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# **Impacts of Communication Type and Quality on Patient Safety Incidents**

## **A Systematic Review**

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## Abstract

**Background:** Poor communication in health care increases the risk for patient safety incidents. However, there is no up-to-date synthesis of this data.

**Purpose:** To synthesize studies investigating how poor communication between health care practitioners and patients (and between different groups of practitioners) affects patient safety.

**Data Sources:** Ovid MEDLINE, CINAHL, APA PsycInfo, CENTRAL, Scopus, and the ProQuest Dissertations & Theses Citation Index from 1 January 2013 to 7 February 2024.

**Study Selection:** Studies published in any language that quantified the effects of poor communication on patient safety.

**Data Extraction:** Two independent reviewers extracted data, assessed risk of bias, and appraised strength of evidence. Study heterogeneity precluded meta-analysis, so results were reported with narrative description, reporting medians and IQRs.

**Data Synthesis:** Forty-six eligible studies (67 639 patients) were included. Risk of bias was low for 20, moderate for 16, and high for 10 studies. Four studies investigated whether poor communication was the only identified cause of a patient safety incident; here, poor communication caused 13.2% (IQR, 6.1% to 24.4%) of safety incidents. Forty-two studies investigated whether poor communication contributed to patient safety incidents alongside other causes; here, poor communication contributed to 24.0% (IQR, 12.0% to 46.8%) of safety incidents. Study heterogeneity was high in terms of setting, continent, health care staff, and safety incident type. The strength of the evidence was low or very low.

**Limitation:** There was important study heterogeneity, generally low study quality, and poor reporting of essential data.

**Conclusion:** Poor communication is a major cause of patient safety incidents. Research is needed to develop effective interventions and to learn more about how poor communication leads to patient safety incidents.

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## Introduction

On average, 1 in 20 patients are exposed to preventable harm in health care (1). Also, more than 3 million deaths occur annually due to patient safety incidents for low- and middle-income countries (2, 3). The proportion of patient harms associated with medical care increased by 59%, from 11 million to 18 million globally between 1990 and 2019 (4). In the United Kingdom alone, more than 1700 lives are lost per year because of medication errors (5). Internationally, more than 50% of patient harm is preventable (6) and is attributed largely to medication errors (7). Notably, the number of patient safety incidents is believed to be underreported (8) because a culture of blame within health care systems makes many practitioners fear reporting patient safety incidents (9, 10). Among the many factors that cause patient safety incidents (11), poor communication (12–14)—including miscommunication (15, 16), communication failure (17–19), communication breakdown (20), communication errors (21–25), and lack of adequate communication (26)—is prevalent. The Joint Commission—a nonprofit organization responsible for objectively evaluating U.S. health care organizations—reported that poor communication, including the absence of precise, accurate, meaningful, and relevant information being exchanged and understood, contributes to more than 60% of all hospital-based adverse events in the United States (27). Poor communication between different health care practitioners, as well as between practitioners and patients, can result in misunderstandings that lead to medical errors through misdiagnosis, suboptimal treatments (28), and

even life-threatening complications (29). Both the Francis (30) and Ockenden (31) reports in the United Kingdom cited a lack of effective communication as a cause of unnecessary deaths at the Mid Staffordshire NHS Foundation Trust and the Shrewsbury and Telford Hospital NHS Trust, respectively, and the U.K. health ombudsman cited poor communication as a cause of 48 000 avoidable sepsis deaths each year (32). Poor communication is a recognized threat to effective, safe health care internationally.

Several reviews have explored the effects of poor communication on patient safety, showing that it can lead to an increased risk for adverse events, delays in treatment, medication errors, and wrong-site surgery (33–36). However, these reviews have focused on specific dimensions of patient safety (such as medication errors) (35), particular health care disciplines (such as pharmacy or medicine) (33, 36), or particular forms of communication (such as practitioner to practitioner) (36). Contemporary policymakers and health care managers work in an increasingly interdisciplinary health care workforce and recognize the interrelationship between different types of communication and safety incidents (6, 33). To prioritize how and where to intervene, they require evidence linking different types of communication (including practitioner to patient and practitioner to practitioner) and different types of patient safety incidents. Hence, the previous reviews provide useful background but lack scope.

Moreover, the most recent review about communication failures leading to patient harm was completed in 2018 (33), and there is a need to synthesize and appraise new evidence published in the last 6 years.

This study aims to evaluate the extent to which poor communication (between practitioners and patients, and between different types of practitioners) causes or contributes to patient safety incidents.

## Methods

A protocol for this systematic review was published in May 2024 (37). The review was registered on PROSPERO (CRD42024507578) and is reported according to 2020 PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) guidance (38) (Supplement Table 1, available at Annals.org).

### Eligibility Criteria

Our inclusion and criteria are summarized in Supplement Table 2 (available at Annals.org) and the definition of key terms is provided in Supplement Section 1 (available at Annals.org). We included any study that classified patient safety incidents quantitatively. Health care practitioners could be from any discipline. Although we did not exclude studies evaluating communication involving nonhuman practitioners (such as carebots or chatbots) in our searches, we did not identify studies that included nonhuman practitioners. Studies evaluating communication included those that reported a lack of communication entirely, as well as other forms of poor communication between health care staff and between health care staff and patients or carers. Studies of written, verbal, electronic, and nonverbal communication were included. We included studies reporting any patient safety incidents, including adverse events, medical errors, and near misses. We included articles reported in any language.

