



## Effectiveness of structured models of Nursing handover for ensuring continuity of information in Hospital

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### Abstract

**Aim:** This review aims to evaluate the effectiveness of implementing structured and standardized model of nursing handovers.

**Background:** Handover between providers impacts patients' safety. In literature there were many attempts to introduce improvements to this process, one of these is standardization.

**Evaluation:** We considered handover improvement studies that assess any of: communicative efficacy, time taken for handover, staff or patients' satisfaction, patient safety, clinical outcomes, quality improvement. To compare a variety of different outcome measures, we used a taxonomy.

**Key issues:** Improvement of communication transfer is the most influenced variable; a small number of papers reported enhancement in quality, compliance, or staff satisfaction. Improved clinical outcomes were reported in a single study, while patient safety was in two.

**Conclusions:** The few data for comparison, low quality of studies and lack of strong trends made it difficult to reach definitive conclusions. Findings suggest that a structured tool is useful in improving communication transfer.

**Implication for nursing management:** A universally accepted model for handoffs should be characterized by simplicity and minimal structure to be extremely flexible to adapt to the various areas of care. However, many tools exist that can be used to a single area or to a group of related fields.

**Keywords:** Handover, Handoff, Nurse shift report, Structured model, Process standardization

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### Introduction

The practice of modern medicine lies upon increasingly complex work environments and supporting processes, and one process central to continuity of nursing care and patients' safety is handover (handoff) (Robertson, Morgan, Bird, Catchpole, & McCulloch, 2014).

Clinical handover has been defined as: "the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or groups of patients, to another person or professional group on a temporary or permanent basis" (Riegel, 1985). Furthermore, handovers are a valuable opportunity for social interaction, emotional support and education (Meißner et al., 2007).

Miscommunication during patient's transfer is cause of about 80% of serious medical errors (Joint Commission, 2012). It may lead to adverse events, delays in treatment and diagnosis, inappropriate treatment and omission of care (Smeulers, Lucas, & Vermeulen, 2014), in addition to causing patient harm (Joint Commission, 2012).

To prevent untoward outcomes, in literature the production of solutions and interventions to improve handovers has increased (Smeulers et al., 2014). Researchers approaches included process standardization, training and education, changes to the physical environment, use of technology, explicit signaling of accountability transfer, and others (Bergs et al., 2018).

The handoff issue has become so prominent that the Joint Commission promoted a national patient safety goal on this (Haig, Sutton, & Whittington, 2006) and the Joint Commission International with The World Health Organization suggested some strategies to enhance communication between providers, among which the implementation "of a standardized approach to hand-over communication between staff, change of shift and between different patient care units in the course of a patient transfer" (World Health Organization, 2007).

Despite the researcher's efforts a knowledge gap remains as the best handover style hasn't been found (Bakon, Wirihana, Christensen, & Craft, 2017; Robertson et al., 2014; Smeulers et al., 2014) and was suggested that the efficacy of handover models depends on the implementation method used (Bakon et al., 2017).

This systematic review aims to evaluate the effectiveness of implementing structured and standardized model of nursing handovers to improve communication and for ensuring continuity of information in a hospital setting.

## Methods

Authors used a search strategy based on PICO method to include studies that introduced a standardized approach to handover to improve communication within hospital settings:

**Population:** nursing staff who makes a transfer of information about patients under their care

**Intervention:** application of structured and standardized models of handovers

**Comparison:** no intervention

**Outcomes:** communication effectiveness, staff or patients' satisfaction, time taken for handover, patient safety, clinical outcomes, quality improvement.

Inclusion criteria for studies comprised:

a) Implementation of a structured and standardized model of handover

b) Set within an intra-hospital environment

c) Between providers that include at least one nurse during shift change, a multidisciplinary meeting, or transfer of a patient between hospital units

d) Assesses any of: communicative efficacy, time taken for handover, staff or patients' satisfaction, patient safety, clinical outcomes, quality improvement.

We searched on MEDLINE and CINAHL for papers published in English and Italian between January 2012 and January 2018, with free full-text available, using a search strategy based on the terms and synonyms below, combined with Boolean Operators: (handover OR handoff OR care transfer OR shift report) AND nurs\* AND (model OR protocol) AND (quality improvement OR efficacy OR effectiveness OR impact OR benefits OR outcomes OR patient safety OR time OR duration OR satisfaction OR communication OR communicating OR communicate OR conversation OR best practice).

Studies extracted from the research were de-duplicated and screened by one reviewer for compliance with inclusion criteria. Subsequently a

selection was made by two reviewers independently for the full-text articles. Finally, the reviewers compared responses and resolved by agreement any difference of opinion about eligibility. We excluded articles that did not meet the inclusion criteria, articles that did not provide the complete text for free, research protocols, and articles dealing with delivery steps in patient transfers between different hospitals or on discharge.

