QUERI

Evidence Brief: Comparative Effectiveness of Appointment Recall Reminder Procedures for Follow-up Appointments

Supplemental Materials

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SEARCH STRATEGIES

SYSTEMATIC REVIEWS

Database: Ovid MEDLINE (April 7, 2015)

1. Reminder Systems/
2. "Appointments and Schedules"/
3. ((recall adj3 remind$) or (remind$ adj3 system$)).mp.
4. (appointment$ adj3 remind$).mp
5. or/1-4
6. meta-analysis.pt.
7. meta-analysis/ or systematic review/ or meta-analysis as topic/ or "meta analysis (topic)"/ or "systematic review (topic)"/ or exp technology assessment, biomedical/
8. ((systematic* adj3 (review* or overview*)) or (methodologic* adj3 (review* or overview*))).ti,ab.
9. ((quantitative adj3 (review* or overview* or synthes*)) or (research adj3 (integrati* or overview*))).ti,ab.
10. ((integrative adj3 (review* or overview*)) or (collaborative adj3 (review* or overview*)) or (pool* adj3 analy*)).ti,ab.
11. (data synthes* or data extraction* or data abstraction*).ti,ab.
12. (handsearch* or hand search*).ti,ab.
13. (mantel haenszel or peto or der simonian or dersimonian or fixed effect* or latin square*).ti,ab.
14. (met analy* or metanaly* or technology assessment* or HTA or HTAs or technology overview* or technology appraisal*).ti,ab.
15. (meta regression* or metaregression*).ti,ab.
16. (meta-analy* or metaanaly* or systematic review* or biomedical technology assessment* or bio-medical technology assessment*).mp,hw.
17. (medline or cochrane or pubmed or medlars or embase or cinahl).ti,ab,hw.
18. (cochrane or (health adj2 technology assessment) or evidence report).jw.
19. (comparative adj3 (efficacy or effectiveness)).ti,ab.
20. (outcomes research or relative effectiveness).ti,ab.
21. ((indirect or indirect treatment or mixed-treatment) adj comparison*).ti,ab.
22. or/6-21
23. 5 and 22
24. limit 23 to yr="2010 - 2015"

Database: Cochrane Database of Systematic Reviews (March 5, 2015)

1. reminder or appointment$.ti,ab.
2. ((recall or appointment) adj2 reminder$).ti,ab.
3. 1 or 2

PRIMARY STUDIES

Database: Ovid MEDLINE and Cochrane Central Registry of Controlled Trials (March 5, 2015)

1. Reminder Systems/
2. 1 not (child$ or pediatric$ or adolescen$).mp.
3. limit 2 to (clinical trial or comparative study or controlled clinical trial or journal article or randomized controlled trial)
4. 2 and (random$ or control$ or cohort or compar$).mp.
5. 3 or 4
6. "Appointments and Schedules"/
7. appointment$.ti,ab.
8. 5 and (6 or 7)

LIST OF EXCLUDED STUDIES

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EVIDENCE TABLES

DATA ABSTRACTION OF INCLUDED SYSTEMATIC REVIEWS

Author Year Clinical Area Outcome(s)	Aims Search details Eligibility criteria	Numbers and designs of included studies applicable to present review; sample sizes	Patient characteristics from included studies applicable to present review	Intervention characteristics from included studies applicable to present review	Overall Results Stratified by subgroup characteristics?
Atherton 2012[1] Primary care, outpatient, community, hospital Whether email was understood and acted upon correctly by recipient as intended by sender	To assess the effects of using email for coordination of healthcare appointments and reminders Cochrane Consumers and Communication Review Group; CENTRAL,MEDLINE,EMBASE, PsycINFO, CINAHL, ERIC; no language or date restrictions <u>Interventions:</u> Email or web messaging systems for coordination of appts or appt reminders; non-screening or preventive care appts <u>Comparison:</u> No intervention; other modes of communication (face-to-face, mail, call, text); automated vs. person email <u>Study design:</u> RCTs, quasi-randomized controlled trials, CBAs (at least 2 intervention and control sites), ITS (at least 3 time points before and after intervention)	NA	NA	NA	No studies included NA

Author Year Clinical Area Outcome(s)	Aims Search details Eligibility criteria	Numbers and designs of included studies applicable to present review; sample sizes	Patient characteristics from included studies applicable to present review	Intervention characteristics from included studies applicable to present review	Overall Results Stratified by subgroup characteristics?
Car 2012[2] Primary care, outpatient, community, hospital Rate of attendance at healthcare appts; cost effectiveness; acceptability; harms	To assess the effects of mobile phone messaging appt reminders for healthcare appts CENTRAL,MEDLINE,EMBASE, PsychINFO, CINAHL, LILACS, African Health Anthology; 1993-present; no language restrictions Interventions: SMS or MMS reminders for healthcare appts, messages between a healthcare provider and patient, not part of a multi-faceted intervention. Comparison: No intervention; other modes of communication (face-to-face, mail, call, email); automated vs. personal text messaging Study design: RCTs, quasi-randomized controlled trials, CBAs, ITS (at least 3 time points before and after intervention)	4 RCTs; N=3498	China Hospital Health Promotion Centre, mean age 50.6 years, 57.6% male; Scotland GP, patients who failed to attend 2 or more routine appts in preceding year; UK, patients at 6 ENT clinics in one general hospital; Malaysia, patients at 7 primary care clinics	Automated SMS text reminder 72 hrs before appts vs telephone reminder 72 hrs before appt vs no reminder; SMS text reminder from PC day prior to appt vs no reminder; postal reminder 2 weeks before appt all groups vs SMS text message 24 hrs before appt; SMS text reminder 24-48 hrs before appt vs call reminder 24-48 hrs before appt vs no reminder	Text reminder vs no reminder: increased rate of attendance at healthcare appts RR=1.10 (1.03-1.17). Text reminder vs mail reminder: increased rate of attendance at healthcare appts RR= 1.10 (1.02-1.19). Text reminder vs call reminder: no difference in rate of attendance RR=0.99 (0.95-1.03). Two studies (Cheng, Leong) reported cost per text message lower than cost per phone call reminder. One study (Koury) reported 98% of patients willing to receive text message reminders prior to intervention. One study (Fairhurst) reported no adverse events. Attendance rates after text message vs phone reminders were similar, but text message was less expensive. Relative cost of text message reminder per attendance ranged from 55%-65% of the cost of phone call reminders (2 studies). No harms or adverse effects reported (1 study). NR

Author Year Clinical Area Outcome(s)	Aims Search details Eligibility criteria	Numbers and designs of included studies applicable to present review; sample sizes	Patient characteristics from included studies applicable to present review	Intervention characteristics from included studies applicable to present review	Overall Results Stratified by subgroup characteristics?
Free 2013[3] Any clinical area Attendance rates, non-attendance rates	To quantify the effectiveness of mobile technology based interventions for healthcare providers or to support healthcare services MEDLINE, EMBASE, PsycINFO, Global Health, The Cochrane Library, NHS HTA Database, Web of Science; 1990-2010 Interventions: mobile technology interventions not part of mixed (mobile device and non-mobile device) interventions; medical education, clinical diagnosis and management, communication between healthcare providers, health services support (appt reminders and test result notification) Comparison: other intervention, usual care, no intervention Study design: controlled trials	6 RCTs; N=20,632 2 nRCTs; N=301 (1 study, 1 study NR)	Holland orthodontic clinic patients; patients with appts at China Hospital Health Promotion Centre; Brazil outpatient clinic patients; Scotland, patients failed to attend 2 or more appts in past year; USA repeat blood donors; Malaysia; Malaysia chronic disease patients; UK, patients with appt at Yarkhill Hospital	Reminder SMS text (range from 24-72 hrs before appt); reminder call (range from 24-72 hrs before appt); no reminder	SMS text reminder vs no reminder increased attendance rates, pooled RR=1.06 (1.05-1.07). SMS text reminder vs other reminder, no significant difference in attendance rates, pooled RR=0.98 (0.94-1.02). No significant difference in cancellation rates with SMS text appt reminder to persistent non-attenders, pooled RR=1.08 (0.89-1.30). No significant difference in cancellation rates with SMS text appt reminder vs call (RR=2.31 (0.91-5.95)) and mail (RR=2.67 (0.92-7.71)) reminders. Mobile phone call reminder vs no reminder, increased attendance rate, RR=1.24 (1.07-1.43). Two trials that evaluated the effects on cancellations of texting appointment reminders to patients who persistently fail to attend appointments showed no statistically significant change (pooled RR of 1.08; 95% CI 0.89–1.30, I2= 0%). NR