### Data Source and Searches

The search strategy is provided in Supplement Section 2 (available at Annals.org). We searched the following databases from 2013 to 7 February 2024: MEDLINE, CINAHL, APA PsycInfo, CENTRAL, and Scopus to ensure the inclusion of all sources of evidence anticipated to contain

papers on health care and health care–related communication. We supplemented these searches by searching ProQuest with its Dissertations & Theses Citation Index, screening the references of all included studies and citation searching. The cutoff date of 2013 was chosen to reflect current rather than historical practice. The Francis Report on quality and safety failings at the Mid Staffordshire NHS Foundation Trust was published in 2013 (30). After the report, regulations related to patient safety changed in the United Kingdom (39) and beyond (40).

The search was peer-reviewed, with results reported using the PRESS (Peer Review of Electronic Search Strategies) checklist (41) (see [Supplement Section 3](#), available at [Annals.org](#)). The independent reviewer provided additional search terms to include for patient safety, drug safety, drug errors, and communication and also had advice on relying on database limits to identify systematic reviews for removal from the results. They also questioned our use of database publication type limits and suggested using a search filter instead, so we adapted our search strategy accordingly.

## Study Selection

Records were imported into Covidence (42). A combination of 2 reviewers (from L.K., A.B.-W., S.M., A.S.K., and M.J.) independently screened titles, abstracts, and full texts for eligibility. Data from the eligible full texts were extracted using the Covidence extraction form. Discrepancies in screening or extraction were resolved by discussion, if necessary, with a third reviewer (J.H.).

## Data Extraction and Quality Assessment

Two reviewers (from L.K., A.B.-W., S.M., A.S.K., and M.J.) independently summarized and recorded data from the included studies. Extracted data included: study details (including first author, lead author contact detail, date published, country of study), study aim, study design, participant demographics (for example, age, ethnicity, sex), demographics of health care staff (for example, age, ethnicity, sex, qualification), details of intervention, patients, setting (primary and secondary care), how patient safety incidents were measured (patient reports, voluntary error reporting systems for staff, automated surveillance, administrative or claims data, and retrospective reviews), comparator, and outcomes (adverse events, never events, medical error, medication errors, or near misses). Two authors independently assessed the risk of bias using JBI (formerly known as the Joanna Briggs Institute) checklists (43). Disagreements were resolved by discussion or consultation with a third author (J.H.). Each item was rated as yes, no, unclear, or not applicable, with 2 points assigned for yes, 1 point for unclear, and 0 points for no. The overall quality appraisal was categorized as follows: good quality (>7 points), intermediate quality ( $\leq 7$  to  $> 5$  points), or poor quality ( $\leq 5$  points) (44). We used GRADE (Grading of Recommendations Assessment, Development and Evaluations) to evaluate the overall certainty of evidence for all outcomes (communication types and type of patient safety incidents); these ratings ranged from very low to high (45).

## Patient and Public Involvement

One patient representative (J.B.) was involved in this study and is a co-author. J.B. contributed to reviewing, suggested improvements to the protocol, and edited the main messages of the manuscript to make sure they were understandable and relevant to nonspecialist audiences.

## Deviation From Protocol

In the PROSPERO registration, we specified that the search strategy would include studies published between 1999 and 2023. However, in this study, we focused on studies published between 2013 and 2023 to better reflect current practices. In addition, although we intended to provide a logic model, we could not obtain sufficient data to generate one.

## Data Synthesis and Analysis

We used preplanned and exploratory analyses to explore the impact of heterogeneity among the included studies. The heterogeneity precluded meta-analysis (46). We therefore produced a narrative description of included studies and analyzed the data descriptively, reporting medians and IQRs (47). We summarized and grouped our studies by form of communication, safety incidents reported, continent, and risk of bias. The inability to conduct a meta-analysis due to heterogeneity precluded the investigation of publication bias using a funnel plot (48).

## Role of the Funding Source

This study was funded by the Stoneygate Trust, which had no role in the development or writing of this article.

## Results

Our search identified 20 557 records. After excluding duplicates, 16 447 articles were screened by title and abstract according to our exclusion criteria, with 16 343 eliminated and a further 58 excluded after full-text review. Forty-six studies were included (see the PRISMA flow chart in the [Supplement Figure](#)). A list of excluded studies with reasons for exclusion is provided in [Supplement Table 3](#) (available at [Annals.org](#)).

## Characteristics of Included Studies

[Table 1](#) contains full details of the included studies. All were published between 2013 and 2023. Nineteen studies reported the number of included patients, with a total of 67 639 (median, 688 [range, 30 (49) to 49 778 (50)]). The number of health care staff within the 10 papers reporting this data was 6154 (median, 190 [range, 15 (21) to 2773 (17)]). Thirteen studies were undertaken in Asia (16, 17, 20, 26, 51–59), 15 in Europe (15, 19, 22, 60–71), 15 in North America (23–25, 49, 50, 72–81), 2 in South America (18, 21), and 1 in Africa (82).

The types of health care staff in included studies were hospital physicians in 4 studies (49, 53, 76, 82); nurses in 5 (50, 59, 60, 67, 81); a combination of hospital physicians and nurses in 10 (16, 17, 20, 24, 54, 62, 63, 71, 72, 79); a combination of hospital physicians and other clinical staff in 6 (15, 19, 23, 56, 65, 80); nurses and primary care physicians in 1 (21); hospital physicians, nurses, and clinical staff in 4 (22, 55, 64, 74); hospital physicians, nurses, and nonclinical staff in 3 (57, 61, 70); and hospital physicians, nurses, and a pharmacist in 1 (58); the types of health care staff were not reported in the remaining studies (18, 25, 26, 51, 52, 66, 68, 69, 73, 75, 77, 78). The settings were hospitals in 42 studies (15–18, 20, 22–26, 49–64, 66, 67, 69–82), a family care clinic in 1 (21), and several forms of care setting (for example, hospitals, rehabilitation, survivorship care, and palliative care) in 2 (65, 68); the setting was not reported in 1 study (19). The most common study designs were described as cross-sectional in 6 studies (16–18, 22, 53, 77), retrospective analysis in 28 studies (19, 22–26, 49, 51, 54–62, 64, 65, 67, 69, 70, 72, 73, 78–80, 82), and prospective in 12 studies (15, 20, 21, 50, 52, 63, 66, 71, 74–76, 81).