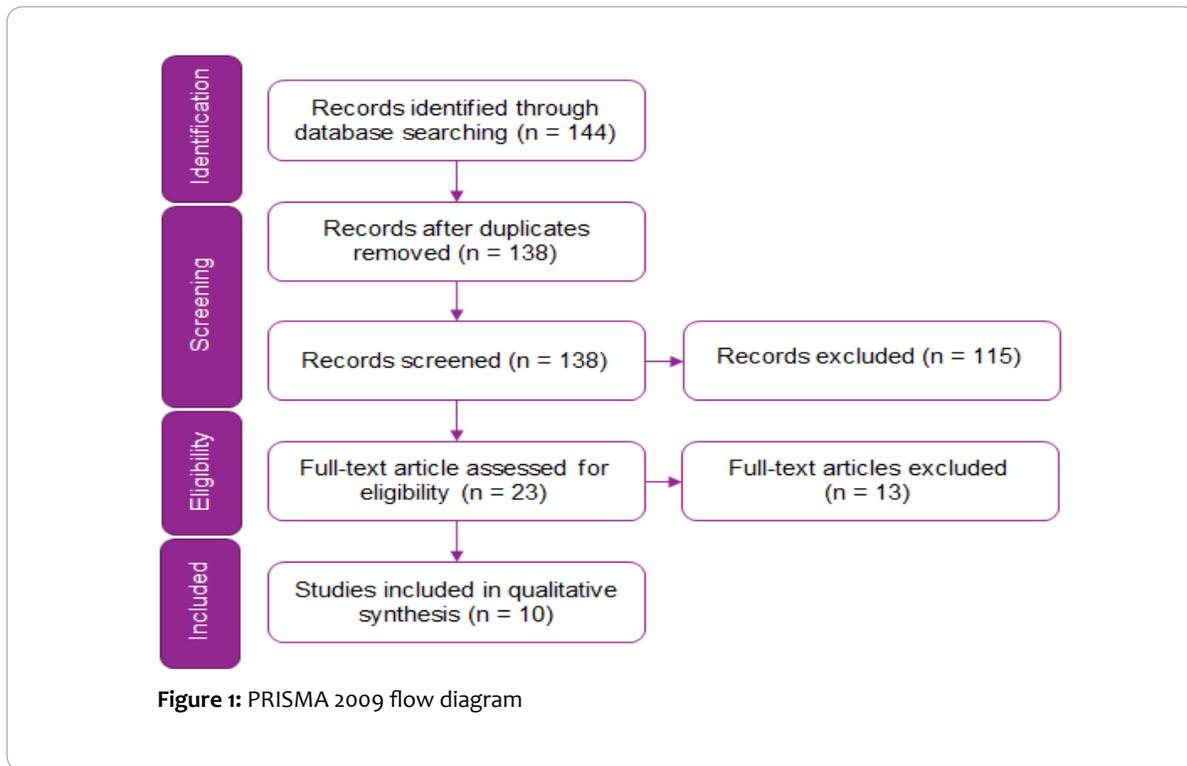
Where available, the following information was extracted from each paper:

- Context: hospital setting and geographical locality
- Study design
- Sample and size: number of nurses of other professionals involved in the study; number of handovers examined
- Information system: model of handover, protocols, and checklists
- Outcomes: measures of information transfer (communication effectiveness, errors or omissions in communication), staff or patient's satisfaction of the handover, compliance with the new model, protocol or checklist; duration (time spent on shift report tasks and/or handover); clinical outcomes (adverse events, patient outcomes and safety); measures of quality improvement (standard of documentation, forgotten tasks, workgroup, performance).

The quality of included articles was assessed with Downs and Black (D&B) checklist (1998). The scale has previously been adapted for similar studies on handover (Riesenberg et al., 2009; Robertson et al., 2014). For the purpose of this review, the quality assessment was intended to criticize the included documents, not to select them.

## Results

The database search provided a total of 144 citations, and after deduplication, 138 remained. The inclusion criteria screening excluded 115 articles in the abstract review and 13 in the full-text analysis (Figure 1). In the end, 10 articles to be included in this review were identified and are displayed in the summary table (table 1).



