

Partnership for Patients: Next Step - Preventing Tracheostomy Associated Infections (TAI) And Complications

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On April 12, 2011 Department of HHS Secretary Kathleen Sebelius and CMS Administrator Donald Berwick launched the Partnership for Patients, a “new public-private partnership that brings together leaders of major hospitals, employers, health plans, physicians, nurses, and patient advocates along with State and Federal governments in a shared effort to make hospital care safer, more reliable, and less costly.”

Among the goals of the Partnership for Patients is the goal to decrease by the end of 2013 instances of (PPCs) Potentially Preventable Conditions while in hospital and Potentially Preventable Complications during transition from one health care setting to another and, more specifically, to decrease the amount of 2010 instances by 40% of hospital patients acquiring preventable conditions as well as decreasing by 20% of 2010 re-admission numbers of patients who experience preventable complications.

Achieving these goals holds potential to save both lives and money. The combined efforts of this partnership could save 60,000 American lives and reduce millions of preventable injuries and complications in patient care over the next three years. It also could save as much as \$35 billion to the health care system, including up to \$10 billion in Medicare savings.¹

The Partnership for Patients has identified nine areas of focus. The Partnership will not limit its work to these nine areas, and will pursue the reduction of all-cause harm. But the following areas of focus are obvious and important places to begin.²

- Adverse Drug Events (ADE)
- Catheter-Associated Urinary Tract Infections (CAUTI)
- Central Line Associated Blood Stream Infections (CLABSI)
- Injuries from Falls and Immobility
- Obstetrical Adverse Events
- Pressure Ulcers
- Surgical Site Infections
- Venous Thromboembolism (VTE)
- Ventilator-Associated Pneumonia (VAP)
- Other Hospital-Acquired Conditions

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Tracheostomy Associated Mucus Plugs — A Preventable Complication

For tracheostomy patients mucus plugs can be deadly. “...A small mucous plug or bleeding can easily cause fatal obstruction. Airway obstruction may produce unyielding pneumonia. Prompt treatment is necessary.”³ Transitioning from intensive care to acute care or acute care to home, Long Term Care (LTC), rehabilitation or nursing home, a lack of medical management results in avoidable tracheostomy complications such as mucus plugs. Mucus plugs are generally not a result of an underlying disease but result due to a lack of moisturization of the upper airway which not only thins secretions but also moisturizes bronchial tissues. Mucus plugging occurs through a build up of bronchial secretions which accumulate significantly enough to obstruct airflow. “Tracheostomy tubes increase the likelihood of mucus plug formation,” says John Bach, a physical medicine and rehabilitation specialist at University Hospital in Newark, NJ, and co-director of the MDA clinic there. “Mucus plugs affect anyone with very weak throat muscles,” he says, “but tracheostomy tubes cause mucus plugs even when throat muscles are not weak.” This is because the tracheostomy tube often stimulates increased secretion production. A trach also bypasses the natural defense systems that filter and humidify the upper airway. In addition, lack of airflow over the larynx can lead to reduced sensation in that area and decreased reflexes to cough or clear the throat.⁴

A 2007 study carried out at Robert Wood Johnson Medical School-Camden, Camden, NJ showed 28% of tracheostomy patients discharged from hospital were re-admitted which is higher than non-tracheostomized patients who had a 20% re-admission rate.⁵ “The introduction of regular ENT-led multidisciplinary input for patients with a tracheostomy significantly improved compliance with nursing care standards.”⁶ “Mucus plugs are the most common cause of respiratory distress for children with tracheostomies,” according to Joanne Wright, RN, MSN, CNS, Children’s Hospital/UHHC.⁷

For trached patients who do not require O₂ using The Wright Face & Tracheostomy Nebulizing Mask is preferred as it does not occlude the airway as HMEs may do in patients with copious secretions. The Wright Mask simultaneously humidifies the nose, mouth, sinuses and trachea thinning secretions complimenting follow-up activities such as suctioning.

