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# Effectiveness of Post-Discharge Contacts on Health Care Utilization and Patient Satisfaction

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**VA**



**U.S. Department of Veterans Affairs**

Veterans Health Administration  
*Health Systems Research*

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# *Appendix*

## SEARCH STRATEGIES

Librarian searcher: Sarah Cantrell, MLIS; Duke University Medical Center Library & Archives; Duke University School of Medicine.

Peer review of search conducted by: Samantha Kaplan, PhD, MLIS; Duke University Medical Center Library & Archives; Duke University School of Medicine.

### Database: MEDLINE (via Ovid)

Search date: 5/26/2023

Note: Ovid MEDLINE ALL 1946 to May 25, 2023

Search Set	Search Statement	Results
1 <i>Patient discharge</i>	exp patient discharge/ or (postdischarg* or post-discharg*).ti,ab. or ((patient or patients or inpatient or inpatients or in-patient or in-patients or hospital*) adj3 discharg*).ti,ab. or ((post or after) adj2 hospital*).ti,ab.	161588
2 <i>Phone or video</i>	telephone/ or cell phone/ or smartphone/ or videoconferencing/ or remote consultation/ or exp text message/ or (phone or phones or phoned or phoning or telephon* or tele-phon* or cellphon* or cell-phon* or smartphon* or smart-phon* or videoconferenc* or video-conferenc* or webconferenc* or web-conferenc* or webex or zoom or skype or FaceTime or GoToMeeting or web-delivered or "web delivered" or internet-delivered or "internet delivered" or computer-delivered or "computer delivered" or teleconsult* or tele-consult* or "remote consult" or "remote consults" or "remote consultation" or "remote consultations" or "remote consulting" or "electronic consult" or "electronic consults" or "electronic consultation" or "electronic consultations" or "electronic consulting" or tele-consult* or teleconsult* or teleconferenc* or tele-conferenc* or "text message" or "text messages" or "text messaging").ti,ab. or ((followup or follow-up) adj3 (call or calls or called or calling or text or texts or texting or message or messages or messaging)).ti,ab. or ((remote* or video* or internet or internet-based or web or web-based or online or online-based or computer or computer-based or asynchronous*) adj3 (meet* or call* or chat* or conferenc* or consult* or counsel* or visit* or message or messages or messaging or messaged or text or texts or texting or texted)).ti,ab. or ((video* or remote* or web-based or internet-based or tele*) adj2 care).ti,ab. or ((secure or secured or EHR or EMR or "electronic health record" or "electronic health records" or "electronic medical record" or "electronic medical records") adj3 (text or texts or texting or message or messages or messaging)).ti,ab. or ((asynchronous* or synchronous*) adj3 communicat*).ti,ab.	168793
3 <i>Combining</i>	1 and 2	5577
4 <i>Follow-Up</i>	(follow-up OR followup OR "follows up" OR "followed up" OR "following up" or "after care" or aftercare).ti,ab.	1289628
5 <i>Readmissions</i>	exp Patient Readmission/ OR (readmission* OR re-admission* OR readmit* OR re-admit*).ti,ab.	53636
6 <i>ED use</i>	Emergency Service, Hospital/ OR ("emergency department" OR "emergency departments" OR "emergency room" OR "emergency rooms").ti,ab.	173870
7 <i>combining</i>	4 or 5 or 6	1487227

Search Set	Search Statement	Results
8 Combining	3 and 7	3504
9 <i>Study Design: EPOC filter or RCTs</i>	exp "Cohort Studies"/ or exp "Longitudinal Studies"/ or exp "Follow-Up Studies"/ or exp "Evaluation Studies as Topic"/ or exp "Controlled Before-After Studies"/ or exp "Interrupted Time Series Analysis"/ or "Randomized Controlled Trial".pt. or "Controlled Clinical Trial".pt. or "Clinical Trial".pt. or "Evaluation Studies".pt. or "Comparative Study".pt. or (randomized or randomised or randomization or randomisation or placebo or randomly or trial or trials or groups or "evaluation study" or "evaluation studies" or "intervention study" or "intervention studies" or cohort or cohorts or longitudinal or longitudinally or prospective or prospectively or "follow up" or follow-up or followup or "comparative study" or "comparative studies" or nonrandom or "non-random" or nonrandomized or "non-randomized" or nonrandomised or "non-randomised" or quasi-experiment* or quazi-experiment* or quasiexperiment* or quaziexperiment* or quasirandom* or quazirandom* or quasi-random* or quazi-random* or quasi-control* or quazi-control* or quasicontrol* or quazicontrol*).ti,ab. or (controlled AND study).ti,ab. or ("pre-post" or "pre post" or "posttest" or "post-test" or "post test" or pretest or "pre-test" or "pre test" or "repeated measure" or "repeated measures").ti,ab. or (before AND after).ti,ab. or (before AND during).ti,ab. or ("time series" AND interrupt*).ti,ab. or ("time points" AND (multiple or one or two or three or four or five or six or seven or eight or nine or ten or month or monthly or day or daily or week or weekly or hour or hourly)).ti,ab.	9516428
10 <i>study design exclusion</i>	9 not (case reports or editorial or letter or comment or congress).pt.	3,363
11 <i>Remove animal-only</i>	10 not (exp animals/ not exp humans/)	3233
12 <i>Remove case reports, editorials, conference abstracts</i>	11 not (case reports OR editorial OR letter OR comment OR congress).pt.	3185
13 <i>Date Limit 2012-present</i>	Limit 12 to da=20120101-20231231	2278

**Database: Embase (via Elsevier)**

Search date: 5/26/2023

Note: Search from the Results page

Search Set	Search Statement	Results
1 <i>Patient discharge</i>	"hospital discharge"/exp OR (postdischarg* OR 'post discharg*'):ti,ab OR ((patient OR patients OR inpatient OR inpatients OR 'in patient' OR 'in patients' OR hospital*) NEAR/3 discharg*):ti,ab OR ((post OR after) NEAR/2 hospital*):ti,ab	347638
2 <i>Phone OR video</i>	'telephone'/exp OR 'mobile phone'/exp OR 'smartphone'/exp OR 'videoconferencing'/exp OR 'teleconsultation'/exp OR 'text message'/exp OR (phone OR phones OR phoned OR phoning OR telephon* OR 'tele phon*' OR cellphon* OR 'cell phon*' OR smartphon* OR 'smart phon*' OR videoconferenc* OR 'video conferenc*' OR webconferenc* OR 'web conferenc*' OR webex OR zoom OR skype	255771

Search Set	Search Statement	Results
	OR FaceTime OR GoToMeeting OR 'web delivered' OR 'internet delivered' OR 'computer delivered' OR teleconsult* OR 'tele consult*' OR 'remote consult' OR 'remote consults' OR 'remote consultation' OR 'remote consultations' OR 'remote consulting' OR 'electronic consult' OR 'electronic consults' OR 'electronic consultation' OR 'electronic consultations' OR 'electronic consulting' OR teleconferenc* OR 'tele conferenc*' OR 'text message' OR 'text messages' OR 'text messaging'):ti,ab OR ((followup OR 'follow up') NEAR/3 (call OR calls OR called OR calling OR text OR texts OR texting OR message OR messages OR messaging)):ti,ab OR ((remote* OR video* OR internet OR web OR online OR computer OR asynchronous*) NEAR/3 (meet* OR call* OR chat* OR conferenc* OR consult* OR counsel* OR visit* OR message OR messages OR messaging OR messaged OR text OR texts OR texting OR texted)):ti,ab OR ((video* OR remote* OR 'web based' OR 'internet based' OR tele*) NEAR/2 care):ti,ab OR ((secure OR secured OR EHR OR EMR OR 'electronic health record' OR 'electronic health records' OR 'electronic medical record' OR 'electronic medical records') NEAR/3 (text OR texts OR texting OR message OR messages OR messaging)):ti,ab OR ((asynchronous* OR synchronous*) NEAR/3 communicat*):ti,ab	
3 combining	#1 AND #2	11472
4 <i>Follow-Up</i>	'follow up'/exp OR ('follow up' OR followup OR 'follows up' OR 'followed up' OR 'following up' OR aftercare OR "after care"):ti,ab	2638498
5 <i>Readmissions</i>	'hospital readmission'/exp OR (readmission* OR 're admission*' OR readmit* OR 're admit*'):ti,ab	119876
6 <i>ED use</i>	'hospital emergency service'/exp OR ('emergency department' OR 'emergency departments' OR 'emergency room' OR 'emergency rooms'):ti,ab	229882
7 combining	#4 OR #5 OR #6	2915778
8 combining	#3 AND #7	7679
9 <i>Study Design: EPOC filter OR RCTs</i>	'cohort analysis'/exp OR 'longitudinal study'/de OR 'randomized controlled trial'/exp OR 'controlled clinical trial'/exp OR 'single blind procedure'/exp OR 'double blind procedure'/exp OR 'crossover procedure'/exp OR 'crossover procedure':de OR 'double-blind procedure':de OR 'randomized controlled trial':de OR 'single-blind procedure':de OR (random* OR factorial* OR crossover* OR cross NEXT/1 over* OR placebo* OR doubl* NEAR/1 blind* OR singl* NEAR/1 blind* OR assign* OR allocat* OR volunteer*):ti,ab OR ('evaluation study' OR 'evaluation studies' OR 'intervention study' OR 'intervention studies' OR cohort OR cohorts OR longitudinal OR longitudinally OR prospective OR prospectively OR 'follow up' OR follow-up OR followup OR 'comparative study' OR 'comparative studies' OR nonrandom OR 'non-random' OR nonrandomized OR 'non-randomized' OR nonrandomised OR 'non-randomised' OR quasi-experiment* OR quazi-experiment* OR quasiexperiment* OR quaziexperiment* OR quasirandom* OR quazirandom* OR quasi-random* OR quazi-random* OR quasi-control* OR quazi-control* OR quasicontrol* OR quazicontrol*):ti,ab OR (controlled AND study):ti,ab OR ('pre-post' OR 'pre post' OR 'posttest' OR 'post-test' OR 'post test' OR pretest OR 'pre-test' OR 'pre test' OR 'repeated measure' OR 'repeated measures'):ti,ab OR (before AND after):ti,ab OR (before AND during):ti,ab OR ('time series' AND interrupt*):ti,ab OR ('time points' AND (multiple OR one OR two OR three OR four OR five OR	8130677

Search Set		Search Statement	Results
		six OR seven OR eight OR nine OR ten OR month OR monthly OR day OR daily OR week OR weekly OR hour OR hourly)):ti,ab	
10	combining	#8 AND #9	6748
11	Remove animal-only	#10 AND [humans]/lim	6451
12	Remove case reports, editorials, conference abstracts	#11 NOT ('case report'/exp OR 'case study'/exp OR 'editorial'/exp OR [editorial]/lim OR 'letter'/exp OR [letter]/lim OR 'note'/exp OR [note]/lim OR [conference abstract]/lim OR 'conference abstract'/exp OR 'conference abstract'/it)	3512
13	Date Limit 2012-present	#12 AND [01-01-2012]/sd	2520
14	Exemplar check	#13 AND 31451065:ui	1/1

**Database: CINAHL Complete (via EBSCO)**

Search date: 5/26/2023

Search Set		Search Statement	Results
1	<i>Patient discharge</i>	(MH "Patient Discharge") OR (MH "Early Patient Discharge") OR ((TI postdischarg* OR AB postdischarg*) OR (TI post-discharg* OR AB post-discharg*)) OR (((TI patient OR AB patient) OR (TI patients OR AB patients) OR (TI inpatient OR AB inpatient) OR (TI inpatients OR AB inpatients) OR (TI in-patient OR AB in-patient) OR (TI in-patients OR AB in-patients) OR (TI hospital* OR AB hospital*)) N3 (TI discharg* OR AB discharg*)) OR (((TI post OR AB post) OR (TI after OR AB after)) N2 (TI hospital* OR AB hospital*))	74682
2	<i>Phone or video</i>	(MH "Telephone") OR (MH "Cellular Phone") OR (MH "Text Messaging") OR (MH "Smartphone") OR (MH "Videoconferencing") OR (MH "Teleconferencing") OR (MH "Remote Consultation") OR ((TI phone OR AB phone) OR (TI phones OR AB phones) OR (TI phoned OR AB phoned) OR (TI phoning OR AB phoning) OR (TI telephon* OR AB telephon*) OR (TI tele-phon* OR AB tele-phon*) OR (TI cellphon* OR AB cellphon*) OR (TI cell-phon* OR AB cell-phon*) OR (TI smartphon* OR AB smartphon*) OR (TI smart-phon* OR AB smart-phon*) OR (TI videoconferenc* OR AB videoconferenc*) OR (TI video-conferenc* OR AB video-conferenc*) OR (TI webconferenc* OR AB webconferenc*) OR (TI web-conferenc* OR AB web-conferenc*) OR (TI webex OR AB webex) OR (TI zoom OR AB zoom) OR (TI skype OR AB skype) OR (TI FaceTime OR AB FaceTime) OR (TI GoToMeeting OR AB GoToMeeting) OR (TI web-delivered OR AB web-delivered) OR (TI "web delivered" OR AB "web delivered") OR (TI internet-delivered OR AB internet-delivered) OR (TI "internet delivered" OR AB "internet delivered") OR (TI computer-delivered OR AB computer-delivered) OR (TI "computer delivered" OR AB "computer delivered") OR (TI teleconsult* OR AB teleconsult*) OR (TI tele-consult* OR AB tele-consult*) OR (TI "remote consult" OR AB "remote consult") OR (TI "remote consults" OR AB "remote consults") OR (TI "remote consultation" OR AB "remote consultation") OR (TI "remote consultations" OR AB "remote consultations") OR (TI "remote consulting" OR AB "remote consulting") OR (TI "electronic consult" OR AB "electronic consult") OR (TI "electronic consults" OR AB "electronic consults")	97395

