

# BMJ Open Scoping review protocol to map the use of text-based two-way communication between patients and healthcare professionals after hospital discharge and identify facilitators and barriers to implementation

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## ABSTRACT

**Introduction** After discharge, patients face multiple risks where timely communication with healthcare professionals is required. eHealth has proposed new possibilities for asynchronous text-based two-way communication between patients and healthcare professionals during this time, and studies show positive effects on clinical outcomes, care coordination and patient satisfaction. However, there are challenges to the adoption of text-based two-way communication, potentially undermining the positive effects in clinical practice. Knowledge of these factors may inform future research and implementations. No reviews have provided an overview of the use of text-based two-way communication after discharge and the identified facilitators and barriers. Therefore, the objective of this scoping review is to systematically identify and map available research that assess the use of text-based two-way communication between patients and healthcare professionals after hospital discharge, including facilitators and barriers to implementation.

**Methods and analysis** We will include all studies describing the use of text-based two-way communication between patients and healthcare professionals after discharge from hospital. A preliminary search of PubMed (PubMed.gov), EMBASE (Elsevier), CINAHL (EBSCO), PsycINFO (Ovid), Cochrane Library (Wiley), Web of Science (Clarivate) and Scopus (Elsevier) was undertaken on 9 November 2021. The search will be updated for the full scoping review, and reference lists of relevant papers reviewed. Two reviewers will independently screen the literature for inclusion. Data will be extracted and charted in accordance with a data extraction form developed from the research questions and inspired by Consolidated Framework Implementation Research. Findings will be presented in tabular format and a descriptive summary, and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews checklist.

**Ethics and dissemination** This scoping review will not require ethics approval. The dissemination strategy involves peer review publication and presentation at conferences.

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This scoping review will be the first to map the use of text-based two-way communication in the period after hospital discharge.
- ⇒ Key facilitators and barriers to the use of text-based two-way communication after discharge will be identified and summarised inspired by a comprehensive conceptual framework.
- ⇒ The rigorous methodology manual by the Joanna Briggs Institute will be followed.
- ⇒ Text-based two-way communication between patients and healthcare professionals is far more used than has been reported. To ensure the quality of this scoping review, only peer reviewed and published literature will be included.

## INTRODUCTION

Discharge from hospital is often experienced as a confusing and fragmented time for patients and relatives, and incomplete or inaccurate transfer of information is known to compromise patient safety and quality of care.<sup>1–6</sup> Patients may have difficulty remembering information given by healthcare professionals and assess the severity of complications after discharge.<sup>3 5</sup> Concerns arise, prompting them to call the hospital or other healthcare facilities to get answers. Healthcare professionals, on the other hand, have to handle inquiries from patients they may not know, while disrupting their workflows.<sup>6 7</sup> As healthcare rapidly evolves towards shorter hospital stays and more outpatient and community care, these changes require a focus on communication support in the period after discharge.



eHealth, defined as the use of internet communication technologies (ICTs) for health, has been proposed as a solution to enhance communication between patients and healthcare providers.<sup>8</sup> Thus, ICT increases accessibility and patient participation in healthcare and supports secure data and information sharing between users.<sup>8</sup> Text-based communication, a form of eHealth, is widely yet very differently applied in healthcare. A steadily increasing number of studies investigate unidirectional automated text-based communication from healthcare facility to patients, for example, sending reminders for medication adherence<sup>9</sup> or promoting mental and physical health behaviour,<sup>10</sup> such as physical activity,<sup>11</sup> symptom monitoring and self-management.<sup>12</sup> For this review, we focus on the application of text-based communication in healthcare to support two-way digital dialogue between patients and healthcare professionals after hospital discharge. This includes formats such as electronic mail (email), phone-based texting and secure messaging. Particularly secure messaging, embedded in patient portals offered by Electronic Health Records vendors, such as MyHealtheVet (Department of Veterans Affairs), MyChart (Epic), the secure email system of Kaiser Permanente and more, has significantly accelerated the use of text-based communication in the healthcare system, especially in the USA and other developed countries.<sup>13–17</sup> Where email was previously considered to be the most secure way of text-based communication with patients, secure messaging is now just as safe in terms of data protection and compliance with existing legislation.<sup>16</sup> In most developed countries, patient portals and secure messaging are even accessible through smartphone applications, making it an easy and ubiquitous solution for most patients to access healthcare services.

Benefits of text-based communication include new possibilities for care coordination, prevention of adverse events, empowering and engaging patients, which may positively affect clinical outcomes<sup>16 18</sup> and patient satisfaction.<sup>7 13–15</sup> Thus, the use of text-based communication between patients and physicians has been found to be an independent predictor of improved performance on quality outcomes for some patient groups<sup>18</sup> and to be of particular value to specific groups of patients, such as those struggling with chronic diseases.<sup>19</sup> Furthermore, the fact that text-based communication can be managed asynchronously, meaning patients and healthcare professionals do not have to use the technology concurrently, may promote easier adaptation into existing workflows and more efficient use of patients time.<sup>16 19</sup>