Author(s) & Journal	Study design	Sample size & site	Study findings
Bakon et al. (2017) <i>Int J Nurs Pract</i>	Integrative literature review Systematic research strategy and thematic analysis	16 papers included	There are various handover models in use, yet there is no evidence that any one model displays superior efficacy. The iSoBAR model and its adaptations remain the only model employed across various specialties.
Cornell et al. (2013) <i>JONA J Nurs Adm</i>	Pre/post implementation study using observation and recording during shift report	75 nurses and 146 handover observations (59 baseline, 36 paper SBAR, 51 electronic SBAR). 4 Medical-surgical units in a tertiary care hospital (Mid-south, USA)	SBAR made reports more focused, with more time spent discussing the patient and less on transcribing information. The SBAR protocol provides a concise and prioritized structure that enables consistent, comprehensive, and patient-centered reports.
C o r n e l l , Townsend-Gervis, et al. (2014) <i>JONA J Nurs Adm</i>	Pre/post implementation study using observation of patient review, and data from hospital records	960 patient reviews (interdisciplinary rounds) in 4 different conditions (118 baseline, 203 mobile, 191 paper SBAR, 448 electronic SBAR) 3 Medical-surgical units in an acute care hospital	SBAR provides a shortcut for communication while maintaining comprehensiveness and clarity, especially in an interdisciplinary setting. Consistency and repeatability also benefit staff development.
Cornell, Gervis, et al. (2014) <i>Off J Acad Medical-Surgical Nurses</i>	Observational study using interviews, surveys, sampling, and direct observation	36 clinical care nurses in a medical-surgical unit. 51 shift reports observed: 16 baseline, 19 paper SBAR, 16 electronic SBAR (USA). 269 patient reviews on interdisciplinary rounds	The SBAR protocol enabled more focused, consistent shift report and fostered dialog between nurses. It provided a framework and support for communicating prioritized, essential information in a timely, consistent manner, SBAR tool is also essential to achieving efficiency.
Kerr et al. (2016) <i>Int J Nurs Pract</i>	Pre/post implementation study using survey and audit	126 nurses participated on survey, 368 medical records and patient observation was audited (AUS) Emergency Department (ED)	A structured nursing handover process that includes an adapted ISBAR checklist in is an easy-to-implement strategy, it enhances continuity of care and completion of aspects of nursing care tasks and documentation in the ED
Robinson (2016) <i>J PeriAnesthesia Nurs</i>	Pre/post implementation of a pilot study using competency assessment, questionnaire and handoff observation audits	All perioperative registered nurses. 50 handoff observations Acute care community hospital with 8 OR and 12-bed post anesthesia care unit (PACU)	The use of perioperative PEARLS improves the effective transfer of essential patient information and compliance with regulatory handoff communication standards, and the promotion of perioperative patient safety.
Shalini et al. (2015) <i>Int J Nurs Educ</i>	Case-control study. Data collected through demographic proforma, structured knowledge questionnaire and practice checklist on SBAR technique during patients' handoff	72 staff nurses and 72 handoff events in a Tertiary care hospital	The protocol on SBAR communication during patients' handoff among nurses is effective. It helped to improve the knowledge and practice of handoff among nurses.
Tucker & Fox (2014) <i>Nurs Stand</i>	Discursive	Acute ward (UK)	Authors advocate introducing the REED model to standardize practice.

**Table 1.** Summary table of articles that met the inclusion criteria.

Wright (2013) AANA J	2-phase, nonexperimental study. Phase 1: e-mailing questionnaire about transfer of care practices. Phase 2: development, pilot test and evaluation of the PATIENT checklist tool (mixed-methods survey questionnaire)	Phase 1: 1000 Certified Registered Nurse Anesthetists (CRNAs) in USA. Phase 2: 74 CRNAs in operating suites at each of 2 large community hospitals and 1 large teaching hospital (USA)	The PATIENT checklist tool, as component of standardized and systematic processes, have the potential to assist providers with identifying, organizing, and communication important information to overcome inevitable human fallibilities and improve performance.
Yang & Zhang (2016) J Clin Nurs	Pre/post-test study with follow-up after 3 months based on data collection.	77 nurses from Neurosurgical Intensive Care Unit (NICU) and Operating Room (OR), 20 resident physicians, 10 intensive care specialists, 2 respiratory therapists, 34 neurosurgeons, 13 anesthetists 168 postoperative handovers (China)	The implementation of a postoperative handover protocol in the ICU improved postoperative handover communication and continuing of care. It may have been associated with decreased ventilation duration.

**Table 1.** Summary table of articles that met the inclusion criteria.

### The study designs of the included studies comprised:

- Four pre/post implementation studies (Cornell, Gervis, Yates, & Vardaman, 2013; Cornell, Townsend-Gervis, Vardaman, & Yates, 2014; Kerr, Klim, Kelly, & McCann, 2016; Robinson, 2016)
- One pre/post-test study with follow-up after 3 months (Yang & Zhang, 2016)
- One observational study (Cornell, Gervis, Yates, & Vardaman, 2014)
- One 2-phase nonexperimental study (Wright, 2013)
- One case-control study (Shalini, Castelino, & Latha, 2015)
- One discursive paper (Tucker & Fox, 2014)
- One integrative literature review (Bakon et al., 2017).

In the included articles, more than 1815 handovers were analyzed, with a median of 146 handoff per study (table 1). Three studies (Bakon et al., 2017; Tucker & Fox, 2014; Wright, 2013) did not provide information on this.

The median length of time for the duration of the studies was 7 months (range 2 weeks-10 months). None of the study gave complete information of their study design timeline. The median time to collect the pre-intervention data was 20.5 days (range 5–30), between pre- and post-intervention measurements was 49 days (range 14–122), and for post-intervention data collection was 7.5 days (range 5–10). One study included a follow-up test after three month from post-intervention data collection (Yang & Zhang, 2016). Two articles did not provide timeline data (Bakon et al., 2017; Tucker & Fox, 2014).