Communication occurred between at least 2 of the following groups: patients, carers, clinical staff, and nonclinical staff (see [Table 1](#)). Communication problems were described as miscommunication (15, 16), communication (17–19), communication breakdown (20), communication errors (21–25), and lack of adequate communication (26). For example, communication failure was defined to be when information (such as diagnostic information or information about required treatment) was communicated inaccurately, inappropriately, or not at all. This can happen at any phase of care, within a single department or across departments and institutions as well as between different health care stakeholders, physicians, nurses, and patients (55). Communication problems were also described as ineffective intraprofessional handovers (again, where information can be missed) and lack of a shared patient care plan, all of which contribute to delays in care and confusion among health care practitioners (74). In addition, communication errors included the incorrect, incomplete,

or delayed communication of information among treatment team members; inadequate or absent written documentation; failures during handovers or transfers of accountability; and misinterpretation or misunderstandings of documents such as orders, requests, or instructions (21–25).

The types of patient safety incidents were adverse events in 15 studies (22, 24, 26, 49, 50, 53–55, 65, 69, 73–77), near misses in 5 studies (60, 62, 78, 80, 81), medical errors in 4 studies (17, 56, 67, 72), and medication errors in 5 studies (16, 20, 51, 58, 59). Incident type was not reported in 17 studies (15, 18, 19, 21, 23, 25, 52, 57, 61, 63, 64, 66, 68, 70, 71, 79, 82).

To detect patient safety incidents, 32 studies used voluntary error reporting systems (15, 18–26, 51, 54, 56, 58–62, 64, 65, 67–72, 75, 77, 78, 80–82), 11 reviewed patients' medical charts (16, 49, 50, 52, 55, 57, 66, 73, 74, 76, 79), and 2 used questionnaires completed by health care practitioners (53, 63). One study used survey questions for inpatients administered by research staff (17). None of the included studies compared better communication with worse communication. Eleven studies reported the source of funding as "None" (15, 17, 26, 54, 57, 60, 61, 65, 66, 77, 79), 16 studies listed their source of funding (20, 24, 49, 52, 55, 56, 58, 63, 68, 69, 74–76, 78, 80, 82), and the remaining studies did not report their funding source (16, 18, 19, 21–23, 25, 50, 51, 53, 59, 62, 64, 67, 70–73, 81).

## Risk-of-Bias Results

Twenty studies had low risk of bias (high quality) (20, 21, 23, 25, 49, 51, 57, 59, 62, 63, 65–68, 70, 73, 74, 76, 78, 80), 16 had some concerns (moderate quality) (15–19, 24, 50, 53, 55, 56, 60, 61, 64, 72, 75, 79), and 10 had high risk of bias (low quality) (22, 26, 52, 54, 58, 69, 71, 77, 81, 82) (Supplement Table 4, available at Annals.org). The main reasons for concerns about risk of bias included issues related to selection of participants (for example, representativeness of the cohort, sample size); inadequate descriptions of participants or setting; reliability (for example, the exposure was not measured in a valid and reliable way); or failure to adequately control for potential confounding.

## Evidence Synthesis

Studies reported the influence of poor communication on patient safety in 2 ways. Four studies (18, 61, 71, 73) investigated the extent to which communication problems were the only identified cause of a patient safety incident, finding that communication problems directly caused a median of 13.2% (IQR, 6.1% to 24.4%) of safety incidents. The remaining 42 studies (15–26, 49–59, 62–70, 72, 74–82) investigated whether communication problems were a contributory cause of patient safety incidents, alongside other (sometimes overlapping) causes, finding that communication contributed to a median of 24.0% (IQR, 12.0% to 46.8%) of safety incidents.

## Effect of Communication Type

Table 2 summarizes the information of synthesis by communication type.

### *Clinical Staff Communication*

Twenty-five studies (15–17, 20, 24–26, 49, 51, 53, 56, 58–60, 62, 64, 66, 69, 70, 75–79, 81) focused on communication problems between clinical staff (where communication problems were a contributory cause of patient safety incidents, alongside other causes). The methods of communication included verbal, written, electronic, and nonverbal communication. In this category, poor communication contributed to approximately 1 in 5 (median, 22.4% [IQR, 12.6% to 50.0%]) patient safety incidents. The quality of studies in this category varied; 10 studies had low risk of bias (20, 25, 49, 51, 59, 62, 66, 70, 76, 78), 10 had some concerns about bias (15–17, 24, 53, 56, 60, 64, 75, 79), and 5 had a high risk of bias (26, 58, 69, 77, 81). The certainty of the evidence was very low. Three studies (18, 71, 73) involved communication problems between clinical staff in which the communication was the only identified cause of the patient safety incident. Here, communication

problems caused a median of 19.4% (IQR, 6.1% to 24.4%) of patient safety incidents. There was a low risk of bias for 1 study (73), some concerns of bias for 1 study (18), and a high risk of bias for the other (71). The certainty of the evidence was very low.

