Are verbal orders a threat to patient safety?

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ABSTRACT

Background: The use of verbal orders has been identified as a potential contributor to poor quality and less safe care. As a result, many organisations have encouraged changing the verbal orders process and/or reducing/eliminating verbal orders altogether (Joint Commission (2005), Institute of Medicine (2001), Leapfrog organisation, Institute of Safe Medication Practices). Ironically there is a paucity of research evidence to support the widespread concern over verbal order.

Aims: This paper describes the very limited existing research on verbal orders, presents a model of verbal order use identifying potential error trigger points and suggests a verbal order research agenda in order to better understand the nature and extent of the potential patient care safety threat posed by verbal orders.

Verbal orders (VO) represent a commonly used and important communication mechanism in the patient care environment. Whether given face to face, by telephone or by other voice transmission devices, VO can facilitate up-to-the minute communication of a patient's clinical status, laboratory and other information, and result in more timely clinical decision-making. While not well studied, VO may represent 20% or more of all inpatient orders[1–3] and are commonly used when prescribers (ie, physician, nurse practitioner (NP), physician's assistant (PA)) are unable or unwilling to write in the medical record or electronically enter orders using a computerised provider order entry (CPOE) system. Thus, there are both appropriate and inappropriate uses of VO. For example, the use of face-to-face VO is clearly necessary when the prescriber is in the middle of a procedure or medical emergency, and it is impractical to stop patient care to write a patient care order. Likewise, telephone VO may be necessary if the prescriber is not physically present when a new patient care order is needed (eg, at night). There are also instances when VO should not be used, that is, complex chemotherapy or do-not-resuscitate orders. In between these indicators of appropriate and inappropriate VO use is a great variation in their appropriate use during other types of patient care activities (eg, patient rounds, interdisciplinary team meetings, other non-emergent patient care situations or teaching healthcare learners). Of particular concern is the extent to which face-to-face VO may become routine and used as a convenience rather than a necessity, thus replacing prescribers' writing or electronically entering patient care orders.

This paper briefly describes the existing research on VO, presents a process model of VO use that identifies potential error trigger points and suggests a VO research agenda. For ease of presentation, we will specifically use the terms ''face-to-face verbal order'' and ''telephone order'' to distinguish when we are discussing specific types of verbally communicated patient care orders. Otherwise the acronym VO will include all telephone or face-to-face patient care orders that: (a) the ordering prescriber (eg, physicians, NPs, PAs) communicates verbally (eg, by telephone or face-to-face); (b) require subsequent transcription to the patient's medical record (either paper-based or electronically) by those individuals approved to receive VO; and (c) require the prescriber to subsequently review and sign the transcribed order.

VO LITERATURE

Research literature

Despite the perception of their potential for patient harm, the indications for using VO, VO policies and procedures, and the extent of VO use have not been studied in depth.[2–4] The VO literature consists primarily of non-systematic and anecdotal evidence of the relationship between VO utilisation and actual or potential patient harm.[5 6] To our knowledge, the only large-scale study of hospital VO polices is a 1990 report of a survey of nursing and pharmacy leaders' self-report of selected features of their hospitals' VO policies.[7] The only study specifically looking at errors associated with VO was conducted in an inpatient paediatric setting in the mid 1990s, and had the counterintuitive finding of a fourfold decreased risk of error associated with verbal as compared with handwritten orders.[1] A more recent systematic review of the literature assessing evidence of the error risk associated with VO also found only the one aforementioned study and, based on the lack of research in this area, concluded that despite the ''common-sense'' of limiting VO, there is no empirical support for adopting changes in VO policies.[4] Recent work by Kaplan *et al*[2] provides the most detailed hospital-wide analysis of VO utilisation. In this study of VO occurrence following implementation of a CPOE system, the authors found a decrease in VO rates from 23% to 10%, a marked reduction in unsigned VO (43% to 9%), and significant variation in VO rates and content among different clinical services. Finally, Wakefield *et al* use VO data from one hospital to describe factors adding to the VO complexity.[3]