All the studies focus on nurses in the handover process, but in three cases a multidisciplinary team was involved (Cornell, Gervis, et al., 2014; Cornell, Townsend-Gervis, et al., 2014; Yang & Zhang, 2016).

### All studies were performed in hospital setting:

- Three studies in medical/surgical units (Cornell et al., 2013; Cornell, Gervis, et al., 2014; Cornell, Townsend-Gervis, et al., 2014)
- Two studies in Operating Room (OR) or Post Anesthesia Care Unit (PACU) (Robinson, 2016; Wright, 2013)
- One study in an acute ward (Tucker & Fox, 2014)
- One study in an Emergency Department (ED) (Kerr et al., 2016)
- One study on patient transfer from OR to the Neurosurgical Intensive Care Unit (NICU) (Yang & Zhang, 2016)
- One study in a tertiary care hospital with no other specification of the unit (Shalini et al., 2015)

- One study collected more than one environment (Bakon et al., 2017).
- The included studies took varied approaches to handover improvements. Among the tools used to facilitate the structuring of information (usually checklists) there are some inspired by pre-existing models: SBAR (Cornell et al., 2013; Cornell, Gervis, et al., 2014; Cornell, Townsend-Gervis, et al., 2014; Shalini et al., 2015) and ISBAR (Kerr et al., 2016). One author described a new model of handover, The REED model (Tucker & Fox, 2014), and three authors created a tool: The PATIENT (Wright, 2013), PEARLS (Robinson, 2016), and the NICU postoperative handover checklists (Yang & Zhang, 2016). In Bakon's review (2017) numerous handover models was identified, including variations of iSoBAR, VITAL / PVITAL, ICCO and The REED model.

Among the strategies used for the implementation of the new handover models / protocols, seven studies contained two or more interventions (Cornell et al., 2013; Cornell, Gervis, et al., 2014; Cornell, Townsend-Gervis, et al., 2014; Kerr et al., 2016; Robinson, 2016; Wright, 2013; Yang & Zhang, 2016), two studies gave no information about intervention strategies (Shalini et al., 2015; Tucker & Fox, 2014), finally, Bakon's review (2017) does not focus on implementation strategies.

### Implementation strategies performed were:

- In five studies, staff's training (Cornell et al., 2013; Cornell, Gervis, et al., 2014; Cornell, Townsend-Gervis, et al., 2014; Robinson, 2016; Yang & Zhang, 2016)
  - In three studies, handovers simulation (Cornell et al., 2013; Cornell, Townsend-Gervis, et al., 2014; Robinson, 2016); group orientation was used in one study (Wright, 2013);
  - In three studies, exposition of checklist or flowchart in the work area (Kerr et al., 2016; Wright, 2013; Yang & Zhang, 2016)
  - In three studies, individual forms of poked-sized paper illustrating the checklist / flowchart or notepads was given to the staff (Cornell, Gervis, et al., 2014; Kerr et al., 2016; Wright, 2013)
  - In one study, quality improvement meeting and debriefing on individual events and action plans (Yang & Zhang, 2016).
- For the evaluation of the outcomes, six studies have used mixed methods (Cornell, Gervis, et al., 2014; Cornell, Townsend-Gervis, et al., 2014; Kerr et al., 2016; Robinson, 2016; Shalini et al., 2015; Wright, 2013), in the remaining studies, excluding the review (Bakon et al., 2017), a single evaluation method was chosen (Cornell et al., 2013; Tucker & Fox, 2014; Yang & Zhang, 2016).

### The methods were:

- In five studies, direct observation of handovers (Cornell et al., 2013; Cornell, Gervis, et al., 2014; Cornell, Townsend-Gervis, et al., 2014; Robinson, 2016; Shalini et al., 2015)
- In five studies, surveys or questionnaires (Cornell, Gervis, et al., 2014; Kerr et al., 2016; Robinson, 2016; Shalini et al., 2015; Wright, 2013)
- In two studies, audits (Kerr et al., 2016; Robinson, 2016)
- In two studies, data collection (Cornell, Townsend-Gervis, et al., 2014; Yang & Zhang, 2016).

Several discrete outcome measures were used to evaluate study interventions. To make results comparable, we used a classification developed in a previous review (Robertson et al., 2014) with some small changes. Robertson's review (2014) divided outcomes in: information transfer, staff satisfaction, handover duration, clinical outcome, and compliance with handover protocol. We modified "staff satisfaction" with "staff and patients' satisfaction" and added the field "quality improvement". Bakon's review (2017) was considered separately.

Seven studies, in at least one of their outcome measures, reported a statistically significant result (Cornell et al., 2013; Cornell, Gervis, et al., 2014; Cornell, Townsend-Gervis, et al., 2014; Kerr et al., 2016; Robinson, 2016; Shalini et al., 2015; Yang & Zhang, 2016).