Author Year Clinical Area Outcome(s)	Aims Search details Eligibility criteria	Numbers and designs of included studies applicable to present review; sample sizes	Patient characteristics from included studies applicable to present review	Intervention characteristics from included studies applicable to present review	Overall Results Stratified by subgroup characteristics?
George 2003[4] Primary care Effectiveness in improving attendance; # missed appts, non-attendance rate	Review the evidence on strategies to reduce non-attendance in general practice MEDLINE, EMBASE, Cochrane Library, NHS National Research Register, NHS R&D Register, through Aug. 2001, English only Studies describing epidemiology of non-attendance or interventions for reducing non-attendance in primary care. Studies on general appts in primary care as opposed to screening appts were of particular interest.	1 SR; N=5285 (pooled) 2 RCTs; N=37 patients (1 study), N=2500 appts (1 study)	Patients attending for medical, psychosocial, and screening purposes in 23 hospitals and family practice in USA, Canada and UK; UK general medical practice patients, frequent non-attenders; UK dental practice patients	Reminder letters and calls, orientation statement, contracts, physician prompts; Letter to ask patients to cancel if unable to attend, letter reminder 3 days before appt, telephone reminder day before appt, automated telephone reminder day before appt, combination letter and telephone reminders	Results of effectiveness from included SR: All interventions effective: Letter prompt OR= 2.17 (1.69-2.92), Telephone prompt OR=2.88 (1.93-4.31), Orientation statement OR=2.91 (1.51-5.61), Contracting OR=1.89 (1.04-3.45), Physician prompt OR=1.64 (1.36-1.98); 2RCTs: reduction in # missed appts in intervention group (mailed letter reminder) from 2.9-0.5 (0.2-0.8) and control group (no letter reminder) from 2.8-1.2 (0.7-1.8); reduction in non-attendance rate for letter reminder (non-attendance rate=3.8%), telephone reminder (4.4%), automated telephone reminder (5.6%), and combination reminder (3.0%). Control group non-attendance rate 9.4%. NR

Author Year Clinical Area Outcome(s)	Aims Search details Eligibility criteria	Numbers and designs of included studies applicable to present review; sample sizes	Patient characteristics from included studies applicable to present review	Intervention characteristics from included studies applicable to present review	Overall Results Stratified by subgroup characteristics?
Gurol Urganci 2013[5] Primary care, outpatient, community, hospital Attendance rate; non-attendance rate; cost effectiveness; acceptability; harms	To assess the effects of mobile phone messaging appt reminders for healthcare appts CENTRAL,MEDLINE,EMBASE, PsychINFO, CINAHL, LILACS, African Health Anthology; 1993-present; no language restrictions <u>Interventions</u>: SMS or MMS reminders for healthcare appts, messages between a healthcare provider and patient, not part of a multi-faceted intervention. <u>Comparison</u>: No intervention; other modes of communication (face-to-face, mail, call, email); automated vs. personal text messaging <u>Study design</u>: RCTs	8 RCTs; N=6615	China Hospital Health Promotion Centre, mean age 50.6 years, 57.6% male; China Ophthalmic Center, parent-child pairs; Scotland GP, patients who failed to attend 2 or more routine appts in preceding year; UK, patients at 6 ENT clinics in one general hospital; Malaysia, primary care clinic patients; Kenya public health clinics, males undergone circumcision, Australia PT outpatient clinic patients	Automated SMS text reminder 72 hrs before appts vs telephone reminder 72 hrs before appt vs no reminder; SMS text reminder from PC day prior to appt vs no reminder; postal reminder 2 weeks before appt all groups vs SMS text message 24 hrs before appt; SMS text reminder 24-48 hrs before appt vs call reminder 24-48 hrs before appt vs no reminder; 4 SMS text reminders 1 and 4 days before appt vs no reminder; daily SMS text for 7 days after circumcision with care instructions and reminder to visit clinic on day 7 vs no reminder; SMS text reminder 2 days prior to appt vs no reminder	Text reminder vs no reminder: increased rate of attendance at healthcare appts RR=1.14 (1.03-1.26). Text reminder vs mail reminder: increased rate of attendance at healthcare appts RR= 1.10 (1.02-1.19). Text reminder vs call reminder: no difference in rate of attendance RR=0.99 (0.95-1.02). Two studies (Cheng, Leong) reported cost per text message 55-65% lower than cost per phone call reminder. One study (Koury) reported 98% of patients willing to receive text message reminders prior to intervention. One study (Fairhurst) reported no adverse events. NR

Author Year Clinical Area Outcome(s)	Aims Search details Eligibility criteria	Numbers and designs of included studies applicable to present review; sample sizes	Patient characteristics from included studies applicable to present review	Intervention characteristics from included studies applicable to present review	Overall Results Stratified by subgroup characteristics?
Guy 2012[6] Hospital, outpatient, primary care, blood bank Attendance rate	To examine effectiveness of SMS text reminders at increasing clinic attendance rates. MEDLINE, EMBASE, Cochrane Library, Google; through June 2010; no language restrictions <u>Interventions</u>: SMS text reminders for already scheduled appts in healthcare facility <u>Comparison</u>: no reminder	8 RCTs; N=4760 5 Observational with concurrent control; N=60,498 5 Observational with historical control; N=57,853	Patients from UK, Australia, Scotland, Malaysia, Ireland, US, Denmark, Brazil, Korea, Netherlands, China; primary care, orthodontic, pediatric, preventive health, ophthalmology and blood bank clinics	SMS text message reminders 24 hrs to 8 weeks before appt; general or personalized messages; vs no reminder	Use of SMS reminders to increase attendance summary OR=1.48 (1.33-1.72) No significant subgroup differences by clinic type (primary care and hospital outpatient), message timing (24, 48, 72+ hrs) and target age group (pediatric, older)

Author Year Clinical Area Outcome(s)	Aims Search details Eligibility criteria	Numbers and designs of included studies applicable to present review; sample sizes	Patient characteristics from included studies applicable to present review	Intervention characteristics from included studies applicable to present review	Overall Results Stratified by subgroup characteristics?
Hasvold 2011[7] Hospital outpatient Non-attendance rate	To assess the effect of reminders on non-attendance rates. To determine difference in non-attendance rates with reminders sent manually or automatically, by time frame when reminders are sent and to determine the costs and benefits of using reminders. PubMed through February 2011, English or Scandinavian languages <u>Population</u>: hospital outpatient patients <u>Interventions</u>: call and text (SMS) reminders for hospital appts, automated or manual <u>Comparison</u>: no reminder, usual care	9 RCTs; N=17,741 8 nRCTs; N=50,096 7 retrospective comparison; N=77,454 2 concurrent; n=316 2 before-after; N=323 1 prospective cohort; N=1,027	Hospital outpatient patients from UK, Australia, Netherlands, China, Brazil, Ireland, US, Ireland, Malaysia, Denmark, New Zealand, Switzerland	Manual or automatic telephone reminders: Call reminders, SMS reminders, call and SMS reminders, 1-17 months duration, manual or automatic reminders	Weighted average change in non-attendance rates: manual reminders (SMS or telephone completed by health-care professional) - absolute change = 8.3%, relative change = 39.1%, automated reminders (computer-automated SMS or telephone) - absolute change=8.9%, relative change=28.9%. No apparent effect of time at which reminder is issued with relative change in non-attendance rate.

Author Year Clinical Area Outcome(s)	Aims Search details Eligibility criteria	Numbers and designs of included studies applicable to present review; sample sizes	Patient characteristics from included studies applicable to present review	Intervention characteristics from included studies applicable to present review	Overall Results Stratified by subgroup characteristics?
Liu 2014[8] Outpatient, infectious disease Adherence to return appt; treatment completion; retrieval of non-attenders; # patients returning for appt	To assess the effects of reminder systems on improving attendance at TB diagnosis, prophylaxis and treatment clinic appointment Cochrane Infections Diseases Group Specialized Register, Cochrane EPOC Specialized Register, CENTRAL,EMBASE, CINAHL, SCI-EXPANDED, Social Sciences Citation Index, metaRegister of Controlled trials, through August 2014, no language restrictions Population: children and adults who require treatment, prophylaxis, or diagnostic or screening services for TB Interventions: any actions to remind TB patients to take medication or attend appts or actions to contact patients with missed appts Comparison: no reminder, other reminders Study design: RCTs (including cluster and quasi-RCTs), CBAs	2 Quasi-RCTs; N=2,635 7 RCTs; N=1,999	Children (1-12yrs) due for TB test (USA); patients (>= 12 yrs) with radiographic evidence of TB (South India); patients (>15 yrs) with TB (Northern Thailand); patients with TB who delayed coming to collect drugs for at least 3 days (Iraq); newly diagnosed TB patients (South India); volunteers in TB detection drive (USA), school-aged children without active TB diagnosis (Spain)	Call reminder 1 day prior to appt; home visit 4 days after missed appt, reminder letter 4 days after missed appt; call reminder to attend appt and take medication; home visit; reminder letter 4 days after appt date; take home reminder card, postcard reminder, reminder card with message on importance of returning for appt; call reminder or home visit every 3 months on importance of chemoprophylaxis and appt attendance	Attendance at single clinic appt (people with TB): pre-appt reminder increased attendance compared to no reminder RR=1.32 (1.1-1.59). Default reminder increased attendance at appt compared to no reminder RR=5.04 (1.61-15.78). Attendance at clinic (people at risk for TB): no difference in attendance between pre-appt reminder and no reminder RR=1.06 (0.92-1.21). NR

Author Year Clinical Area Outcome(s)	Aims Search details Eligibility criteria	Numbers and designs of included studies applicable to present review; sample sizes	Patient characteristics from included studies applicable to present review	Intervention characteristics from included studies applicable to present review	Overall Results Stratified by subgroup characteristics?
McLean 2014[9] Outpatient Attendance, cancellations, rescheduling	Exploring the differential effect of reminder systems for different segments of the population for improving attendance, cancellation, and rescheduling of appointments. Allied and Complementary Medicine, Cumulative Index to Nursing and Allied Health Literature Plus, Cochrane Library, EMBASE, Health Management Information Consortium, Institute of Electrical and Electonics Engineers, King's Fung Library Catalogue, Maternity and Infant Care, MEDLINE, Physiotherapy Evidence Database, PsychINFO, SPORTDiscuss and Web of Science: January 2000 to February 2012. Systematic reviews: partially or completely examined appt reminder systems, included studies published since 2000 Primary studies: investigated appt reminder systems for an *already-scheduled* health-related outpatient appt, published in English between 2000 and 2012.	SRs: 11 RCTs: 31 (33,626)	Patients attending general healthcare appts or in need of immunizations.	Automated telephone reminders, SMS texting, postal reminders, email reminders, no intervention.	One study in an orthodontic practice reported differential attendance for boys over girls and the affluent over those with higher Townsend deprivation scores.

