Quality and Productivity Commission

30th Annual Productivity and Quality Awards Program

"Heritage of Excellence"

2016 APPLICATION

Title of Project (Limited to 50 characters, including spaces, using Arial 12 point font):

NAME OF PROJECT: TRACHEOSTOMY MANAGEMENT – A TEAM APPROACH

DATE OF IMPLEMENTATION/ADOPTION: **DECEMBER 1, 2014**
(Must have been implemented at least one year - on or before July 1, 2015)

PROJECT STATUS: X Ongoing _____ One-time only

HAS YOUR DEPARTMENT PREVIOUSLY SUBMITTED THIS PROJECT? _____ Yes X No

EXECUTIVE SUMMARY: Describe the project in 15 lines or less using Arial 12 point font. State clearly and concisely what difference the project has made.

This was an unfunded multidisciplinary project to update tracheostomy management at Rancho Los Amigos National Rehabilitation Center, through the combined efforts of an otolaryngologist, speech pathologists, and physiatrists. Our goal was to increase the rate of successful tracheostomy tube removal (also known as "decannulation") among inpatients undergoing an active rehabilitation program. We combined existing hospital protocols for the use of speaking valves and caps on tracheostomy tubes with an evidence-based checklist for determining if the patient was eligible for decannulation. The inpatient decannulation rate nearly tripled from 25.6% during November 2012-October 2014 (pre-intervention) to 71.3% during December 2014-May 2016 (post-intervention), with significantly fewer adverse events during the post-intervention period. The estimated cost avoidance over 18 months was $461,480, due to eliminating unnecessary purchases of supplies/equipment, unnecessary fare on Access transportation services for outpatient follow-up appointments, and costs associated with monthly outpatient clinic visits.

BENEFITS TO THE COUNTY

(1) ACTUAL/ESTIMATED **ANNUAL** COST AVOIDANCE	(2) ACTUAL/ESTIMATED **ANNUAL** COST SAVINGS	(3) ACTUAL/ESTIMATED **ANNUAL** REVENUE	(1) + (2) + (3) = TOTAL **ANNUAL** ACTUAL/ESTIMATED BENEFIT	SERVICE ENHANCEMENT PROJECT
$ 212,841	**$ 0**	**$ 0**	**$ 212,841**	☐

ANNUAL = 12 MONTHS ONLY

SUBMITTING DEPARTMENT NAME AND COMPLETE ADDRESS
Rancho Los Amigos National Rehabilitation Center
Neurosurgery and Orthopedic Surgery
7601 E Imperial Highway, Downey, CA 90242

TELEPHONE NUMBER
562-401-7448

PROGRAM MANAGER'S NAME
Gordon Sun, MD

TELEPHONE NUMBER
562-401-6252

EMAIL
gsun@dhs.lacounty.gov

PRODUCTIVITY MANAGER'S NAME AND SIGNATURE
(PLEASE CALL (213) 893-0322 IF YOU DO NOT KNOW YOUR PRODUCTIVITY MANAGER'S NAME)
Gerardo Pinedo
SIGNATURE ON FILE

DATE
6-30-2016

TELEPHONE NUMBER
213-240-8104

EMAIL
gpinedo@dhs.lacounty.gov

DEPARTMENT HEAD'S NAME AND SIGNATURE
Mitchell H. Katz, M.D.
SIGNATURE ON FILE

DATE
6-30-2016

TELEPHONE NUMBER
213-240-8101

We Support Plain Language

Title of Project (Limited to 50 characters, including spaces, using Arial 12 point font):
NAME OF PROJECT: TRACHEOSTOMY MANAGEMENT – A TEAM APPROACH

1st FACT SHEET – LIMITED TO 3 PAGES ONLY: Describe the **Challenge, Solution, and Benefits** of the project. State clearly and concisely what difference the project has made. Use Arial 12 point font

CHALLENGE: The challenge was a very low rate of tracheostomy tube removal (*decannulation*) among rehabilitative therapy inpatients at Rancho Los Amigos National Rehabilitation Center. Historically, decannulation was rarely attempted during therapy, or would occasionally be done by the primary rehabilitative team, but without the support of an otolaryngologist (an ear, nose and throat [ENT] surgeon).

Leaving tracheostomy tubes in a patient's neck for a long period of time without a clear medical need places patients at risk for a number of significant complications of the windpipe (*trachea*), including scarring (*tracheal stenosis*) or weakening (*tracheomalacia*), skin infections, and abnormal connections between the windpipe and other parts of the body (*fistulas*). For some patients, having a visible tracheostomy tube in the neck contributes to development of negative body image issues. Additionally, leaving tracheostomy tubes in place may also complicate patients' ability to go home safely because the family needs substantial training in tracheostomy care, and there can be costly ongoing equipment purchases. Regular visits to the surgeon for tracheostomy tube management not only accumulate costs to the patient and the hospital, but also can be challenging for our patients due to transportation difficulties.

In November 2014, general otolaryngologist Dr. Gordon Sun joined the Rancho staff. Hired as the new ENT Program Manager, Dr. Sun learned of the poor decannulation rates from multiple staff members across several hospital departments. Given Dr. Sun's training at a world-renowned hospital for airway surgery and management, he was asked by his colleagues to help devise and implement a solution.

SOLUTION: The **project vision** reflects Rancho's mission of "Restoring Health, Rebuilding Life, and Revitalizing Hope" through strengthening patients and reducing their dependence on unnecessary tracheostomy tubes. The project was inspired by successful tracheostomy protocols and best practices developed at major hospitals across the United States, Canada, and Australia.

The **project objective** was to develop, implement, and enforce a multidisciplinary checklist to progress patients through the steps needed to safely remove a tracheostomy tube.