Six studies have reported success on information transfer (Cornell, Gervis, et al., 2014; Cornell, Townsend-Gervis, et al., 2014; Kerr et al., 2016; Robinson, 2016; Shalini et al., 2015; Yang & Zhang, 2016).

The SBAR technique in one study improved the knowledge and practice of handoff (Shalini et al., 2015), and in one study enhanced consistency and quality of information (relevant, essential, prioritized) during the shift report, (Cornell, Gervis, et al., 2014). A SBAR protocol was also used in two studies during the interdisciplinary rounds (IDRs) (Cornell, Gervis, et al., 2014; Cornell, Townsend-Gervis, et al., 2014), and was found an increased consistency in patient presentation during the patient reviews on IDRs, reducing superfluous information.

In the ED, after the implementation of an adapted ISBAR checklist, nurses reported that they had been provided with adequate information about all patients during the handover, and that information were presented in a systematic and organized way (Kerr et al., 2016).

Two studies reported the use of structured checklist in the OR (Robinson, 2016; Yang & Zhang, 2016). After the implementation of perioperative PEARLS checklist, was identified a significant improvement in effective communication of essential elements of care in the immediate postoperative period (Robinson, 2016). Also in post-implementation phase of the NICU postoperative handover checklist, bedside communication improved significantly: was increased transfer of key messages regarding anesthesia, surgery, and care plans from sending staff to the receiving ones (Yang & Zhang, 2016).

Quality improvement was the next most commonly reported success, it was described in three studies (Kerr et al., 2016; Tucker & Fox, 2014; Yang & Zhang, 2016). In two studies improved significantly some nursing tasks (Kerr et al., 2016; Yang & Zhang, 2016); in two studies there was an improvement of documentation standards and a better completeness of data reported (Kerr et al., 2016; Tucker & Fox, 2014); and in one study increased teamwork (Yang & Zhang, 2016).

After the implementation of an handover structured protocol in the ED there were a statistically significant improvement in completion of two nursing care tasks (wear allergy alert band, and identification bracelet to patients) (Kerr et al., 2016). Another study improved the performance of nursing staff in the pre-NICU admission preparation, indicated by readiness of the receiving staff and ventilator, monitor, microinjection pumps ready prepared (Yang & Zhang, 2016).

In Kerr's study (2016), three documentation items were improved

(documentation of intravenous cannula insertion, valuables documented in nursing notes, intravenous therapy recorded on the fluid balance chart). In another paper was indicated that The REED model improved the standard of documentation (Tucker & Fox, 2014).

Increase in teamwork was found in one study after protocol implementation, also surgeon presence increased during the postoperative handovers (Yang & Zhang, 2016).

Relevance of standardized handover process on clinical outcomes and patients' safety was reported by three studies (Cornell, Townsend-Gervis, et al., 2014; Robinson, 2016; Yang & Zhang, 2016). After the new handover process, in one study decreased mechanical ventilation duration per patient (Yang & Zhang, 2016), while in one study patients' length of stay had no significant difference from the baseline (Cornell, Townsend-Gervis, et al., 2014).

Despite it was not among the measured outcomes, patients' safety and the absence of adverse events occurred was reported in two studies (Robinson, 2016; Yang & Zhang, 2016).

Handovers' duration was analyzed in three studies after SBAR protocol implementation (Cornell et al., 2013; Cornell, Gervis, et al., 2014; Cornell, Townsend-Gervis, et al., 2014). The introduction of SBAR in the IDRs reduced significantly the duration of patient review in two studies (Cornell et al., 2013; Cornell, Townsend-Gervis, et al., 2014).

Duration reduction of shift report after the introduction of SBAR protocol was controversial. In one study was found no statistical difference in mean time to complete shift report (Cornell et al., 2013), instead in one study shift report duration increased (Cornell, Gervis, et al., 2014). However, seems that the time to complete the shift report was shorter (Cornell, Gervis, et al., 2014), but the duration of shift report tasks was significantly longer (Cornell et al., 2013; Cornell, Gervis, et al., 2014).

A single study tests the satisfaction of nurses with respect to the new instrument implemented (Wright, 2013), with positive feedback. In Robinson's study (2016) the statistically significant increase in nursing practice change may indirectly indicate satisfaction with the instrument in terms of appropriateness.

In one study was measured patients' satisfaction on nursing communication and patient experience after the introduction of SBAR protocol, was found no significant differences for the two variables (Cornell, Townsend-Gervis, et al., 2014).

A single study measures the compliance of nurses with the new handoff communication protocol (Robinson, 2016), findings indicated that the standardized handover process improved the compliance with regulatory handover communication, with an effective practice change (statistically significant).

