

Additional file 1: Details of the search strategies

MEDLINE

Searches

- 1 exp Emergency service hospital/
- 2 exp Emergency medical services/
- 3 (emergency adj2 (care or department? or unit? or center? or ward? or service?)).ti,kf.
- 4 (ED or EDs).ti,kf.
- 5 (ER or ERs).ti,kf.
- 6 (PER or PERs).ti,kf.
- 7 or/1-6 [Concept #1: ER]
- 8 exp Crowding/
((inappropriate* or appropriate* or unnecessary or "sub optimal" or optimal or "non urgent" or unurgent or avoidable) adj3 ("use" or "usage" or utilization or patient? or visit* or revisit? or attend* or admission? or readmission? or presentation?)).ti,ab,kf.
- 9 ((non or "not" or low or "sub") adj3 (emergency or urgent or acute) adj3 ("use" or "usage" or utilization or patient? or visit* or revisit? or attend* or admission? or readmission? or presentation? or presentation?)).ti,ab,kf.
- 10 ((high or frequent) adj2 (user? or visitor? or attend* or presentation?)).ti,ab,kf.
((patient? or visitor? or attend* or presentation?) adj2 (crowding* or overcrowd* or over-crowd* or saturat* or oversaturate* or over-saturate* or inflow or influx* or input? or flood* or overflow* or over-flood* or surge? or visit*)).ti,ab,kf.
- 11 overtriage.ti,ab,kf.
- 12 ((ED? or ER?) adj3 (use* or utilization)).ti,ab,kf.
- 13 or/8-14 [Concept #2: ER visits]
- 14 exp Health Care Rationing/
- 15 exp Case Management/
- 16 exp Critical Pathways/
- 17 exp Decision Making/
- 18 exp Decision Support Systems, Clinical/
- 19 exp Health Services Misuse/
- 20 exp Patient Care Planning/
- 21 exp "Referral and Consultation"/
- 22 exp Remote Consultation/
- 23 exp Severity of Illness Index/
- 24 exp Trauma Severity Indices/
- 25 exp Health Services Research/
- 26 exp Cost-Effectiveness Analysis/
- 27 exp Triage/

30 ((patient? or visit* or attend* or present*) adj3 (diversion or divert* or redirect* or
bypass* or defer or deferring* or deferral? or deflect* or refer* or preven*)).ti,ab,kf.

31 ((telemedicine or telephone or mobile or phone* or computer or app or virtual or
digital) adj3 (screen* or triage or assess*)).ti,ab,kf.

32 ((ER or ERs or ED or EDs) adj3 (predict* or anticipat* or forecast* or "machine
learning" or "artificial intelligence" or AI or AIs)).ti,ab,kw.

33 or/16-32 [Concept #3: interventions to anticipate and reduce ER visits]

34 and/7,15,33 [Concepts #1-3 combined]

35 (comment or editorial or letter).pt.

36 34 not 35 [Exclude publication type filter]

37 limit 36 to yr="2008-current" [Publication date limit]

Embase

1	exp emergency ward/	294930	Advance d
2	exp emergency care/	223794	Advance d
3	exp emergency health service/	290613	Advance d
4	exp emergency patient/	4564	Advance d
5	exp emergency physician/	14964	Advance d
6	exp emergency medical dispatcher/	321	Advance d
7	exp hospital emergency service/	105614	Advance d
8	(emergency adj2 (care or department? or unit? or center? or ward? or service?)).ti,kw.	128939	Advance d
9	(ED or EDs).ti,kw.	17412	Advance d
10	(ER or ERs).ti,kw.	34949	Advance d
11	(PER or PERs).ti,kw.	27582	Advance d
12	or/1-11 [Concept #1: ER]	609100	Advance d
13	exp Crowding/	9263	Advance d
14	((inappropriate* or appropriate* or unnecessary or "sub optimal" or optimal or "non urgent" or unurgent or avoidable) adj3 ("use" or "usage" or utilization or patient? or visit* or	267125	Advance d

	revisit? or attend* or admission? or readmission? or presentation?)).ti,ab,kw.		
15	((non or "not" or low or "sub") adj3 (emergency or urgent or acute) adj3 ("use" or "usage" or utilization or patient? or visit* or revisit? or attend* or admission? or readmission? or presentation?)).ti,ab,kw.	18307	Advanced
16	((high or frequent) adj2 (user? or visitor? or attend* or presentation?)).ti,ab,kw.	21953	Advanced
17	((patient? or visitor? or attend*) adj2 (crowding* or overcrowd* or over-crowd* or saturat* or oversaturate* or over-saturate* or inflow or influx* or input? or flood* or overflow* or over-flood* or surge? or visit* or presentation?)).ti,ab,kw.	148909	Advanced
18	overtriage.ti,ab,kw.	796	Advanced
19	((ED? or ER?) adj3 (use* or utilization)).ti,ab,kw.	31383	Advanced
20	or/13-19 [Concept #2: ER Attendance]	485772	Advanced
21	*health care organization/	49219	Advanced
22	exp health care planning/	106388	Advanced
23	exp resource allocation/	43039	Advanced
24	exp health care utilization/	260250	Advanced
25	exp clinical pathway/	17160	Advanced
26	exp decision making/	676174	Advanced
27	exp decision support system/	32825	Advanced
28	exp patient care planning/	96344	Advanced
67	exp patient referral/	148390	Advanced
29	exp teleconsultation/	20361	Advanced
30	exp "severity of illness index"/	299946	Advanced
31	exp injury scale/	64219	Advanced

32	exp "utilization review"/	86138	Advanced
33	exp health services research/	221644	Advanced
34	exp "cost effectiveness analysis"/	266464	Advanced
35	((patient? or visit* or attend* or present*) adj3 (diversion or divert* or redirect* or bypass* or defer or deferring* or deferral? or deflect* or refer* or preven*)).ti,ab,kw.	378262	Advanced
36	((telemedicine or telephone or mobile or phone* or computer or app or virtual or digital) adj3 (screen* or triage or assess*)).ti,ab,kw.	68418	Advanced
37	((ER or ERs or ED or EDs) adj3 (predict* or anticipat* or forecast* or "machine learning" or "artificial intelligence" or AI or AIs)).ti,ab,kw.	6551	Advanced
38	or/21-37[Concept #3: interventions to anticipate and reduce ER visits]	2609094	Advanced
39	and/12,20,38 [Concepts #1-3 combined]	13638	Advanced
40	(comment or editorial or letter).pt.	4157155	Advanced
41	39 not 40 [editorial or letter records removed]	13498	Advanced
42	limit 41 to yr="2008-current" [Publication date limit]	11178	Advanced