Search Set	Search Statement	Results
	consults") OR (TI "electronic consultation" OR AB "electronic consultation") OR (TI "electronic consultations" OR AB "electronic consultations") OR (TI "electronic consulting" OR AB "electronic consulting") OR (TI tele-consult* OR AB tele-consult*) OR (TI teleconsult* OR AB teleconsult*) OR (TI teleconferenc* OR AB teleconferenc*) OR (TI tele-conferenc* OR AB tele-conferenc*) OR (TI "text message" OR AB "text message") OR (TI "text messages" OR AB "text messages") OR (TI "text messaging" OR AB "text messaging")) OR (((TI followup OR AB followup) OR (TI follow-up OR AB follow-up)) N3 ((TI call OR AB call) OR (TI calls OR AB calls) OR (TI called OR AB called) OR (TI calling OR AB calling) OR (TI text OR AB text) OR (TI texts OR AB texts) OR (TI texting OR AB texting) OR (TI message OR AB message) OR (TI messages OR AB messages) OR (TI messaging OR AB messaging))) OR (((TI remote* OR AB remote*) OR (TI video* OR AB video*) OR (TI internet OR AB internet) OR (TI internet-based OR AB internet-based) OR (TI web OR AB web) OR (TI web-based OR AB web-based) OR (TI online OR AB online) OR (TI online-based OR AB online-based) OR (TI computer OR AB computer) OR (TI computer-based OR AB computer-based) OR (TI asynchronous* OR AB asynchronous*)) N3 ((TI meet* OR AB meet*) OR (TI call* OR AB call*) OR (TI chat* OR AB chat*) OR (TI conferenc* OR AB conferenc*) OR (TI consult* OR AB consult*) OR (TI counsel* OR AB counsel*) OR (TI visit* OR AB visit*) OR (TI message OR AB message) OR (TI messages OR AB messages) OR (TI messaging OR AB messaging) OR (TI messaged OR AB messaged) OR (TI text OR AB text) OR (TI texts OR AB texts) OR (TI texting OR AB texting) OR (TI texted OR AB texted))) OR (((TI video* OR AB video*) OR (TI remote* OR AB remote*) OR (TI web-based OR AB web-based) OR (TI internet-based OR AB internet-based) OR (TI tele* OR AB tele*)) N2 (TI care OR AB care)) OR (((TI secure OR AB secure) OR (TI secured OR AB secured) OR (TI EHR OR AB EHR) OR (TI EMR OR AB EMR) OR (TI "electronic health record" OR AB "electronic health record") OR (TI "electronic health records" OR AB "electronic health records") OR (TI "electronic medical record" OR AB "electronic medical record") OR (TI "electronic medical records" OR AB "electronic medical records")) N3 ((TI text OR AB text) OR (TI texts OR AB texts) OR (TI texting OR AB texting) OR (TI message OR AB message) OR (TI messages OR AB messages) OR (TI messaging OR AB messaging))) OR (((TI asynchronous* OR AB asynchronous*) OR (TI synchronous* OR AB synchronous*)) N3 (TI communicat* OR AB communicat*))	
3	Combining	S1 AND S2 3701
4	Follow-Up	(MH "After Care") OR ((TI follow-up OR AB follow-up) OR (TI followup OR AB followup) OR (TI "follows up" OR AB "follows up") OR (TI "followed up" OR AB "followed up") OR (TI "following up" OR AB "following up") OR (TI "after care" OR AB "after care") OR (TI aftercare OR AB aftercare)) 348945
5	Readmissions	(MH "Readmission") OR ((TI readmission* OR AB readmission*) OR (TI re-admission* OR AB re-admission*) OR (TI readmit* OR AB readmit*) OR (TI re-admit* OR AB re-admit*)) 27971
6	ED use	(MH "Emergency Service") OR ((TI "emergency department" OR AB "emergency department") OR (TI "emergency departments" OR AB "emergency departments") OR (TI "emergency room" OR AB 103921



Search Set		Search Statement	Results
		"emergency room") OR (TI "emergency rooms" OR AB "emergency rooms"))	
7	combining	S4 OR S5 OR S6	466385
8	combining	S3 AND S7	2322
9	<i>Study Design: EPOC filter or RCTs</i>	(ZT "randomized controlled trial") OR (MH "Randomized Controlled Trials") OR (MH "Double-Blind Studies") OR (MH "Prospective Studies+") OR (MH "Single-Blind Studies") OR (MH "Triple-Blind Studies") OR (MH "Crossover Design") OR (MH "Experimental Studies") OR (MH "Clinical Trials") OR (MH "Intervention Trials") OR (MH "Preventive Trials") OR (MH "Therapeutic Trials+") OR (MH "Controlled Before-After Studies") OR (MH "Interrupted Time Series Analysis") OR (MH "Nonrandomized Trials") OR (MH "Quasi-Experimental Studies+") OR (MH "Multiple Time Series") OR (MH "Time Series") OR (MH "Repeated Measures") OR ((TI randomized OR AB randomized) OR (TI randomised OR AB randomised) OR (TI randomization OR AB randomization) OR (TI randomisation OR AB randomisation) OR (TI placebo OR AB placebo) OR (TI randomly OR AB randomly) OR (TI trial OR AB trial) OR (TI trials OR AB trials) OR (TI groups OR AB groups) OR (TI "evaluation study" OR AB "evaluation study") OR (TI "evaluation studies" OR AB "evaluation studies") OR (TI "intervention study" OR AB "intervention study") OR (TI "intervention studies" OR AB "intervention studies") OR (TI cohort OR AB cohort) OR (TI cohorts OR AB cohorts) OR (TI longitudinal OR AB longitudinal) OR (TI longitudinally OR AB longitudinally) OR (TI prospective OR AB prospective) OR (TI prospectively OR AB prospectively) OR (TI "follow up" OR AB "follow up") OR (TI follow-up OR AB follow-up) OR (TI followup OR AB followup) OR (TI "comparative study" OR AB "comparative study") OR (TI "comparative studies" OR AB "comparative studies") OR (TI nonrandom OR AB nonrandom) OR (TI non-random OR AB non-random) OR (TI nonrandomized OR AB nonrandomized) OR (TI non-randomized OR AB non-randomized) OR (TI nonrandomised OR AB nonrandomised) OR (TI non-randomised OR AB non-randomised) OR (TI quasi-experiment* OR AB quasi-experiment*) OR (TI quazi-experiment* OR AB quazi-experiment*) OR (TI quasiexperiment* OR AB quasiexperiment*) OR (TI quasirandom* OR AB quasirandom*) OR (TI quazirandom* OR AB quazirandom*) OR (TI quasi-random* OR AB quasi-random*) OR (TI quazi-random* OR AB quazi-random*) OR (TI quasi-control* OR AB quasi-control*) OR (TI quazi-control* OR AB quazi-control*) OR (TI quasicontrol* OR AB quasicontrol*) OR (TI quazicontrol* OR AB quazicontrol*)) OR ((TI controlled OR AB controlled) AND (TI study OR AB study)) OR ((TI pre-post OR AB pre-post) OR (TI "pre post" OR AB "pre post") OR (TI posttest OR AB posttest) OR (TI post-test OR AB post-test) OR (TI "post test" OR AB "post test") OR (TI pretest OR AB pretest) OR (TI pre-test OR AB pre-test) OR (TI "pre test" OR AB "pre test") OR (TI "repeated measure" OR AB "repeated measure") OR (TI "repeated measures" OR AB "repeated measures")) OR ((TI before OR AB before) AND (TI after OR AB after)) OR ((TI before OR AB before) AND (TI during OR AB during)) OR ((TI "time series" OR AB "time series") AND (TI interrupt* OR AB interrupt*)) OR ((TI "time points" OR AB "time points") AND ((TI multiple OR AB multiple) OR (TI one OR AB one) OR (TI two OR AB two) OR (TI three OR AB three) OR (TI four OR AB four) OR (TI five OR AB five) OR (TI six OR AB six)))	2152369



Search Set		Search Statement	Results
		OR (TI seven OR AB seven) OR (TI eight OR AB eight) OR (TI nine OR AB nine) OR (TI ten OR AB ten) OR (TI month OR AB month) OR (TI monthly OR AB monthly) OR (TI day OR AB day) OR (TI daily OR AB daily) OR (TI week OR AB week) OR (TI weekly OR AB weekly) OR (TI hour OR AB hour) OR (TI hourly OR AB hourly)))	
10	Combining	S8 AND S9	2047
11	<i>Remove animal-only</i>	S10 NOT (((MH "Animals+") OR (MH "Animal Studies") OR (TI "animal model*"))) NOT (MH "human"))	2046
12	<i>Remove case reports, editorials, conference abstracts</i>	S11 NOT PT ( Abstract OR Algorithm OR Anecdote OR Bibliography OR Biography OR Book OR Book Chapter OR Book Review OR Cartoon OR Case Study OR Commentary OR Editorial OR Letter OR Masters Thesis OR Doctoral Dissertation OR Forms OR Games OR Pamphlet OR Pamphlet Chapter OR Poetry )	1800
13	<i>Date Limit 2012-present</i>	Published Date: 20120101-20231231	1267

## STUDY CHARACTERISTICS

For full study citations, refer to the main report's reference list.

Study Country Sample Size Design	Population % Female % White	Pre- and Post-Discharge Intervention Description Comparator	Outcome (Time Point) Risk of Bias Rating
Bell, 2016 <sup>21</sup> United States 851 Randomized trial	Patients aged 18 that were hospitalized for acute coronary syndromes (ACS) and/or acute decompensated heart failure (ADHF), as determined by medical record review conducted by a physician using standard criteria -Percentage not reported -Percentage not reported	Pharmacists reconciled preadmission medications and discharge medications with the patient and reported any inconsistencies to the medical team, prior to hospital discharge. The pharmacist then provided tailored counseling, including assessing patient understanding of the medication regimen, barriers to medication adherence, and troubleshooting barriers while the patient was in the hospital. At discharge, the pharmacist provided additional counseling, an illustrated medication schedule showing the discharge regimen, and a pillbox, which the patient practiced filling. The pharmacist employed a teach-back technique to ensure patient understanding. Within 4 days after hospital discharge, study coordinators contacted the patients and inquired about general health, symptoms, and any medication related problems such as regimen confusion, non-adherence, or side effects. If issues were detected, the study coordinator contacted the pharmacist to provide those patients reinforcement education and to resolve problems. -Usual care/routine discharge	Emergency Department visit (30 days) Hospital readmission (30 days) ROB rating: Low
Clari, 2015 <sup>22</sup> Italy 219 Randomized trial	Patients between 18 and 80 years old hospitalized for elective "low- or medium-intensity orthopaedic surgery" (ASA score < 3) -46% female -Percentage not reported	Patients assigned to the intervention group received routine care and instruction for discharge. A follow-up telephone call carried out by a nurse who specialised in orthopaedics 24 – 96 hours after discharge that was designed to give the nurse the opportunity to assess the overall health of the patient. During this phone call, the nurse followed a standardized sequence of questions and was also able to record whether or not an educational intervention or reinforcement technique was carried out. -Usual care/routine discharge	Patient satisfaction ROB rating: Some concerns