In one study, at follow-up test surgeon presence, communication during bedside handover, team performance and ventilation duration per patient were either sustained or improved further; this could indirectly indicate a good compliance with the new protocol implemented (Yang & Zhang, 2016).

Bakon's review (2017) aimed "to explore the different handover models and processes and their efficacy in improving communication with nursing practice". The author concluded that the efficacy of the model of handover is dependent on the facility and the implementation method used, and there is no evidence that any one model displays superior efficacy (Bakon et al., 2017).

### Discussion

We approached this research on the assumption that handovers are of fundamental importance for continuity of care (Emily S Patterson & Wears, 2010; Smeulders et al., 2014). In literature there is agreement

that handover modalities may impact on patient safety (Arora, Johnson, Meltzer, & Humphrey, 2008; Borowitz, Waggoner-Fountain, Bass, & Sledd, 2008; Dufault et al., 2010; Farhan, Brown, Woloshynowych, & Vincent, 2012; E. S. Patterson, Roth, Woods, Chow, & Gomes, 2004). Moreover, handover can be an opportunity to socialize, debrief, and provide patient education (Halm, 2013; Klim, Kelly, Kerr, Wood, & McCann, 2013). On the contrary, communication errors in the handoff can cause various untoward outcomes (Joint Commission, 2012; Smeulers et al., 2014).

In agreement with Robertson's review (2014), information transfer was the most commonly reported successes, in our study 100% of papers that explored this reported an improvement of information process and effectiveness of communication. Quality improvement, compliance with protocol, and staff satisfaction were all improved in a minority of studies. Improvement on clinical outcomes was reported in a single study, while patients' safety was enhanced in two studies. Patients' satisfaction with the handover process was evaluated in one study and was found no significant difference from the baseline. Handover duration improved in IDRs but not in shift reports.

Unfortunately, the few data for comparison, the poor quality of the studies, and the lack of strong trends do not allow us to draw strong conclusions. From the results of the review it seems that the transmission of information is the one that is most positively influenced by the implementation of new models, protocols and checklists; also, quality improvement and clinical outcomes seems obtain encouraging results. Any beneficial outcomes beyond these is however unclear.

In this study we focused not so much on the model used, but on the standardization of the same and therefore the sharing of the method in a staff. The advantage of a standardized handover system should be to provide complete, essential, prioritized information, and presented in a systematic and organized way. These qualities were found in some of the studies included in the review: three used SBAR (Cornell et al., 2013; Cornell, Gervis, et al., 2014; Cornell, Townsend-Gervis, et al., 2014), one an adapted ISBAR checklist (Kerr et al., 2016), one The PEARLS checklist (Robinson, 2016), and one The NICU postoperative handover checklist (Yang & Zhang, 2016).

We agree with Robinson (2016) that "the use of a checklist as a memory aid serves two purposes: first, it ensures that critical information necessary for patient care is not omitted; and second, it provides a consistent order in which information should be communicated". Furthermore, the use of a structured model can increase the reliability of handoff (Bakon et al., 2017), while standardization of information may promote situational awareness and patient safety (Halm, 2013).

Findings suggests that a structured tool is useful in improving communication transfer but must necessarily be accompanied by a series of other communicative factors. In fact, when The World Health Organization suggested a series of strategy that involved organizations to make safe the handovers, such as implementation of a standardized approach, also suggested some elements, include: "allocation of sufficient time for communicating important information and for staff to ask and respond to questions without interruptions wherever possible (repeat-back and read-back steps should be included in the handover process)" (World Health Organization, 2007). Furthermore, Halm (2013) proposed some key elements for a highly reliable handover, among which: "face-to-face and 2-way communication", and the use of "structured written forms, templates, or checklists".

### Limitations

The handover topic is as wide and varied as the areas of the healthcare system. For this reason, we have chosen to focus on nursing handovers in the hospital setting, when there is a transfer of the patient's

care (shift to shift or transfer between hospital units). However, the results of the studies may extend to the exchange of information between a multidisciplinary staff or clinicians, because the standardization of the handover process is a cross-cutting topic. Future research may direct attention to other areas of handover to integrate results to this research.

The low quality of many studies, identified through the score of the modified D&B checklist, did not allow us to draw strong conclusions on the outcome of the implementation of structured handover models. In fact, many studies did not present the whole study design, or they were small or uncontrolled. This makes the results susceptible to multiple bias. The issue of low qualitative structure of the handover's studies has already been found in previous reviews (Robertson et al., 2014; Smeulers et al., 2014), so this a problem that involve the literature on handover and not only our research.

Another limit of our review is methodological ones, due to the need to view the free full-text of articles and to be able to read only Italian and English studies. The research could also be extended to a wider time frame and not only to the last seven years, using more databases and sources (e.g. the "grey literature"). A research not limited by data range, language and free-full text, and with the possibility of including more databases and sources would have produced a greater number of results but probably would not have reduced the heterogeneity of the studies.