### *Clinical Staff–to–Nonclinical Staff Communication*

Two studies (23, 55) with concerns about bias (55) or low risk of bias (23) found that poor communication between clinical and nonclinical staff (for example, laboratory staff) contributed to 22% and 79.1% of patient safety incidents, respectively. The certainty of the evidence was very low.

### *Clinical Staff–to–Patient Communication*

Five studies (21, 50, 65, 72, 74) considered communication problems between clinical staff and patients or carers. The modes of communication included verbal, written, electronic, and nonverbal communication. Poor communication between clinical staff and patient or carer contributed to a median of 34.0% (IQR, 15.0% to 53.5%) of patient safety incidents. Three of these studies had low risk of bias (21, 65, 74), and 2 had some concerns about bias (50, 72). The certainty of the evidence was low.

### *Clinical and Nonclinical Staff–to–Patient Communication*

Five studies (22, 63, 67, 68, 80) considered communication problems between a combination of both clinical and nonclinical staff to patients or carers. Poor communication between these groups contributed to a median of 21.7% (IQR, 9.3% to 35.2%) of patient safety incidents. Four of these studies had low risk of bias (63, 67, 68, 80) and 1 had high risk (22). The certainty of the evidence was very low.

One study (61) reported that communication problems directly caused 7.1% of patient safety incidents. Risk-of-bias assessment revealed some concerns about bias.

## Effects by Type of Patient Safety Incidents

[Supplement Section 4](#) (available at [Annals.org](#)) contains full details of the synthesis by type of patient safety incident and by continent, with a summary in [Table 3](#). The contribution of poor communication to patient safety incidents ranged from a median of 13.3% (IQR, 1.9% to 44.1%) for medication errors to a median of 40.5% (IQR, 14.3% to 66.4%) for adverse events. The contribution of poor communication to patient safety incidents (all types) ranged from 21.7% (IQR, 14.4% to 38.5%; Europe) to 38.2% (2 studies; South America).

## Effect of Risk of Bias

We investigated the risk of bias through sensitivity and subgroup analyses (see [Supplement Table 5](#), available at [Annals.org](#)). Among the studies investigating whether communication problems were a contributory cause of patient safety incidents, when studies at high risk of bias (22, 26, 52, 54, 58, 69, 77, 81, 82) were excluded from the analysis, we found poor communication contributed to a median of 22.4% (IQR, 12.6% to 44.2%;  $n = 33$ ) of patient safety incidents, which was similar to the findings in which studies with a high risk of bias were included. We also grouped these studies by risk of bias. The 19 studies with a low risk of bias had a median of 22.4% (IQR, 14.7% to 42.5%;  $n = 19$ ) (20, 21, 23, 25, 49, 51, 57, 59, 62, 63, 65–68, 70, 74, 76, 78, 80). The 14 studies with some concerns (15–17, 19, 24, 50, 53, 55, 56, 60, 64, 72, 75, 79) had a median of 24.2% (IQR, 5.8% to 50.8%;  $n = 14$ ). Within the 9 studies with high risk of bias (22, 26, 52, 54, 58, 69, 77, 81, 82), the median was 47.9% (IQR, 11.8% to 53.9%;  $n = 9$ ). Comparing studies with low and high risk of bias demonstrates that those with a high risk of bias report a higher estimate (47.8% compared with 22.4%).

Among the studies investigating the extent to which poor communication was the only identified cause of a patient safety incident, when the study with a high risk of bias (71) was excluded (71), we

found a median of 19.4% (range, 7.1% to 24.4%). The 1 study (71) with high risk of bias reported that communication problems caused 6.1% of patient safety incidents.

## Effects of Study Design

We conducted a subgroup analysis by study design. In 34 retrospective studies (16–19, 22–26, 49, 51, 53–62, 64, 65, 67, 69, 70, 72, 73, 77–80, 82), we found a median of 23.4% (IQR, 11% to 45.6%); in 12 prospective studies (15, 20, 21, 50, 52, 63, 66, 71, 74–76, 81), we found a median of 18.9% (IQR, 7.6% to 47.9%).

## Discussion

### Summary of Findings

In this systematic review of 46 studies, we found that poor communication contributed to approximately a quarter of patient safety incidents and that poor communication was the only identified cause of about 1 in 10 patient safety incidents. Patient safety incidents in the 46 studies included adverse events, medication errors, near misses, and medical errors. Studies were conducted in various regions and across different continents, and these were considered in synthesizing the results, as different continents have differences in health care practices, patient populations, and safety protocols. Most studies were from North America, Europe, and Asia. Studies with a higher risk of bias reported larger effect sizes for one group of studies (those investigating the extent to which poor communication was a contributory cause) and lower effects in another (those investigating the extent to which poor communication was the only identified cause).

### Comparison With Existing Literature

Our finding complements those of other related studies (33–36), by adding rigor as previous reviews had not appraised the quality of evidence or determined the strength of evidence. In addition, we were able to provide a broad overview of the relationships between different types of communication and various types of patient safety incidents. Previous related studies mainly focused on specific aspects of patient safety (such as medication errors) (35), particular health care disciplines (such as pharmacy or medicine) (33, 36), or certain types of communication (such as practitioner to practitioner) (36). Our review extends these prior reviews by providing an updated and comprehensive assessment of the literature considering different health care practitioner populations, health care settings, and all forms of communication and patient safety incidents. We also used broader inclusion criteria and synthesize the results based on communication between health care staff to health care staff or health care staff to patient, type of patient safety events, region, and risk of bias, which were overlooked in previous reviews.