However, text-based communication has not yet been fully adopted across the healthcare system, even though it may provide an easy and much needed support in the period following hospital discharge. This suggests that there may be barriers to use, as known from other eHealth services.<sup>20 21</sup> In a preliminary search of PubMed, we have found studies investigating the use of text-based communication to increase access to healthcare and facilitate two-way dialogue in the period post hospital

discharge.<sup>14 16 22–24</sup> The identified studies cover diverse patient populations with different focus, study designs and evaluation methods. However, looking at these studies, most of them describe barriers to use. There may be shared learnings, that can be useful in future implementations of text-based communication following discharge. Some studies focus on patients' and healthcare professionals' perceptions and preferences<sup>24–28</sup> and others on organisational factors that affect acceptance and diffusion of text-based communication.<sup>22 23</sup> Husain *et al*<sup>22</sup> implemented and evaluated a web-based clinical communication system for team-based care with patients with a focus on facilitators and barriers, but found that even though the system could fill a gap of communication, existing modes of communication, workflows, incentives and lack of integration with electronic medical records were barriers to adoption. Even factors such as individual tension for change among healthcare professionals to use text-based communication with patients made implementation difficult.<sup>22</sup> Another recent study investigated parents' usage and experiences of communicating with professionals in hospital-to-home transitions after their child's preterm birth or surgery related to this, using an eHealth device with embedded online chat, where they could communicate with nurses at the hospital. Even though the parents felt that the eHealth device supported their self-treatment by providing communication with healthcare professionals, the authors described barriers related to the technical infrastructure and to the adoption by healthcare professionals.<sup>28 29</sup> All of these aspects are important to uncover in advance of implementation, since implementing new ways of patient communication in healthcare is a complex task. Facilitators and barriers in relation to the implementation of text-based communication after hospital discharge can thus include many diverse aspects. To systematically identify and map studies that assess the use of text-based communication after discharge, including facilitators and barriers, we are inspired by the Conceptual Framework for Implementation Research (CFIR).<sup>30</sup> CFIR can be used to explore barriers and facilitators of uptake, using five defined constructs that encompass all conceivable aspects of implementation: the intervention, the inner and outer settings, the individuals involved, and the process by which implementation is accomplished.<sup>30</sup>

Providing an overview of the use of text-based communication after hospital discharge, and facilitators and barriers to implementation across this heterogeneous field of research, can guide future strategies for implementing text-based communication and thereby promote acceptance and dissemination in healthcare. A scoping review is suitable, as it allows the inclusion of multiple study designs within research areas characterised by a high degree of heterogeneity,<sup>31</sup> such as text-based communication in healthcare. In an initial search of the literature, including PubMed, Cochrane Database of Systematic Reviews, Joanna Briggs Institute Database of Systematic Reviews and Implementation Reports, we have

**Table 1** PCC grid with search terms used in initial search in PubMed, including truncated keywords (\*) and MeSH terms

Population	Concept	Context
Patient*	Text-based; Text messa*; Texting; Short message service; Web-based; Web portal*; Patient portal*; Internet portal*; e-mail*; email*; Digital communicat*; Digital dialog*; Electronic communicat*; Internet communicat*; Online communicat*, Online messag*; Secure messag*; Chat; E-visit*, Communicat*; Patient-provider messag*; Provider-patient messag*; Patient-physician messag*; Physician-patient messag*; Patient-nurse messag*; Nurse-patient messag*; Patient-clinician messag*; Clinician-patient messag*; Patient-doctor messag*; Doctor-patient messag*	Patient discharg*; Hospital discharg*; After discharg*; Continuity of care; Continuous care; Health care team*; Outpatient*; Postoperative period*; Postoperative car*; Post-surger*; Home-based; At home
Patients (MeSH)	Patient Portals (MeSH); Text Messaging (MeSH); Electronic Mail (MeSH); Communication (MeSH)	Postoperative Period (MeSH); Postoperative Care (MeSH); Continuity of Patient Care (MeSH); Outpatients (MeSH)

PCC, population, concept, context.

not found any reviews that have identified and mapped the use of text-based communication between patients and healthcare professionals after hospital discharge, including facilitators and barriers to implementation. As text-based communication has shown to be beneficial for several patient groups and healthcare professionals, but have still not achieved full adoption, there is a need to map available research on this topic.

### Study objective

In this scoping review, we aim to systematically identify and map available research that assess the use of text-based two-way communication between patients and healthcare professionals after hospital discharge, including facilitators and barriers to implementation.

## METHOD

### Protocol design

This proposed scoping review will be developed using the methodological guidance for the conduct of Joanna Briggs Institute (JBI) scoping reviews<sup>31</sup> and the JBI Reviewers Manual.<sup>32</sup>

Reporting the scoping review will be conducted in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses Extension for Scoping Review (PRISMA-ScR) checklist.<sup>33</sup>

### Research questions

The objective of this scoping review is to identify and map studies that assess the use of text-based two-way communication between patients and healthcare professionals after hospital discharge, including facilitators and barriers to implementation. The initial search of the literature showed diverse use and organisation of text-based communication after discharge, and a wide range of facilitators and barriers associated with the implementation. However, it became clear that there may be shared learning across these studies. Based on this, the following research questions were identified:

1. In which patient populations have the use of text-based two-way communication between patients and healthcare professionals after hospital discharge been studied?
2. For what purposes has it been used in the studies?
3. What text-based formats have been used?
4. What characterised the organisation of the use of text-based communication?
5. What facilitators and barriers are identified to the implementation?

### Eligibility criteria

The eligibility criteria for this scoping review were conceptualised using participants (P), concept (C) and context (C) as follows:

#### Participants

This scoping review will consider all studies involving patients discharged from hospital, both somatic and mental illness, and patients at all ages. A broad study population has been chosen because text-based communication is applied in many different patient populations, but facilitators and barriers to the use after hospital discharge may be relatable from one context to another.