Author Year Clinical Area Outcome(s)	Aims Search details Eligibility criteria	Numbers and designs of included studies applicable to present review; sample sizes	Patient characteristics from included studies applicable to present review	Intervention characteristics from included studies applicable to present review	Overall Results Stratified by subgroup characteristics?
Reda 2012[10] Outpatient, mental health Attendance at mental health appt	To assess effects of prompting by professional carers on attendance at clinics for those with suspected serious mental illness Cochrane Schizophrenia Group Trials Register through May 2012 Population: anyone having been diagnosed or suspected of a serious mental illness Interventions: any prompt (text, letter, call, visit, financial or other awards) Comparison: standard care Study design: RCTs, quasi-RCTs	4 RCTs; N=789	Adults attending or referred to mental health clinics	Call reminder 2 days prior to appt; individualized letter reminder 72 hrs prior to appt; orientation letter (with or without telephone reminder 24 hrs prior to reminder), telephone reminder only; letter reminder (1 or 3 days prior to appt), letter orientation statement (1 or 3 days prior to appt)	No difference between reminders and no reminders in did not attend rate: telephone reminder RR=0.84 (0.66-1.07), text-based reminder RR=0.76 (0.43-1.32), combination telephone/text reminders RR=0.7 (0.42-1.17). No difference between telephone and text-based reminders in did not attend rate RR=1.93 (0.98-3.8). No difference between text letter and text orientation statement in did not attend rate: any time before appt RR=1.62 (0.89-2.92), one day before appt RR=0.78-5.15), three days before appt RR=1.38 (0.64-2.93). All prompts considered (regardless of type) results were of greater significance and suggested an effect to increase the rate of attendance (RR missed appointments 0.80 CI 0.65-0.98). NR

Author Year Clinical Area Outcome(s)	Aims Search details Eligibility criteria	Numbers and designs of included studies applicable to present review; sample sizes	Patient characteristics from included studies applicable to present review	Intervention characteristics from included studies applicable to present review	Overall Results Stratified by subgroup characteristics?
Schauman 2013[11] Outpatient, mental health Appt attendance	To assess effects of interventions to increase appt attendance in mental health services MEDLINE, EMBASE, PsycINFO, CENTRAL, British Nursing Index, CINAHL through June 2012, no language restrictions <u>Population</u>: adult mental health patients <u>Intervention</u>: interventions with explicit aim of increasing initial appt attendance or decreasing non-attendance in adult mental health services <u>Comparison</u>: standard care <u>Study design</u>: RCTs, quasi-RCTs	21 studies; N=5,043	USA, UK, Spain, New Zealand; hospital-based, specialist and community mental health outpatient clinics	Opt-in systems (patient contact clinic for appt) vs standard scheduling; telephone reminder and letter reminders vs no reminder and vs standard appt letter; accelerated scheduling vs standard scheduling; questionnaire vs standard appt letter; choice of therapist	No meta-analysis due to study heterogeneity. Reminder letters and choice of therapist may increase initial appt attendance; telephone reminders, opt-in systems, accelerated scheduling and pre-appt questionnaires do not appear increase initial appt attendance. NR

Author Year Clinical Area Outcome(s)	Aims Search details Eligibility criteria	Numbers and designs of included studies applicable to present review; sample sizes	Patient characteristics from included studies applicable to present review	Intervention characteristics from included studies applicable to present review	Overall Results Stratified by subgroup characteristics?
Stubbs 2012[12] Outpatient, primary care, hospital, dental Non-attendance rate/no shows; cost-effectiveness	To compare various reminder interventions to reduce outpatient non-attendance; review return-on-investment and revenue recovery PubMed, Nov. 1999 - Nov. 2009, English only. Numerical result of efficacy; reported # of patients or appts; include comparison to control; exclude articles on screening. English language publications of studies in outpatient procedural or nonprocedural settings from industrialized countries in Europe, North America, and Asia. Interventions: Telephone, mail, text (SMS), email appt reminders; open or advanced access scheduling Comparisons: No appt reminder intervention; traditional scheduling with or without reminders	Telephone reminders: 10 RCTs, 15 non-RCTs; N=40,164 Text/SMS: 4 RCTs, 9 non-RCTs; N=88,547 Mail: 6 RCTs, 1 non-RCT; N=6,621 Open access: 4 non-RCT; N=15,218 Recall Reminder: 1 non-RCT; N=2,116	NR	NR	Weighted average reduction in non-attendance: telephone reminders (9.4%), text (SMS) reminders (8.6%), letter reminders (7.6%). Open access scheduling: 16.1% decrease in no-shows for appts using open-access scheduling. Statistical significance and variance around weighted averages NR. SMS costs ranged from around 36-45% less expensive than telephone reminders. The cost of sending SMS messages can be justified through revenue recovery for patient visits, with return-on-investments ranging from 10-30-fold. Telephone reminders combined with postcard reminders produced the greatest net annual revenue recovery compared to telephone reminders or postcard reminders alone. NR

DATA ABSTRACTION OF INCLUDED PRIMARY STUDIES

Data Abstraction of Observational Studies

Author Year N Clinical Area; Appointment Type	Patient Characteristics	Intervention(s)	Outcome(s) Subgroup Analysis	Results Adjustment	Setting; Timeframe
Brannan 2011[13] N=201 Ophthalmology; Follow-up; required in 1 month or greater (type NR)	54.7% female, 45% ≥65 yo	Customized text message sent 2 weeks prior to scheduled appointment, patients asked to confirm, if no confirmation, received another customized SMS text sent 1 week prior to appointment	Did not attend (DNA) rate in the participating group of follow-up attendees, could not attend (CNA) rate, proportion of mobile to landline communication, and number responding to text message A sub analysis of the 65 years and over group revealed only 13% (12/92 patients) used mobile phones, with 74% of the under 65 year olds using mobile phones as preferred method of communication (81/109 patients).	SMS text messaging reminders reduced the DNA rate (historic rate of 12% for follow-up patients was reduced to 5.5%). The historic CNA rate of 6% had been reduced to 2%. 47% of patients used mobile phone technology with text messaging capability and 69% responded to the text reminder. None	Single general ophthalmology clinic; July 2007-June 2008
Cherniack 2007[14] N=NR Geriatrics; Follow up	NR	Open-access scheduling; letter sent to patients advising to call and make appt 30 days prior to next anticipated visit	# of patient encounters; no shows; patient satisfaction NA	Rate of no shows reduced from 18% to 11% (p=0.000). NS reduction in # of patient encounters of 8% (p=0.405). 55% of convenience sample (125 patients) preferred open-access scheduling. None	Miami VA Geriatrics Clinic; FY 2005-2006

Author Year N Clinical Area; Appointment Type	Patient Characteristics	Intervention(s)	Outcome(s) Subgroup Analysis	Results Adjustment	Setting; Timeframe
Farmer 2014[15] N=3717 Sexual health (HIV); Pre-booked	Male: 18% Female: 36.5% HIV: 45.5%	Text message sent 2 days prior to appointment	DNA rates, cancellation rates NA	After the introduction of short message service text appointment reminders, the overall 'did not attend' rates fell from 28% to 24% (p<0.005) and from 28% to 18% (p<0.05) for male sexual health appointments. No significant change in the HIV clinic 'did not attend' rates. In the same periods, the cancellation rates increased from 62% to 66% (n.s.) and from 55% to 72% for female sexual health clinics (p<0.005). None	Single sexual health/HIV clinic (Patrick Clements Clinic); 2009 (12 month period before introduction of SMS messages), and then May 2012-April 2013
Haufler 2011[16] N=8688 Surgery; Multiple pediatric and adult surgical procedures	NR	RN preoperative phone call to patient 3 days before procedure	Rate of day-of-surgery cancellations resulting from no shows (NS), NPO violations (NPO), and lack of responsible adult to accompany patient home (RA) NA	Total day of surgery cancellations reduced from 6.01%to 4.43% (z=2.77, P =.006). Day of surgery cancellations due to NS, NPO, RA issues reduced from 2.36% to 1.32% (z=2.910, P=.004). Increased patient satisfaction (data not reported). Increased recovered revenue ($102,983). None	Single ambulatory surgical center at the University of North Carolina ASC (4 operating rooms); Began July 2009 (data reported 6 months after project started)