### Limitations and Future Research

There were a number of limitations to this review. First, there was substantial heterogeneity between studies, and the quality of studies was often low. This limits the robustness of the summarized evidence and inhibits our ability to precisely quantify associations between communication problems and patient safety incident outcomes. In addition, poor reporting of the underpinning evidence (including numbers of patients and practitioners involved, definition of poor communication, and classification of safety incidents) makes it difficult to develop robust conclusions from the data that we have. For example, most studies did not report the number of patients and type of health care provider, and many did not report the time between communication problems and measuring patient safety incidents. Moreover, they did not report the proportion of patient safety incidents where communication problems were a contributor. Future research should address these barriers to implementation through better reporting of the types of communication failures that caused patient safety incidents as well as the type of patient safety incidents. Relatedly, the quantitative nature of the included studies meant that most lacked rich descriptions of the mechanisms through which communication impacted patient safety. Further research is needed to explore the pathways between different types of communication and different categories of patient safety incidents, including the

direct and indirect effects (83, 84) to optimize and develop interventions to enhance communication. Relatedly, research would benefit from exploring the most effective interventions to enhance patient safety specifically. Finally, there were few studies from Australia and Africa, with only 1 study from each continent, which limits our ability to draw conclusions about the extent to which poor communication causes patient safety incidents across countries and cultures.

### Implications for Policy and Practice

Our findings highlight the crucial need for health care professionals to develop and maintain effective communication skills to foster strong relationships with their peers and their patients. Policymakers should therefore focus on commissioning evidence-based training to ensure that health care professionals develop and maintain positive communication and teamwork, which can consequently improve health care safety. Such training should span the continuum of health professions education, from undergraduate training to continuing professional development, and should consider effective communication skills between all relevant stakeholders, including patients, health care professionals, and nonclinical staff. This is particularly important given that 30 of the 46 included studies revealed that communication between colleagues contributed to patient safety incidents (15–17, 20, 22, 24–26, 49, 51, 53, 56, 58–60, 62–64, 66–70, 75–81). Health care professionals seeking to enhance their own communication skills may be guided by published reports of communication interventions designed to improve patient safety (13, 85, 86). These interventions offer standardized approaches to verbal communication between health care professionals, and between health care professionals and patients (13, 85, 86). However, research is required to optimize and develop such interventions further, and to identify which interventions are most effective at improving patient safety. Doing so would require researchers to assess patient safety as a core outcome in randomized trials of the effectiveness of interventions for communication in health care.

### Conclusion

Poor communication is a substantial cause of patient safety incidents. Our findings emphasize the urgent need for interventions aimed at improving patient safety through improved communication. Such interventions should be embedded from the beginning of undergraduate health professions education to better prepare health care professionals to communicate effectively with both patients and colleagues. The proportion of patient safety incidents that are attributed to communication problems is broadly comparable across cultural contexts, indicating a need for shared problem-solving internationally to address this key threat to patient health and well-being.

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Collection and assembly of data: L. Keshtkar, A.S. Khan, S. Mohan, M. Jones, K. Nockels, J. Howick.

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**Figure. Evidence search and selection.** Flow diagram of selection of studies.

**Table 1. Details of Included Studies**

Study, Year (Reference)	Risk of Bias (Low, Some Concerns, High)	Study Design	Patient Type: <i>n</i>	Type of Health Care Providers	Setting	Reported Cause of the Problem	Comm. Between	Method of Comm. (Written, Verbal, Non-verbal)	Type of Patient Safety Incident	Patient Safety Incidents Caused/ Partly Caused by Poor Comm., %	Measurement Strategies	Continent: Country
<b>Clinical staff-to-clinical staff comm.</b>												
Nazir et al, 2024 (49)	Low	Retro cohort	Radio-therapy patients: 30	Hospital physicians	Hospital: secondary care	Inability to use closed-loop comm.	HCPs	NR	Adverse events	76.67	Retro chart review	North America: US
Lyphout et al, 2018 (66)	Low	Prospective, multicenter, cohort design	Hospital patients: 688	NR	Hospital: secondary care	Comm. incidents	HCPs	NR	Patient safety incidents (unspecified type)	16.13	Retro chart review (e.g., medical record)	Europe: Belgium
Bagheri-Nesami et al, 2015 (59)	Low	Descriptive study	Critical care or intensive care patients: 2542	Nurses	Hospital: secondary care	Comm.	HCPs	Verbal; written	Medication errors	13.36	Voluntary error reporting systems	Asia: Iran
Gunnar et al, 2020 (73)	Low	Retro analysis	Surgical patients: NR	NR	Hospital: secondary care	Comm.	HCPs	NR	Adverse events	19.38	Retro chart review	North America: US
Castro-Rodriguez et al, 2020 (70)	Low	Observation, descriptive, analytic	ED patients: NR	Hospital physicians, nurses, clinical staff	Hospital: secondary care	Comm.	HCPs	NR	Safety incidents (unspecified type)	21.69	Voluntary error reporting systems	Europe: Spain
Ruddy et al, 2015 (78)	Low	Observation study	Patients attending the ED: NR	NR	Hospital: secondary care	Comm.: inter-personal skills	HCPs	NR	Near misses	14.73	Voluntary error reporting systems	South America: Brazil
Suliburk et al, 2019 (76)	Low	Prospective observation	Surgical patients: NR	Hospital physicians	Hospital: secondary care	Comm.	HCPs	NR	Adverse events	12.50	Retro chart review (e.g.,	North America: US