Preventing Tracheostomy Associated Infections (TAI)
Tracheostomy Associated Pneumonia and infections can be

equally as threatening to trached patients as mucus plugs are. Keeping trach tubes, trach masks and humidifiers, clean and germ free is imperative in the battle against infectious germs, mold, Nosocomial infections and community acquired pneumonia. "Patients with tracheostomy alone had half the pneumonia rate compared to invasive, ventilator-dependent patients. Tracheostomy has its own risk of associated pneumonia. The mechanical ventilator is an added risk."⁸ "Approximately 40,000 cases of VAP occur each year, and these cases are associated with about 6,000 deaths. Patients in hospitals can also develop pneumonia for reasons unrelated to ventilators, and pneumonia is sometimes difficult to diagnose. It is therefore important to properly assess inpatient pneumonia cases to accurately identify cases that are associated with ventilators."⁹

Based on Partnership for Patients' estimates, 50% of VAP cases are preventable, Partnership for Patients has set a goal for hospitals to reduce preventable cases of VAP by 50% over the next few years.

TAI cases and Tracheostomy Associated Mucus Plug cases are also preventable. In a 17 year study that reviewed the charts of 72 children who had tracheostomy between Jan 1990 and Jan 2007, "Tracheostomy infection occurred in 90% of the patients and tracheal granulation in 56%."¹⁰ 15% deaths occurred with 10% of those deaths due to a mucus plug.

It is estimated that 20,000 cases of Tracheostomy Associated Pneumonia (TAP) occur each year in the US resulting in about 3,000 deaths. As with cases associated with ventilators, it is imperative for health care professionals to assess inpatient pneumonia cases in order to correctly identify cases that are associated with trachs, in order to reduce TAP occurrences.

Opportunity for Improvement

Tracheostomy Associated Mucus Plugs can be prevented by implementing specific preventive practices for trached patients that includes daily use of The Wright Face and Tracheostomy Nebulizing Mask. Simultaneous humidification of the nose, mouth, sinuses and trachea with the Wright Face & Tracheostomy Nebulizing Mask thins secretions while replacing moisture to the upper airway, reducing mucus plugs and re-hospitalizations. Implementing daily use of The Wright Face & Tracheostomy Nebulizing Mask in medical management of trached patients along with other recommended practices can successfully reduce preventable conditions and complications.

During a recent speech given by HHS Secretary Sebelius to the Atlanta Press Club, the Secretary addressed the need to choose a path in which to lower Medicare costs. In part she said, "We're now working to establish a very novel principle in our health care system, which is that we should reward the care that's most effective. To do that, CMS is helping groups of hospitals and doctors form 'accountable care organizations.' By keeping their patients healthy and not readmitted, these 'accountable care organizations' will share the savings. CMS is tying Medicare payments for hospitals to the quality of the care they provide." Referring to some of these changes, one Georgia hospital CEO said: "It isn't just good to do quality. It is going to be necessary to do quality." "We hope that attitude keeps spreading," Sebelius said.

Secretary Sebelius believes the best way to put Medicare's finances on a more stable path is by making Medicare a full

partner of the doctors and nurses who are working to improve care across the country.¹¹

HHS and CMS have also created a new Innovation Center in Medicare and Medicaid that will develop and test new models for improving care. It's all part of an effort to improve the nation's health care system that includes a new national focus on prevention.

The Wright Face & Tracheostomy Nebulizing Mask will significantly reduce re-hospitalization costs while simultaneously delivering quality of care to patients. Accountable care organizations must improve readmission prevalence among this vulnerable population. To do so, ensuring trach patients receive clear instructions prior to being discharged on their medications and other follow-up activities will reduce the likelihood they will suffer a preventable complication requiring them to be readmitted to the hospital.