Author Year N Clinical Area; Appointment Type	Patient Characteristics	Intervention(s)	Outcome(s) Subgroup Analysis	Results Adjustment	Setting; Timeframe
Henry 2012[17] N= Intervention: 374 Control: 210 Primary care (HIV); Follow-up HIV primary care appointments	Race/ethnicity: White: 19.2% AA: 33.4% Hispanic: 4.6% Asian/Native American: 6.4% Mental disorders: Depression: 51.6% PTSD: 20.3% Schizophrenia: 9.1% Hepatitis: B: 23.5% C: 32.4% Homeless: 35.3% STIs: 27.3% Illicit drug use: 35.3%	Automated telephone appointment reminder 2 weeks prior to the patient's regularly scheduled HIV clinic appointment	Reduction in no-shows and patient factors associated with no-shows Patient age, race and ethnicity, marital status, low income, lack of housing, STIs, mental disorders, evidence of prior hepatitis B or C infection, illicit drug use, number of scheduled appointments	Patients who were not homeless (aOR=0.77, (0.61–0.98), patients who were not diagnosed with depression (aOR=0.65, (0.49–0.86), and those who had five or more appointments scheduled in 6 months (aOR=0.66, (0.47–0.92) had significantly reduced numbers of no-shows after intervention (p<.05). Arm (pre-intervention 6 mo vs post-intervention 6 mo) Intervention 0.93 (0.75–1.15) Control 0.71 (0.49–1.04). Demographic and clinical factors	Intervention: West LA VAMC HIV primary care clinic Control: VA Sepulveda Ambulatory Care Center and the VA LA Ambulatory Care Center; May 2007-October 2007

Author Year N Clinical Area; Appointment Type	Patient Characteristics	Intervention(s)	Outcome(s) Subgroup Analysis	Results Adjustment	Setting; Timeframe
McInnes 2014[18] N=20 Outpatient (Homeless); Primary care, specialty care, and scheduled laboratory visits and procedures	Homeless Veterans; 81% male, 62% white, mean age: 55 yo, 85% had 1 or more chronic medical condition, 80% had mental health condition, 55% had substance abuse disorder, The most common medical, mental health, and substance use problems were, respectively, arthritis or degenerative joint disease (55%), depression (75%), and problem alcohol use (40%)	Text appointment reminders 2 days and 5 days before appointment	Patient-cancelled appointments, reduction in hospitalizations, and # ED visits NA	Patient-cancelled appointments were reduced from 53 to 37, a 30% change, and no-shows reduced from 31 to 25, a 19% change. Participants experienced a statistically significant reduction in ED visits, from 15 to 5 (difference of 10; 95% CI = 2.2, 17.8; P = .01), and a borderline significant reduction in hospitalizations, from 3 to 0 (difference of 3; 95% CI = –0.4, 6.4; P =.08). None	Providence VAMC homeless primary care clinic; February 2013-May 2013

Author Year N Clinical Area; Appointment Type	Patient Characteristics	Intervention(s)	Outcome(s) Subgroup Analysis	Results Adjustment	Setting; Timeframe
Perry 2011[19] N=150 Dental; Dental appointments	NR	Automated SMS text message to patients the day before their appointment	Failed attendances at appointments NA	**Comparison of failed appointments:** <u>Practitioner A:</u> Before intervention: 29% failed After intervention: 16% failed Chi-square: 4.2, P=0.04 <u>Practitioner B:</u> Before intervention: 33% failed After intervention: 6% failed Chi-square: 6.6, P=0.01 <u>Total for both A and B:</u> Before intervention: 31% failed After intervention: 14% failed Chi-square: 11.1, P=0.001 Failed attendance at appointments for the two dentists was reduced from 46/150 (31%) before the SMS text reminders were introduced to 21/150 (14%) after its introduction (P=0.00088). None	Dental access center in Kirkcaldy, Fife, Scotland; 2010-2011

Author Year N Clinical Area; Appointment Type	Patient Characteristics	Intervention(s)	Outcome(s) Subgroup Analysis	Results Adjustment	Setting; Timeframe
Saine 2003[20] N=2116 Ophthalmology; Various appointments	NR	1) Pre-scheduled appointment method: Secretary blind-scheduled an appointment and computer-generated notification letter sent 4 weeks before appointment time with instructions for canceling or rescheduling 2) Postcard reminder method: Postcard sent asking patient to contact office to make appointment. Details on timing NR.	% of completed/ pending appts made within 3 months of postcard/letter; no shows; patient satisfaction NA	More appts were completed in pre-scheduled appt group (74% vs. 54%, p=0.000). There were more no-shows in pre-scheduled appt group (6.5% vs 2%). There was no difference in patient satisfaction between the two groups. None	Dartmouth-Hitchcock Medical Center ophthalmology practice; Prescheduled appointment: July-Sep 2001 Postcard reminder: Apr-Jun 2001

Data Abstraction of RCTs

Author Year N Clinical Area; Appointment Type	Patient Characteristics	Intervention(s)	Outcome(s) Subgroup Analysis	Results Adjustment	Setting; Timeframe
Parikh 2010[21] N=12092 Outpatient (Specialty care); Various specialty appointments	42.7% male, 18.1% new patients, 74.5% established patients, age: 55.9 ± 16.5, <u>Type of insurance:</u> commercial: 54.0%, HMO: 5.7%, Medicare/ Medicaid: 36.3%, self-pay: 2.2%, other: 1.8%	1. clinic staff reminder (STAFF) 3 days prior to appointment 2. automated appointment reminder 3 days prior to appointment (AUTO) 3. no reminder (NONE)	No-show rates for STAFF, AUTO, and NONE, reschedule rates Age, type of visit (initial patient visit versus established patient visit), wait time between scheduling and appointment, practice specialty, and insurance type	Cancellation rates were higher in the AUTO and STAFF groups when compared with the NONE group (14.5%) (P=.0001 and P=.003, respectively). The no-show rates for patients in the STAFF, AUTO, and NONE groups were 13.6%, 17.3%, and 23.1%, respectively (P<.01). By linear regression modeling, for every 1 year increase in age, the absolute no-show rate decreased by 2.4% (P<.0001). No show rates among new vs established pts in STAFF and AUTO groups (18.3% vs 12.5%, P<.0001; 20.2% vs 15.6%, P<.01, respectively), but not observed among patients who received no call (23.6% vs 23.3%, P=not significant). Reschedule rates were not statistically different between the NONE group (2.09%) and the STAFF and AUTO groups (2.63% and 2.02%, respectively). Reschedule rates were not statistically different between the AUTO and STAFF groups (P=.06). Appointment reminder group, age, gender, visit type, wait time (from scheduling to appointment), division, and insurance type	Outpatient multispecialty practice of the University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School; March-July 2007

Author Year N Clinical Area; Appointment Type	Patient Characteristics	Intervention(s)	Outcome(s) Subgroup Analysis	Results Adjustment	Setting; Timeframe
Perron 2010[22] N= intervention: 1052 control: 1071 Primary care or HIV clinic; General, tobacco cessation, HIV, and dietitian consults	Men: control: 57% intervention: 54% Mean age: control: 45.7 intervention: 46.7 Uninsured: control: 22.9% intervention: 21.5% Comorbidities (control, intervention): depression (16.7%, 14.7%), psychosis (0.8%, 1.4%), addiction (4.8%, 6.7%)	Reminder sent 48 hours prior to appointment (1. phone call, 2. SMS if no response, 3. postal reminder if no available phone number)	Reduction in missed appointments, profile of patient missing appointments Subgroup analysis showed that the decrease in missed appointments was statistically significant in only two consultations: the general and the smoking cessation consultations	Rate of missed appointments decreased from 122/1071 (11.4%) to 82/1052 (7.8%; p < 0.005) -Only statistically significant in two consult types: general and smoking cessation. Not significant for HIV clinic or dietitian consult (p = 0.62 and 0.75, respectively). By multivariate analysis, significant predictors of missed appointments included: younger age (OR per additional decade 0.82; CI 0.71-0.94), male gender (OR 1.72; CI 1.18-2.50), follow-up appointment >1year (OR 2.2; CI: 1.15-4.2), substance abuse (2.09, CI 1.21-3.61), and being an asylum seeker (OR 2.73: CI 1.22-6.09) Patient characteristics	Primary care or HIV clinics at the Geneva University Hospitals; April-June 2008
Perron 2013[23] N= text: 3285 telephone: 3165 Primary care; General primary care, substance abuse	53.1% female (text message group) 54.8% female (telephone reminder group), mean age: 44.2 (text message) 44.5 (telephone)	1. text message reminder 24 hours before planned appointment 2. telephone call reminder 24 hours before planned appointment	Rate of missed appointments; patient satisfaction NA	The rate of missed appointments was similar in the text-message group (11.7%, 95% CI: 10.6-12.8) and in the telephone group (10.2%, 95% CI: 9.2-11.3 p = 0.07). Rate of missed appointments in general primary care clinic: 10.2% text message, 8.5% telephone (OR: 0.8 (0.7-1.0), p=.04). Rate of missed appointments in substance abuse clinic: 17.1% (text message) 17.0% (telephone) (OR: 1.0 (0.7-1.3) p=0.98) Total costs: text=230 euros, 8,910 euros (Junod Perron 2013) "The reminder is useful" (primary care): text=98.4%, telephone=98.5% "The reminder is useful" (substance abuse): text=88.2%, telephone=85.7% None	Primary care division of the Geneva University Hospitals in Switzerland; November 2010- April 2011