Study, Year (Reference)	Risk of Bias (Low, Some Concerns, High)	Study Design	Patient Type: <i>n</i>	Type of Health Care Providers	Setting	Reported Cause of the Problem	Comm. Between	Method of Comm. (Written, Verbal, Non-verbal)	Type of Patient Safety Incident	Patient Safety Incidents Caused/ Partly Caused by Poor Comm., %	Measurement Strategies	Continent: Country
Thawitsri et al, 2016 (20)	Low	Prospective observation	Surgical patients: NR	Hospital physicians and nurses	Hospital: secondary care	Comm. breakdowns	HCPs	NR	Medication errors	42.86	Voluntary error reporting systems (medical record)	Asia: Thailand
Salmani and Fallah Tafti, 2016 (51)	Low	Descriptive, analytic	Patients on pediatric ward: NR	Nurses	Hospital: secondary care	Comm.	HCPs	Written	Medication errors	4.04	Voluntary error reporting systems	Asia: Iran
Elnahal et al, 2016 (25)	Low	Retro case-control	Patients receiving radiation therapy: 1293	NR	Hospital: secondary care	Comm. errors	HCPs	NR	Patient safety incidents (unspecified type)	22.42	Voluntary error reporting systems	North America: US
O'Sullivan and Lyons, 2023 (60)	Some concerns	Retro audit	Hospital patients: 670	Nurses	Hospital: secondary care	Comm.	HCPs	Written	Near misses	11.43	Voluntary error reporting systems	Europe: Ireland
Pereira da Silva et al, 2023 (18)	Some concerns	Cross-sectional	Radio-therapy patients: NR	NR	Hospital: secondary care	Comm. failure	HCPs	NR	Patient safety incidents (unspecified type)	24.42	Voluntary error reporting systems	South America: Brazil
Scharein and Trendelenburg, 2013 (62)	Some concerns	Retro analysis	Patients attending the IM clinic:	Hospital physicians and nurses	Hospital: secondary care	Comm. problems	HCPs	NR	Near misses	25.66	Voluntary error reporting systems	Europe: Switzerland
Provenzano et al, 2015 (79)	Some concerns	Retro analysis	Hospital patients: NR	Hospital physicians and nurses	Hospital: secondary care	Comm. barriers	HCPs	NR	Patient safety incidents (unspecified type)	3.40	Retro chart review	North America: US

Study, Year (Reference)	Risk of Bias (Low, Some Concerns, High)	Study Design	Patient Type: <i>n</i>	Type of Health Care Providers	Setting	Reported Cause of the Problem	Comm. Between	Method of Comm. (Written, Verbal, Non-verbal)	Type of Patient Safety Incident	Patient Safety Incidents Caused/ Partly Caused by Poor Comm., %	Measurement Strategies	Continent: Country
Mugada et al, 2018 (16)	Some concerns	Cross-sectional	Hospital patients: 377	Hospital physicians and nurses	Hospital: secondary care	Miscomm.	HCPs	NR	Medication errors	3.95	Retro chart review (e.g., medical record)	Asia: India
Bielka et al, 2023 (15)	Some concerns	Prospective cohort	Surgical patients: 188	Hospital physicians and clinical staff	Hospital: secondary care	Miscomm. with a surgical team	HCPs	NR	Patient safety incidents (unspecified type)	12.77	Voluntary error reporting systems	Europe: Ukraine
Hamad et al, 2022 (24)	Some concerns	Retro analysis	Surgical patients: NR	Hospital physicians and nurses	Hospital: secondary care	Comm. errors	HCPs	Verbal; written	Adverse events	56.20	Voluntary error reporting systems	North America: US
Abbas et al, 2020 (53)	Some concerns	Cross-sectional	Surgical patients: NR	Hospital physicians	Hospital: secondary care	Poor comm. among team members	HCPs	NR	Adverse events	22.31	Questionnaires completed by HCPs	Asia: Pakistan
Niemeier et al, 2021 (64)	Some concerns	Retro analysis	Trauma patients: NR	Hospital physicians, nurses, and clinical staff	Hospital: secondary care	Comm.	HCPs	Verbal; nonverbal	Patient safety incidents (unspecified type)	7.69	Voluntary error reporting systems	Europe: Germany
Topcu et al, 2017 (17)	Some concerns	Cross-sectional	ICU patients: NR	NR	Hospital: secondary care	Comm. failures	HCPs	Verbal; written	Medical errors	52.91	Questionnaires completed by HCPs	Asia: Turkey
Kahriman et al, 2016 (56)	Some concerns	Descriptive design	Hospital patients: NR	Nurses	Hospital: secondary care	Lack of comm.	HCPs	NR	Medical errors	48.61	Voluntary error reporting systems	Asia: Turkey

Study, Year (Reference)	Risk of Bias (Low, Some Concerns, High)	Study Design	Patient Type: <i>n</i>	Type of Health Care Providers	Setting	Reported Cause of the Problem	Comm. Between	Method of Comm. (Written, Verbal, Non-verbal)	Type of Patient Safety Incident	Patient Safety Incidents Caused/ Partly Caused by Poor Comm., %	Measurement Strategies	Continent: Country
Thiels et al, 2015 (75)	Some concerns	Prospective observation	Surgical patients: NR	NR	Hospital: secondary care	Inadequate comm.	HCPs	NR	Adverse events	45.71	Voluntary error reporting systems	North America: US
Dennison et al, 2022 (81)	High	Prospective study	NR	Nurses	Hospital: secondary care	Comm.	HCPs	NR	Near misses	47.88	Voluntary error reporting systems	North America: Canada
Brado et al, 2021 (71)	High	Prospective clinical	Neonates: 179	Hospital physicians and nurses	Hospital: secondary care	Comm. and patient mis-ID	HCPs	NR	Patient safety incidents (unspecified type)	6.06	Voluntary error reporting systems	Europe: Germany
Christiansen et al, 2015 (69)	High	Retro analysis	Patients with cancer: NR	NR	Different health care center: both primary and secondary care	Comm.: document-ation	HCPs	Verbal; written; electronic	Adverse events	55.94	Voluntary error reporting systems	Europe: Denmark
Santhosh et al, 2019 (77)	High	Cross-sectional	ICU patients: NR	NR	Hospital: secondary care	Comm. failure from the ICU to the ward	HCPs	Verbal; written	Adverse events	86.86	Voluntary error reporting systems	North America: US
Al Wahabi et al, 2017 (21 26)	High	Retro analysis	Patients received imaging: 854	NR	Hospital: secondary care	Lack of proper comm.	HCPs	NR	Adverse events	35.33	Voluntary error reporting systems	Asia: Saudi Arabia