Another problem was the difficulty of cataloging the results to compare them. We therefore used a taxonomy already used in Robertson (2014) systematic review, with some little modification. Nevertheless, the varied typology of results in papers included and the need to classify them according to a taxonomy causes that, apart from the "information transfer" category, the others compare three or less findings, making difficult to draw strong conclusions.

### Conclusions

For nursing managers, effective communication between suppliers is a relevant issue. Although there have been numerous attempts to identify a model of handover that encourages standardization and communicative effectiveness, it is difficult that this can be transversal to all nursing areas. In fact, there is an increasingly fragmentation across multiple settings and providers in today's healthcare system (Arora et al., 2008). This is probably the reason why there is no universally accepted model for handoffs (Riesenberg et al., 2009; Robertson et al., 2014; Smeulers et al., 2014; Tucker & Fox, 2014).

A universal model of handover probably should be characterized by simplicity and minimal structure, in order to be extremely flexible to adapt to the various areas of care. Research should be oriented towards this direction or accept the fact that there is too much fragmentation of areas and specializations. In the second case, the manager can identify tools that already exist in the literature or develop new ones, more rigid and structured, that adapt to single areas or to a group of related fields.

Regardless of the model of handover to be implemented, there are some guiding principles on effective communication that should not be overlooked, in the same way as continuous professional development and adequate staff training, as suggested by the World Organization of Healthcare (2007).

### References

1. Arora, V. M., Johnson, J. K., Meltzer, D. O., & Humphrey, H. J. (2008). [A theoretical framework and competency-based approach to improving handoffs](https://doi.org/10.1136/qshc.2006.018952). *Quality and Safety in Health Care*, 17(1), 11–14. <https://doi.org/10.1136/qshc.2006.018952>