Practice literature

Despite the paucity of research evidence supporting either the use or elimination of VO, it is widely believed that VO represent a threat to patient safety. This is most clearly evidenced by specific recommendations from the Joint Commission, the National Quality Forum (NQF) and others

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Box 1 Examples of verbal orders having patient care quality and safety implications

Case 1

- "A verbal order for flutamide was misheard as thalidomide. Errors are more likely with these sound-alike products because both may be used to treat prostate cancer."[17]

Case 2

- "A physician who intended to prescribe 40 mEq of potassium chloride to be given IV over an hour instead gave a verbal order for '40 of K.' The order was misunderstood and the patient received 40 mg of vitamin K intravenously."[18]

Case 3

- "An emergency room nurse thought the physician stated that a patient was to receive '1 and 1/2 teaspoons' of Zithromax, which was given. In checking the written order, the dose was noted for 1/2 teaspoon."[19]

Case 4

- " … during a code situation, a verbal order for amiodarone was called into the pharmacy—no dose was specified. The pharmacist mistakenly dispensed amrinone, subsequently realised the error, and was able to get to the emergency department before the drug was administered."[20]

Case 5

- "Due to fluid restrictions, a physician gave a verbal order for a double-strength solution of magnesium sulfate to be administered at 2 g/hour. The nurse forgot to transcribe the verbal order and did not re-label the single-strength bag to which she had added additional magnesium sulfate. The change-of-shift report was hurried due to an emergency Cesarean section. The oncoming nurse subsequently increased the rate of infusion because she was unaware the patient was receiving a double-strength solution. The patient developed signs of magnesium toxicity…"[21]

Case 6

- "A patient admitted to the intensive care unit with septic shock requiring vasopressors appears to have suffered a myocardial infarction (MI) …. the cause of the MI was likely related to a log increase in the dose of vasopressin because of a prescribing error….The vasopressin order was incorrectly written by a resident physician after he received a verbal order from his supervising critical care fellow."[22]