Study, Year (Reference)	Risk of Bias (Low, Some Concerns, High)	Study Design	Patient Type: <i>n</i>	Type of Health Care Providers	Setting	Reported Cause of the Problem	Comm. Between	Method of Comm. (Written, Verbal, Non-verbal)	Type of Patient Safety Incident	Patient Safety Incidents Caused/ Partly Caused by Poor Comm., %	Measurement Strategies	Continent: Country
Chalasanani and Ramesh, 2017 (58)	High	Retro analysis	ICU patients: 5137	Hospital physicians, nurses, and pharmacists	Hospital: secondary care	Lack of comm.	HCPs	NR	Medication errors	9.65	Voluntary error reporting systems	Asia: India
<b>Clinical staff-to-nonclinical staff comm.</b>												
Judy et al, 2017 (23)	Low	Retro analysis	Trauma patients: NR	Hospital physicians, nurses, and clinical staff	Hospital: secondary care	Comm. errors	Clinical staff and nonclinical staff; nonclinical staff	NR	Patient safety incidents (unspecified type)	22	Voluntary error reporting systems	North America: US
Watson et al, 2023 (55)	Some concerns	Retro analysis	Patients from public hospitals: NR	Hospital physicians, nurses, and clinical staff	Hospital: secondary care	Comm. problems	HCPs; clinical staff and nonclinical staff; nonclinical staff	Verbal; written; electronic; methods: spoken, written, system-related	Adverse events	79.15	Retro chart review	Asia: China
<b>Clinical or nonclinical staff-to-patient comm.</b>												
Gens-Barberà et al, 2021 (68)	Low	Cross-sectional	NR	Hospital physicians and nurses	Primary care centers and hospital: both primary and secondary care	Comm.	Patient/carer and practitioner; HCPs; clinical staff and nonclinical staff; patient and nonclinical staff	NR	Patient safety incidents (unspecified type)	27.81	Voluntary error reporting systems	Europe: Spain

Study, Year (Reference)	Risk of Bias (Low, Some Concerns, High)	Study Design	Patient Type: <i>n</i>	Type of Health Care Providers	Setting	Reported Cause of the Problem	Comm. Between	Method of Comm. (Written, Verbal, Non-verbal)	Type of Patient Safety Incident	Patient Safety Incidents Caused/ Partly Caused by Poor Comm., %	Measurement Strategies	Continent: Country
Lacson et al, 2019 (80)	Low	Retro analysis	Patients received imaging: 854	NR	Hospital: secondary care	Report comm. (e.g., test results)	Patient/carer and practitioner; HCPs	NR	Near misses	2.58	Voluntary error reporting systems	North America: US
O'Hara et al, 2018 (63)	Low	Prospective survey	Hospital patients: 2471	Hospital physicians and nurses	Hospital: secondary care	Comm. issues	Patient/carer and practitioner; HCPs; nonclinical staff	NR	Patient safety incidents (unspecified type)	21.73	Patient reports	Europe: UK
Källberg et al, 2015 (67)	Low	Retro analysis	Patients in the ED: 66	Hospital physicians and clinical staff	Hospital: secondary care	Comm. failure	Patient/carer and practitioner; HCPs; clinical staff and nonclinical staff	Verbal; written	Medical errors	42.50	Voluntary error reporting systems	North America: US
Thomas and MacDonald, 2016 (61)	Some concerns	Retro analysis	Critical care units' patients: NR	Hospital physicians, nurses, clinical staff	Hospital: secondary care	Comm. incidents	Patient/carer and practitioner; HCPs; clinical staff and nonclinical staff	Verbal; written; electronic; written combined, bleeps, and telephone	Patient safety incidents (unspecified type)	7.11	Voluntary error reporting systems	Europe: UK
Jager et al, 2021 (22)	High	Retro analysis	NR	Hospital physicians and clinical staff	Hospital: secondary care	Comm. errors	HCPs; patient and nonclinical staff	NR	Adverse events	16.05	Voluntary error reporting systems	Europe: Switzerland