The **consumers** are inpatients at Rancho Los Amigos National Rehabilitation Center undergoing an active rehabilitation program.

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Contributions by partners included the following:

- Speech Pathology: Led by Wendy Burton and Sarah Leyba, speech pathologists conducted the majority of direct patient care involving proper tracheostomy tube usage, education, and progression toward decannulation.
- Physical Medicine & Rehabilitation: Led by Dr. Michael Scott, physiatrists developed the overall rehabilitation strategy and created an early draft of the decannulation protocol.

Project innovation is reflected in the use of peer-reviewed medical literature, in conjunction with the experience of Dr. Sun and his colleagues, to develop a guideline for how to remove a tracheostomy tube safely and permanently. The guideline was designed to reflect information presented in the American Academy of Otolaryngology-Head and Neck Surgery Foundation clinical consensus statement on tracheostomy care. It incorporated existing therapeutic protocols for the use of speaking valves and tracheostomy caps, developed by speech pathologists at Rancho. The project required no external funding or special training.

There was no specific new **technology used in the solution**. The project is novel in that it uses only pre-existing medical devices, such as tracheostomy tubes and speaking valves, to accomplish its goal.

BENEFITS: Our **outcome measures** included the following:

- Rate of decannulation;
- Complications or adverse events that may be related to having a tracheostomy tube in place, such as accidental or unplanned removal of the tube, scarring or weakening of the trachea, and abnormal fistulas;
- Complications or adverse events occurring after decannulation, such as the need to replace the tracheostomy tube during hospitalization (*decannulation failure*);
- Estimated costs to patients and hospitals for outpatient care related to tracheostomy tubes.

During the 24-month pre-intervention period (November 2012-October 2014), the decannulation rate was **25.6%** (43/166). There were 3 accidental removals of the tracheostomy tube with no decannulation failures. There were 14 other tracheostomy-related complications. We then developed the new protocol during November 2014 and officially began implementation December 1, 2014.

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LINKAGE TO THE COUNTY STRATEGIC PLAN (DETAIL IS REQUIRED FOR COUNTY DEPARTMENTS): Use Arial 12 point font

During the 20-month post-intervention period (December 2014-May 2016), the decannulation rate was **71.3%** (62/87), nearly triple the rate before the project began. There were 4 accidental removals of the tracheostomy tube with no decannulation failures. There were 2 other tracheostomy-related complications.

A cost minimization analysis was done, based on the calculation that had this project not been conceived, 40 fewer patients would have had their tracheostomy tubes removed during the December 2014-May 2016 period. Using equipment costs obtained from medical vendors and major retailer websites, office appointment reimbursement rates and policies from the Centers for Medicare and Medicaid Services (CMS), and fare using the LA Access transportation system, estimated total cost avoidance was about **$461,480** during the entire post-intervention period and **$212,841** during a typical 12-month period (further details on page 5). These figures do not include potential decreases in hospital length of stay due to not needing a tracheostomy tube, increased potential to be discharged home rather than to a more expensive skilled nursing facility or other outside hospital, lost productivity or other incidental costs accrued by patients and their caregivers, decreased patient productivity (e.g. patients not seeking a job because they have a tracheostomy tube), and other opportunity costs.

This project meets Goals 1, 2, and 3 of the County of Los Angeles Strategic Plan. **Goal 1 (Operational Effectiveness/Fiscal Sustainability)** was achieved through this project's significant cost avoidance over the course of 1½ years, requiring no additional training or specialized equipment beyond what is already available at Rancho Los Amigos National Rehabilitation Center. **Goal 2 (Community Support and Responsiveness)** was achieved through improved administration of an evidence-based medical program, enriching the lives of Los Angeles County residents by providing enhanced services. **Goal 3 (Integrated Services Delivery)** was achieved by maximizing the effectiveness of tracheostomy management at Rancho through the use of up-to-date protocols and medical evidence. This led to a concrete improvement in quality of care and patient outcomes, while at the same time reducing unnecessary expenditures, thus supporting the transformation of the Los Angeles County healthcare system in a positive manner.

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COST AVOIDANCE, COST SAVINGS, AND REVENUE GENERATED (ESTIMATED BENEFITS TO THE COUNTY): If you are claiming cost benefits, include a calculation on this page. You must include an explanation of the County cost savings, cost avoidance or new revenue that matches the numbers in the box. Remember to keep your supporting documentation. Use Arial 12 point font

Cost Avoidance: Costs that are eliminated or not incurred as a result of program outcomes.

Cost Savings: A reduction or lessening of expenditures as a result of program outcomes.

Revenue: Increases in existing revenue streams or new revenue sources to the County as a result of program outcomes.

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Estimated number of ADDITIONAL patients decannulated with new protocol = **27/year**.

Estimated cost of monthly tracheostomy supplies (e.g. tracheostomy tubes and collars, suction catheters, gauze, lubricant, speaking valve, gloves) = **$7,164/year**.

Estimated cost of one-time purchase of tracheostomy-related equipment (suction machine, nebulizer, and Ambu resuscitation bag) = **$575/year**.

Estimated number of appointments for tracheostomy tube changes in outpatient otolaryngology clinic = **12/year**

Estimated cost of each tracheostomy tube appointment above, calculated by subtracting the cost of a standard tracheostomy tube from the 2015 CMS reimbursement rate for an "established patient office visit, level 2" **= $5/visit**. There is no procedural reimbursement for the tracheostomy tube change after 7 days from the initial placement of the tracheostomy tube.

LA Access fare = $3.50 if ≥20 miles for 1-way trip. Assumed cost **$7/visit**.

Estimated cost avoidance over 12 months = (27 x $7,164) + (27 x $575) + (27 x $7 x 12) + (27 x $5 x 12) = **$212,841**.