#### Concept

The concept of this scoping review is text-based communication between patients and healthcare professionals. Text-based communication is defined as a medium for two-way communication between patients and healthcare professionals, where patients can ask questions, refine understanding and provide personalised updates with their individual healthcare providers or healthcare team at the hospital after discharge. At the same time, healthcare professionals can keep tabs on recovery for their patients after hospital discharge. Text-based communication may have format as email, phone-based texting and secure messaging, but basically, they represent the same thing: easy and accessible asynchronous communication between patients and healthcare professionals. The

**Box 1 Data extraction form (proposed)****Bibliographic details**

Author  
 Country  
 Year of publication  
 Article title  
 Journal, volume, issue, pages  
 Aim/purpose  
 Study design, methods (eg, data collection techniques)  
 Sample size (participants)  
 Outcome measures  
 Main findings/results  
 Authors conclusions  
 Suggestions for future research (related to the text-based communication)

**Use of text-based communication after hospital discharge (review questions 1–4)**

Patient population (illness/disease of patients)  
 Age of patient population  
 Details of the text-based communication, for example;  
 ⇒ Purpose of text-based communication (eg, improve clinical outcomes, patient satisfaction, give sense of security to patients and so on).  
 ⇒ Format (eg, email, phone texting, secure text messaging through patient platform).  
 ⇒ Characteristics of the organisation of the use of text-based communication (duration of access, which efforts was done to implement it, which healthcare professionals were involved, was it a part of a larger eHealth intervention and so on).

**Facilitators and barriers to implementation (review question 5)**

In relation to the intervention, for example,  
 ⇒ Adaption to clinical context (why/why not).  
 ⇒ Technical aspects, for example, reminders to answer.  
 In relation to the inner setting, for example,  
 ⇒ Structural context (eg, interrelationships within and between other organisations).  
 ⇒ Political context.  
 ⇒ Cultural context.  
 In relation to the outer setting, for example,  
 ⇒ Economic context.  
 ⇒ Political context.  
 ⇒ Social context.  
 In relation to the individuals involved (both targeted user such as patients and healthcare professionals involved and other potentially affected individuals), for example,  
 ⇒ Culture/organisational/professional mindsets.  
 ⇒ Norms, interests and affiliations of individuals.  
 ⇒ Usability of the text-based communication.  
 ⇒ Training in use/support access.  
 ⇒ Individual tension for change.  
 ⇒ Satisfaction with intervention.  
 In relation to the process of implementation, for example,  
 ⇒ Planning the process.  
 ⇒ Evaluation.  
 Other facilitators and barriers that fall aside of the five constructs of CFIR.

exclusion criteria will be studies that deal with text-based communication between healthcare professionals, where the patient is not directly involved in the communication, and studies where text messaging is scheduled, for

example, automated text messaging, reminders sent from healthcare professionals to patients.

**Context**

All studies that examine the defined population and concept after hospital discharge will be included for this scoping review. The context referred to as 'after hospital discharge' is used to describe the varying time period, where patients continue to have attendance, virtual consultations, online contact or other affiliation, with healthcare professionals from the hospital, after they have returned home for further rehabilitation.

**Information sources and search strategy**

This scoping review will consider all types of study designs. However, study protocols will be excluded, as we are only interested in studies that assess the use of text-based communication and knowledge of the facilitators and barriers identified in relation to this. Also, text and opinion papers will not be considered for inclusion in this scoping review, since text-based communication seems to be more widely used than it is reported in peer-reviewed literature. It is considered very difficult to obtain the full overview of the actual use of text-based communication in healthcare if unpublished literature would be included, and the results and findings will not be well argued to include in this scoping review.

The JBI guidelines recommend a preliminary search, thus, an initial limited search of PubMed (PubMed.gov) was undertaken to identify articles on the topic as shown in [table 1](#) (see search query in online supplemental material 1). Second, the text words in titles and abstracts and the index terms of the relevant articles will be screened and used to develop a full search strategy for the following databases: PubMed (PubMed.gov), EMBASE (Elsevier), CINAHL (EBSCO), PsycINFO (Ovid), Cochrane Library (Wiley), Web of Science (Clarivate) and Scopus (Elsevier). The literature search will be performed by the first author in collaboration with an experienced librarian. The search strategy will be adapted for each included database, and additionally the reference list of all included articles will be screened for supplementary studies. The search strategy is aimed to locate all published and peer-reviewed literature within the phenomena of interest, including systematic reviews that meet the eligibility criteria. Web of Science and Scopus will be used to find the newest literature on the topic. No search limits will be applied to the search, thus studies published in any language at any time will be included. If publications in other languages than English, Danish, Swedish or Norwegian should be included, we will use automated translational services, such as Google Translate, to overcome these barriers.

**Study selection**

All identified citations from the literature search will be exported to EndNote V.X9 (Clarivate Analytics, Pennsylvania, USA), where duplicates will be removed. Following

the JBI guidelines, we will pilot test the source selection process based on a random sample of 25 titles/abstracts. These will be screened by all authors using the eligibility criteria, and discrepancies will be discussed. Relevant modifications to the eligibility criteria will be made and reported in the final scoping review. When the authors achieve a 75% agreement, the screening will continue. Screening process will be done by two independent reviewers using Rayyan—a web and mobile app for systematic reviews. All potentially relevant sources will be retrieved in full text, and their citation details will be imported. Then, the full-text articles will be assessed in detail against the eligibility criteria, and reasons for exclusion of articles at full text, will be recorded and reported in the scoping review. At any stage of the selection process, when disagreements arise between the two independent reviewers, it will be resolved through discussion, or with a third reviewer involved. Results of the search and the study selection process will be reported in the scoping review and presented in a PRISMA-ScR flow diagram.<sup>33</sup>