Changes in Medicare payment made in 2010 are leading to an influx of patients with tracheostomy and those who are ventilator dependent into sub-acute skilled nursing facilities. Health care reform will further influence this trend and reimbursement will depend on quality care and positive outcomes. Tracheostomy and ventilators can make even the most seasoned healthcare practitioners uneasy. For many RNs, LPN/LVNs, and CNAs working in skilled nursing facilities, these patients will provide a new challenge and demand that they develop new skills.¹²

Too often, nursing students, medical students and residents who dare to ask questions are told: "this is the way we do it." Such a dogmatic response suggests that medical knowledge is carved in stone, ie, "we have discovered the ultimate treatment."

Dr Jack Wennberg, the father of what is now known as "the Dartmouth Research" refers to such certainty as the "Doctrine of Manifest Efficacy": "this is what we do therefore, it must be right." (Wennberg notes that when his children were growing up, a similar argument was made to justify subjecting millions of children to unnecessary tonsillectomies. Some of those children died.)

How do we help students understand the ambiguities and uncertainties of medicine? One nurse at the symposium made an excellent suggestion: When showing a student a procedure, we might say, "This is the way we used to do it—but we realized that led to too many errors. So now, we do it this way." And a thoughtful mentor might add: "at some point in the future, we'll probably find an even better way."¹³

It is now time to think out of the box in order to reduce re-hospitalizations while lowering health care costs. Emphasis must be on getting all those who care for the patient on the same page, thinking and executing the same things. It is time to provide tracheostomy patients with The Wright Face & Tracheostomy Nebulizing Mask, giving them the ability to manage their homecare, ultimately keeping them from being re-admitted due to mucus plugs, dry sinuses, tracheostomy associated sleep apnea as well as sinus headaches—all of which are preventable complications.

The Department of Health and Human Services (HHS) launched a new initiative which will reward hospitals for the

quality of care they provide to people with Medicare and help reduce health care costs. Authorized by the Affordable Care Act, the Hospital Value-Based Purchasing program marks the beginning of an historic change in how Medicare pays health care providers and facilities—for the first time, 3,500 hospitals across the country will be paid for inpatient acute care services based on care quality, not just the quantity of the services they provide. “Changing the way we pay hospitals will improve the quality of care for seniors and save money for all of us,” said Sebelius. “Under this initiative, Medicare will reward hospitals that provide high-quality care and keep their patients healthy. It’s an important part of our work to improve the health of our nation and drive down costs. As hospitals work to improve their performance on these measures, all patients—not just Medicare patients—will benefit.” For example, ensuring heart failure patients receive clear instructions when they are discharged on their medications and other follow-up activities reduces the likelihood that they will suffer a preventable complication that would require them to be readmitted to the hospital.¹⁴

Beginning in 2013, hospitals will receive a payment reduction if they have excess 30-day readmissions for patients with heart attacks, heart failure, and pneumonia. By 2015, most hospitals will face reductions in their Medicare payments if they do not meaningfully use information technology to deliver better, safer, more coordinated care. In addition, beginning in 2015, hospitals with high rates of certain hospital acquired conditions will receive further payment reductions from Medicare.¹⁵

On May 2, 2011, HHS recognized the following 13 hospitals and health care facilities for their efforts to prevent – and eventually eliminate – healthcare associated infections (HAIs), specifically Ventilator-Associated Pneumonia, one of the Health care Associated Infections which is a leading cause of death in the United States. These hospitals received the Achievements in Eliminating VAP, Outstanding Leadership Award, for sustained success in reaching their target for 25 months or more: Seton Medical Center, Daly City, CA; University Hospital, Augusta, GA; St Catherine of Siena Medical Center, New York; Johnson City Medical Center, Johnson City, TN; Baylor University Medical Center Truett ICU, Dallas, TX; and St Luke’s Episcopal Hospital, Houston, TX. The Sustained Improvement Award, for consistent and sustained progress over an 18 to 24 month period went to: St Joseph Hospital Orange, Orange, CA; Huntington Memorial Hospital, Pasadena, CA; Palmdale Regional Medical Center, Palmdale, CA; Saint Anne’s Hospital, Fall River, MA; Carolinas Medical Center NeuroSurgical ICU, Charlotte, NC; Highland Hospital ICU, Rochester, NY; and Providence St Mary Medical Center, Walla Walla, WA.