Author Year N Clinical Area; Appointment Type	Patient Characteristics	Intervention(s)	Outcome(s) Subgroup Analysis	Results Adjustment	Setting; Timeframe
Taylor 2012[24] N= SMS: 342 no reminder: 337 Outpatient (Physical therapy); Physical therapy appointments	Mean age: SMS: 37.5 19.6 no SMS: 36.9 20.4 Men: SMS reminder: 36% No SMS reminder: 42% Diagnosis: upper-limb musculoskeletal, lower-limb musculoskeletal, neck & trunk musculoskeletal, neuromuscular, other	SMS reminder before next appt	Rate of nonattendance (without cancellation) NA	The nonattendance rate for patients who did not receive a reminder (16%) was more than nonattendance for patients receiving the SMS reminder (11%; OR, 1.61; 95% CI, 1.03–2.51; number needed to treat, 19; 95% CI, 9–275).Patients who did not receive an SMS reminder were 1.77 times more likely to not attend without cancelling than patients who received the reminder (OR, 1.77; 95% CI, 1.10 –2.85), controlling for other factors in the model. One missed appointment was prevented for every 19 SMS reminders (NNT, 19; 95% CI, 9–275). Other statistically significant contributors to the model were health condition/diagnosis of neck and trunk musculoskeletal disorder (OR, 2.86; 95% CI, 1.53–5.32), neuromuscular disorder (OR, 3.27; 95% CI, 1.17–9.17), and age (OR, .98; 95% CI, .97– .995). Health condition/ diagnosis, whether the appt was an initial or review appt, and age	2 physical therapy outpatient departments in a metropolitan area; Timeframe NR

QUALITY ASSESSMENT OF INCLUDED SYSTEMATIC REVIEWS

Author Year	Was an 'a priori' design provided?	Was there duplicate study selection and data extraction?	Was a comprehen-sive literature search performed?	Was the status of publication (*ie*, grey literature) used as an inclusion criterion?	Was a list of studies (included and excluded) provided?	Were the character-istics of the included studies provided?	Was the scientific quality of included studies assessed and documented?	Was the scientific quality of included studies used appropriately in formulating conclusions?	Were the methods used to combine the findings of studies appropriate?	Was the likelihood of publication bias assessed?	Was the conflict of interest stated?	Quality
Atherton 2012[1]	Unknown.	Yes.	Yes.	Yes. *No language or date restrictions. Grey lit. search included*	Yes.	NA *No studies included.*	NA *No studies included.*	NA	NA	Yes	Yes	Good
Car 2012[2]	See Gurol Urganci 2013[5]											
Free 2013[3]	Yes: *Study protocol*	Yes.	Yes.	No.	Included: Yes Excluded: No	Yes.	Yes.	No.	Yes.	Yes.	Yes.	Fair
George 2003[4]	Unknown.	Unknown.	Yes.	Yes: *Restricted to English language. Did not state whether grey lit. search was included*	No: *Only included studies provided*	Yes: *Only for 2 studies in UK, description of other studies in text*.	No.	NA.	NA.	No.	No.	Poor

Author Year	Was an 'a priori' design provided?	Was there duplicate study selection and data extraction?	Was a comprehen-sive literature search performed?	Was the status of publication (*ie*, grey literature) used as an inclusion criterion?	Was a list of studies (included and excluded) provided?	Were the character-istics of the included studies provided?	Was the scientific quality of included studies assessed and documented?	Was the scientific quality of included studies used appropriately in formulating conclusions?	Were the methods used to combine the findings of studies appropriate?	Was the likelihood of publication bias assessed?	Was the conflict of interest stated?	Quality
Gurol Urganci 2013[5]	Yes.	Yes.	Yes.	Yes: *No language restrictions. Grey lit. search included*	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Good
Guy 2012[6]	Unknown.	Study selection: Unknown Data extraction: Yes	Yes.	No.	Included: Yes Excluded: No	Yes.	No.	NA.	Yes.	Yes.	Yes.	Fair
Hasvold 2011[7]	Unknown.	Unknown: *States that papers were analyzed independe ntly by 2 authors, does not state specifically for selection/ extraction*	No: *Only PubMed*	Yes: *English and Scandinavia n languages only. Did not state whether grey lit search included.*	Included: Yes Excluded: No	Yes.	Yes.	No.	Yes. .	Yes.	No.	Fair
Liu 2014[8]	Yes.	Yes.	Yes.	No.	Yes.	Yes.	Yes.	Yes.	Yes.	Not possible.	Yes.	Good
Macharia 1992 [25]	Unknown.	Yes.	Yes.	Yes.	Included: Yes Excluded: No	Yes.	Not documented.	No.	Yes.	No.	Yes.	Poor

Author Year	Was an 'a priori' design provided?	Was there duplicate study selection and data extraction?	Was a comprehen-sive literature search performed?	Was the status of publication (*ie*, grey literature) used as an inclusion criterion?	Was a list of studies (included and excluded) provided?	Were the character-istics of the included studies provided?	Was the scientific quality of included studies assessed and documented?	Was the scientific quality of included studies used appropriately in formulating conclusions?	Were the methods used to combine the findings of studies appropriate?	Was the likelihood of publication bias assessed?	Was the conflict of interest stated?	Quality
McLean 2014[9]	Yes.	Yes.	Yes.	Yes: English language.	Yes.	Yes.	Yes.	Yes.	Yes.	No.	Yes.	Good.
Reda 2012[10]	Unknown.	Yes.	Yes.	Yes: *Grey lit. search included*	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Good
Schauman 2013[11]	Yes: *Registered protocol*	Yes.	Yes.	Yes: *Did not restrict search by language or publication status*	No: *Only included studies*	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Good
Stubbs 2012[12]	Unknown.	Unknown.	No: *Only PubMed searched*	Yes: *Restricted to English language. Did not say whether or not grey lit. was searched*	No: *Only included studies provided*	Yes.	No.	No.	Unknown.	No.	No.	Poor

QUALITY ASSESSMENT OF INCLUDED PRIMARY STUDIES

Quality Assessment of Observational Studies

Author Year Country	Non-biased selection?	Adequate handling of missing data?	Outcomes pre-specified and defined?	Ascertainment techniques adequately described?	Non-biased and adequate ascertainment methods?	Statistical analysis of potential confounders?	Adequate duration of follow-up?	Overall quality rating
Brannan 2011[13] UK	Yes: *Patients requiring follow-up in ≥1 mo.*	Yes.	Yes.	No: *Minimal info on historic DNA rate*	Unknown.	No: *No adjustment for confounders.*	Yes.	Poor
Cherniack 2007[14] US	Yes: *All patients at Miami VA during fiscal years 2005-2006*	Unknown.	Yes.	Yes: *Computerized patient record system (CPRS)*	Yes.	No: *No adjustment for confounders.*	Yes.	Poor
Farmer 2014[15] UK	Yes: *All patients with appt scheduled 3 days prior*	Yes.	Yes.	No.	Unknown.	No: *No adjustment for confounders.*	Yes.	Poor
Haufler 2011[16] US	Yes: *All patients with scheduled surgery*	Yes.	Yes.	Yes: *Charge nurse/clinic records*	Yes.	No: *No adjustment for confounders.*	Yes.	Poor
Henry 2012[17] US	Yes: *All HIV-infected patients scheduled for follow-up appt*	Yes.	Yes.	Yes: *CPRS*	Yes.	Yes: *Adjustment for patient demographic and clinical characteristics.*	Yes.	Fair
McInnes 2014[18] US	Yes: *Patients recruited from clinic*	Unknown.	Yes.	Yes: *Questionnaire, interview, medical records*	Yes.	No: *No adjustment for confounders*	Yes.	Poor

Author Year Country	Non-biased selection?	Adequate handling of missing data?	Outcomes pre-specified and defined?	Ascertainment techniques adequately described?	Non-biased and adequate ascertainment methods?	Statistical analysis of potential confounders?	Adequate duration of follow-up?	Overall quality rating
Perry 2011[19] UK	Yes: *Consecutive patients with appts*	Unknown.	Yes.	Yes: *Clinic records*	Yes.	No: *No adjustment for confounders*	Yes.	Poor
Saine 2003[20] US	Yes: *All patients requiring scheduling for follow-up*	Unknown.	Yes.	Yes: *Clinic records*	Yes.	No: *No adjustment for confounders.*	Yes.	Poor

Quality Assessment of RCTs

Author Year Country	Adequate sequence generation?	Adequate allocation concealment?	Blinding of participants, personnel and outcome assessors?	Formal assessment of adequacy of the blind?	Incomplete outcome data adequately addressed?	Study reports free of suggestion of outcome reporting bias?	Study free of other sources of bias?	Risk of bias?
Parikh 2010 [21] US	Yes.	Yes.	Participants: No (impossible) Personnel and outcome assessors: Unknown	No.	Yes.	Yes.	Yes.	Low
Junod Perron 2010 [22] Switzerland	Yes.	Yes.	Participants: No (impossible) Personnel and outcome assessors: Yes	No.	Yes. SMS: 2% excluded Telephone: 1% excluded	Yes.	Yes.	Low