### Charting the data

Data will be extracted from the included articles by two independent reviewers using the data extraction form as presented in [box 1](#). The data extracted will include article characteristics and specific details about the use of text-based communication after discharge including reference, country of origin, aim of the study, patient population, what text-based format was used, for how long after discharge was it available to patients, which healthcare professionals was involved in the text-based communication, outcomes and so on. Key findings related to facilitators and barriers will be extracted and synthesised inspired by the five constructs of CFIR: the intervention, the inner setting, the outer setting, the individuals and the process of implementation. The data extraction form will be pilot tested before performing the final scoping review, and it will be modified if necessary, during the process of extracting data from each article. The two reviewers will continuously discuss the results throughout the process, and any revisions on the data extraction form will be reported in the scoping review. Disagreements that may arise between the two reviewers will be resolved through discussion, or if necessary, with a third reviewer involved.

### Collating, summarising and reporting results

Extracted data from the included articles will be mapped in relation to the specified review questions for this scoping review. Mapping will be illustrated graphically, in a tabular form and/or charted, where appropriate, for example, to summarise and disseminate knowledge of the use of text-based communication after hospital discharge including key findings related to facilitators and barriers to the implementation. This will be accompanied by a descriptive summary to designate how the results relate to the objective of this scoping review and the specific research questions. Data from the included studies will

be mapped and presented as true to the original studies as possible, thus without interpretation, and according to guidelines for scoping reviews.<sup>31</sup>

### Patient and public involvement

This scoping review will not include patient and public involvement. However, the idea for this scoping review arises from a previous process, where we identified communication needs after hospital discharge in collaboration with patients and healthcare professionals.

### ETHICS AND DISSEMINATION

This scoping review will not require ethics approval, as the methodology of scoping reviews concerns reviewing and summarising available data. However, it will provide an overview of the use of text-based communication between patients and healthcare professionals after hospital discharge, and the facilitators and barriers to implementation. These will be systematically identified and mapped, which may be of interest for different stakeholders in healthcare, for example, researchers, software providers, healthcare professionals, managers and decision-makers across healthcare sectors, who work to improve transitions of care after hospital discharge. Since all healthcare research bears ethical responsibility, as results can affect care by influencing the development within the specific area of interest, we will also consider ethical issues for this scoping review. The strategy of dissemination includes submission for publication in scientific journal and subsequent presentation at relevant conferences.

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**Contributors** The idea for this scoping review was conceived by LWHJ, BID, OR and SK. Design and first draft of the protocol manuscript was conducted by LWHJ in close discussion with BID, OR, SK and AG. The search strategy has been developed in mutual discussion between all authors. The data extraction form has been discussed between all authors and will be pilot tested by LWHJ and AG before use. The second reviewer for the full scoping review will be AG and in case of need of a third reviewer this will be OR, BID or SK in this order. All authors have contributed to the critical revision of the protocol manuscript and approved the version to be published.

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**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

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# Search History

## Results and Databases

Database	Interface	Result	Date
PubMed	PubMed.gov	1322	09.11.2021
Embase	Elsevier	1027	09.11.2021
Cinahl	EBSCO	1089	09.11.2021
PsycINFO	Ovid	449	09.11.2021
Cochrane	Wiley	1839	09.11.2021
Web of Science	Clarivate	794	09.11.2021
Scopus	Elsevier	1303	09.11.2021
All		7823	
After removal of duplicates with EndNote		4690	
After removal of duplicates with Rayyan		<b>4564</b>	

## PubMed

Search	Query	Results
#37	Search: (((((((((((Patient Portals[MeSH Terms]) OR (Text Messaging[MeSH Terms])) OR (Electronic Mail[MeSH Terms])) OR (patient portal*[Text Word] OR internet portal*[Text Word] OR web portal*[Text Word])) OR (texting[Text Word] OR text messa*[Text Word] OR short message service[Text Word])) OR (web-based[Text Word] OR text-based[Text Word])) OR (e-mail*[Text Word] OR email*[Text Word])) OR (digital communicat*[Text Word] OR digital dialog*[Text Word] OR electronic communicat*[Text Word] OR internet communicat*[Text Word] OR online communicat*[Text Word])) OR (online messag*[Text Word] OR secure messag*[Text Word]) OR (chat[Text Word]) OR (e-visit*[Text Word])) AND (((((((("Continuity of Patient Care"[Mesh] OR (patient discharg*[Text Word]) OR (hospital discharg*[Text Word]) OR (after discharg*[Text Word]) OR (continuity of care[Text Word] OR continuous care[Text Word])) OR (health care team*[Text Word]) OR ("Outpatients"[Mesh]) OR (outpatient*[Text Word]) OR (Postoperative Period[MeSH Terms] OR postoperative period*[Text Word] OR Postoperative Care[MeSH Terms] OR postoperative car*[Text Word] OR post-surger*[Text Word]) OR (home-based[Text Word] OR at home[Text Word])))) AND (((("Communication"[Mesh] OR (communicat*[Text Word]) OR (patient-provider messag*[Text Word] OR provider-patient messag*[Text Word]) OR (patient-physician messag*[Text Word] OR physician-patient messag*[Text Word]) OR (patient-nurse messag*[Text Word] OR nurse-patient messag*[Text Word]) OR (patient-clinician messag*[Text Word] OR clinician-patient messag*[Text Word]) OR (patient-doctor messag*[Text Word] OR doctor-patient messag*[Text Word])) Sort by: Publication Date	<a href="#">1,322</a>
#34	Search: (((("Communication"[Mesh] OR (communicat*[Text Word]) OR (patient-provider messag*[Text Word] OR provider-patient messag*[Text Word]) OR (patient-physician messag*[Text Word] OR physician-patient messag*[Text Word]) OR (patient-nurse messag*[Text Word] OR nurse-patient messag*[Text Word]))	<a href="#">642,912</a>

