



COMMON CANISTER PROCESS FOR DELIVERING AEROSOL MEDICATIONS: THE FINAL STEPS TO ASSURE PATIENT SAFETY

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ABSTRACT

BACKGROUND: Financial savings, improved staffing efficiency and prevention of cross contamination (utilizing appropriate infection control methods) of the Common Canister (CC) process for delivering aerosol medications have been established and published. ^{1,2} Also well defined is the variable compliance of clinical staff members with infection control methods, even as simple as performing proper hand hygiene. ³

OBJECTIVE: To assure that our CC protocol is safe for our patients; our staff remains compliant with the infection prevention process defined in our protocol and to confirm cost savings in our institution.

METHODS: We developed a protocol that assured the hands of the respiratory therapist (RT) did not contaminate the patient's Valved Holding Chamber (VHC) or other surfaces. The protocol is specific to the point of outlining which hand to use to pick up each item involved in the process. We implemented CC in July 2008. Utilizing a multidisciplinary approach, we provided specific training, periodic validation of competence, unannounced observation of aerosol medication administration and patient interviews to identify the techniques used by the RT. We validated our protocol utilizing a florescent dye and black light to show if there was contamination during a mock CC process. Infection rates pre and post implementation of CC were followed by our Infection Control team using standard methods. MRSA rates were used to confirm that cross-contaminating was not occurring between isolated patients and patients receiving CC. Our departmental compliance is managed by making expectations clear and promoting staff accountability. Non-compliance is identified and the disciplinary process is utilized as needed.

RESULTS: Our protocol proved to be valid. Since July 2008 we have delivered over 9,000 CC aerosol medication treatments while maintaining our hospital MRSA infection rate at 0.298% compared to the national average of 2.0%. ⁴ For the most recent quarter in FY 2009, we had a zero infection rate for MRSA infections. We confirmed average cost savings to be near 30% and saw substantial time savings over standard nebulizer therapy after implementation of the CC process.

CONCLUSION: CC delivery does provide cost-saving, efficient, effective and safe aerosol medication delivery with our proven protocol and methods to assure staff compliance.

INTRODUCTION

- It has been well documented that aerosol medication administration via a common canister (CC) program can improve efficiency, decrease costs and be safe for our patients when a sound protocol is implemented utilizing proper infection control techniques. It is especially important to assure the therapist does not contaminate the valved holding chamber or other items with their hands during administration. ^{1,2}

- It also has been documented that compliance with rigorous hand hygiene among health-care personnel is poor. ³

- We seek to confirm these findings in our own institution and implement a management plan that assures patient safety.

METHOD

- We developed a protocol for CC aerosol delivery that does not contaminate any surfaces, with special focus on hand hygiene and hand placement of the therapists. We sought validation of this protocol with the use of a pharmacy tool, a dye and blacklight kit. Thorough and repetitive education was provided to our staff. The CC aerosol delivery protocol was implemented in July 2008.

- Infection rates were measured and followed for the year previous and the year after protocol implementation.

- Our major focus is patient safety and quality care. This is reflected by a high priority being set on staff education: compliance with the protocol validated by frequent competency fairs, direct and inconspicuous multidisciplinary observation (respiratory management, pharmacists and infection control nurse), and patient interviews to validate delivery and infection control methods.

RESULTS

- The blacklight kit validated that our protocol, when performed correctly, did not cause cross contamination.