HAIs are infections that are acquired while patients are receiving medical treatment for other conditions. At any given time, about 1 in every 20 patients has an infection related to their hospital care. These infections cost the US health care system billions of dollars each year and lead to the loss of tens of thousands of lives. In addition, HAIs can have devastating emotional, financial and medical consequences.¹⁶ By FY 2015 up to 4.5% of hospitals’ CMS payments will be at risk due to HAI performance.¹⁷

Clearly hospitals have a challenge in the months and years ahead, however, more needs to be done to prevent—and eventually eliminate—infections acquired after patients leave the hospital setting. By providing patients with the tools to avoid future infections health care facilities will reduce re-

hospitalizations, lower health care costs and ultimately save lives. Reduction by 50% of preventable inpatient TAP & VAP cases, could save 4,500 lives, reduce 30,000 re-hospitalizations while saving the health care system billions of dollars per year.

References

- 1 <http://www.hhs.gov/news/press/2011pres/04/20110412a.html>
- 2 <http://www.healthcare.gov/center/programs/partnership/safer/index.html>
- 3 Surgery of the trachea & Brochi by Hermes C. Grillo, MD (Ed.); Publisher: B.C. Decker Inc., 992p 10/01/03; ISBN: 1550090585
- 4 Managing Mucus Plugs By Amy Labbe, 01/06/09; MDA/ALS News Magazine, April-March 211 Issue
- 5 Critical Care: Respiratory Support; Oct. 24, 2007; ICU READMISSION OF TRACHEOSTOMIZED PATIENTS: AN ANALYSIS OF PREDICTORS; Wissam B. Abouzgheib, MD*, Adib Chaaya, MD, Christa Schorr, RN, Huma Rana, Medical Student, Daniel Markley, Medical Student and David R. Gerber, DO; Robert Wood Johnson Medical School-Camden Campus, Camden, NJ; <http://meeting.chestpubs.org/cgi/content/abstract/132/4/577a>
- 6 Clin Otolaryngo. 2008 Dec; 33(6): 596-9, Driving standards in tracheostomy care: a preliminary communication of the St Mary’s ENT-led multi disciplinary team approach; Arora A, Hettige R, Ifeacho S, Narula A; Source: Department of Otolaryngology, St Mary’s Hospital, London, UK; <http://www.ncbi.nlm.nih.gov/pubmed/19126136> PMID: 19126136 [PubMed - indexed for MEDLINE]
- 7 Tracheostomy Care for School Nurses; By Joanne Wright, RN, MSN, CNS; Pediatric Pulmonary and ENT Trach Nurse Specialist; Children’s Hospital/UHHSC, www.kessjones.com/documents/7-Wright.ppt
- 8 FORUM Abstracts Respiratory Care The Science Journal of the American Association of Respiratory Care; 2001 OPEN FORUM; Ventilator-and Tracheostomy-Associated Pneumonia in Long-Term Subacute Care; PatriciaKing, RN, BSHCS; Daved van Stralen, MD; Larry Meissner, BA; Racquel Calderon, RCP, RRT; Donald Janner MD; Linda Giang, MPH; Ravindra Rao, MD, Totally Kids® Specialty Health care; Loma Linda, CA; Loma Linda University Medical Center, Loma Linda, CA. <http://www.rcjournal.com/abstracts/2001/?id=A00000012>
- 9 Preventing Ventilator-Associated Pneumonia; <http://www.healthcare.gov/center/programs/partnership/safer/vap.html>
- 10 Tracheostomy in children: A population-based experience over 17 years - Mohammed Al-Samri FRCPC1, # Ian Mitchell FRCPC2,*, Derek S. Drummond FRCS3, Candice Bjornson FRCPC; Article first published online: 5 APR 2010; DOI: 10.1002/ppul.21206; Copyright © 2010 Wiley-Liss, Inc; Pediatric Pulmonology; Volume 45, Issue 5, pages 487–493, May 2010
- 11 Atlanta Press Club, Atlanta GA; Secretary Kathleen Sebelius; April 19, 2011; <http://www.hhs.gov/secretary/about/speeches/sp20110419.html>
- 12 Pedagogy, Tracheostomy Care for the Sub-Acute Care Setting; <http://www.pedagogy-inc.com/Home/Classes/Respiratory/Tracheostomy-Care.aspx?cnp=H1> May 2011
- 13 Health Beat www.healthbeatblog.org; By Maggie Mahar; Teachers Must Emphasize that Medicine Is Always Changing
- 14 News Release: Administration Implements Affordable Care Act Provision to Improve Care, Lower Costs; Value-Based Purchasing Will Reward Hospitals Based on Quality of Care