2. Bakon, S., Wirihana, L., Christensen, M., & Craft, J. (2017). [Nursing handovers: An integrative review of the different models and processes available](#). *International Journal of Nursing Practice*, 23(2), e12520. <https://doi.org/10.1111/ijn.12520>
3. Bergs, J., Lambrechts, F., Mulleneers, I., Lenaerts, K., Hauquier, C., Proesmans, G., ... Vandijck, D. (2018). [A tailored intervention to improving the quality of intrahospital nursing handover](#). *International Emergency Nursing*, 36, 7–15. <https://doi.org/10.1016/j.ienj.2017.07.005>
4. Borowitz, S. M., Waggoner-Fountain, L. A., Bass, E. J., & Sledd, R. M. (2008). [Adequacy of information transferred at resident sign-out \(in-hospital handover of care\): a prospective survey](#). *Quality & Safety in Health Care*, 17(1), 6–10. <https://doi.org/10.1136/qshc.2006.019273>
5. Cornell, P., Gervis, M. T., Yates, L., & Vardaman, J. M. (2013). [Improving Shift Report Focus and Consistency With the Situation, Background, Assessment, Recommendation Protocol](#). *JONA: The Journal of Nursing Administration*, 43(7/8), 422–428. <https://doi.org/10.1097/NNA.0b013e31829d6303>
6. Cornell, P., Gervis, M. T., Yates, L., & Vardaman, J. M. (2014). [Impact of SBAR on Nurse Shift Reports and Staff Rounding](#). *Official Journal of the Academy of Medical-Surgical Nurses*, 23(5), 334–342. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/26292447>
7. Cornell, P., Townsend-Gervis, M., Vardaman, J. M., & Yates, L. (2014). [Improving Situation Awareness and Patient Outcomes Through Interdisciplinary Rounding and Structured Communication](#). *JONA: The Journal of Nursing Administration*, 44(3), 164–169. <https://doi.org/10.1097/NNA.000000000000045>
8. Downs, S. H., & Black, N. (1998). [The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions](#). *Journal of Epidemiology and Community Health*, 52(6), 377–384. <https://doi.org/10.1136/JECH.52.6.377>
9. Dufault, M., Duquette, C. E., Ehmann, J., Hehl, R., Lavin, M., Martin, V., ... Willey, C. (2010). [Translating an evidence-based protocol for nurse-to-nurse shift handoffs](#). *Worldviews on Evidence-Based Nursing*, 7(2), 59–75. <https://doi.org/10.1111/j.1741-6787.2010.00189.x>
10. Farhan, M., Brown, R., Woloshynowych, M., & Vincent, C. (2012). [The ABC of handover: a qualitative study to develop a new tool for handover in the emergency department](#). *Emergency Medicine Journal : EMJ*, 29(12), 941–946. <https://doi.org/10.1136/emmermed-2011-200199>
11. Haig, K. M., Sutton, S., & Whittington, J. (2006). [SBAR: a shared mental model for improving communication between clinicians](#). *Joint Commission Journal on Quality and Patient Safety*, 32(3), 167–175. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/16617948>
12. Halm, M. A. (2013). [Nursing handoffs: ensuring safe passage for patients](#). *American Journal of Critical Care: An Official Publication, American Association of Critical-Care Nurses*, 22(2), 158–162. <https://doi.org/10.4037/ajcc2013454>
13. Joint Commission. (2012). [Joint Commission Center for Transforming Healthcare Releases Targeted Solutions Tool for Hand-Off Communications](#). *Joint Commission Perspectives®*, 32(8). Retrieved from [https://www.jointcommission.org/assets/1/6/TST\\_HOC\\_Persp\\_08\\_12.pdf](https://www.jointcommission.org/assets/1/6/TST_HOC_Persp_08_12.pdf)
14. Kerr, D., Klim, S., Kelly, A.-M., & McCann, T. (2016). [Impact of a modified nursing handover model for improving nursing care and documentation in the emergency department: A pre- and post-implementation study](#). *International Journal of Nursing Practice*, 22(1), 89–97. <https://doi.org/10.1111/ijn.12365>
15. Klim, S., Kelly, A.-M., Kerr, D., Wood, S., & McCann, T. (2013). [Developing a framework for nursing handover in the emergency department: an individualised and systematic approach](#). *Journal of Clinical Nursing*, 22(15–16), 2233–2243. <https://doi.org/10.1111/jocn.12274>
16. Meißner, A., Hasselhorn, H.-M., Estryng-Behar, M., Nézet, O., Pokorski, J., & Gould, D. (2007). [Nurses' perception of shift handovers in Europe? results from the European Nurses' Early Exit Study](#). *Journal of Advanced Nursing*, 57(5), 535–542. <https://doi.org/10.1111/j.1365-2648.2006.04144.x>
17. Patterson, E. S., Roth, E. M., Woods, D. D., Chow, R., & Gomes, J. O. (2004). [Handoff strategies in settings with high consequences for failure: lessons for health care operations](#). *International Journal for Quality in Health Care*, 16(2), 125–132. <https://doi.org/10.1093/intqhc/mzh026>
18. Patterson, E. S., & Wears, R. L. (2010). [Patient handoffs: standardized and reliable measurement tools remain elusive](#). *Joint Commission Journal on Quality and Patient Safety*, 36(2), 52–61. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/20180437>
19. Riegel, B. (1985). [A method of giving intershift report based on a conceptual model](#). *Focus on Critical Care / American Association of Critical-Care Nurses*, 12(4), 12. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/3850042>
20. Riesenber, L. A., Leitzsch, J., Massucci, J. L., Jaeger, J., Rosenfeld, J. C., Patow, C., ... Karpovich, K. P. (2009). [Residents' and Attending Physicians' Handoffs: A Systematic Review of the Literature](#). *Academic Medicine*, 84(12), 1775–1787. <https://doi.org/10.1097/ACM.0b013e3181bf51a6>
21. Robertson, E. R., Morgan, L., Bird, S., Catchpole, K., & McCulloch, P. (2014). [Interventions employed to improve intrahospital handover: a systematic review](#). *BMJ Quality & Safety*, 23(7), 600–607. <https://doi.org/10.1136/bmjqs-2013-002309>
22. Robinson, N. L. (2016). [Promoting Patient Safety With Perioperative Hand-off Communication](#). *Journal of PeriAnesthesia Nursing*, 31(3), 245–253. <https://doi.org/10.1016/J.JOPAN.2014.08.144>
23. Shalini, N., Castelino, F., & Latha, T. (2015). [Effectiveness of Protocol on Situation, Background, Assessment, Recommendation \(SBAR\) Technique of Communication among Nurses During Patients' Handoff in a Tertiary Care Hospital](#). *International Journal of Nursing Education*, 7(1), 123. <https://doi.org/10.5958/0974-9357.2015.00025.2>
24. Smeulers, M., Lucas, C., & Vermeulen, H. (2014). [Effectiveness of different nursing handover styles for ensuring continuity of information in hospitalised patients](#). *The Cochrane Database of Systematic Reviews*, (6), CD009979. <https://doi.org/10.1002/14651858.CD009979.pub2>
25. Tucker, A., & Fox, P. (2014). [Evaluating nursing handover: the REED model](#). *Nursing Standard (Royal College of Nursing (Great Britain))*: 19(8), 28(20), 44–48. <https://doi.org/10.7748/ns2014.01.28.20.44.e7992>
26. World Health Organization (WHO). (2007). [Communication During Patient Hand-Over](#). *Patient Safety Solutions*, 1(3), 1–4. Retrieved from <http://www.who.int/patientsafety/solutions/patientsafety/PS-Solution3.pdf>
27. Wright, S. M. (2013). [Examining transfer of care processes in nurse anesthesia practice: introducing the PATIENT protocol](#). *AANA Journal*, 81(3), 225–232. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/23923675>
28. Yang, J.-G., & Zhang, J. (2016). [Improving the postoperative handover process in the intensive care unit of a tertiary teaching hospital](#). *Journal of Clinical Nursing*, 25(7–8), 1062–1072. <https://doi.org/10.1111/jocn.13115>