Impact of Changing a Respiratory Therapy Medication Delivery System


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ABSTRACT

The recent focus on medication management and patient safety by the Joint Commission on Accreditation of Health Care Organizations (JCAHO) has prompted changes in the process of delivering respiratory medications to hospitalized patients. Specifically, many respiratory therapy departments have recently changed their practice of inpatient medication delivery to comply with current JCAHO standards, which require that all respiratory medications are reviewed by a pharmacist for possible drug interactions before administration, that medications are patient-specific, and, at the Cleveland Clinic Foundation, that medications be stored in a secure area. Revamping the process of respiratory medication delivery has offered the opportunity to develop strategies to optimize the efficiency of medication delivery. In the context of our goal to optimize this efficiency, the current report compares 2 strategies of delivering respiratory medication: one in which medications are stored in a centralized locked cabinet on each ward using a Pyxis system (Cardinal Health, San Diego, CA) (the "central approach"). The bedside strategy was associated with a mean per patient savings of $0.89 per trip. In 2004, respiratory therapists administered 109,521 small volume nebulizer or MDI treatments during 2004, we estimate an overall cost savings of $32,491.23 per trip. Based on an average of 3 therapist trips per medication administration, the savings associated with the locked box strategy totaled 1460 hours, which translates to $32,491 in annual savings by utilizing the bedside approach.

BACKGROUND

• A recent focus on managing medications and on patient safety by the Joint Commission on Accreditation of Hospitals (JCAHO) has affected how respiratory medications are delivered to hospitalized patients.

• Current JCAHO standards specify that respiratory medications must be reviewed by a pharmacist for possible drug interactions prior to administration, and that medications should be patient-specific and stored in a secure area.

• In order to optimize the delivery of respiratory medications while complying with JCAHO standards, we reviewed the process by which respiratory medications are delivered by respiratory therapists to patients in the Cleveland Clinic Hospital.

• The central strategy was based on the use of Pyxis medication stations that were in use on each ward at the Cleveland Clinic Foundation Hospital. Once reviewed and verified by the pharmacy, each respiratory medication (e.g., metered dose inhalers, etc.) is delivered and stored in a medication Pyxis station on each hospital floor. Respiratory therapists obtain patient medications from the Pyxis and proceed to the patient's room to administer the medication retrieved. Following administration, the metered dose inhaler (MDI) is returned to the Pyxis station. This process is repeated for each patient receiving respiratory medications. With the alternative "bedside strategy," therapists retrieve the patient's respiratory medication from the locked box at the bedside, administer the medication to the patient, and return the medication to the box, obviating the need to return medications to a central Pyxis. Travel time was calculated (using a stop watch to follow selected patients) as the interval between the therapist's arrival on the hospital floor and delivery of the medication to the individual patient or as the interval between completion of the prior patient's medication and delivery of medication to a subsequent patient.

METHODS

• The Central Strategy

• A Pyxis medication station houses the respiratory medications (metered-dose inhalers, MDIs, or unit dose vials) on each hospital ward.

• Therapists obtain individual medications from the Pyxis and proceed to the patient's room to deliver the treatment.

• Upon completion of the treatment, the medication (MDI) is returned to the Pyxis station.

• The process is then repeated for each patient receiving respiratory medications.

• The bedside strategy was associated with a mean per patient savings of 0.89 per trip. Based on an average of 3 therapist trips (36,507 trips) to deliver 109,521 small volume nebulizer or MDI treatments during 2004, we estimate an overall cost savings of $32,491.23 using the "bedside approach.

• These benefits include: Decreased therapist travel time, Commensurately decreased respiratory therapy labor costs, and The opportunity for more efficient use of respiratory therapists' time.

• On the basis of these advantages, we are currently implementing a widespread bedside locked box strategy at the Cleveland Clinic Foundation Hospital.

• On a Pyxis strategy (3.8 min/patient ± 1.83 SD). Figure 2.

Figure 1. Bedside Locked Box

Figure 2. Mean Travel Time (in Minutes) to Deliver Medication

RESULTS

• Use of a bedside delivery strategy for delivering respiratory medications in which therapists leave medications in a locked medication box in the patient's room ("bedside approach") compared to a "central" approach, in which therapists retrieve and deposit medications in a central Pyxis unit on each ward.

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CONCLUSIONS

• Use of a bedside strategy for delivering respiratory medications in which therapists leave medications in a locked medication box in the patient's room ("bedside approach") compared to a "central" approach, in which therapists retrieve and deposit medications in a central Pyxis unit on each ward.

• These benefits include: Decreased therapist travel time, Commensurately decreased respiratory therapy labor costs, and The opportunity for more efficient use of respiratory therapists' time.

• On the basis of these advantages, we are currently implementing a widespread bedside locked box strategy at the Cleveland Clinic Foundation Hospital.

• Mean therapist travel time (4.1 min/patient ± 0.5.3 SD) utilizing the bedside locked boxes was less than travel time using the central Pyxis strategy (3.8 min/patient ± 1.83 SD). Figure 2.

• The bedside strategy was associated with a mean per patient savings of $0.89 per trip.

• Based on an average of 3 visits to each patient for medication administration, the savings associated with the locked box strategy totaled 1460 hours, which translates to $32,491 in annual savings by utilizing the bedside approach.

• The "central strategy" was based on the use of Pyxis medication stations that were in use on each ward at the Cleveland Clinic Foundation Hospital. Once reviewed and verified by the pharmacy, each respiratory medication (e.g., metered dose inhalers, etc.) is delivered and stored in a medication Pyxis station on each hospital floor. Respiratory therapists obtain patient medications from the Pyxis and proceed to the patient's room to administer the medication retrieved. Following administration, the metered dose inhaler (MDI) is returned to the Pyxis station. This process is repeated for each patient receiving respiratory medications. With the alternative "bedside strategy," therapists retrieve the patient's respiratory medication from the locked box at the bedside, administer the medication to the patient, and return the medication to the box, obviating the need to return medications to a central Pyxis. Travel time was calculated (using a stop watch to follow selected patients) as the interval between the therapist's arrival on the hospital floor and delivery of the medication to the individual patient or as the interval between completion of the prior patient's medication and delivery of medication to a subsequent patient.

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