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- 17 Alberani V, Pietrangeli PDC, Mazza AMR: The use of grey literature in health sciences: a preliminary survey. *Bull Med Libr Assoc* 1990, 78(4):358-363.
- 18 Moher D, Liberati A, Tetzlaff J, Altman DG, Group P: Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *J Clin Epidemiol* 2009, 62(19):1006-1012.
- 19 Van Woerden HC, Evans MR, Mason BW, Nehaul L: Using facsimile cascade to assist case searching during a Q fever outbreak. *Epidemiol Infect* 2007, 135(5):798-801.
- 20 Leung CS, Ho MM, Kiss A, Gundlapalli AV, Hwang SW: Homelessness and the response to emerging infectious disease outbreaks: lessons from SARS. *J Urban Health* 2008, 85(3):402-410.
- 21 Clinician Outreach Communication Activity (COCA) [<http://www.bt.cdc.gov/coca/about.asp>]
- 22 Dorian A, Rottman SJ, Shoaf K, Tharian B: The Novel Influenza A H1N1 Epidemic of Spring 2009 National After Action Workshop on a Federal Public Health Emergency: 21-22 September 2009 Torrance, California. *Prehosp Disaster Med* 2009, epub:<http://pdm.medicine.wisc.edu/H1N1.pdf>.
- 23 Cowen P, Garland T, Hugh-Jones ME, Shimshony A, Handysides S, Kaye D, Madoff LC, Pollack MP, Woodall J: Evaluation of ProMED-mail as an electronic early warning system for emerging animal diseases: 1996 to 2004. *J Am Vet Med Assoc* 2006, 229(7):1090-1099.
- 24 Madoff LC, Woodall JP: The internet and the global monitoring of emerging diseases: lessons from the first 10 years of ProMED-mail. *Arch Med Res* 2005, 36(6):724-730.
- 25 Gesteland PH, Samore MH, Pavia AT, Srivastava R, Korgenski K, Gerber K, Daly JA, Mundorff MB, Rolfs RT, James BC et al: Informing the front line about common respiratory viral epidemics. In: *AMIA Annu Symp Proc* 2007; 2007: 274-278.
- 26 Jacobs LM, Burns KJ: Terrorism preparedness: Web-based resource management and the TOPOFF 3 exercise. *J Trauma* 2006, 60(3):566-571; discussion 571-572.
- 27 Lurio J, Morrison FP, Pichardo M, Berg R, Buck MD, Wu W, Kitson K, Mostashari F, Calman N: Using electronic health record alerts to provide public health situational awareness to clinicians. *J Am Med Inform Assoc* 2010, 17(2):217-219.
- 28 McKenna VB, Gunn JE, Auerbach J, Brinsfield KH, Dyer KS, Barry MA: Local collaborations: development and implementation of Boston's bioterrorism surveillance system. *J Public Health Manag Pract* 2003, 9(5):384-393.
- 29 Samala U, Anderson DL: Novel H1N1 and the use of HIT within the Chicago Department of Public Health. In: Washington DC: NACCHO; 2009.
- 30 Tanielian T, Ricci K, Stoto MA, Dausey DJ, Davis LM, Myers S, Olmsted S, Willis HH: Exemplary Practices in Public Health Preparedness. Technical Report 405 (TR-239). In: Arlington, VA: RAND, National Defense Research Institute; 2005.
- 31 Dearinger AT, Howard A, Ingram R, Wilding S, Scutchfield D, Pearce KA, Hall B: Communication efforts among local health departments and health care professionals during the 2009 H1N1 outbreak. *J Public Health Manag Pract* 2011, 17(1):45-51.
- 32 Freimuth VS: Order out of chaos: the self-organization of communication following the anthrax attacks. *Health Commun* 2006, 20(2):141-148.
- 33 Staes CJ: Public health communication with frontline clinicians during the first wave of the 2009 influenza pandemic. *J Public Health Manag Pract* 2011, 17(1):36-34.
- 34 Jernigan JA, Stephens DS, Ashford DA, Omenaca C, Topiel MS, Galbraith M, Tapper M, Fisk TL, Zaki S, Popovic T et al: Bioterrorism-related inhalational anthrax: the first 10 cases reported in the United States. *Emerg Infect Dis* 2001, 7(6):933-944.
- 35 Baseman J: Improving public health to provider messaging: the REACH Project. In: Joint Conference on Health. Yakima, WA: WSPHA; 2010.
- 36 IOM: Research priorities in emergency preparedness and response for public health systems: a letter report. In: Washington, DC: National Academies Press; 2008.