Study Country Sample Size Design	Population % Female % White	Pre- and Post-Discharge Intervention Description Comparator	Outcome (Time Point) Risk of Bias Rating
Danielsen, 2020 <sup>23</sup> Norway 282 Randomized trial	Patients aged 18 and older assigned to the following aortic valve replacement (AVR) treatments: First-time isolated AVR, AVR with concomitant coronary artery bypass grafting (CABG), or AVR with concomitant supra-coronary tube graft (SCG). -Percentage not reported -Percentage not reported	Prior to discharge, the intervention group received standard discharge care, which included a scheduled consultation with the treating surgeon before discharge from the tertiary hospital. Project coordinator called intervention patients on day 2 and day 9 after hospital discharge to home (telephone follow-up). These were structured telephone calls comprising of advice on the importance of physical activity in the early rehabilitation phase after AVR, and reminding participant about the availability of 24/7-telephone support to answer questions they might have about their present health condition (patient-centered instructions and/or reassurance). The patients could also call a 24/7-phone hotline that was staffed by a group of dedicated and experienced advanced nurse practitioners to receive information whenever they wanted during the first 30 days after discharge. -Usual discharge care	Hospital readmissions (30 days) ROB rating: Some concerns
Farris, 2014 <sup>24</sup> United States 630 Randomized trial	Patients 18 years or older admitted with diagnosis of hypertension, hyperlipidemia, heart failure, coronary artery disease, myocardial infarction, stroke, transient ischemic attack, asthma, chronic obstructive pulmonary disease or receiving oral anticoagulation. -Percentage not reported -91.4% White	Minimal Intervention Group: - Pharmacist case manager (PCM) verifies admission medications with community pharmacy, in addition to medication review by unit pharmacist. - PCM makes recommendations to inpatient medical team. PCM educates patient during hospitalization, provides discharge medication counseling and wallet card medication list. Strategies are reviewed to enhance self-management. - No call.  Enhanced Intervention Group: In addition to PCM activities described for Minimal Intervention Group, the Enhanced group also receives the following after unblinding to PCM at discharge. 1) PCM creates discharge care plan and faxes to community physician and pharmacy. 2) PCM phones patient 3-5 days post-discharge to evaluate adherence and new side effects and answer questions. Report is faxed to community physician and pharmacist if problem noted.  Control/Usual Care Group: - Unit pharmacist performs medication review. - Unit nurse provides discharge summary and medication list.	Hospital readmission (30 days and 90 days) Emergency Department visit (30 days and 90 days) ROB rating: Low

Study Country Sample Size Design	Population % Female % White	Pre- and Post-Discharge Intervention Description Comparator	Outcome (Time Point) Risk of Bias Rating
Haag, 2016 <sup>25</sup> United States 25 RCT	Independent living elderly adults, age 60 or older, enrolled in care transitions program (CTP) who were at high risk for an emergency department visit or hospital readmission. -Percentage not reported -Percentage not reported	A medication therapy management consultation by pharmacist between 3 days and up to 7 business days after hospital discharge. Pharmacist reviewed EMR to complete a comprehensive review of all prescriptions, nonprescriptions, and herbal meds. This review included the identification, resolution, and prevention of drug related problems including adverse events or the use of inappropriate medication. -Usual care group: a nurse practitioner home visit within 3 days after discharge to review medication.	Emergency Department visits (30 days) Hospital readmissions (30 days) Composite of both Emergency Department visits and hospital readmissions (30 days) ROB rating: Some concerns
Lee, 2020 <sup>26</sup> United States 2372 RCT	All patients aged ≥ 21 years who were hospitalized in 16 hospitals between January 15, 2017, and March 31, 2018, within Kaiser Permanente Northern California with heart failure (HF); identified by diagnosis codes for HF as the primary hospital problem, or diagnosis code for a HF-related sign or symptom as the primary hospital problem in combination with a HF-specific diagnosis code as a secondary problem -44% female -60.4% White	Telephone appointment - patients were called by a nurse or pharmacist who were previously trained and experienced using a structure HF protocol, including directions for titrating diuretics and other HF-related medications and ordering lab tests based on reported symptoms and vitals. Nurse/pharmacist also had immediate access to supervising physician and could arrange for expedited appointments as necessary. -In-person clinic appointment (usual care) - scheduled primarily with their primary care physician who provided usual care	Hospital readmission for heart failure (30 days) Hospital readmission for any cause (30 days) ROB rating: Some concerns
Lindpaintner, 2013 <sup>27</sup> Switzerland 60 RCT	Patients were "high risk" for adverse events after discharge and had either: oral anticoagulation, newly ordered insulin, polypharmacy (defined as more than eight regularly used medicines at the time of admission), or new diagnosis requiring four or more long-term medicines. Patients also either lived alone, received home nursing care prior to admission, or required complex wound care. -50% female	For patients in the intervention group, prior to discharge the nurse care manager (NCM) conducted a comprehensive structured assessment of symptom burden, prior adherence to prescribed therapies, family caregiving, functional status using the Barthel Index, cognition using a German adaptation of the Mini Mental Test and the Clock-drawing Test, and comorbidity, using the Charlson Comorbidity Index (CCI). The NCM then conferred with the ward team about discharge planning and joined the team for rounds on intervention patients. Contacting patients by structured telephone contact within 24 hours of discharge, evaluating self-efficacy and giving reminders about self-management strategies and follow-up appointments; Availability of the NCM by pager 24/7 for 5 days following discharge; Ending the intervention with a home visit and a letter to the primary care physician; Using	Hospital readmission (30 days) ROB rating: Some concerns

Study Country Sample Size Design	Population % Female % White	Pre- and Post-Discharge Intervention Description Comparator	Outcome (Time Point) Risk of Bias Rating
	-Percentage not reported	proprietary case management software (e-case) adapted for the project to collect data and generate correspondence. The individualized interventions emphasized adherence, self-management skills, and extending the network of support available to patient and family caregivers. -Usual care/routine discharge	
Lundby,2020 <sup>28</sup> Denmark 64 RCT	Patients 18 years or older discharged from the gastrointestinal unit with gastrointestinal diseases (inflammatory bowel disease, cancer within the gastrointestinal system, or complex fistulas) -48% female -Percentage not reported	Intervention included preparing patient information for the discharge counseling, medication review, discussion with physician, patient counseling at discharge, medication report to primary care physician, and phone follow-up to the patient 3 days after discharge. The discharge counseling included an updated medication list and a written summary of the counseling for the patient to take home, including a direct phone number to the pharmacist performing the counseling.	Patient satisfaction ROB rating: High
Robinson,2015 <sup>29</sup> New Zealand 20682 Interrupted time-series	Age 65 years with an acute medical admission that were identified as being "high risk" patients -Percentage not reported -Percentage not reported	Pre-discharge component: nutrition screening, and if necessary referral to a dietitian; allied health review; and discharge medicines reconciliation and patient education by a pharmacist. Post-discharge component: a telephone assessment, education, and support by a team of experienced community nurses on the first and third days post-discharge. No comparator	Hospital readmission (28 days) Emergency Department visit (28 days) ROB rating: Serious
Sarangarm,2013 <sup>30</sup> United States 279 Nonrandomized trial	All English- or Spanish-speaking patients who were discharged from all internal medicine teams between 8 am and 5 pm Monday through Friday were included in the study based on pharmacist availability to perform discharge counseling -44% female	Intervention patients received discharge counseling from a pharmacist that included information about proper medication administration, side effects, and disease state education. Pharmacists also reviewed patients' medications and prescriptions by completing medication review; identifying duplicative, unnecessary, or incomplete therapy; checking for drug interactions; verifying patients' formulary drug coverage and availability of medications; and ensuring prescription	Composite hospital readmissions and Emergency Department visits (30 days) ROB rating: Serious

Study Country Sample Size Design	Population % Female % White	Pre- and Post-Discharge Intervention Description Comparator	Outcome (Time Point) Risk of Bias Rating
	-89% White	completeness. To minimize interpharmacist variability during the discharge process, a standardized checklist was developed outlining the topics to be covered during a counseling session, and standardized patient education leaflets were used. Usual discharge care	
Soong,2014 <sup>31</sup> Canada 334 Cluster RCT	General medical patients age 18 and older discharged home after hospitalization -Percentage not reported -Percentage not reported	The discharge process involves each patient receiving a copy of the electronic discharge summary and patient-specific instructions. In addition, the provider must review written discharge instructions with the patient and/or caregiver. The non-clinical patient navigator called a patient or caregiver within 3 days following discharge from hospital with a minimum of 5 attempts conducted. A standardized intervention phone script that solicited information on general health status post discharge, comprehension of discharge instructions, and reinforced instructions was read to the patient. The caller utilized a modified teach-back method to educate the patient on discharge instructions, medications, and follow up recommendations. Usual care	Emergency Department visit (30 days) Hospital readmission (30 days) ROB Rating: Some concerns
Sorknaes,2013 <sup>32</sup> Denmark 266 RCT	Patients who were at least 40 years old and 1) diagnosed with COPD verified by spirometry 2) admitted with acute exacerbation of COPD (AECOPD) "defined by increased need or medicine and increased dyspnoea, increased expectorate volume or increased coughing" -Percentage not reported -Percentage not reported	All COPD patients admitted with exacerbation received conventional treatment according to GOLD guidelines, ie, inhaler with bronchodilator medication, systemic glucocorticoid treatment, and if needed, antibiotics, noninvasive ventilation or respirator treatment. Prior to discharge, control of inhalation techniques was performed and a decision was made concerning the treatment with which the patient should continue. Intervention consisted of daily teleconsultations (initiated within 24 hours of discharge) conducted by a nurse via videom everyday for an average of 7 days post-discharge. Telemedicine equipment loaned to patient at discharge allowed patient to measure pulse, oxygen saturation, and spirometry and transmit the information to the nursing providing the intervention. The week after the teleconsultations were finished, a telephone follow-up call was made. Conventional treatment	Hospital readmissions (within 26 weeks) ROB rating: Some concerns

<b>Study Country Sample Size Design</b>	<b>Population % Female % White</b>	<b>Pre- and Post-Discharge Intervention Description Comparator</b>	<b>Outcome (Time Point) Risk of Bias Rating</b>
Yiadam,2020 <sup>33</sup> United States 3054 RCT	All inpatients discharged home from a general medicine service -Percentage not reported -Percentage not reported	A semi structured script was used to guide the conversation to assess their knowledge of discharge diagnosis and plan, with attention to medication changes, follow-up appointments, and anticipated discharge support services (medication procurement, visiting health assistance, and needed equipment). Patients were asked to “teach back” their discharge plan. Gaps in knowledge or planned care transition supports were identified and addressed as needed.	Hospital readmission (30 days) ROB rating: Low



## INTERVENTION CHARACTERISTICS

For full study citations, refer to the main report's reference list.

Study	Mode Timing Dose	Staff Access to EHR Assessments Conducted	Post-Discharge Intervention Description	Core Components Outcomes Assessed
Bell, 2016 <sup>21</sup>	Phone Within 4 days 1 call	Study coordinator; pharmacist (if needed) Yes Medication related problems; general health assessment; symptom screener	Within 4 days after hospital discharge, study coordinators contacted the patients and inquired about general health, symptoms, and any medication related problems such as regimen confusion, non-adherence, or side effects. If issues were detected, the study coordinator contacted the pharmacist to provide those patients reinforcement education and to resolve problems.	Medication review, monitoring Emergency department visits, hospitalizations/readmissions, patient satisfaction/composite outcomes
Clari, 2015 <sup>22</sup>	Phone Within 4 days 1 call, 4.89 minutes on average	Nurses Do not know Overall health screener; explore experienced and potential problems via standardized sequence of questions	A follow-up telephone call carried out by a nurse who specialised in orthopaedics 24 – 96 hours after discharge designed to give the nurse the opportunity to assess the overall health of the patient	Medication review, monitoring Patient satisfaction/composite outcomes
Danielsen, 2020 <sup>23</sup>	Phone Day 2 Number and duration of calls not specified	Study coordinator; pharmacist (if needed) Yes None	Project coordinator called intervention patients on day 2 and day 9 after hospital discharge to home (telephone follow-up). These were structured telephone calls comprising of advice on the importance of physical activity in the early rehabilitation phase after AVR, and reminding participant about the availability of 24/7 telephone support to answer questions they might have about their present health condition (patient-centered instructions and/or reassurance). The patients could also call a 24/7 phone hotline that was staffed by a group of dedicated and experienced advanced nurse practitioners to receive information whenever they wanted during the first 30 days after discharge.	Coordination of services Hospitalizations/readmissions