Author Year Country	Adequate sequence generation?	Adequate allocation concealment?	Blinding of participants, personnel and outcome assessors?	Formal assessment of adequacy of the blind?	Incomplete outcome data adequately addressed?	Study reports free of suggestion of outcome reporting bias?	Study free of other sources of bias?	Risk of bias?
Junod Perron 2013 [23] Switzerland	Yes.	Unknown.	Participants: No (impossible) Personnel and outcome assessors: Unknown	No.	Yes.	Yes.	Yes.	Medium
Taylor 2012 [24] Australia	Yes.	Yes.	Participants: No (impossible) Personnel: Unknown Outcome assessors: Yes	No.	Yes.	Yes.	Yes.	Low

STRENGTH OF EVIDENCE FOR INCLUDED STUDIES

Strength of Evidence for KQ 1

SOE Grade	Study limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Findings
Low	High	Direct	Unknown	Imprecise	Undetected	None	Among elderly VA patients, the number of missed appts was reduced from 18% to 11% (p=.000) after implementation of advanced clinic access scheduling system (patients reminded 30 days before anticipated appt to call and schedule appt) compared to scheduling next appt after the last visit (Cherniack 2007; 1 non-concurrent cohort study of an unknown number of participants)[14]

SOE Grade	Study limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Findings
Insufficient	High	Direct	Unknown	Imprecise	Undetected	None	Among Dartmouth ophthalmology patients, the number of completed appts increased from 54% to 74% (p=.000) with pre-scheduled appt times in a reminder letter vs a reminder letter to schedule an appt (Saine 2003; 1 non-concurrent cohort study of 2,116 participants)[20]

Strength of Evidence for KQ2

KQ2: Reminders for Existing Appointments

SOE	Study limitations	Directness	Consistency	Precision	Reporting bias	Other issues	Findings
Postal vs telephone							
Insufficient (Adapted from Reda 2012)	Medium	Direct	Unknown	Imprecise	Undetected	None	Nonattendance at outpatient mental health appt: ó telephone vs orientation statement (RR=1.93, 0.98-3.8) (Reda 2012 included 1 RCT of 75 participants)[10]
Postal vs text message							
Low (Adapted from Gurol Urganci 2013)	High	Direct	Unknown	Precise	Undetected	None	Attendance at varied appt: é SMS+postal vs postal alone (RR=1.10, 1.02-1.19) (Gurol Urganci 2013 included 1 RCT of 291 participants)[5]
Insufficient	Medium	Direct	Unknown	Imprecise	Undetected	None	Cancellation: ó SMS vs mail at orthodontic clinic (RR=2.67, 0.92-7.71) (Free 2013 included 1 non-randomized parallel group trial of 301 participants)[3]
Postal vs postal							
Insufficient (Adapted from Reda 2012)	Medium	Direct	Unknown	Imprecise	Undetected	None	Did not attend rate: ó text letter vs orientation statement (any time RR=1.62, 0.89-2.92, one day before appt RR=2.0, 0.78-5.15, three days before appt RR=1.38, 0.64-2.93) (Reda 2012 included 1 RCT of 120 participants)[10]
Postal vs any other reminder or no reminder							
Insufficient	Medium to high	Direct	Inconsistent	Unknown (no pooling)	Undetected	None	Initial attendance at outpatient mental health appt: é letter vs other (Schauman 2013 included 4 RCTs of 1,083 participants)[11]

SOE	Study limitations	Directness	Consistency	Precision	Reporting bias	Other issues	Findings
Insufficient	Unknown	Direct	Consistent	Precise	Unknown	None	Attendance at varied appt: é letter vs other (OR=2.17, 1.69-2.92) (results from Macharia 1992, George 2003 included 3 RCTs of 1,737 participants)[4,25]
Postal vs none							
Low	Low to medium	Direct	Consistent	Imprecise	Undetected	None	Nonattendance at outpatient mental health appt: ó postal vs none (RR=0.76, 0.43-1.32) (Reda 2012 included 3 RCTs of 326 participants)[10]
Insufficient	Unknown	Direct	Unknown	Unknown	Unknown	None	Nonattendance at varied appt: ê letter vs none (-7.6%) (Stubbs 2012 included 6 RCTs and 1 historically-controlled cohort of 6,621 participants)[12]
Telephone vs any other reminder or no reminder							
Insufficient	Medium to high	Direct	Inconsistent	Unknown (no pooling)	Undetected	None	Initial appt attendance at outpatient mental health appt: ó telephone vs other reminder or no reminder (Schauman 2013 included 6 RCTs of 2,311 participants)[11]
Insufficient	Unknown	Direct	Consistent	Imprecise	Unknown	None	Attendance at varied appt: é telephone vs other reminder or no reminder (OR=2.88, 1.93-4.31) (results from Macharia 1992, George 2003 included 4 RCTs of 708 participants)[4,25]
Insufficient	Unknown	Direct	Unknown	Unknown	Unknown	None	Nonattendance at varied appt: ê telephone vs other reminder or no reminder (-9.4%, 4.4 vs 9.4%) automated telephone reminder vs other (5.6% vs 9.4%) (Stubbs 2012 included 25 RCTs and observational studies of 40,164 participants; George 2003 included 1 study of 2,500 participants)[4,12]
Telephone vs telephone							
Moderate	Low	Direct	Unknown	Precise	Undetected	None	No-shows: é automated call vs call from staff at outpatient multispecialty appt (17.3 vs 13.6%, OR=1.28, 1.11-1.47) (Parikh 2010; 1 RCT including 8,071 participants)[21]
Moderate	Low	Direct	Unknown	Precise	Undetected	None	Cancellations: ó automated call vs call from staff at outpatient multispecialty appt (17.6 vs 16.9%, not significantly different) (Parikh 2010; 1 RCT including 8,071 participants)[21]

SOE	Study limitations	Directness	Consistency	Precision	Reporting bias	Other issues	Findings
Insufficient	Medium	Direct	Unknown	Unknown	Unknown	None	Nonattendance at hospital appt: ê manual vs automated calls (-39% vs -29%)(Hasvold 2011 included 29 RCTs and observational studies of 146,957 participants)[7]
Insufficient	High	Direct	Unknown	Precise	Undetected	None	Nonattendance at ambulatory surgical appt: ê scripted telephone reminder 3 days prior vs unscripted telephone reminder 1 days prior (6.01 to 4.43%, z=2.77, P =.006); Nonattendance due to NS, NPO, RA: ê 2.36 to 1.32% (z=2.910, P=.004) (Haufler 2011; 1 non-concurrent cohort including 8,688 participants)[16]
Insufficient	High	Direct	Unknown	Unknown	Undetected	None	é patient satisfaction scores (data NR) (Haufler 2011; 1 non-concurrent cohort including 8,688 participants)[16]
Insufficient	High	Direct	Unknown	Unknown	Undetected	None	é recovered revenue by $102,983 (Haufler 2011; 1 non-concurrent cohort including 8,688 participants)[16]
Low	Medium	Direct	Unknown	Precise	Undetected	None	No-shows at VA HIV primary care appt: ó before intervention (automated telephone reminder 3 days prior) vs after intervention (automated telephone reminders 3 days prior + 2 weeks prior) OR=0.93 (0.75–1.15) (Henry 2012; 1 non-concurrent cohort study including 584 participants)[17]
Telephone vs none							
Moderate (Adapted from Reda 2012)	Medium	Direct	Consistent	Precise	Undetected	None	Nonattendance at outpatient mental health appt: ó telephone vs none (RR=0.84, 0.66-1.07) (Reda 2012 included 2 RCTs including 457 participants)[10]
Low	Low	Direct	Unknown	Precise	Undetected	None	No-shows: é no call vs automated call at outpatient multispecialty appt (23.1 vs 17.3%, OR=1.52, 1.34-1.71) (Parikh 2010; 1 RCT including 8,030 participants)[21]
Low	Low	Direct	Unknown	Precise	Undetected	None	No-shows: é no call vs call from staff at outpatient multispecialty appt (23.1 vs 13.6%, OR=1.93, 1.69-2.19) (Parikh 2010; 1 RCT including 8,083 participants)[21]

