syndrome, cardiac arrest requiring CPR, deep surgical site infection (SSI), deep vein thrombosis, organ space SSI, pulmonary embolism, unplanned intubation, severe sepsis
		Maurer et al. (2023)	NR (ACS-NSQIP)	Journal article	Cohort study	30-day mortality, 30-day morbidity (pulmonary embolism, wound disruption, deep vein thrombosis, progressive renal insufficiency, myocardial infarction, unplanned intubation, stroke, cardiac arrest requiring CPR, bleeding requiring transfusion, acute renal failure, ventilator required for >48 hours, superficial surgical site infection (SSI), deep incisional SSI, organ space SSI, sepsis, urinary tract infection, pneumonia, septic shock)
		Saji et al. (2023)	Scotland	Abstract	Cohort study	Referral to paediatric hospitalisation

NR = Not Reported, US = United States, UK = United Kingdom, ACS-NSQIP = American College of Surgeons National Surgical Quality Improvement Program, ACS-TQIP = American College of Surgeons Trauma Quality Improvement Program, CPR = cardiopulmonary resuscitation, SSI = surgical site infection

Supplementary material 5

Participant and App Characteristics

		Author (Year)	Number of Participants	Participant demographic	Application Name	Targeted Users[a]	Application Platform
Education and awareness		Otu et al. (2024)	102	Healthcare professionals	Sepsis tutorial app	Healthcare professionals	Android
		Kim & Jeong (2020)	60	Healthcare professionals	Sepsis-3	Healthcare professionals	Android & iOS
		Limeira et al. (2023)	20	Healthcare professionals	Sepsis Quick Guide	General public	Android
Biomarker or pathogen detection		Alba-Patino et al. (2020)	NR	NR	NR	Healthcare professionals[b]	Android
		Barnes et al. (2018)	10	All age patients	Bacticount	Healthcare professionals[b]	Android
		Kim et al. (2017)	NR	NR	NR	Healthcare professionals[b]	Android
		Russell et al. (2019)	NR	NR	NR	Healthcare professionals[b]	Android
		Samson et al. (2016)	4	Healthcare professionals	Multiplex blood culture test app	Healthcare professionals	Android
Clinical assistance	Data Collection	Crehan et al. (2020)	2732	Neonatal patients	NeoTree	Healthcare professionals	Android
		Gannon et al. (2021)	3222	Neonatal patients	NeoTree	Healthcare professionals	Android
	Digital Triage	Ansermino et al. (2024)	18147	Pediatric patients	Smart Triage	Healthcare professionals	Android
		Choosri & Kungsuwan (2023)	NR	Both patients & healthcare professionals	Pedicmeter	Healthcare professionals	Android
		Lee et al. (2020)	10802	Pediatric patients	NR	Healthcare professionals	Android
		Li et al. (2023)	3344	Pediatric patients	Smart Triage	Healthcare professionals[b]	NR
		Novakowski et al. (2022)	15	Healthcare professionals	Smart Triage	Healthcare professionals	NR
		Pillay et al. (2022)	3560	Pediatric patients	Smart Triage	Healthcare professionals	NR

	Guidelines or clinical pathway	Kerns et al. (2019)	NR	Neonatal patients	PedsGuide (Febrile infant)	Healthcare professionals	Android & iOS
		Lefchak et al. (2024)	99	Healthcare professionals	NR	Healthcare professionals	Android & iOS
		Leitch et al. (2015)	NR	Healthcare professionals	NR	Healthcare professionals	Android & iOS
		MacKinnon et al. (2023)	480	Pediatric patients	IWK antimicrobial stewardship app	Healthcare professionals	Android & iOS
		McCulloh et al. (2018)	3805	Healthcare professionals	PedsGuide	Healthcare professionals	Android & iOS
	Alerts	Joshi et al. (2022)	50	Adult patients	Sensium	Healthcare professionals	NR
	Prediction Tool	Bertsimas et al. (2018)	NR	All age patients	POTTER	Healthcare professionals	Android & iOS
		Gebran et al. (2022)	464861	Adult patients	POTTER-ICU	Healthcare professionals	Android & iOS
		Maurer et al. (2021)	934053	Adult patients	TOP	Healthcare professionals[b]	NR
		Maurer et al. (2023)	29366	Adult patients	POTTER	Healthcare professionals	Android & iOS
		Saji et al. (2023)	54	Pediatric patients	NR	Healthcare professionals	NR

NR = Not reported, POTTER = Predictive OpTimal Trees in Emergency Surgery Risk, POTTER-ICU = Predictive OpTimal Trees in Emergency Surgery Risk Intensive Care Unit, TOP = Trauma Outcome Predictor, iOS = iPhone operating system

[a]Healthcare professionals included both clinical staff and medical laboratory scientists.

[b]As targeted users were not reported for these studies, the users were assumed based on study context or app design.