Study	Mode Timing Dose	Staff Access to EHR Assessments Conducted	Post-Discharge Intervention Description	Core Components Outcomes Assessed
Farris, 2014 <sup>24</sup>	Phone 3–5 days post-discharge 1 call; duration not reported	Pharmacist Do not know None	Pharmacist case manager (PCM) creates discharge care plan and faxes to community physician and pharmacy. PCM phones patient 3-5 days post-discharge to evaluate adherence and new side effects and answer questions. Report is faxed to community physician and pharmacist if problem noted.	Medication review, coordination of services, monitoring Emergency department visits, hospitalizations/readmissions, patient satisfaction/composite outcomes
Haag, 2016 <sup>25</sup>	Phone 3 days Number and duration of calls not specified	Pharmacist; study coordinator Yes None	A medication therapy management consultation by pharmacist between 3 days and up to 7 business days after hospital discharge. Pharmacist reviewed EMR to complete a comprehensive review of all prescriptions, nonprescriptions, and herbal meds. This review included the identification, resolution, and prevention of drug related problems including adverse events or the use of inappropriate medication. Additionally, the electronic medical record was investigated for potential prescribing omissions. This review was the foundation for the phone consultation with the patient to ensure medication optimization.	Medication review Emergency department visits, hospitalizations/readmissions, patient satisfaction/composite outcomes
Lee, 2020 <sup>26</sup>	Phone Within 7 days 1 call, duration not reported	Pharmacist or nurse Yes Symptom management protocol; self-report weight; self-report blood pressure; medication review	Within 7 days post-discharge patients were called by a nurse or pharmacist who were previously trained and experienced using a structured HF protocol, including directions for titrating diuretics and other HF-related medications and ordering lab tests based on reported symptoms and vitals. Nurse/pharmacist also had immediate access to supervising physician and could arrange for expedited appointments as necessary.	Medication review; coordination of services; monitoring Hospitalizations/readmissions
Lindpaintner, 2013 <sup>27</sup>	Phone Day 1 1 call, duration not reported	Nurse (registered nurse with Masters degree) Yes Medication review	Structured telephone contact within 24 hours of discharge, evaluating self-efficacy and giving reminders about self-management strategies and follow-up appointments and making the Nurse Care manager available to the patient by pager 24/7 for 5 days following discharge. Ending the intervention with a home visit and a	Medication review; coordination of services Hospitalizations/readmissions

Study	Mode Timing Dose	Staff Access to EHR Assessments Conducted	Post-Discharge Intervention Description	Core Components Outcomes Assessed
			letter to the primary care physician. Using proprietary case management software (e-case) adapted for the project to collect data and generate correspondence.	
Lundby, 2020 <sup>28</sup>	Phone Within 3 days 1 call, mean time intervention + call 32 min (range 25-35)	Pharmacist Do not know None	Phone follow-up to the patient 3 days after discharge. The discharge counseling included an updated medication list and a written summary of the counseling for the patient to take home, including a direct phone number to the pharmacist performing the counseling.	Medication review Patient satisfaction/composite outcomes
Robinson, 2015 <sup>29</sup>	Phone Day 1 and 3 2 calls; duration not reported	Nurse (supported by a geriatrician, a pharmacist, and cultural support workers) Yes None	A telephone assessment, education, and support by a team of experienced community nurses on the first and third days post-discharge.	Medication review, coordination of services, monitoring Emergency department visits, hospitalizations/readmissions
Sarangam, 2013 <sup>30</sup>	Phone 2-3 days 1 call; duration not reported	Pharmacist Yes None	Intervention patients received a phone call 36 to 72 hours post-discharge to assess patient clinical status and to identify and resolve further medication-related issues.	Medication review; coordination of services Emergency department visits, hospitalizations/readmissions, patient satisfaction/composite outcomes
Soong, 2014 <sup>31</sup>	Phone Within 3 days 1 call	Patient navigator Yes General health screener; structured assessment of discharge instructions	Within 3 days following discharge from hospital the PN called a patient or caregiver and a standardized intervention phone script that solicited information on general health status post discharge, comprehension of discharge instructions, and reinforced instructions was read to the patient. The caller utilized a modified teach-back method to educate the patient on discharge instructions, medications and follow up recommendations.	Coordination of services; monitoring Emergency department visits, hospitalizations/readmissions

Study	Mode Timing Dose	Staff Access to EHR Assessments Conducted	Post-Discharge Intervention Description	Core Components Outcomes Assessed
Sorknaes, 2013 <sup>32</sup>	Video Day 1-9 Daily for 5 to 9 days, duration not reported	Nurse N/A Pulse, oxygen saturation, and spirometry	Daily teleconsultations post-discharge conducted by a nurse via video. Telemedicine equipment loaned to patient at discharge allowed patient to measure pulse, oxygen saturation, and spirometry and transmit the information to the nursing providing the intervention.	Coordination of services; monitoring Hospitalizations/readmissions
Yiadom, 2020 <sup>33</sup>	Phone Within 3 days Not reported	Not reported Yes Structured assessment of understanding of discharge recommendations	A first call attempt was made within 72 hours of discharge with at least 3 call attempts made until successful contact for up to 7 days after discharge. A semistructured script was used to guide a conversation with the patient to assess their knowledge of their discharge diagnosis and plan with attention to medication changes, follow-up appointments, and actualization of anticipated discharge supports, including acquisition of durable medical equipment, visiting health assistance visits, and medication procurement. Patients were asked to “teach back” their discharge plan.	Medication review; coordination of services Emergency department visits, patient satisfaction/composite outcomes

## RESULTS: HOSPITAL READMISSIONS

For full study citations, refer to the main report's reference list.

Study Design	Outcome (Time Point)	Results
Bell, 2016 <sup>21</sup> RCT	Unplanned hospitalizations assessed via follow-up call (30 days)	PILL-CVD Events: 61 Total: 423
		Usual care Events: 66 Total: 428
		Adjusted hazard ratios: 0.94 (95% CI [0.63, 1.28]) <i>P</i> value = NR
Danielsen, 2020 <sup>23</sup> RCT	All-cause hospital readmission (30 days)	Telephone follow-up/hotline Events: 32 Total: 127
		Post-discharge usual care Events: 26 Total: 133
		Chi-squared: 1.196 <i>P</i> value = 0.274
Farris, 2014 <sup>24</sup> RCT	Hospital readmission (30 days)	Enhanced intervention Events: 47 Total: 287
		Minimal intervention Events: 40 Total: 296
		Effect estimate: NR <i>P</i> value: NR
	Hospital readmission (90 days)	Enhanced intervention Events: 49 Total: 287
		Minimal intervention Events: 51 Total: 296
		Effect estimate: NR <i>P</i> value = NR
Haag, 2016 <sup>25</sup> RCT	Hospital readmission (30 days)	Pharmacist intervention Events: 2 Total: 11
		Usual care

Study Design	Outcome (Time Point)	Results
		Events: 1 Total: 11  Effect estimate: NR <i>P</i> value = 0.53
Lee, 2020 <sup>26</sup> RCT	Heart failure hospitalizations obtained from EHR (30 days)	Telephone follow-up Events: NR Total: 1027  Usual care (in-person visit in the first 7 days) Events: Total: 1064  HR = 0.81 (95% CI [0.59, 1.11]) <i>P</i> value = NR
	All-cause hospitalizations obtained from EHR (30 days)	Telephone follow-up Events: NR Total: 1027  Usual care (in-person visit in the first 7 days) Events: Total: 1064  HR = 0.82 (95% CI [0.66, 1.02]) <i>P</i> value = NR
Lindpaintner, 2013 <sup>27</sup> RCT	Readmission reported by patient, visiting nurse, or primary care provider (5 days)	Discharge management Events: 1 Total: 28  Usual care Events: 2 Total: 29  Effect estimate: NR <i>P</i> value = NR
	Readmission reported by patient, visiting nurse, or primary care provider (30 days)	Discharge management Events: NR Total: 29  Usual care Events: NR Total: 30  Effect estimate: NR <i>P</i> value = 0.026
Robinson, 2015 <sup>29</sup> Interrupted time-series	Pre-intervention period trend (% change per month) (28 days)	Transition of care calls Events: NR Total: NR  Pre-intervention

Study Design	Outcome (Time Point)	Results
		Events: NR Total: NR
		Percent change per month: 0 <i>P</i> value = 0.334
	Development period trend (% change per month) (28 days)	Transition of care calls Events: NR Total: NR
		Pre-intervention Events: NR Total: NR
		Percent change per month: 0.4 <i>P</i> value = 0.683
	Intervention period trend (% change per month) (28 days)	Transition of care calls Events: NR Total: NR
		Pre-intervention Events: NR Total: NR
		Percent change per month: -0.6 <i>P</i> value = 0.604
	Shift (pre-intervention/development) (%) (28 days)	Transition of care calls Events: NR Total: NR
		Pre-intervention Events: NR Total: NR
		Percent change between pre-intervention and development: -1.6 <i>P</i> value = 0.614
	Shift (development/intervention) (%) (28 days)	Transition of care calls Events: NR Total: NR
		Pre-intervention Events: NR Total: NR
		Percent change between development and intervention: 1.7 <i>P</i> value = 0.502
Sarangarm, 2013 <sup>30</sup> Nonrandomized trial	Total number of post-discharge hospital admissions	Pharmacist counseling Events: 20 Total: 140



Study Design	Outcome (Time Point)	Results
	(30 days)	<p>Usual care</p> <p>Events: 16</p> <p>Total: 139</p> <p>Effect estimate: NR</p> <p><i>P</i> value = 0.49</p>
Soong, 2014 <sup>31</sup> Cluster RCT	Unplanned hospitalizations (readmission to any hospital in the local health region as verified per patient self-report and/or available electronic medical records) (30 days)	<p>Patient navigator call group</p> <p>Events: 15</p> <p>Total: 107</p> <p>No call group</p> <p>Events: 13</p> <p>Total: 107</p> <p>OR = 1.18 (95% CI [0.53, 2.61])</p> <p><i>P</i> value = 0.68</p>
Sorknaes, 2013 <sup>32</sup> RCT	Total readmission after discharge (182 days)	<p>Teleconsultations</p> <p>Events: NR</p> <p>Total: 121</p> <p>Conventional treatment</p> <p>Events: NR</p> <p>Total: 121</p> <p>Mean difference: 0.14 (95% CI [-0.4, 0.68])</p> <p><i>P</i> value = 0.62</p>
	Total readmission after discharge (84 days)	<p>Teleconsultations</p> <p>Events: NR</p> <p>Total: 127</p> <p>Conventional treatment</p> <p>Events: NR</p> <p>Total: 126</p> <p>Mean difference: -0.03 (95% CI [-0.38, 0.32])</p> <p><i>P</i> value = 0.87</p>
	Total readmission after discharge (56 days)	<p>Teleconsultations</p> <p>Events: NR</p> <p>Total: 127</p> <p>Conventional treatment</p> <p>Events: NR</p> <p>Total: 130</p> <p>Mean difference: -0.16 (95% CI [-0.44, 0.12])</p> <p><i>P</i> value = 0.26</p>
	Total readmission after discharge (28 days)	<p>Teleconsultations</p> <p>Events: NR</p> <p>Total: 130</p>

Study Design	Outcome (Time Point)	Results
		Conventional treatment Events: NR Total: 131  Mean difference: -0.08 (95% CI [-0.25, 0.09]) P value = 0.35
	AECOPD readmission (182 days)	Teleconsultations Events: NR Total: 121  Conventional treatment Events: NR Total: 121  Mean difference: 0.06 (95% CI [-0.43, 0.54]) P value = 0.82
	AECOPD readmission (84 days)	Teleconsultations Events: NR Total: 127  Conventional treatment Events: NR Total: 126  Mean difference: -0.05 (95% CI [-0.35, 0.25]) P value = 0.75
	AECOPD readmission (56 days)	Teleconsultations Events: NR Total: 127  Conventional treatment Events: NR Total: 130  Mean difference: -0.16 (95% CI [-0.4, 0.09]) P value = 0.2
	AECOPD readmission (28 days)	Teleconsultations Events: NR Total: 130  Conventional treatment Events: NR Total: 131  Mean difference: -0.09 (95% CI [-0.25, 0.07]) P value = 0.28
Yiadam, 2020 <sup>33</sup> RCT	Inpatient readmission (30 days)	Telephone call program Events: 228 Total: 1534

Study Design	Outcome (Time Point)	Results
		Usual care Events: 232 Total: 1520
		Absolute difference: -0.4 (95% CI [-2.9, 2.1]) <i>P</i> value = 0.76
	Observation readmission (30 days)	Telephone call program Events: 59 Total: 1534
		Usual care Events: 55 Total: 1520
		Absolute difference: 0.2 (95% CI [-1.1, 1.6]) <i>P</i> value = 0.74
	Any revisit (30 days)	Telephone call program Events: 318 Total: 1534
		Usual care Events: 322 Total: 1520
		Absolute difference: -0.5 (95% CI [-3.3, 2.4]) <i>P</i> value = 0.76

## RESULTS: EMERGENCY CARE USE

For full study citations, refer to the main report's reference list.