Search	Query	Results
	Word])) OR (patient-clinician messag*[Text Word] OR clinician-patient messag*[Text Word])) OR (patient-doctor messag*[Text Word] OR doctor-patient messag*[Text Word]) Sort by: Publication Date	
#33	Search: patient-doctor messag*[Text Word] OR doctor-patient messag*[Text Word] Sort by: Publication Date	<a href="#">114</a>
#32	Search: patient-clinician messag*[Text Word] OR clinician-patient messag*[Text Word] Sort by: Publication Date	<a href="#">50</a>
#31	Search: patient-nurse messag*[Text Word] OR nurse-patient messag*[Text Word] Sort by: Publication Date	<a href="#">592</a>
#30	Search: patient-physician messag*[Text Word] OR physician-patient messag*[Text Word] Sort by: Publication Date	<a href="#">1,476</a>
#29	Search: patient-provider messag*[Text Word] OR provider-patient messag*[Text Word] Sort by: Publication Date	<a href="#">56</a>
#28	Search: communicat*[Text Word] Sort by: Publication Date	<a href="#">450,867</a>
#27	Search: "Communication"[Mesh] Sort by: Publication Date	<a href="#">326,151</a>
#26	Search: (((((((("Continuity of Patient Care"[Mesh]) OR (patient discharg*[Text Word])) OR (hospital discharg*[Text Word])) OR (after discharg*[Text Word])) OR (continuity of care[Text Word] continuous care[Text Word])) OR (health care team*[Text Word])) OR ("Outpatients"[Mesh])) OR (outpatient*[Text Word])) OR (Postoperative Period[MeSH Terms] OR postoperative period*[Text Word] OR Postoperative Care[MeSH Terms] OR postoperative car*[Text Word] OR post-surger*[Text Word])) OR (home-based[Text Word] OR at home[Text Word]) Sort by: Publication Date	<a href="#">711,029</a>
#25	Search: home-based[Text Word] OR at home[Text Word] Sort by: Publication Date	<a href="#">63,781</a>
#24	Search: Postoperative Period[MeSH Terms] OR postoperative period*[Text Word] OR Postoperative Care[MeSH Terms] OR postoperative car*[Text Word] OR post-surger*[Text Word] Sort by: Publication Date	<a href="#">164,151</a>
#23	Search: outpatient*[Text Word] Sort by: Publication Date	<a href="#">208,005</a>
#22	Search: "Outpatients"[Mesh] Sort by: Publication Date	<a href="#">17,601</a>
#21	Search: health care team*[Text Word] Sort by: Publication Date	<a href="#">4,921</a>
#20	Search: continuity of care[Text Word] OR continuous care[Text Word] Sort by: Publication Date	<a href="#">8,121</a>
#19	Search: after discharg*[Text Word] Sort by: Publication Date	<a href="#">22,163</a>

Search	Query	Results
#18	Search: hospital discharg*[Text Word] Sort by: Publication Date	<a href="#">31,167</a>
#17	Search: patient discharg*[Text Word] Sort by: Publication Date	<a href="#">34,577</a>
#16	Search: "Continuity of Patient Care"[Mesh] Sort by: Publication Date	<a href="#">260,574</a>
#15	Search: ((((((((((Patient Portals[MeSH Terms]) OR (Text Messaging[MeSH Terms])) OR (Electronic Mail[MeSH Terms])) OR (patient portal*[Text Word] OR internet portal*[Text Word] OR web portal*[Text Word])) OR (texting[Text Word] OR text messa*[Text Word] OR short message service[Text Word])) OR (web-based[Text Word] OR text-based[Text Word])) OR (e-mail*[Text Word] OR email*[Text Word])) OR (digital communicat*[Text Word] OR digital dialog*[Text Word] OR electronic communicat*[Text Word] OR internet communicat*[Text Word] OR online communicat*[Text Word])) OR (online messag*[Text Word] OR secure messag*[Text Word])) OR (chat[Text Word])) OR (e-visit*[Text Word]) Sort by: Publication Date	<a href="#">71,138</a>
#14	Search: e-visit*[Text Word] Sort by: Publication Date	<a href="#">120</a>
#13	Search: chat[Text Word] Sort by: Publication Date	<a href="#">7,133</a>
#11	Search: online messag*[Text Word] OR secure messag*[Text Word] Sort by: Publication Date	<a href="#">379</a>
#10	Search: digital communicat*[Text Word] OR digital dialog*[Text Word] OR electronic communicat*[Text Word] OR internet communicat*[Text Word] OR online communicat*[Text Word] Sort by: Publication Date	<a href="#">2,574</a>
#8	Search: e-mail*[Text Word] OR email*[Text Word] Sort by: Publication Date	<a href="#">18,653</a>
#7	Search: web-based[Text Word] OR text-based[Text Word] Sort by: Publication Date	<a href="#">35,904</a>
#6	Search: texting[Text Word] OR text messa*[Text Word] OR short message service[Text Word] Sort by: Publication Date	<a href="#">7,073</a>
#5	Search: patient portal*[Text Word] OR internet portal*[Text Word] OR web portal*[Text Word] Sort by: Publication Date	<a href="#">2,617</a>
#4	Search: Electronic Mail[MeSH Terms] Sort by: Publication Date	<a href="#">2,790</a>
#3	Search: Text Messaging[MeSH Terms] Sort by: Publication Date	<a href="#">3,543</a>
#2	Search: Patient Portals[MeSH Terms] Sort by: Publication Date	<a href="#">522</a>