**Clinical staff-to-patient comm.**

Study, Year (Reference)	Risk of Bias (Low, Some Concerns, High)	Study Design	Patient Type: <i>n</i>	Type of Health Care Providers	Setting	Reported Cause of the Problem	Comm. Between	Method of Comm. (Written, Verbal, Non-verbal)	Type of Patient Safety Incident	Patient Safety Incidents Caused/ Partly Caused by Poor Comm., %	Measurement Strategies	Continent: Country
Wong et al, 2015 (74)	Low	Prospective cohort	General medical inpatients: 141	Hospital physicians, nurses, and clinical staff	Hospital: secondary care	Comm. problems	Patient/carer and practitioner; HCPs	Verbal; Nonverbal	Adverse events	34.04	Retro chart review (e.g., medical record)	North America: Canada
Martijn et al, 2013 (65)	Low	Retro analysis	Women with a low-risk profile at the start of pregnancy :	Hospital physicians and midwives	Primary care midwife and hospital referral: both primary and secondary care	Comm.	Patient/carer and practitioner; HCPs	NR	Adverse events	54.93	Voluntary error reporting systems	Europe: the Netherlands
Marchon et al, 2015 (21)	Low	Observation, descriptive, prospective	Patients presenting to family health strategy units: 125	Nurses and primary care physicians	Family health units: primary care	Comm. errors	Patient/carer and practitioner; HCPs	NR	Patient safety incidents (unspecified type)	52	Voluntary error reporting systems	Europe: Sweden
Crotty et al, 2015 (50)	Some concerns	Prospective analysis	Hospital patients: 49 778	Hospital physicians	Hospital: secondary care	Unread messages	Patient/carer and practitioner	Electronic	Adverse events	4	Retro chart review (e.g., medical record)	North America: US
Vioque et al, 2014 (72)	Some concerns	Retro analysis	Trauma patients: NR	Hospital physicians and nurses	Hospital: secondary care	Comm. deficiencies	Patient/carer and practitioner; HCPs	Verbal; written; electronic	Medical errors	26.06	Voluntary error reporting systems	North America: US

**Other (NR)**

Study, Year (Reference)	Risk of Bias (Low, Some Concerns, High)	Study Design	Patient Type: <i>n</i>	Type of Health Care Providers	Setting	Reported Cause of the Problem	Comm. Between	Method of Comm. (Written, Verbal, Non-verbal)	Type of Patient Safety Incident	Patient Safety Incidents Caused/ Partly Caused by Poor Comm., %	Measurement Strategies	Continent: Country
Ishiyama et al, 2019 (57)	Low	Retro analysis	Radio-therapy patients: 2887	NR	Hospital: secondary care	Comm.	NR	NR	Patient safety incidents (unspecified type)	38.46	Retro chart review (e.g., medical record)	Asia: Japan
Zarei et al, 2023 (19)	Some concerns	Retro review	Intensive care patients: NR	Hospital physicians and clinical staff	NR	Comm. failures	NR	NR	Patient safety incidents (unspecified type)	34.61	Voluntary error reporting systems	Europe: Austria
Tuchinda et al, 2020 (52)	High	Prospective, descriptive	Neuro-anesthesia hospital patients: NR	NR	Hospital: secondary care	Comm.	NR	NR	Safety incidents (unspecified type)	7.64	Retro chart review	Asia: Thailand
ELMeneza and AbuShady, 2020 (82)	High	Retro analysis	Neonates: NR	Hospital physicians	Hospital: secondary care	Failure of comm.	NR	NR	Patient safety incidents (unspecified type)	27.83	Voluntary error reporting systems	Africa: Egypt
Vahidi et al, 2021 (54)	High	Retro analysis	NR	Hospital physicians and nurses	Hospital: secondary care	Comm. errors	NR	NR	Adverse events	10.53	Voluntary error reporting systems	Asia: Iran

Comm./comm. = communication; ED = emergency department; HCP = health care practitioner; ICU = intensive care unit; mis-ID = misidentification; Miscomm. = miscommunication; NR = not reported; Observation = observational; Retro = retrospective; UK = United Kingdom; US = United States.

**Table 2. Outcome Summary by Type of Communication Between Health Care Staff and Between Health Care Staff and Patients**

Group	Studies, <i>n</i>	Risk of Bias, <i>n</i>			Strength of Evidence	Median, %	IQR, %, or Range for 3 Studies
		High	Some Concerns	Low			
<b>Estimate of the contribution of poor communication to patient safety incidents</b>							
Clinical staff communication	25	5	11	9	Low	22.4	12.6–50.0
Clinical staff-to-nonclinical staff communication	2	–	1	1	Very low	50.6	–
Clinical staff to patient/carer	5	–	2	3	Low	34.0	15.0–53.5
Clinical and nonclinical staff to patients or carers	5	1	4	–	Very low	21.7	9.3–35.2
Overall	37	6	18	13	Low to very low	25.7	13.0–49.9
<b>The proportion of patient safety incidents caused by poor communication</b>							
Clinical staff to clinical staff	3	1	1	1	Very low	19.4	6.1–24.4
Clinical and nonclinical staff to patients or carers	1	–	1	–	Very low	7.1	–
Overall	4	1	3	–	Very low	13.3	6.1–24.4

**Table 3. Outcome Summary by Type of Patient Safety Incidents and Continent**

Group	Studies, <i>n</i>	Risk of Bias, <i>n</i>			Strength of Evidence	Median (or Actual Data Points for 1 or 2 Studies) Contribution of Poor Communication to Patient Safety Incidents, %	IQR, %
		High	Some Concerns About Bias	Low			
<b>Type of patient safety incidents</b>							
Adverse events	14	5	6	4	Very low	40.5	14.3–66.4
Medical errors	4	–	3	1	Low	37.3	2.6–52.9
Near misses	5	1	2	2	Very low	25.7	13.0–45.2
Medication errors	5	1	1	3	Low	13.3	1.9–44.1
Unspecified	14	3	3	8	Very low	21.9	10.2–31.2
<b>Continent</b>							
North America	14	2	6	7	Low	24.2	8.2–52.0
Europe	13	3	6	6	Very low	21.7	14.4–38.5
Asia	13	4	5	4	Very low	22.3	8.6–45.7
South America	2	–	1	1	Low	38.2	–
Africa	1	1	–	–	Very low	27.8	–