Study Design	Outcome (Time Point)	Results
Bell, 2016 <sup>21</sup> RCT	Unplanned ED visits assessed via follow-up call (30 days)	PILL-CVD Events: 89 Total: 423
		Usual care Events: 85 Total: 428
		Adjusted hazard ratios: 1.03 (95% CI [0.76, 1.39]) P value = NR
Haag, 2016 <sup>25</sup> RCT	Emergency department visits (30 days)	Pharmacist intervention Events: 1 Total: 11
		Usual care Events: 1 Total: 11
		Effect estimate: NR P value = >0.99
Robinson, 2015 <sup>29</sup> Interrupted time-series	Pre-intervention period trend (% change per month) (28 days)	Transition of care calls Events: NR Total: NR
		Pre-intervention Events: NR Total: NR
		Percent change per month: 0.1 P value = 0.1
	Development period trend (% change per month) (28 days)	Transition of care calls Events: NR Total: NR
		Pre-intervention Events: NR Total: NR
		Percent change per month: -0.7 P value = 0.445
	Intervention period trend (% change per month) (28 days)	Transition of care calls Events: NR Total: NR
		Pre-intervention

Study Design	Outcome (Time Point)	Results
		Events: NR Total: NR
		Percent change per month: 0.7 <i>P</i> value = 0.478
		Transition of care calls Events: NR Total: NR
		Pre-intervention Events: NR Total: NR
		Percent change between pre-intervention and development: 1.5 <i>P</i> value = 0.547
		Transition of care calls Events: NR Total: NR
		Pre-intervention Events: NR Total: NR
		Percent change between development and intervention: 3.1 <i>P</i> value = 0.174
		Pharmacist counseling Events: 17 Total: 140
		Usual care Events: 11 Total: 139
		Effect estimate: NR <i>P</i> value = 0.24
Soong, 2014 <sup>31</sup> Cluster RCT	Unplanned ED visits to any hospital in the local health region as verified per patient self-report and/or available electronic medical records (30 days)	Patient navigator call group Events: 22 Total: 107
		No call group Events: 19 Total: 107
		OR = 1.2 (95% CI [0.61, 2.37]) <i>P</i> value = 0.6
Yiadom, 2020 <sup>33</sup> RCT	Emergency department revisits (30 days)	Telephone call program Events: 93 Total: 1534

Study Design	Outcome (Time Point)	Results
		Usual care Events: 82 Total: 1520  Absolute difference: 0.7 (95% CI [-1, 2.3]) P value = 0.43
Farris, 2014 <sup>24</sup> RCT	ED visits (30 days)	Enhanced intervention Events: 38 Total: 287  Minimal intervention Events: 49 Total: 296  Effect estimate: NR P value = NR
	ED visits (90 days)	Enhanced intervention Events: 41 Total: 287  Minimal intervention Events: 40 Total: 296  Effect estimate: NR P value = NR

## RESULTS: COMPOSITE MEASURES OF UTILIZATION

For full study citations, refer to the main report's reference list.

Study Design	Outcome (Time Point)	Results
Haag, 2016 <sup>25</sup> RCT	Composite 30-day emergency department visit or hospital readmission (30 days)	Pharmacist intervention Events: 2 Total: 11
		Usual care Events: 1 Total: 11
		Effect estimate: NR <i>P</i> value = 0.53
Sarangarm, 2013 <sup>30</sup> Nonrandomized trial	Combined total number of 30-day post-discharge hospitalizations and ED visits (30 days)	Pharmacist counseling Events: 30 Total: 140
		Usual care Events: 24 Total: 139
		Effect estimate: NR <i>P</i> value = 0.34
Farris, 2014 <sup>24</sup> RCT	Composite healthcare utilization: composite variable of combined hospital readmission, emergency department visit or unscheduled office visit (30 days)	Enhanced intervention Events: 81 Total: 287
		Minimal intervention Events: 88 Total: 296
		Effect estimate: NR <i>P</i> value = NR
	Composite healthcare utilization: composite variable of combined hospital readmission, emergency department visit or unscheduled office visit (90 days)	Enhanced intervention Events: 97 Total: 287
		Minimal intervention Events: 90 Total: 296
		Effect estimate: NR <i>P</i> value = NR



Study Design	Outcome (Time Point)	Results
Bell, 2016 <sup>21</sup> RCT	First unplanned health care utilization; was defined as a composite of first unplanned hospital readmission or ER visit within 30 days after discharge (30 days)	<p>PILL-CVD Events: 97 Total: 423</p> <p>Usual care Events: 92 Total: 428</p> <p>Adjusted hazard ratios: 1.04 (95% CI [0.78, 1.39])</p> <p><i>P</i> value = NR</p>

## RESULTS: PATIENT SATISFACTION

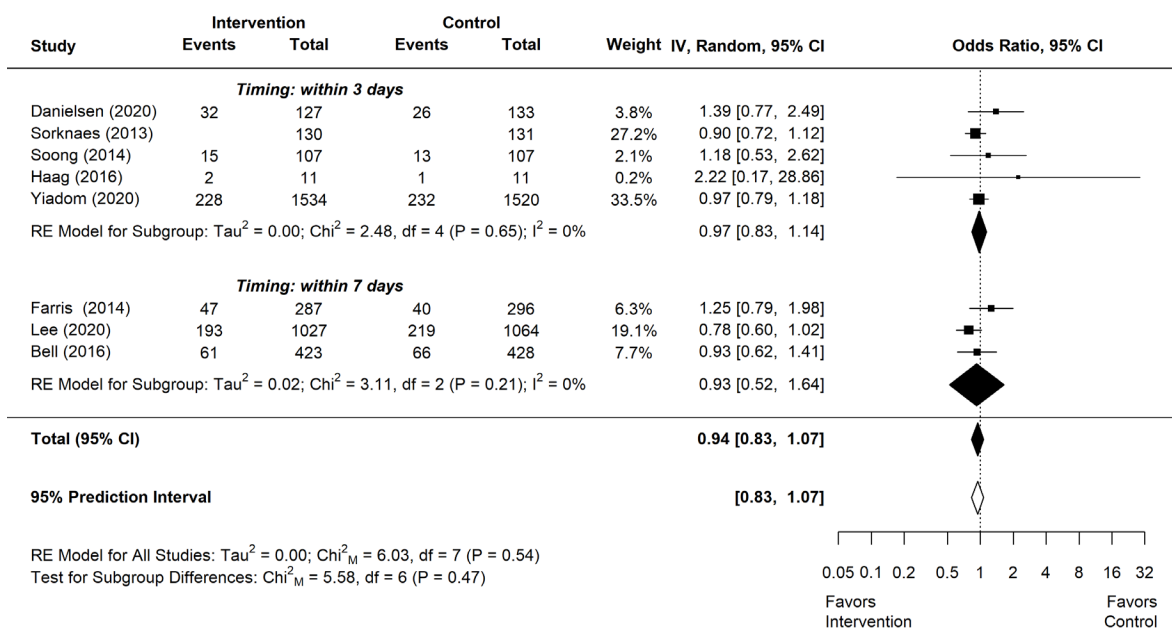
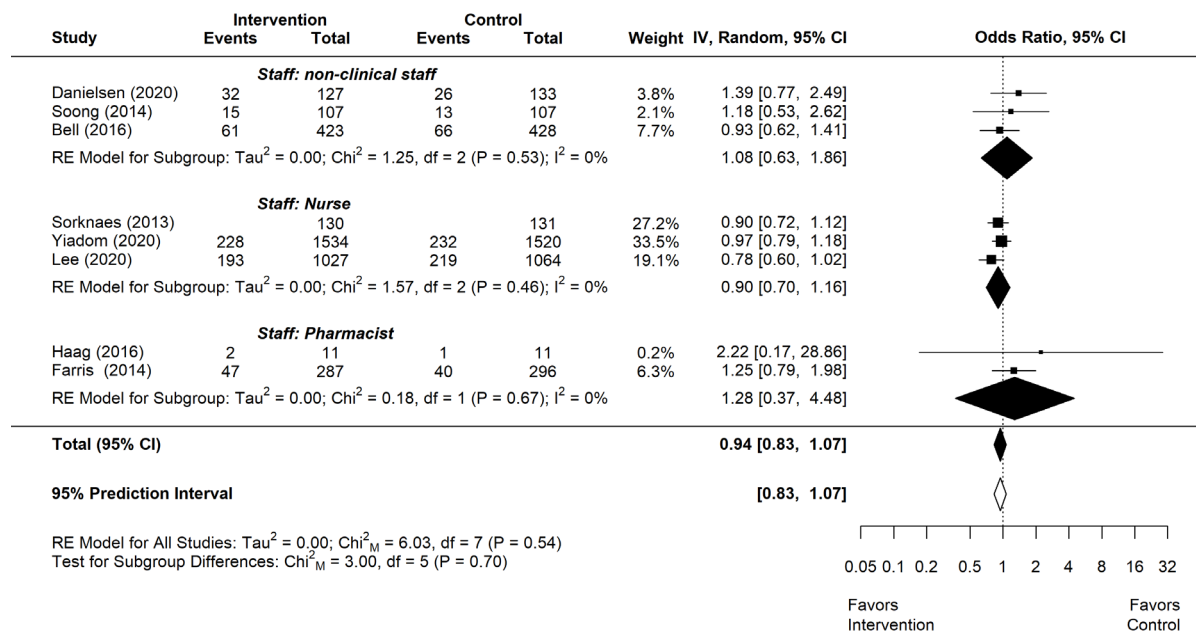
For full study citations, refer to the main report's reference list.