## Embase

No.	Query	Results
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#30	#28 NOT #29	1,027
#29	#28 AND ('conference abstract'/it OR 'conference paper'/it OR 'conference review'/it)	963
#28	#10 AND #19 AND #27	1931
#27	#20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26	995568
#26	'patient-doctor messag*':ti,ab,kw OR 'provider-doctor messag*':ti,ab,kw	0
#25	'patient-clinician messag*':ti,ab,kw OR 'provider-clinician messag*':ti,ab,kw	2
#24	'patient-nurse messag*':ti,ab,kw OR 'provider-nurse messag*':ti,ab,kw	0
#23	'patient-physician messag*':ti,ab,kw OR 'provider-physician messag*':ti,ab,kw	5
#22	'patient-provider messag*':ti,ab,kw OR 'provider-patient messag*':ti,ab,kw	17
#21	communicat*':ti,ab,kw	432425
#20	'interpersonal communication'/exp	690727
#19	#11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18	1174007
#18	'home-based':ti,ab,kw OR 'at home':ti,ab,kw	92216
#17	'postoperative period*':ti,ab,kw OR 'postoperative care':ti,ab,kw OR 'post-surg*':ti,ab,kw	97318
#16	'postoperative period'/exp	546828
#15	'outpatient*':ti,ab,kw	299252
#14	'outpatient'/de	135369
#13	'continuity of care':ti,ab,kw OR 'continuous care':ti,ab,kw OR 'health care team*':ti,ab,kw	17782
#12	((patient OR hospital OR after) NEAR/1 discharg*):ti,ab,kw	96715
#11	'hospital discharge'/de	141244
#10	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9	112214
#9	'e-visit*':ti,ab,kw	231
#8	'online messag*':ti,ab,kw OR 'secure messag*':ti,ab,kw OR chat:ti,ab,kw	10178
#7	'digital communicat*':ti,ab,kw OR 'digital dialog*':ti,ab,kw OR 'electronic communicat*':ti,ab,kw OR 'internet communicat*':ti,ab,kw OR 'online communicat*':ti,ab,kw	3020
#6	'e-mail*':ti,ab,kw OR email*':ti,ab,kw	37116
#5	'web-based':ti,ab,kw OR 'text-based':ti,ab,kw	49697
#4	texting:ti,ab,kw OR 'text messa*':ti,ab,kw OR 'short message service':ti,ab,kw	7973
#3	((patient* OR internet OR web*) NEAR/1 portal*):ti,ab,kw	4141
#2	'e-mail'/de	24392
#1	'text messaging'/de	5898

## Cinahl

#	Query	Results
S33	S11 AND S23 AND S31	1,089
S32	S11 AND S23	3,377
S31	S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30	401,573
S30	patient-doctor messag* OR doctor-patient messag*	0
S29	patient-clinician messag* OR clinician-patient messag*	0
S28	patient-nurse messag* OR nurse-patient messag*	0

S27	patient-physician messag* OR physician-patient messag*	7
S26	patient-provider messag* OR provider-patient messag*	7
S25	communicat*	218,829
S24	(MH "Communication+")	293,196
S23	S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22	405,552
S22	home-based OR at home	205,279
S21	postoperative period* OR postoperative care OR post-surg*	43,519
S20	(MH "Postoperative Care+")	19,394
S19	(MH "Postoperative Period")	16,208
S18	outpatient*	103,627
S17	(MH "Outpatients")	48,174
S16	health care team*	6,036
S15	continuity of care OR continuous care	5,409
S14	(patient OR hospital OR after) N1 discharg*	50,950
S13	(MH "Patient Discharge+")	32,742
S12	(MH "Continuity of Patient Care+")	20,153
S11	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10	40,801
S10	e-visit*	109
S9	online messag* OR secure messag* OR chat	2,224
S8	digital communicat* OR digital dialog* OR electronic communicat* OR internet communicat* OR online communicat*	1,209
S7	e-mail* OR email*	15,841
S6	web-based OR text-based	16,898
S5	texting OR text messa* OR short message service	5,471
S4	(patient* OR internet OR web*) N1 portal*	1,926
S3	(MH "Email")	6,802
S2	(MH "Text Messaging")	3,313
S1	(MH "Patient Portals")	151

## PsycINFO

#	Searches	Results
1	text messaging/	1151
2	computer mediated communication/	6119
3	((patient* or internet or web*) adj portal*).mp.	676
4	(texting or text messa* or short message service).mp.	3733
5	(web-based or text-based).mp.	16350
6	(e-mail* or email*).mp.	10028
7	(digital communicat* or digital dialog* or electronic communicat* or internet communicat* or online communicat*).mp.	5487
8	(online messag* or secure messag*).mp.	230
9	chat.mp.	3707
10	e-visit*.mp.	11
11	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10	40453
12	hospital discharge/	2520
13	((patient or hospital or after) adj discharg*).mp.	10169
14	"continuum of care"/	1965
15	(continuity of care or continuous care or health care team*).mp.	4034
16	outpatients/	7366
17	outpatient*.mp.	60809
18	(postoperative period* or postoperative care or post-surg*).mp.	3274
19	(home-based or at home).mp.	28674
20	12 or 13 or 14 or 15 or 16 or 17 or 18 or 19	105459