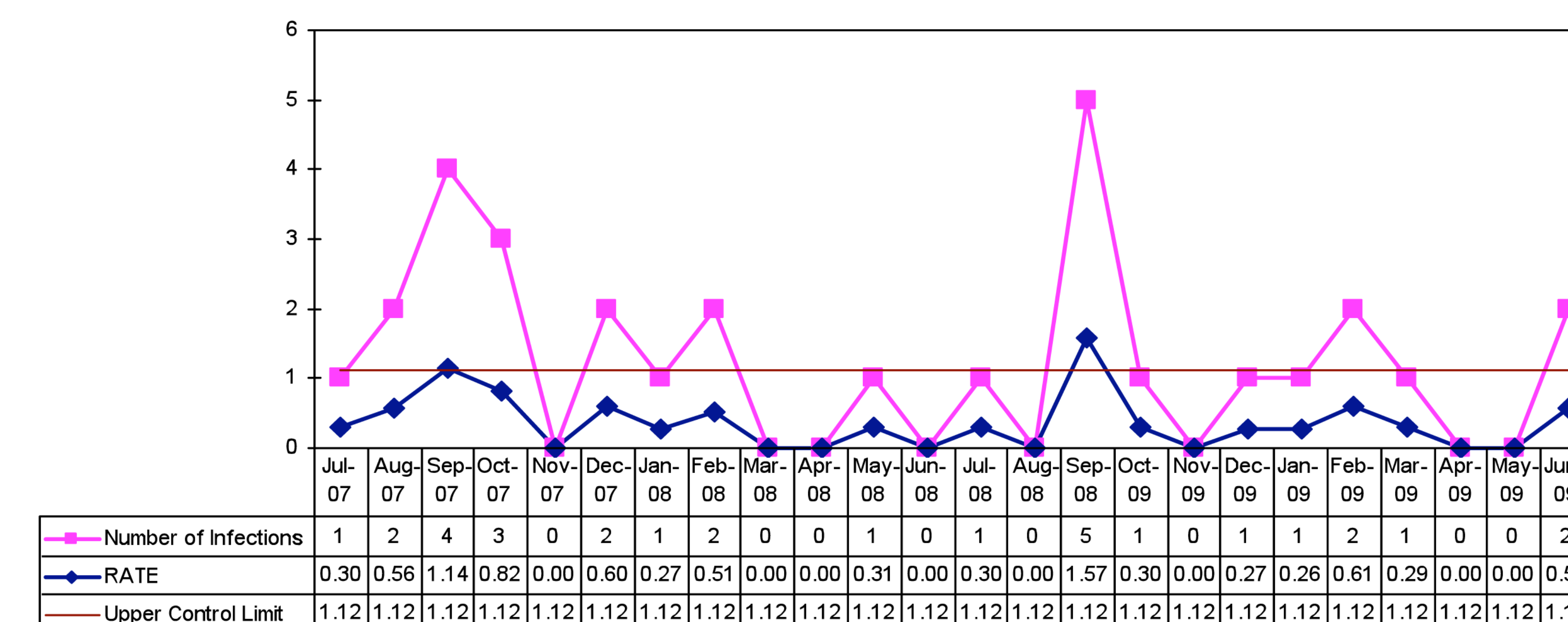
- Infection rates in our hospital actually decreased during the year after implementation.

- Staff efficiency was validated by an increased number of aerosol deliveries and a subsequent decrease in the number of missed therapy by the same number of therapists.

- We experienced a significant financial savings during the first year. An overall decrease in canisters purchased by our pharmacy of 16.5% and an overall annual savings of over \$20,000.00 in pharmaceutical expenses for aerosol medication. Substantial savings were seen in Fluticasone, a 65% decrease in canisters purchased and Ipratropium/Albuterol combination, a decrease of 34% in canisters purchased.

- Staff compliance, although not perfect, was good. We found a need for continued re-education, repeated competency validation of the protocol, and on-going interventions to assure compliance with the protocol and hand-hygiene.

INFECTION RATES



OUR COMMON CANISTER PROTOCOL (INFECTION CONTROL PORTION ONLY)

Follow the infection control sequence precisely. (1-7 are part one)

- Unlock medication drawer and pull out computer mouse surface.
- Retrieve 4oz hand sanitizer from inside drawer and use per directions.
- Reach into drawer and remove MDI with boot attached and an alcohol pad.
- Remove the cap and wipe the boot with the alcohol pad in the patient's view.
- Shake the inhaler for about 5 seconds
- Place the inhaler with boot into the patient's Valved Holding Chamber (VHC).
- Hold the inhaler with only one hand during entire procedure.



Follow infection control sequence (part 2)

- Remove inhaler and boot from the patient's VHC with same hand used in #7 above.
- Place the VHC, held in the opposite hand, on the bedside table.
- Place inhaler with boot on the computer cart mouse surface, connection side up.
- Sanitize both hands with alcohol hand gel sanitizer stored in drawer and place sanitizer back in drawer.
- Remove an alcohol wipe and wipe boot in patient's view and replace inhaler cap.
- Return cleaned inhaler to drawer, close and lock.
- Perform post-therapy patient assessment and document in Meditech.
- Place VHC device in patient's plastic bag for storage.
- Remove disinfecting wipe from cart, wipe down area, then close the mouse surface.
- Use the same wipe to clean computer keyboard and cart handle and discard.

CONCLUSIONS

A safe and successful program utilizing a common canister aerosol administration can be implemented to decrease costs, improve staff efficiencies, and will not add infection risk to our patients when the protocol is valid. We found the key to patient safety with CC is the vigilant management of the process: including initial and on-going education, competency testing, observation of staff performance in the clinical setting, patient interviews, as well as immediate correction and follow-up when compliance is not fully maintained.

REFERENCES

- Duncan JL, Sheils SG, Wojciechowski WV. The common canister protocol using the Monaghan Aero Chamber reveals no cross-contamination and potential cost savings. *Respir Care* August 2000;45(8):981.
- Common Canister Protocol vs. Individually supplied MDI's at a 537 Bed Regional Center - a Pharma coeconomic analysis. Ehlers K, Albritton S, Stogner S. <http://www.rcjournal.com/abstracts/2004> (retrieved October 22, 2009).
- Goldmann D. System Failure versus Personal Accountability-The Case for Clean Hands. *The New England Journal of Medicine* 2006;355:121-123.
- CDC NNIS System. National Nosocomial Infections Surveillance (NNIS) system report, data summary from January 1992 to June 2003, issued August 2003. *Am J Infect Control* 2003;31:481-98.