SOE	Study limitations	Directness	Consistency	Precision	Reporting bias	Other issues	Findings
Low	Low	Direct	Unknown	Precise	Undetected	None	Cancellations: ê no call vs automated call at outpatient multispecialty appt (14.5 vs 17.6%, p=.0001) (Parikh 2010; 1 RCT including 8,030 participants)[21]
Low	Low	Direct	Unknown	Precise	Undetected	None	Cancellations: ê no call vs call from staff at outpatient multispecialty appt (14.5 vs 16.9%, p=.003) (Parikh 2010; 1 RCT including 8,083 participants)[21]
Text reminders vs no reminder							
Low (Adapted from Liu 2014)	High	Direct	Unknown	Precise	Undetected	None	Attendance outpatient appt (pts receiving TB treatment): é pre-apt phone call vs none (RR=1.32, 1.1-1.59) (Liu 2014; 1 SR included 1 quasi-randomized trial of 615 participants)[8]
Low (Adapted from Liu 2014)	Low	Direct	Unknown	Imprecise	Undetected	None	Attendance at single clinic appointment (pts receiving TB treatment): é default reminder letter vs none (RR=5.04, 1.61-15.78) (Liu 2014; 1 SR included 1 RCT of 52 participants)[8]
Insufficient	High	Direct	Unknown	Imprecise	Undetected	None	Nonattendance at general ophthalmology appt: ê 12 to 5.5% (Brannan 2011; 1 non-concurrent cohort study including 201 participants)[13]
Insufficient	High	Direct	Unknown	Precise	Undetected	None	Overall nonattendance at sexual health clinic appt: ê 28 to 24% (p<.005) (Farmer 2014; 1 non-concurrent cohort study including 3,717 participants)[15]
Insufficient	High	Direct	Unknown	Precise	Undetected	None	Male sexual health appt nonattendance: ê 28 to 18% (p<.02) (Farmer 2014; 1 non-concurrent cohort study including 662 participants)[15]
Insufficient	High	Direct	Unknown	Precise	Undetected	None	Female sexual health appt nonattendance: ó 28 to 24% (p>.05) (Farmer 2014; 1 non-concurrent cohort study including 1,282 participants)[15]
Insufficient	High	Direct	Unknown	Precise	Undetected	None	HIV clinic appt nonattendance: ó 28 to 25% (p>.05) (Farmer 2014; 1 non-concurrent cohort study including 1,773participants)[15]
Insufficient	High	Direct	Unknown	Precise	Undetected	None	Overall sexual health cancellation: ó 62 to 66% (p>.05) (Farmer 2014; 1 non-concurrent cohort study including 3,717 participants)[15]
Insufficient	High	Direct	Unknown	Precise	Undetected	None	Male sexual health clinic cancellation: ó 69 to 71% (p>.05) (Farmer 2014; 1 non-concurrent cohort study including 662 participants)[15]

SOE	Study limitations	Directness	Consistency	Precision	Reporting bias	Other issues	Findings
Insufficient	High	Direct	Unknown	Precise	Undetected	None	Female sexual health clinic cancellation: é 55 to 72% (p<.005) (Farmer 2014; 1 non-concurrent cohort study including 1,282 participants)[15]
Insufficient	High	Direct	Unknown	Precise	Undetected	None	HIV clinic cancellation: ó 64 to 62% (p>.05) (Farmer 2014; 1 non-concurrent cohort study including 1,773 participants)[15]
Insufficient	High	Direct	Unknown	Imprecise	Undetected	None	VA homeless primary care clinic cancellations: ê 53 to 37% (McInnes 2014; 1 uncontrolled before-after study including 20 participants)[18]
Insufficient	High	Direct	Unknown	Imprecise	Undetected	None	VA homeless primary care clinic no-show: ê 31 to 25% (McInnes 2014; 1 uncontrolled before-after study including 20 participants)[18]
Insufficient	High	Direct	Unknown	Precise	Undetected	None	No-show: ê at dental appts 31 to 14% (p=.001) (Perry 2011; 1 non-concurrent cohort study of 150 participants)[19]
Insufficient	High	Direct	Unknown	Imprecise	Undetected	None	Savings from avoiding unused appointments: Cancelled appointments avoided= $411.84 per person per year No-shows avoided=$386.10 per person per year (McInnes 2014; 1 uncontrolled before-after study including 20 participants)[18]
Low (SR-Trials)	Medium	Direct	Consistent	Precise	Undetected	None	Attendance at varied appt: é text-message vs no reminder (RR: 1.06 (1.05-1.07) (1 SR including 8 RCTs totaling 49,947 participants) [3], RR=1.14 (1.03-1.26) [5] (1 SR including 7 RCTs totaling 5,841 participants), OR=1.48 (1.33-1.72)[6] (1 SR including 8 RCT totaling 4,760 participants)[3,5,6]
Insufficient (SR-Observational)	High	Direct	Consistent	Imprecise	Undetected	None	Non-attendance at varied appt: ê text-message vs no reminder (-8.6% weighted average) (1 SR including 4 RCTs, 3 cohort studies, 3 observational studies, and 2 retrospective reviews totaling 88,547 participants)[12]

SOE	Study limitations	Directness	Consistency	Precision	Reporting bias	Other issues	Findings
Low (Combined – SR Trials and Observational)	Medium	Direct	Consistent	Precise	Undetected	None	Attendance at varied appt: é text-message vs no reminder (RR: 1.06 (1.05-1.07) (1 SR including 8 RCTs totaling 49,947 participants)[3], RR=1.14 (1.03-1.26) [5] (1 SR including 7 RCTs totaling 5,841 participants), OR=1.48 (1.33-1.72) [6] (1 SR including 8 RCT totaling 4,760. Non-attendance at varied appt: ê text-message vs no reminder (-8.6% weighted average) (1 SR including 4 RCTs, 3 cohort studies, 3 observational studies, and 2 retrospective reviews totaling 88,547 participants) [3,5,6,12]
Low	Low	Direct	Unknown	Precise	Undetected	None	Physical therapy appt no-show: é no reminder vs text reminder (OR=1.61, 1.03-2.51) (1 RCT including 679 participants)[24]
Insufficient	Medium	Direct	Unknown	Imprecise	Undetected	None	Acceptability at varied appt: One study reported 98% of patients willing to receive text message reminders prior to intervention (1 SR including 1 RCT of 291 participants) [5]
Text reminder vs postal and call reminder							
Low	Medium	Direct	Consistent	Precise	Undetected	None	Attendance at varied appt: ó text message vs postal and call reminder (RR=0.98, 0.94-1.02) (Free 2013; 1 SR including 3 RCTs totaling 1,263 participants)[3]
Text reminder vs telephone reminder							
Low	Medium	Direct	Unknown	Precise	Undetected	None	Primary care appt no-shows: ê text reminder vs telephone (10.2% vs 8.5%; OR=0.8, 0.7-1.0, p=0.04) Substance abuse clinic no-shows: ó text reminder vs telephone (17.1% vs 17.0%; OR=1.0, 0.7-1.3, p=0.98) (Junod Perron 2013; 1 RCT including 6,450 participants)[23]
Insufficient	Medium	Direct	Unknown	Imprecise	Undetected	None	Orthodontic appt cancellations: ó text message vs call reminders (RR=2.31, 0.91-5.95) (1 SR including 1 RCTs of 301 participants)[3]
Moderate	Low	Direct	Consistent	Precise	Undetected	None	Attendance at varied appt: ó text message vs call reminders (RR=0.99, 0.95-1.02) (1 SR including 3 RCTs totaling 2,509 participants)[5]

SOE	Study limitations	Directness	Consistency	Precision	Reporting bias	Other issues	Findings
Low	Medium	Direct	Unknown	Imprecise	Undetected	None	Text message reminders were found useful by 98.4% and 88.2% of patients in primary care substance abuse clinics, respectively. Call reminders were found useful by 98.5% and 85.7% of patients in primary care and substance abuse clinics, respectively. (Junod Perron 2013; 1 RCT including 900 participants)[23]
Low	Low	Direct	Consistent	Imprecise	Undetected	None	Text message reminders are more cost effective than call reminders. (Gurol Urganci 2013, Junod Perron 2013; 1 SR including 2 RCTs totaling 2,884 participants and 1 RCT including 6,450 participants)[5,23]
Combination reminders vs none							
Insufficient (Adapted from Reda 2012)	Medium	Direct	Unknown	Imprecise	Undetected	None	Nonattendance at outpatient mental health appt: ó combination telephone/text vs none (RR=0.7, 0.42-1.17) (Reda 2012; 1 SR included 1 RCT of 66 participants)[10]

KQ2: All Other Studies

SOE	Study limitations	Directness	Consistency	Precision	Reporting bias	Other issues	Findings
Low	Low	Direct	Unknown	Precise	Undetected	None	No show rates among new vs established pts in an outpatient multispecialty practice in STAFF, AUTO, and no reminder groups (18.3% vs 12.5%, P<.0001; 20.2% vs 15.6%, P<.01; and 23.6 vs 23.3%, p>.05, respectively) (Parikh 2010)[21]
Low	Medium	Direct	Unknown	Precise	Undetected	None	Mean percentage change in no-shows in VA HIV primary care clinics among: participants with depression ó (24.9 to 30.6%, p>.05); participants without depression ê (23.4 to 18.2%, p<.05) (Henry 2012)[17]
Insufficient	Unknown	Direct	Unknown	Unknown	Unknown	None	SMS reminders for varied appointments: no significant subgroup differences by message timing, data not shown (24, 48, and 72 + hours before the scheduled appointment) (Guy 2012)[6]
Insufficient (Adapted from Reda 2012)	Medium	Direct	Unknown	Imprecise	Undetected	None	No difference between text letter and text orientation statement in did not attend rate at outpatient mental health appointment: any time before appt RR=1.62 (0.89-2.92), one day before appt RR=0.78-5.15), three days before appt RR=1.38 (0.64-2.93).(Reda 2012)[10]
Insufficient	Medium	Direct	Unknown	Unknown	Unknown	None	Time between telephone reminder and appt did not affect nonattendance composite for hospital outpatient appointments, Spearman correlation=0.18 (Hasvold 2011)[7]
Insufficient	Unknown	Direct	Unknown	Unknown	Unknown	None	SMS reminders for varied appointments: no significant subgroup differences by clinic type (primary care clinics, hospital outpatient clinics) (Guy 2012)[6]