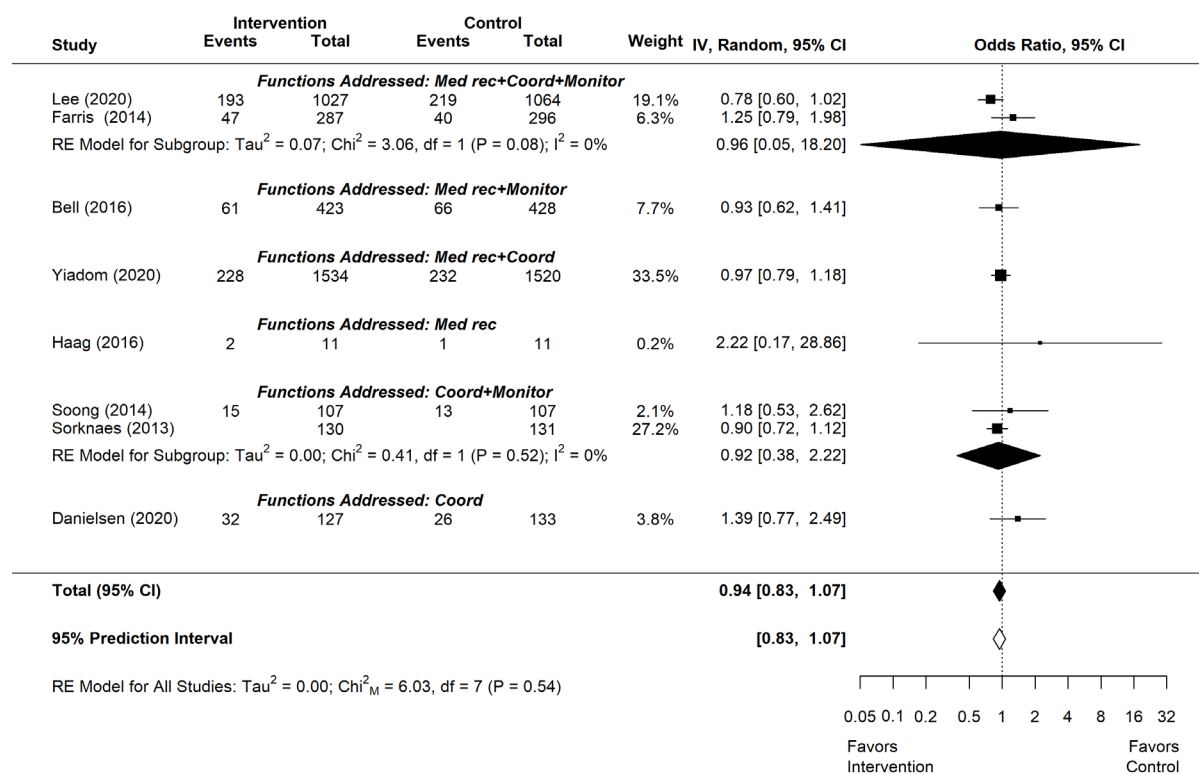
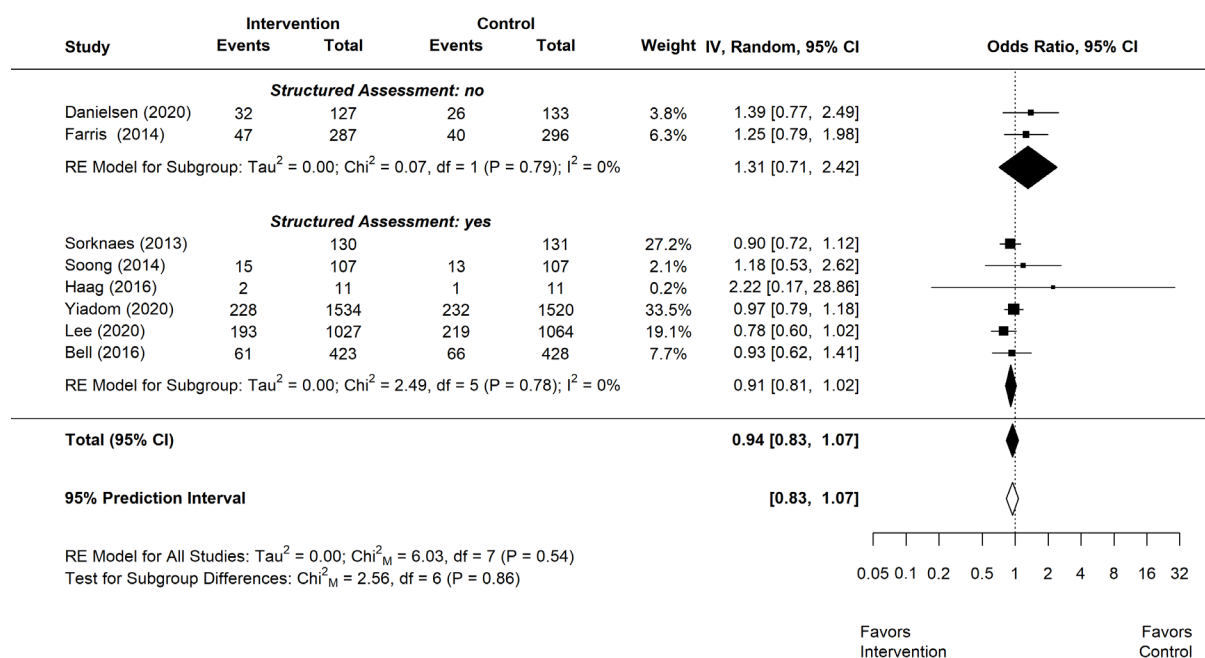
Study Design	Outcome (Time Point)	Results
Clari, 2015 <sup>22</sup> RCT	Patients who said the information was useful (15 days)	Telephone follow-up Events: NR Total: NR
		Routine care Events: NR Total: NR
		Effect estimate: NR <i>P</i> value = 0.004
	Overall experience (15 days)	Telephone follow-up Events: NR Total: NR
		Routine care Events: NR Total: NR
		Effect estimate: NR <i>P</i> value = 0.07
Lindpaintner, 2013 <sup>27</sup> RCT	Patients experience with clarity of information (15 days)	Telephone follow-up Events: NR Total: NR
		Routine care Events: NR Total: NR
		Effect estimate: NR <i>P</i> value = 0.08
	Overall satisfaction with discharge process, 4-point Likert scale (5 days)	Discharge Management Events: NA Total: NA
		Usual care Events: NA Total: NA
		Effect estimate: NR <i>P</i> value = 0.027
	Overall satisfaction with discharge process, 4-point Likert scale (30 days)	Discharge management Events: NA Total: NA
		Usual care

Study Design	Outcome (Time Point)	Results
		Events: NA Total: NA  Effect estimate: NR <i>P</i> value = 0.008
Lundby, 2020 <sup>28</sup> RCT	Overall satisfaction (7 days)	Medication counseling Events: 24 Total: 32  Usual care Events: 29 Total: 32  Effect estimate: NR <i>P</i> value = 0.1
	Overall satisfaction (7 days)	Medication counseling Events: 8 Total: 32  Usual care Events: 0.09 Total: 32  Effect estimate: NR <i>P</i> value = NR
Yiadam, 2020 <sup>33</sup> RCT	Patient experience assessed using 2 items of the Hospital Consumer Assessment of Healthcare Providers and Systems score data from Press Ganey (ie, overall satisfaction; likelihood of recommending hospital (30 days)	Telephone call program Events: NA Total: NA  Usual care Events: NA Total: NA  Absolute difference: 16% response rate was too low for analysis <i>P</i> value = NA

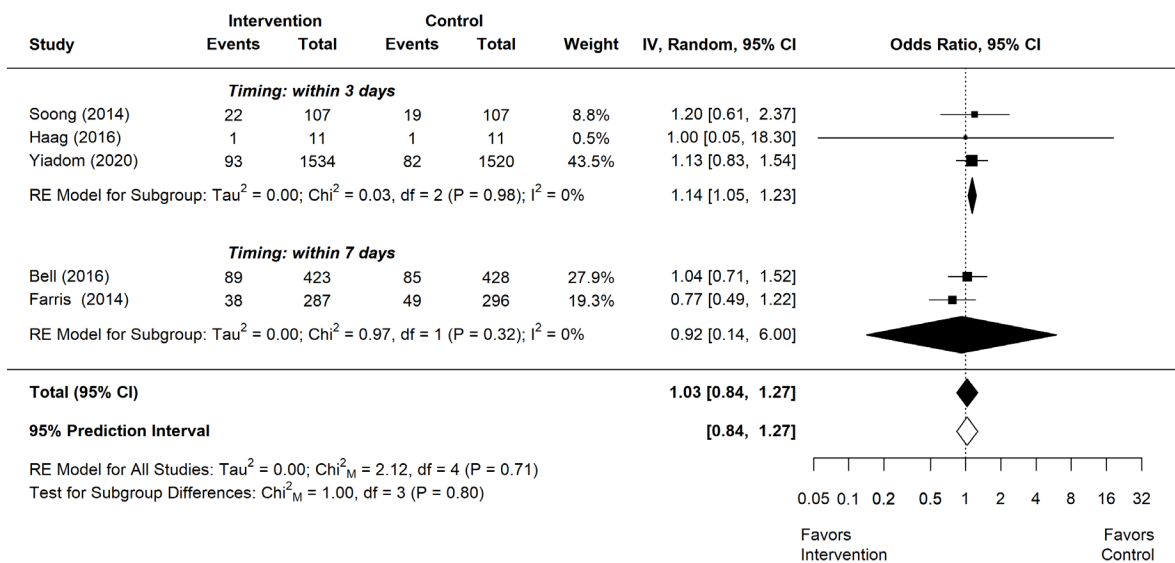
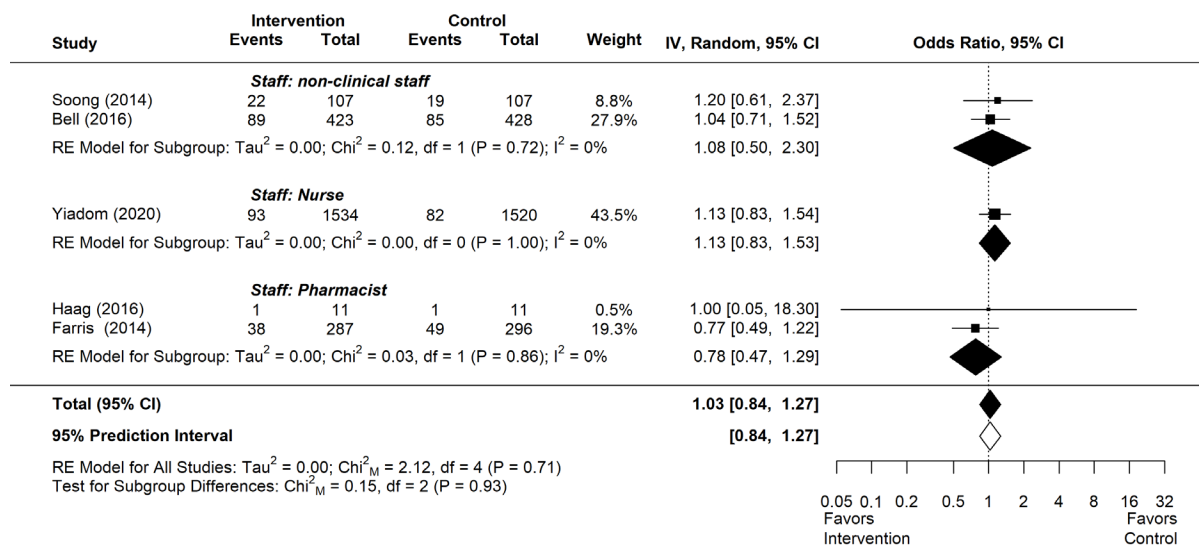
# SUBGROUP ANALYSES

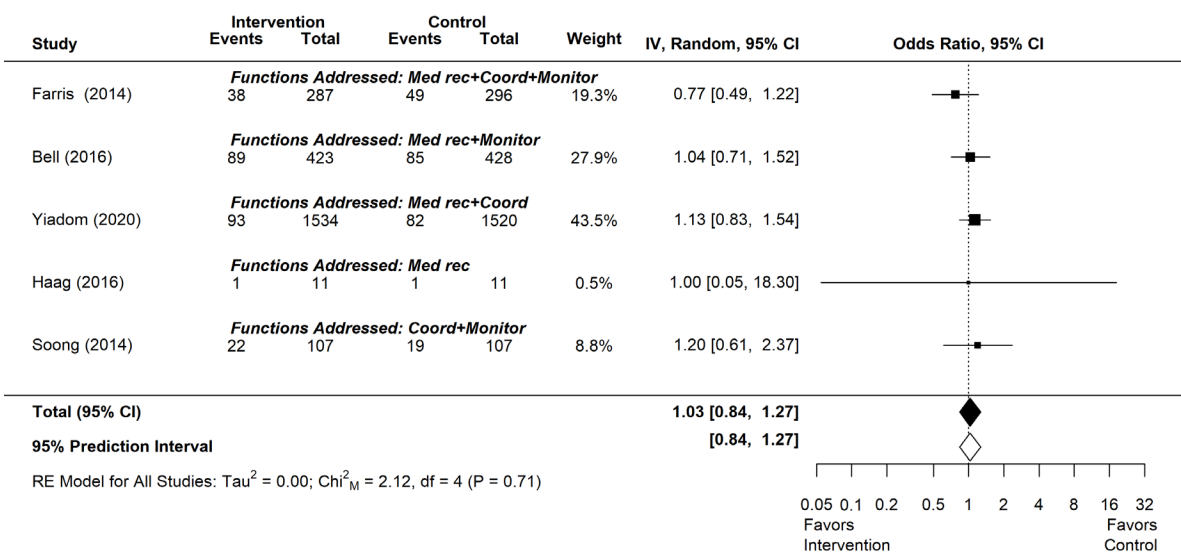
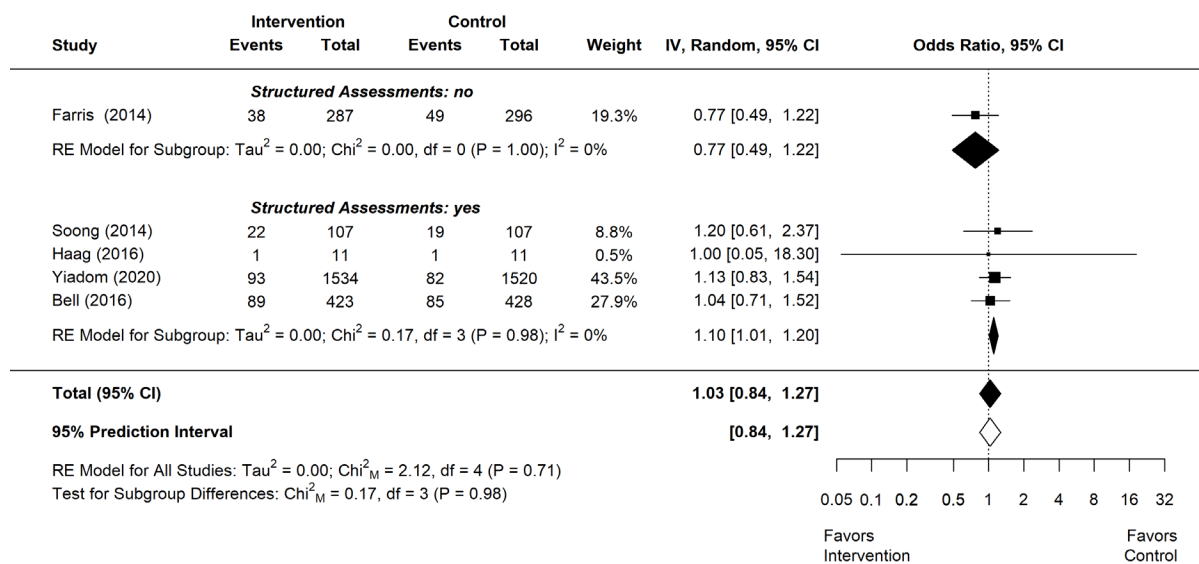
## 30-DAY HOSPITAL READMISSION