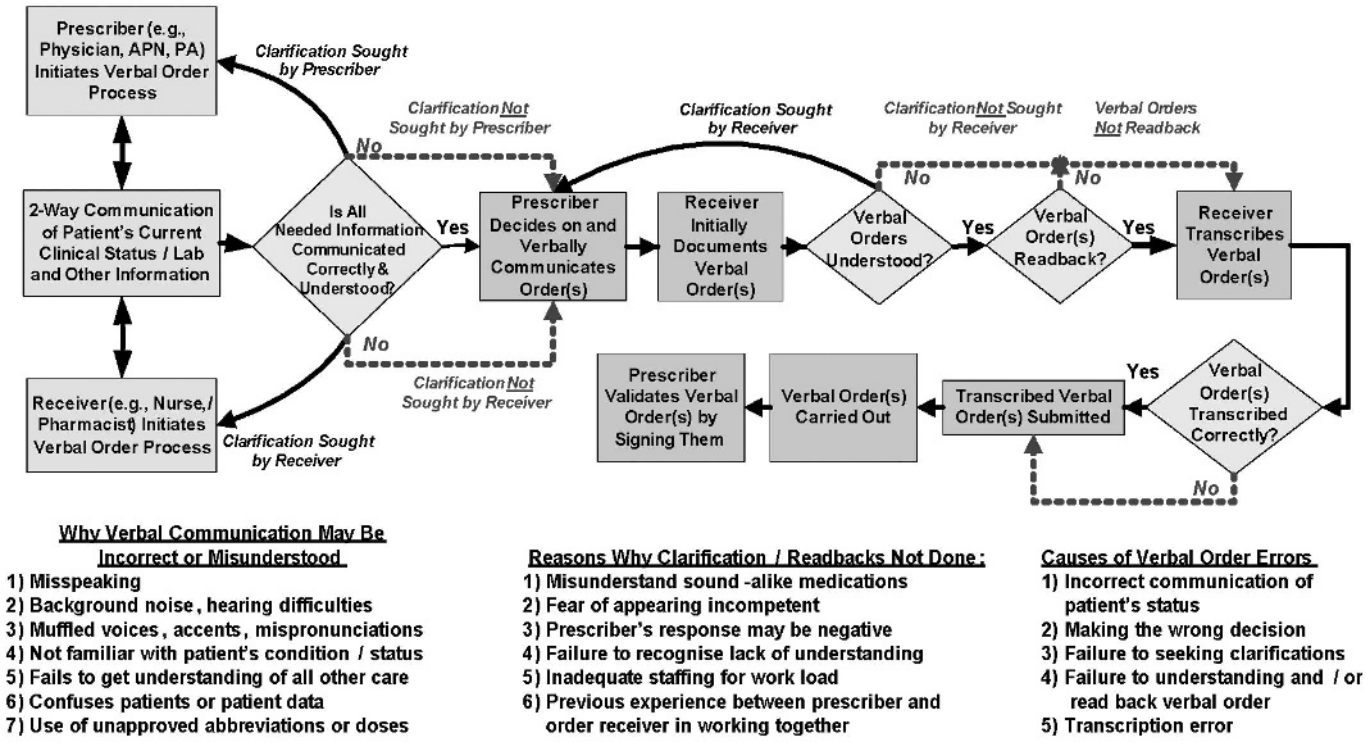

Figure 1 Verbal order process model (solid arrows indicate intended flow. Broken arrows indicate unintended flow.

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requiring ''read-backs'' and other strategies aimed at reducing or standardising how VO are communicated.[8–16] The reason for this concern is that there are a variety of human and environmental factors[12 13](eg, fatigue, workload, sound-alike medications, background noise, accents, dialects and different pronunciations), and a number of different individuals and steps involved in the VO process that may contribute to miscommunication, misunderstanding and transcribing errors. Box 1 provides examples of adverse events involving VO drawn from anecdotal reports in the literature that highlight several different types of problems associated with VO.

Regardless of the reason VO are used, the potential for VO to be miscommunicated, misunderstood or incorrectly transcribed has received significant attention in practice. The vast majority of the available VO-related literature has focused on practical recommendations to limit VO use, and to standardise VO policies and practices to optimise VO communications, decision-making, understanding, transcription and execution.[4–6 8–16] Specific recommendations and suggestions can be categorised into seven general areas including specification of: (1) when VO should and should not be used; (2) who is allowed to give and receive the VO; (3) what constitutes a VO, and the related verbal content that must be documented; (4) limitations and prohibitions in the use of VO; (5) authorisation and validation of the VO; (6) strategies, techniques and specific actions to increase the clarity and effectiveness of the VO; and (7) requirements for periodic monitoring and evaluation of VO practices and compliance with organisational policies and procedures.

Model of VO process

Figure 1 depicts a VO model containing both intended process steps (''solid arrows''), and identifies points in the process where errors may occur with deviations from the intended process steps (''broken arrows''). Reasons why VO may be miscommunicated or misunderstood, and reasons why readbacks may not be performed are also listed. As shown in fig 1, the VO process may be initiated by either the prescriber or the receiver. An example of the latter would be a nurse detecting important changes in a patient's clinical condition and deciding to call the physician to share this information to determine whether any additional orders are needed. It should be noted that this initial communication between the prescriber (physician) and receiver (nurse) also has the potential to result in a miscommunication or misunderstanding of all of the verbally communicated patient clinical information necessary to make the correct decision about the specific order(s) that may be needed. That is, an incorrect VO may result from problems in the verbal (or written) communications preceding the VO. Examples of causes of VO-related errors are listed at the bottom of fig 1.