21	exp communication/	322105
22	communicat*.mp.	327817
23	(patient-provider message or provider-patient message).mp.	0
24	(patient-physician message or physician-patient message).mp.	0
25	(patient-nurse message or nurse-patient message).mp.	0
26	(patient-nurse message or nurse-patient message).mp.	0
27	(patient-doctor message or doctor-patient message).mp.	0
28	21 or 22	486283
29	11 and 20 and 28	449

## Cochrane

ID	Search	Hits
#1	MeSH descriptor: [Patient Portals] explode all trees	24
#2	MeSH descriptor: [Text Messaging] explode all trees	975
#3	MeSH descriptor: [Electronic Mail] explode all trees	338
#4	((patient* OR internet OR web*) NEAR/1 portal*):ti,ab,kw	491
#5	(texting OR text messaging OR short message service):ti,ab,kw (Word variations have been searched)	12243
#6	(web-based OR text-based):ti,ab,kw	7927
#7	(e-mail OR email):ti,ab,kw (Word variations have been searched)	5283
#8	(digital communication OR digital dialogue OR electronic communication OR internet communication OR online communication):ti,ab,kw (Word variations have been searched)	4152
#9	(online message OR secure message):ti,ab,kw (Word variations have been searched)	1543
#10	(chat):ti,ab,kw	784
#11	(e-visit):ti,ab,kw (Word variations have been searched)	67
#12	{OR #1-#11}	27481
#13	MeSH descriptor: [Continuity of Patient Care] explode all trees	26349
#14	((patient OR hospital OR after) NEAR/1 discharg*):ti,ab,kw	15345
#15	(continuity of care OR continuous care):ti,ab,kw	12765
#16	(health care team):ti,ab,kw (Word variations have been searched)	8554
#17	MeSH descriptor: [Outpatients] explode all trees	1252
#18	(outpatient):ti,ab,kw (Word variations have been searched)	42900
#19	MeSH descriptor: [Postoperative Period] explode all trees	6054
#20	MeSH descriptor: [Postoperative Care] explode all trees	4546
#21	(postoperative period OR postoperative care OR post-surgery):ti,ab,kw (Word variations have been searched)	56597
#22	(home-based OR at home):ti,ab,kw	45112
#23	{OR #13-#22}	181114
#24	MeSH descriptor: [Communication] explode all trees	8732
#25	(communication):ti,ab,kw (Word variations have been searched)	27669
#26	(patient-provider message OR provider-patient message):ti,ab,kw (Word variations have been searched)	166
#27	(patient-physician message OR physician-patient message):ti,ab,kw (Word variations have been searched)	87
#28	(patient-nurse message OR nurse-patient message):ti,ab,kw (Word variations have been searched)	39
#29	(patient-clinician message OR clinician-patient message):ti,ab,kw (Word variations have been searched)	28
#30	(patient-doctor message OR doctor-patient message):ti,ab,kw (Word variations have been searched)	127
#31	{OR #24-#30}	32923

#32	#12 AND #23 AND #31	1839
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## Web of Science

#	Searches	Results
25	#8 AND #17 AND #24	794
24	#18 OR #19 OR #20 OR #21 OR #22 OR #23	1,178,117
23	"patient-doctor messag*" OR "doctor-patient messag*" (Topic)	1
22	"patient-clinician messag*" OR "clinician-patient messag*" (Topic)	0
21	"patient-nurse messag*" OR "nurse-patient messag*" (Topic)	0
20	"patient-physician messag*" OR "physician-patient messag*" (Topic)	4
19	"patient-provider messag*" OR "provider-patient messag*" (Topic)	11
18	communicat* (Topic)	1,178,113
17	#9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16	350,870
16	"home-based" OR "at home" (Topic)	80,674
15	"postoperative period*" OR "postoperative car*" OR "post-surger*" (Topic)	42,608
14	outpatient* (Topic)	177,629
13	"health care team*" (Topic)	3,668
12	"continuity of care" OR "continuous care" (Topic)	7,051
11	"after discharg*" (Topic)	19,989
10	"hospital discharg*" (Topic)	29,685
9	"patient discharg*" (Topic)	2,556
8	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7	159,101
7	chat OR "e-visit*" (Topic)	17,155
6	"online messag*" OR "secure messag*" (Topic)	1,111
5	"digital communicat*" OR "digital dialog*" OR "electronic communicat*" OR "internet communicat*" OR "online communicat*" (Topic)	15,846
4	"e-mail*" OR email* (Topic)	38,650
3	"web-based" OR "text-based" (Topic)	78,307
2	texting OR "text messa*" OR "short message service" (Topic)	10,404
1	"patient portal*" OR "internet portal*" OR "web portal*" (Topic)	5,018