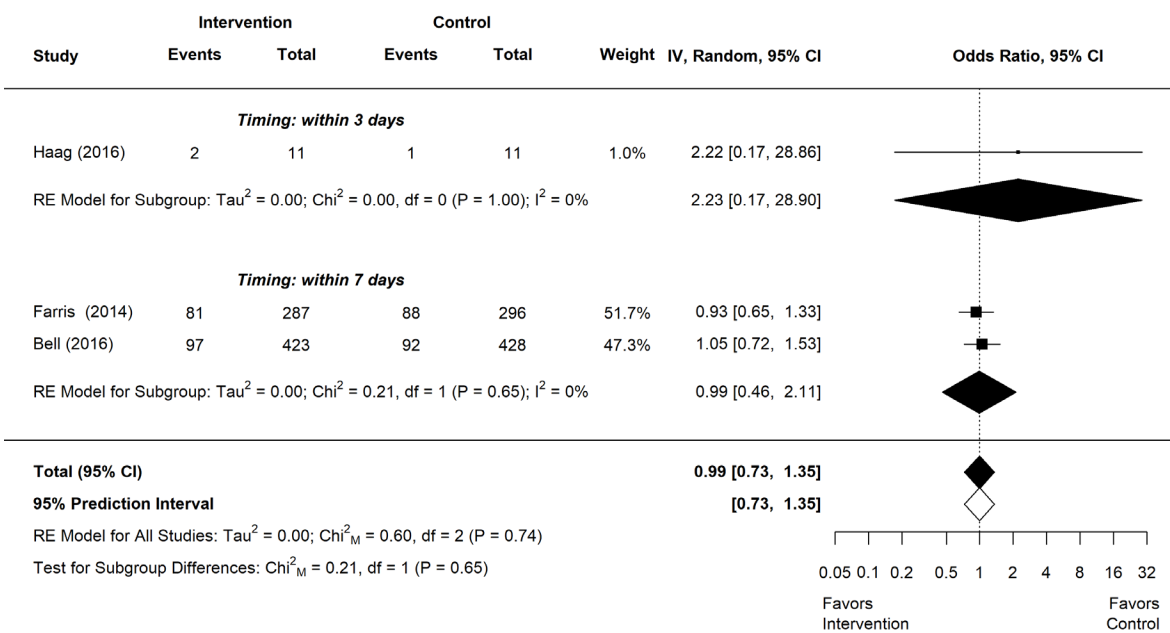
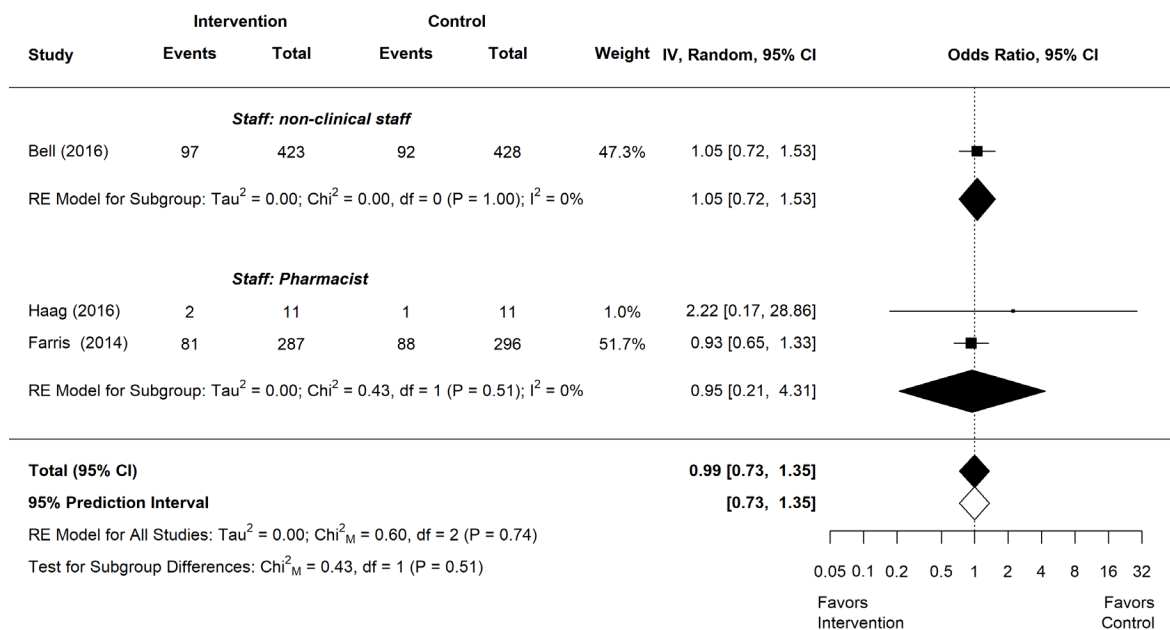
## 30-DAY EMERGENCY DEPARTMENT USE

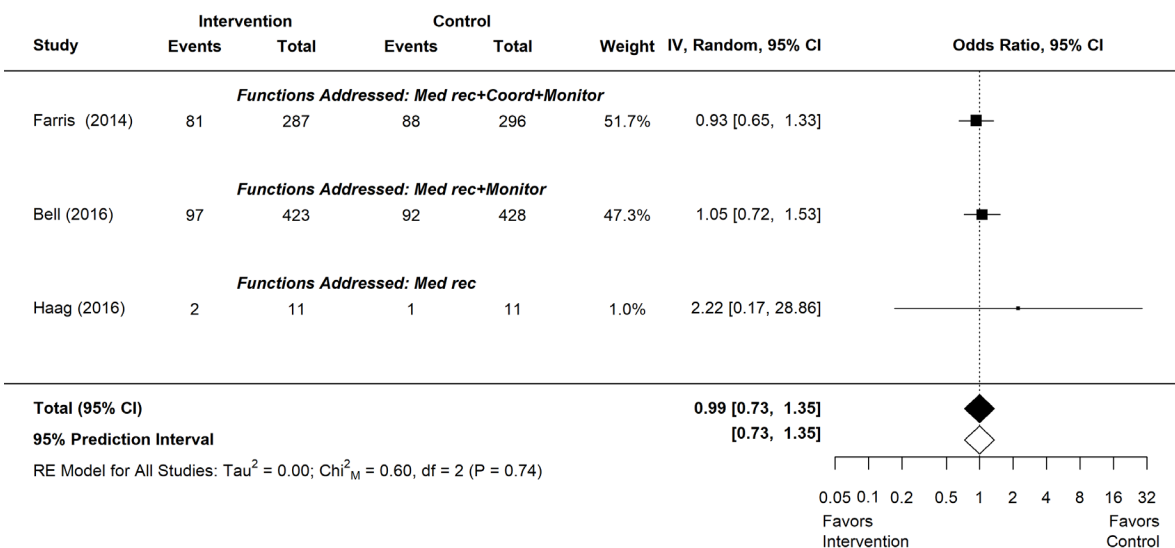
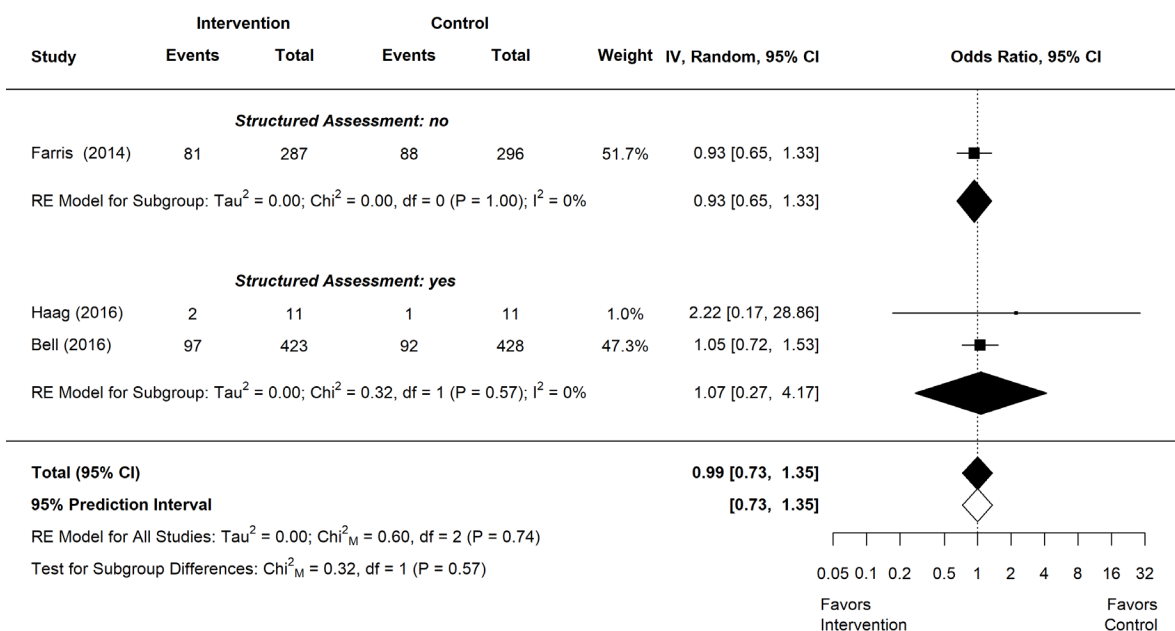






## 30-DAY COMPOSITE ED AND HOSPITAL UTILIZATION





## STUDIES EXCLUDED DURING FULL-TEXT SCREENING

Citation	
Abu-Sheasha, 2020 <sup>1</sup>	Ineligible country
Adams, 2020 <sup>2</sup>	Ineligible study design
Ahc, 2018 <sup>3</sup>	Ineligible comparator
Bashir, 2016 <sup>4</sup>	Ineligible study design
Botha, 2018 <sup>5</sup>	Ineligible country
Brearily, 2020 <sup>6</sup>	Ineligible study design
Cawthon, 2012 <sup>7</sup>	Ineligible intervention
Chan, 2015 <sup>8</sup>	Ineligible intervention
Charles, 2020 <sup>9</sup>	Ineligible intervention
Chen, 2019 <sup>10</sup>	Ineligible country
Choudhury, 2022 <sup>11</sup>	Ineligible study design
Christy, 2016 <sup>12</sup>	Ineligible intervention
Costantino, 2013 <sup>13</sup>	Ineligible intervention
Crannage, 2020 <sup>14</sup>	Ineligible study design
Dichmann Sorknaes, 2016 <sup>15</sup>	Ineligible intervention
Donze, 2023 <sup>16</sup>	Ineligible population
Elmose Mols, 2019 <sup>17</sup>	Ineligible outcomes
Fera, 2014 <sup>18</sup>	Ineligible study design
Freburger, 2022 <sup>19</sup>	Ineligible intervention
Gaines-Dillard, 2015 <sup>20</sup>	Ineligible study design
Gamez-Lopez, 2012 <sup>21</sup>	Ineligible intervention
Gesell, 2019 <sup>22</sup>	Ineligible outcomes
Goldman, 2014 <sup>23</sup>	Ineligible intervention
Hamar, 2016 <sup>24</sup>	Ineligible intervention
Hamar, 2018 <sup>25</sup>	Ineligible study design
Hani, 2021 <sup>26</sup>	Ineligible country
Hervieu-Begue, 2013 <sup>27</sup>	Ineligible study design
Hodalova, 2020 <sup>28</sup>	Ineligible intervention
Hoyer, 2018 <sup>29</sup>	Ineligible study design
Iacoviello, 2017 <sup>30</sup>	Ineligible intervention
Irewall, 2019 <sup>31</sup>	Ineligible outcomes
Jahn, 2014 <sup>32</sup>	Ineligible outcomes
Jalal, 2016 <sup>33</sup>	Ineligible population
Jennings, 2015 <sup>34</sup>	Ineligible intervention
Jenq, 2016 <sup>35</sup>	Ineligible intervention
Jones, 2018 <sup>36</sup>	Ineligible study design
Kansagara, 2012 <sup>37</sup>	Ineligible study design
Kassymova, 2021 <sup>38</sup>	Ineligible population