PEER REVIEW COMMENT TABLE

Comment #	Reviewer #	Comment	Author Response
Are the objectives, scope, and methods for this review clearly described?			
1	1	Yes	*None*
2	2	Yes	*None*
3	3	Yes	*None*
4	4	Yes	*None*
Is there any indication of bias in our synthesis of the evidence?			
5	1	No	*None*
6	2	No	*None*
7	3	No	*None*
8	4	No	*None*
Are there any published or unpublished studies that we may have overlooked?			
9	1	No	*None*
10	2	No	*None*
11	3	No	*None*
12	4	No	*None*
Additional suggestions or comments can be provided below.			
13	1	Pg 1/Ln 19; remove “to” after (ACAP)	Edit made
14	1	Pg 2/Ln 15 - consider changing this to "in which a patient needs to be seen 3 or more months from today." "Within" implies less than 3 months.	Changed to “in more than 90 days”.
15	1	Sometimes in the report 90 days is used and in other places 3 months. I'd suggest making it consistent throughout the report.	Revised to use “90 days” throughout the report.
16	1	Pg 2/Ln 38; - add "being" after "forgetfulness not"	Edit made
17	1	Pg 3/Ln 7; note this is unpublished data when citing reference 8.	Edit made
18	1	Pg 3/Ln 10; "remind them" not "reminder them"	Edit made

Comment #	Reviewer #	Comment	Author Response
19	1	Results- Literature Flow: The number of selected studies is inconsistent. In the text, 2 studies were selected for KQ1 but Figure 1 implies 3 studies for KQ1. The text implies that none of the articles for KQ1 answer KQ2 but the footnote in Figure 1 implies some studies answer both questions.	We included 3 studies in KQ1 and clarified this in the text: "For Key Question 1, we only identified 2 flawed single-site non-concurrently controlled cohort studies that compared different approaches to scheduling follow-up appointments and one systematic review that compared different methods of scheduling initial appointments." One systematic review addressed both KQ1 and KQ2, we clarified this in the footnote in Figure 1.
20	1	Title for KQ2 on page 12- line 12: Patient is mispelled.	Edit made
21	1	Page 14- line 18; Spelling- colposcopy is Should be colonscopy	Colposcopy is correct spelling. It is a gynecological follow-up procedure.
22	2	Page ii/Ln 27; Spelling= patient	Edit made
23	2	Pg 2/Ln 34; Question about use of "affect"	"Affect" is correct here.
24	2	Pg 3/Ln 30; add "if" to beginning of parentheses	Edit made
25	2	Pg 5/Ln 17; add "appointment" after future	Edit made
26	2	Pg 6: Analytic Framework; move wait times to intermediate outcomes and satisfaction to final outcomes; wait times and access not clearly distinguished	Moved wait times to intermediate outcomes and moved reduced satisfaction to potential consequences.
27	2	Pg 10/ Ln 59; Although appointment age would be nice to know, this wouldn't be a confounding factor because it's the principal causal pathway through which we think recall reminder reduces no-shows.	No changed needed. We agree with the reviewer's point for the comparison of 365 scheduling to recall reminder. But for the comparison of two interventions that are designed to reduce appointment age (blind scheduling close to due date vs recall reminder), knowing how well matched the appointment age is key to understanding the source of the difference; e.g., for blind scheduling, higher no-shows could also be because the patient wasn't even aware in the first place and/or didn't like the date/time, didn't like not having a say in the selection process.
28	2	Pg 11/Ln 6; Double use of word "also"	Edit made
29	2	Pg 12/ Ln 11; Spelling= patient	Edit made
30	2	Pg 12/Ln 47; question if order of percentages is correct- "Are these two comparisons in the same order? In other words is 18.2 the number with the auto reminder and is 30.9 the corresponding number for patients with depression? Although the difference is not significant, it's odd that the contrast goes in the opposite direction."	Yes, we confirmed that the order of the percentages is correct.
31	2	Pg 17/Ln 19; Proofread this paragraph	Edited to improve clarity

Comment #	Reviewer #	Comment	Author Response
32	2	Pg 18/Ln 11; Was 'missed opportunities' introduced and explained? If not, replace with cancellations and no-shows.	Yes, we introduced the concept of missed opportunities in the introduction.
33	2	Pg 18/Ln 18; Interesting suggestion. I don't think we have enough evidence to support a simulation model at this point.	We clarified how initiating a systems approach data collection plan could eventually inform the development of an agent-based simulation model.
34	3	The Executive summary should clearly point out that this study was a "literature search" and not a study that directly compared methods.	Added "brief evidence review" to first sentence of Executive Summary.
35	3	Pg 1/Ln 46-50; The conclusions in the example cited are erroneous and should have been discussed by the authors. i.e. using a RR to make appointments within 30 days neglects to account for the delays prior to the sending of the recall reminder. Hence, the delay is the delay from time from initial appointment (A) + time from reception of RR to actual appointment (B) Hence the delay is NOT 0 %.	No change needed. The 0% refers to *proportion of patients* having to wait > 30 days at time of making the follow-up appointment, not the duration of delay. Added 'when making next appointment' to clarify this.
36	3	Pg 2/Ln 17-21; Introduction: the purpose as described is more limited than what the "findings will drive" lines 26-29. It seems like the purpose expanded.	Edited this section to more clearly differentiate the description of the purpose of the evidence brief (i.e., to summarize the evidence on the comparative effectiveness of different approaches to scheduling follow-up appointments, lines 17-21) versus the description of how ACAP plans to use the findings in lines 26-29.
37	3	Pg 2/Ln 39; Describe reasons for missed appointment s but also include correlating factors which are not reasons- i.e. number of meds is not a reason but a correlate.	Added 'and correlates of'
38	3	Pg 11/Ln 12; The word patient is misspelled	Edit made
39	3	Pg 18/Ln 20-30; Conclusion- I agree with this conclusion. It may be worthwhile to emphasize the individualization approach as an opportunity for future research	Changed Future Research sentence in Conclusion to be more specific about directions for future research, including individualization approach.
40	3	Pg 18/Ln 45; There is a difference in reasons for no show between new and established patients. This might be explored but the two groups are not directly comparable.	Agreed and improved the clarity of this distinction to Key Question 1's section on evidence of scheduling new patients.

Comment #	Reviewer #	Comment	Author Response
41	3	This study outlined the study questions, pursued a rigorous literature search and, appropriately, could not draw many significant conclusions to directly answer the study questions. The study appropriately suggested more study. While the study questions are valid questions, the method of research- a literature search- is limited due to the lack of correlation or consistency between the study questions and the examples found in the literature. In other words, the other studies were not designed in the same way, do not investigate comparable situations, nor do the outside studies contain the same variables. As such, a literature search may not be the best way to answer these questions.	Agreed and suggested the Directions for future VA quality improvement initiatives include evaluation of (1) a complete set of pertinent and related system outcomes, (2) policy options of more flexibility and adaptation to local circumstances, (3) the impact of potential patient, provider and system effect modifiers, (4) the impact of variation in recall reminder scheduling system design (*ie*, how and when Veterans are contacted), (5) the independent contributions from the scheduling and reminder components, respectively, (6) the use agent-based models to identify areas with greatest potential for change, and (7) tailoring the scheduling approach to the individual Veteran.

Comment #	Reviewer #	Comment	Author Response
42	4	The report found very limited evidence on comparative effectiveness of different systems for scheduling established patients' follow-up appointments. I believe that this is a true finding, and the background was comprehensive and the methodology was rigorous. I have two comments which, if addressed, would raise my recommendation from "fair" to "good": First comment: The assumption in the report is that "missed opportunities" represent a measure of efficiency. This appears to have been the explicit instruction to the ESP CC by the DUSHOM. I recommend that consideration be given to acknowledging that a missed appointment may reflect needed care that was not delivered. Second comment: The intent of "Key Question 2" is confusing. If the intent (to differentiate the question from Key Question 1) is to focus on initial, rather than follow-up appointments, the wording should be changed to state "initial future appointments". The content, however, that this question seems to be addressing is whether there is evidence that among patients with a scheduled future appointment, what is the comparative effectiveness of different reminder systems. This is an important question that could be helpful in designing best interventions to keep patients engaged in their care, and the finding (moderate-strength evidence) that live telephone reminders increase attendance (among patients with scheduled appointments) compared to automated telephone reminders is important, and would be worth including in the executive summary.	First comment: Refined related sentence in Background to better emphasize this point. Second comment: Both Key Questions are focused on follow-up appointments. Key Question 1 addresses *overall* comparative effectiveness and the purpose of Key Question 2 is to evaluate potential effect modifiers. We added findings from Key Question 2 to the executive summary.

Comment #	Reviewer #	Comment	Author Response
43	4	Finally (and this is a comment that isn't at all about the quality of this ESP) The interim guidance/outpatient scheduling policy was released on May 18th. It continues to require use of recall software (with an exemption possible for sites with low missed opportunity rates) and to prohibit blind scheduling, even when there is little to no evidence for either of these strategies, as found in this document. I do hope that the current pilots will provide helpful information about potential best practices.	No change to the ESP report needed.

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