## Scopus

#	Search Terms	Results
31	(( TITLE-ABS-KEY ( "patient portal*" OR "internet portal*" OR "web portal*" ) ) OR ( TITLE-ABS-KEY ( texting OR "text messa*" OR "short message service" ) ) OR ( TITLE-ABS-KEY ( "web-based" OR "text-based" ) ) OR ( TITLE-ABS-KEY ( "e-mail*" OR email* ) ) OR ( TITLE-ABS-KEY ( "digital communicat*" OR "digital dialog*" OR "electronic communicat*" OR "internet communicat*" OR "online communicat*" ) ) OR ( TITLE-ABS-KEY ( "online messag*" OR "secure messag*" ) ) OR ( TITLE-ABS-KEY ( chat OR "e-visit*" ) ) ) AND ( ( TITLE-ABS-KEY ( "patient discharg*" ) ) OR ( TITLE-ABS-KEY ( "hospital discharg*" ) ) OR ( TITLE-ABS-KEY ( "after discharg*" ) ) OR ( TITLE-ABS-KEY ( "continuity of care" OR "continuous care" ) ) OR ( TITLE-ABS-KEY ( "health care team*" ) ) OR ( TITLE-ABS-KEY ( outpatient* ) ) OR ( TITLE-ABS-KEY ( "postoperative period*" OR "postoperative car*" OR "post-surger*" ) ) OR ( TITLE-ABS-KEY ( "home-based" OR "at home" ) ) ) AND ( ( TITLE-ABS-KEY ( communicat* ) ) OR ( TITLE-ABS-KEY ( "patient-provider messag*" OR "provider-patient messag*" ) ) OR ( TITLE-ABS-KEY ( "patient-physician messag*" OR "physician-patient messag*" ) ) ) OR ( TITLE-ABS-KEY ( "patient-	1,303

	nurse messag** OR "nurse-patient messag**") OR ( TITLE-ABS-KEY ( "patient-clinician messag** OR "clinician-patient messag**" ) ) OR ( TITLE-ABS-KEY ( "patient-doctor messag** OR "doctor-patient messag**" ) ) ...View More	
30	( TITLE-ABS-KEY ( communicat* ) ) OR ( TITLE-ABS-KEY ( "patient-provider messag** OR "provider-patient messag**" ) ) OR ( TITLE-ABS-KEY ( "patient-physician messag** OR "physician-patient messag**" ) ) OR ( TITLE-ABS-KEY ( "patient-nurse messag** OR "nurse-patient messag**" ) ) OR ( TITLE-ABS-KEY ( "patient-clinician messag** OR "clinician-patient messag**" ) ) OR ( TITLE-ABS-KEY ( "patient-doctor messag** OR "doctor-patient messag**" ) )	2,310,748
27	TITLE-ABS-KEY ( "patient-doctor messag** OR "doctor-patient messag**" )	2
22	TITLE-ABS-KEY ( "patient-clinician messag** OR "clinician-patient messag**" )	0
21	TITLE-ABS-KEY ( "patient-nurse messag** OR "nurse-patient messag**" )	0
20	TITLE-ABS-KEY ( "patient-physician messag** OR "physician-patient messag**" )	8
19	TITLE-ABS-KEY ( "patient-provider messag** OR "provider-patient messag**" )	14
18	TITLE-ABS-KEY ( communicat* )	2,310,740
17	( TITLE-ABS-KEY ( "patient discharg**" ) ) OR ( TITLE-ABS-KEY ( "hospital discharg**" ) ) OR ( TITLE-ABS-KEY ( "after discharg**" ) ) OR ( TITLE-ABS-KEY ( "continuity of care" OR "continuous care" ) ) OR ( TITLE-ABS-KEY ( "health care team**" ) ) OR ( TITLE-ABS-KEY ( outpatient* ) ) OR ( TITLE-ABS-KEY ( "postoperative period** OR "postoperative car** OR "post-surger**" ) ) OR ( TITLE-ABS-KEY ( "home-based" OR "at home" ) )	917,472
16	TITLE-ABS-KEY ( "home-based" OR "at home" )	119,953
15	TITLE-ABS-KEY ( "postoperative period** OR "postoperative car** OR "post-surger**" )	385,303
14	TITLE-ABS-KEY ( outpatient* )	278,228
13	TITLE-ABS-KEY ( "health care team**" )	6,324
12	TITLE-ABS-KEY ( "continuity of care" OR "continuous care" )	10,222
11	TITLE-ABS-KEY ( "after discharg**" )	26,726
10	TITLE-ABS-KEY ( "hospital discharg**" )	129,312
9	TITLE-ABS-KEY ( "patient discharg**" )	38,719
8	(TITLE-ABS-KEY ( "patient portal** OR "internet portal** OR "web portal**" ) ) OR ( TITLE-ABS-KEY ( texting OR "text messa** OR "short message service" ) ) OR ( TITLE-ABS-KEY ( "web-based" OR "text-based" ) ) OR ( TITLE-ABS-KEY ( "e-mail** OR email* ) ) OR ( TITLE-ABS-KEY ( "digital communicat** OR "digital dialog** OR "electronic communicat** OR "internet communicat** OR "online communicat**" ) ) OR ( TITLE-ABS-KEY ( "online messag** OR "secure messag**" ) ) OR ( TITLE-ABS-KEY ( chat OR "e-visit**" ) )	259,133
7	TITLE-ABS-KEY ( chat OR "e-visit**" )	21,656
6	TITLE-ABS-KEY ( "online messag** OR "secure messag**" )	1,550
5	TITLE-ABS-KEY ( "digital communicat** OR "digital dialog** OR "electronic communicat** OR "internet communicat** OR "online communicat**" )	46,617
4	TITLE-ABS-KEY ( "e-mail** OR email* )	64,956
3	TITLE-ABS-KEY ( "web-based" OR "text-based" )	111,468
2	TITLE-ABS-KEY ( texting OR "text messa** OR "short message service" )	16,073
1	TITLE-ABS-KEY ( "patient portal** OR "internet portal** OR "web portal**" )	8,269