Citation	
Kassymova, 2023 <sup>39</sup>	Ineligible population
Kilcup, 2013 <sup>40</sup>	Ineligible study design
Kirkham, 2014 <sup>41</sup>	Ineligible study design
Kripalani, 2019 <sup>42</sup>	Ineligible study design
Lavesen, 2016 <sup>43</sup>	Ineligible intervention
Lee, 2022 <sup>44</sup>	Ineligible population
Lindegaard Pedersen, 2017 <sup>45</sup>	Ineligible intervention
Lisby, 2019 <sup>46</sup>	Ineligible population
Liu, 2013 <sup>47</sup>	Ineligible country
Löser, 2022 <sup>48</sup>	Ineligible population
March, 2022 <sup>49</sup>	Ineligible study design
Marcus, 2018 <sup>50</sup>	Ineligible study design
Matarazzo, 2019 <sup>51</sup>	Ineligible outcomes
Miller, 2015 <sup>52</sup>	Ineligible study design
Miller, 2016 <sup>53</sup>	Ineligible study design
Monkong, 2020 <sup>54</sup>	Ineligible country
Montero, 2016 <sup>55</sup>	Ineligible study design
Nguyen, 2023 <sup>56</sup>	Ineligible study design
Nguyen, 2018 <sup>57</sup>	Ineligible intervention
Noel, 2020 <sup>58</sup>	Ineligible intervention
O'Reilly, 2020 <sup>59</sup>	Ineligible study design
Odeh, 2019 <sup>60</sup>	Ineligible study design
Ota, 2013 <sup>61</sup>	Ineligible study design
Parodi, 2022 <sup>62</sup>	Ineligible study design
Phatak, 2016 <sup>63</sup>	Ineligible intervention
Phillip, 2022 <sup>64</sup>	Ineligible publication type
Rasmussen, 2023 <sup>65</sup>	Ineligible study design
Rice, 2016 <sup>66</sup>	Ineligible study design
Rinfret, 2013 <sup>67</sup>	Ineligible outcomes
Ritchie, 2016 <sup>68</sup>	Ineligible intervention
Ross, 2017 <sup>69</sup>	Ineligible intervention
Salmany, 2018 <sup>70</sup>	Ineligible country
Seto, 2020 <sup>71</sup>	Ineligible publication type
Shah, 2021 <sup>72</sup>	Ineligible population
Shalaby, 2022 <sup>73</sup>	Ineligible intervention
Shaver, 2019 <sup>74</sup>	Ineligible study design
Shepherd, 2015 <sup>75</sup>	Ineligible intervention
Sides, 2012 <sup>76</sup>	Ineligible intervention
Simpson, 2014 <sup>77</sup>	Ineligible intervention
Smith, 2021 <sup>78</sup>	Ineligible intervention

Citation	
Sutton, 2021 <sup>79</sup>	Ineligible outcomes
Szöts, 2016 <sup>80</sup>	Ineligible intervention
Tedesco, 2016 <sup>81</sup>	Ineligible study design
Trang, 2015 <sup>82</sup>	Ineligible study design
Turan Kavrakdim, 2020 <sup>83</sup>	Ineligible outcomes
Tuso, 2013 <sup>84</sup>	Ineligible intervention
Tuso, 2014 <sup>85</sup>	Ineligible study design
Van Spall, 2016 <sup>86</sup>	Ineligible publication type
Vieira, 2022 <sup>87</sup>	Ineligible study design
Weisman, 2012 <sup>88</sup>	Ineligible intervention
Wingard, 2017 <sup>89</sup>	Ineligible intervention
Xiao, 2019 <sup>90</sup>	Ineligible study design
Youens, 2019 <sup>91</sup>	Ineligible intervention

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## RISK OF BIAS ASSESSMENTS

### RANDOMIZED CONTROLLED TRIALS (ROB-2)

	Risk of bias domains					Overall
	D1	D2	D3	D4	D5	
Bell 2015	+	+	+	+	+	+
Clari 2015	+	+	-	+	+	-
Danielsen 2020	+	+	+	+	-	-
Farris 2014	+	+	+	+	+	+
Haag 2016	+	-	+	+	+	-
Lee 2020	+	-	+	+	+	-
Lindpaintner 2013	+	X	-	+	+	-
Lundby 2020	-	-	+	+	-	X
Soong 2014	+	+	+	+	-	-
Sorknaes 2013	+	+	+	X	+	-
Yiadom 2020	+	+	+	+	+	+

Domains:

D1: Bias arising from the randomization process.

D2: Bias due to deviations from intended intervention.

D3: Bias due to missing outcome data.

D4: Bias in measurement of the outcome.

D5: Bias in selection of the reported result.

















Judgement

X High

- Some concerns

+ Low

## NONRANDOMIZED COMPARISON STUDIES (ROBINS-I)

		Risk of bias domains							
		D1	D2	D3	D4	D5	D6	D7	Overall
Study	Robinson 2015								
	Sarangarm 2013								

Domains:

D1: Bias due to confounding.

D2: Bias due to selection of participants.

D3: Bias in classification of interventions.

D4: Bias due to deviations from intended interventions.

D5: Bias due to missing data.

D6: Bias in measurement of outcomes.

D7: Bias in selection of the reported result.

Judgement

 Serious

 Moderate

 Low

## PEER REVIEW COMMENTS AND RESPONSES

Comment #	Reviewer #	Comment	Author Response
<i>Are the objectives, scope, and methods for this review clearly described?</i>			
1	1	Yes	Thank you.
2	2	Yes	Thank you.
3	3	Yes	Thank you.
4	4	Yes	Thank you.
5	5	Yes	Thank you.
6	6	Yes	Thank you.
7	7	Yes	Thank you.
<i>Is there any indication of bias in our synthesis of the evidence?</i>			
8	1	No	Acknowledge.
9	2	No	Acknowledge.
10	3	Yes - Am surprise that there are many digital / technology facilitated approaches for post-discharge contacts. For example there are emerging examples / studies of electronic symptom monitoring in oncology, surgery that I've come across. While this may not have been specified in the definition of post-discharge contacts, I think it is important to consider such types of interventions as a type of touch-points which will likely increase in the near future. I would state that the search strategy may have introduced some bias in this regard. For example, I was unable to find some specific search terms for 'automated', 'symptom monitoring', etc. in the search strategies. At the minimum, consider including as a limitation. Otherwise I think the synthesis was good.	Thank you. These types of interventions were not a part of the conceptualization of post-discharge contact approaches. We have noted this in the limitations.
11	4	No	Acknowledge.
12	6	No	Acknowledge.
13	7	No	Acknowledge.
<i>Are there any published or unpublished studies that we may have overlooked?</i>			
14	1	Yes - not within your search criteria timeframe - but see below for what I believe are some important contextual literature	Thank you and we address this comment below.
15	2	No	Acknowledge.
16	3	No	Acknowledge.
17	4	No	Acknowledge.
18	6	No	Acknowledge.
19	7	Yes - AHRQ Reengineered Discharge <a href="https://www.ahrq.gov/patient-safety/settings/hospital/red/toolkit/index.html">https://www.ahrq.gov/patient-safety/settings/hospital/red/toolkit/index.html</a>	This toolkit is now cited in the Background and again in the Discussion sections of the main report, as is the original paper

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			<p>which studied Project RED. Additionally, the toolkit webpage cites a Cochrane review from 2004, and we have included the updated review from 2022 in our citations and background (the Goncalves paper). These references note a small reduction in readmissions when the full toolkit is used.</p> <p>For the purposes of our review on post-discharge contacts, 10 (and likely 11) of the 12 steps in the toolkit should occur prior to discharge, which we have also highlighted in the discussion.</p>
<i>Additional suggestions or comments can be provided below.</i>			
20	1	<p>Overall, I think this report is excellent. Thank you for doing this excellent work.</p> <p>My note is that, when reading it I was surprised that there was no mention of the works by Coleman's Care Transitions Intervention or Naylor Home Follow-up program.</p> <p>Coleman EA, Parry C, Chalmers S, Min S. The Care Transitions Intervention: Results of a Randomized Controlled Trial. Arch Intern Med. 2006;166(17):1822–1828. doi:10.1001/archinte.166.17.1822</p> <p>Naylor MD, Brooten D, Campbell R, et al. Comprehensive Discharge Planning and Home Follow-up of Hospitalized Elders: A Randomized Clinical Trial. JAMA. 1999;281(7):613–620. doi:10.1001/jama.281.7.613</p> <p>I appreciate why they did not make it into your review (they were not in your time horizon) and, based on the studies that made it in, these may have been too intensive of programs to meet your criteria. Based on this, I have two suggestions for you to consider</p> <p>1) If interventions such as these would have not made it into your sample for reasons other than the time horizon, make it more explicit that studies of more comprehensive approaches such as these were excluded.</p> <p>2) Consider mentioning these studies in your discussion as examples of more resource-intensive interventions that have been shown</p>	<p>Thank you for your comments. You are correct that these studies did not make it in due to their publication dates and that the interventions were not conceptually aligned with the type of post-discharge interventions studied here. The focus of this review was on the effectiveness of interventions, in which the majority of the patient contacts are deployed in the post-discharge 7-day window. We state in our discussion that we are focused on a subset of care transition interventions and that more intensive programs have shown positive results. We now cite these studies as historical examples of such programs.</p>

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		to have impact. I appreciate that one might argue that they are now dated enough that the standard of care has changed so that updated studies are needed. However, I would not want your readers to come away with the impression that there are no studies of post-discharge interventions have been shown as being effective.	
21	2	Overall, the report is outstanding. My recommendations are very minor.	Thank you.
22	2	Pages 12 (line 4) and 20 (line 6) according to Adobe (but says ix and 5 at the bottom left corner of the pages) is incorrect. It was not the "Office of Connected Care", it was the "Office of Primary Care" that requested this review.	Thank you. We have made that correction.
23	2	Throughout the document you mention medication reconciliation 35 times, but nurses cannot conduct medication reconciliation, we can only conduct medication review due to our scope of practice. I recommend you update the term "medication reconciliation" to "medication review" when referring to post-discharge contact.	Thank you. We have made this change.
24	2	You mention a couple of times how the VHA is the largest integrated health system in the US, but I wonder if it would be valuable to add how many patients we care for, how many facilities we have, etc. to give context. Non-VA folks who may read this likely have no idea how large we are.	Thank you. We have added this detail to the background section.
25	3	With regard to evidence gaps (PICO), would consider specifying older adult patients with multiple chronic conditions as high risk population where there is little or no evidence. With regard to intervention types, I think it would be worthwhile to clarify that multi-contact approaches could be multi-modal, specific digital vs non-digital approaches, automated vs in-person.	Thank you. We have added these suggestions to Table 3.
26	4	1. page ix rows 37 -42 PDC and ED abbreviation is present but unlike other abbreviation it is not identified anywhere prior for APA format.	Thank you.
27	4	2. page x- section Results of literature-Format of numbers is confusing some are written out some are not? Does this follow APA?	Thank you. Number style follows the rules of the VA ESP program, which asks for all numbers to be numerals. The exception is when a number begins a sentence—then it is spelled out.

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28	4	3. page 9 row 20- typo for the word "documenting" it reads docum2enting.	Thank you; we have corrected this.
29	6	Page x, line 45 - page xi line 31 would be helpful to see information presented in table form, maybe a matrix table that shows study components in one section, outcomes in another, with a list of titles and x's to show which studies covered what in each area.	Thank you. We have a study characteristics table in the Appendix that gives these details for each included study.
30	6	page xi, line 46-49 is making an assumption about whether the half of studies that did not mention a pre-discharge component actually had this due to it being "standard of care". If the assumption is not true in a particular setting, the post-discharge contact still could make little difference, but for very different reasons.	We agree with this statement and further contextualize the other reasons why a post-discharge contact as defined in this review may not be impactful in the Discussion.
31	6	Line 20 on p. 9 has a superscript in the middle of a word	Thank you.
32	6	page 17 line 15- explains "elevated risk". In the ES, I assumed this was "elevated risk" for a psychiatric hospitalization, when in fact, this line shows this is not the case. It would be helpful to clarify this sooner.	Thank you. We define "elevated risk" in the Executive Summary.
33		<p>Page 11- line 59</p> <p>Currently, there is no standard post-discharge practice for Veteran patients transitioning back home from VHA hospitals. This is not completely accurate: Suggest different verbiage.</p> <p>While VHA requires primary care Patient Aligned Care Teams (PACT)(2-days) and mental health teams (7-days) to contact Veterans post discharge, there is variability in implementation.</p>	Thank you for the detailed information on VHA PDC implementation for primary care and mental health hospitalizations. We have added this to the background section.