Verbally communicated orders may not be accurately heard or understood by the receiver (cases 1–3, box 1). Ideally, and a potentially unique advantage of VO, there would be the opportunity to seek immediate clarification and to ''read back'' the order when the VO is given. Case 4 in box 1 is an example of failure to clarify a VO. Readbacks allow for clarification about whether the receiver correctly heard and understood the order. Finally, there may be errors in either the initial order documentation (ie, writing down the order as it is given) and/

Box 2 Examples of potential verbal order (VO) research questions

1. Nature, extent and appropriateness of current VO use:
- What is the nature and variation in use of face-to-face or telephone verbal order in different types of care units (ie, critical care, medicine, surgery, paediatrics, psychiatry) and care settings (ie, acute care hospitals, ambulatory surgical centers, nursing homes)?
- What is the variation in the types of different face-to-face or telephone VO (ie, medication, laboratory, consultation requests…) made in different types of care units or care settings?
- Are there, and what are the, criteria used to define or determine when a face-to-face or telephone verbal order is deemed as being appropriate in different types of care settings?
- What are the trade-offs between the potential of VO to cause harm versus their potential to facilitate patient care processes?

2. Nature, extent and causal role of VO in medical error:
- What proportion of all medication-related errors (ie, prescribing, dispensing and administration) involve face-to-face and/or telephone VO?
- What proportion of all face-to-face and/or telephone VO result in a medication-related prescribing, dispensing or administration error, and/or patient harm?
- For all face-to-face and/or telephone VO associated with an error, to what extent was the cause of the error related to non-VO communication errors, misunderstanding of what was being communicated or problems in transcribing the order prior to the execution of the VO?
- How do the risk factors for communication errors (ie, language skills, background noise levels, knowledge of the patient) vary between face-to-face and telephone VO?
- What steps in the VO process (ie, communication of patient status, understanding, reading back, transcribing, etc) are more prone to error?
- What is the relationship between whether, and/or how, physicians and other prescribers are taught to give VO and the potential for error?

Strategies for minimising VO-related errors and harm
- What are the best practices to ensure appropriate face-to-face and/or telephone VO use, communication, understanding and transcription?
- Would standardised VO communication process based on the SBAR (Situation, Background, Assessment, Recommendation) or other structured communication methods significantly increase the accuracy of verbally reported clinical data, reduce the mishearing and misunderstanding of orders, ensure more consistent clarification of orders and/or improve initial order documentation and subsequent transcription?
- To what extent do VO represent workarounds used to avoid using CPOE systems to enter orders?
- To what extent do ''inappropriate'' VO contribute to nurse job dissatisfaction because they are viewed as shifting workload from the prescriber to the nurse?

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or subsequently transcribing the VO into the medical record. Cases 5 and 6 in box 1 provide examples of such errors. Not shown in fig 1 is the final step in which the prescriber reviews, validates and signs the transcribed VO. Because this final check on the accuracy of a VO occurs only after the VO has been carried out, it is essential for VO to be correctly communicated, understood and transcribed.

It should be noted that the process and potential for error depicted in fig 1 are applicable to situations in which VO are used because of medical necessity (ie, during emergencies and procedures, or prescriber is not physically present) as well as for prescriber convenience. Although there are no empirical data that associate the use of VO with increased medical errors, as noted earlier it is widely believed that the use of VO in situations where they are not immediately necessary for patient care (ie, provider convenience) may contribute to avoidable errors and adverse events as well increasing workload for those receiving the orders. Unanswered are the questions of the nature and extent of the threat to patient safety posed by VO.

POTENTIAL VO RESEARCH AGENDA

Because of the paucity VO research, there is both a great need and opportunity for the development of a research agenda in this area. Conceptually it is useful to organise the broad range of questions needing further research under three categories: (1) Nature, Extent and Appropriateness of Current VO Use; (2) Nature, Extent and Causal Role of VO in Medical Error; and (3) Strategies for Minimising VO-Related Errors and Harm. Examples of specific research questions for each category are listed in box 2.

SUMMARY

VO represent a commonly used and perceived as a potential threat to patient safety. Despite their common use and anecdotal evidence, there has been very little systematic study of the actual threat posed by their use. As a yet unstudied but common communication vehicle in healthcare, VO represent a very important and rich area for future research of direct relevance to improving patient care safety.

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