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- for Patients; 4/29/11, HHS Press Office (202) 690-6343; <http://www.hhs.gov/news/press/2011pres/04/20110429a.html>
- 15 Health care.gov; Newsroom; Administration Implements New Health Reform Provision to Improve Care Quality, Lower Cost, <http://www.health-care.gov/news/factsheets/valuebasedpurchasing04292011a.html> Posted: 4/29/11
- 16 HHS Recognizes Progress Toward Eliminating Health care-Associated Infections; 5/2/11; U.S. Dept. of Health & Human Services; HHS Action Plan to Prevent Health care-Associated Infections at <http://www.hhs.gov/ash/initiatives/hai/index.html> and the Partnership for Patients at <http://www.Health-care.gov/center/programs/partnership>
- 17 Patient Protection and Affordable Care Act (PPAC) of 2010, Sections 3001, 3008 and 3011; CMS IPPS FY11 Proposed Rule, April 19, 2010. Note: Hospitals penalized for failure to report under RHQDAPU "pay for reporting" are excluded from VBP; Total CMS Payment at Risk does not include impact of lost reimbursement due to incremental cost to treat HACs not present on admission (POA).

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affect the flap valve in any way.

It is very easy to incorporate the Blom Tracheostomy Tube into the ventilator circuit, as the hub is a standard 15 mm connection. Some patients who would be ideal candidates for this device are patients with known or suspected aspiration and patients unable to tolerate cuff deflation. Patients who would not be candidates for this device include patients with large tracheostomas which can't seal around the trach tube or patients with very thick and copious secretions.

It is very easy to see how the use of this device could be a game changer for patients who were unable to communicate before and can do so now with its help. The exhaled volume reservoir is also a needed development as it will help to solve the false low volume alarms that seem to plague many patients who are already able to speak with ventilation through the use of speaking valves.

Reference

Kunduk M, et al. Preliminary report of laryngeal phonation during mechanical ventilation via a new cuffed tracheostomy tube. *Respir Care* 2010; 55(12): 1661-1670.