Quality and Productivity Commission
31st Annual Productivity and Quality Awards Program
"Celebrating Quality Service"

2017 APPLICATION

Title of Project (Limited to 50 characters, including spaces, using Arial 12 point font):
NAME OF PROJECT: HULA: DIABETES MANAGEMENT SAVES LIMBS AND LIVES

DATE OF IMPLEMENTATION/ADOPTION: JULY 1, 2016
(Must have been implemented at least one year - on or before July 1, 2016)

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.

1 The Harbor UCLA Limb Alliance (**HULA**) was initiated to provide focused,
2 multidisciplinary care to patients with diabetic foot infections and/or ulcerations. The
3 team (including vascular surgery, podiatric surgery, infectious disease, and
4 endocrinology), has created a protocol with a direct pathway to HULA for limb salvage.
5 This includes consultation by endocrinology for diabetes management and evaluation
6 by the infectious disease team for recommendations regarding the use of targeted
7 antibiotic therapy. Utilizing this protocol, our multidisciplinary team has improved
8 focused care on patients with diabetic foot ulcerations as well as enhanced diabetes
9 management in an at-risk population. The project has made a substantial difference to
10 patients by increasing their access to appropriate health care providers and decreasing
11 overall major amputations rates, as reflected in the outcome data. Through HULA, Los
12 Angeles County is contributing to better health for its citizens, but it isn't costing the
13 County any additional money to achieve this. That is a social and fiscal win/win!
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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
$	$	$	$	☒

ANNUAL = 12 MONTHS ONLY

SUBMITTING DEPARTMENT NAME AND COMPLETE ADDRESS	**TELEPHONE NUMBER**
DHS-Harbor UCLA Medical Center, Division of Vascular Surgery 1000 West Carson Street Torrance, CA 90502	310-222-2704
PROGRAM MANAGER'S NAME Frederic Bongard, M.D. Ashley Miller, D.P.M.	**TELEPHONE NUMBER** 310-222-2701 **EMAIL** fbongard@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] — **DATE** 7.3.17	**TELEPHONE NUMBER** 213-240-7948 **EMAIL** gpinedo@dhs.lacounty.gov
DEPARTMENT HEAD'S NAME AND SIGNATURE Dr. Mitchell Katz [signature] — **DATE**	**TELEPHONE NUMBER**

We Support Plain Language

Title of Project (Limited to 50 characters, including spaces, using Arial 12 point font):
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1st FACT SHEET – LIMITED UP TO 3 PAGES ONLY: Describe the **challenge(s), solution(s), and benefit(s)** of the project. What quality and/or productivity-related outcome(s) has the project achieved? Provide measures of success. Use Arial 12 point font.

Challenges

We were faced with a number of challenges when starting the Harbor UCLA Limb Alliance (HULA) service. The first was the difficulty in diabetes management in a general patient population where the disease is primarily "uncontrolled" or "poorly controlled". Without proper diabetes management, a patient with a diabetic foot ulceration will not thrive or improve. Treatment must focus not only on foot care but on overall diabetes management as well. A second challenge we were faced with was in the area of antibiotic regimens, which can be difficult to determine in patients with polymicrobial wound cultures. Many diabetic patients fall into this category, and this is particularly true in those with bone infections (osteomyelitis). A third challenge we faced was how to create a clinic that could provide organized and complete follow up for patients. It was important for us to ensure that we maximized each patient visit by addressing as many medical issues as possible, to decrease the need for patients to return for multiple appointments. A fourth challenge we identified was that patients admitted to the HULA service often have other medical problems, but that many do not have an established primary care provider (PCP). The final challenge we had to tackle was how to improve patient outcomes without increasing hospital costs.

Solutions

Our solution to the problem we faced with diabetes management was to collaborate with endocrinology. On admission to the limb salvage (HULA) service, the endocrine team automatically evaluates the patient and writes medication orders if the admission glucose is over 200 mg/dL. The endocrine service continues to monitor blood sugars and modify treatment orders based on individual patient needs. In dealing with the antibiotic regimen challenge, our solution was collaboration with the infectious disease (ID) service. From this collaboration, a protocol was created that provides recommendations for broad spectrum antibiotics on admission and/or prior to identification of the infecting bacteria. Beyond this, the ID service is readily available after speciation of wound cultures to provide specific antibiotic recommendations, allowing us to prescribe the regimen that will be most beneficial to each patient. Next, the HULA clinic was created with the goal of ensuring that patients would have organized, appropriate and complete follow-up. To achieve this, the clinic was staffed by an attending surgeon, two general surgery residents and a nurse practitioner. A work flow was developed in which the nurse practitioner reviews each patient's chart up to three days prior to the next clinic visit. If a patient needs

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any studies (e.g., blood work, x-rays, MRI), those tests are ordered, completed and reviewed by the nurse practitioner. This information is then transferred onto the clinic schedule for that date. A complete list of scheduled patients is distributed to each provider in clinic with a list of "to-do's" for each patient, ensuring each patient a more tailored, coordinated and comprehensive visit. Because diabetic limb preservation is more achievable when a patient is in better general health, it was important to address the issue of supporting primary care for patients who did not yet have a primary care provider. To do this, the HULA clinic team teamed again with the endocrine service to provide interim primary care for diabetes management. For patients with an established medication regimen, the HULA clinic refills home medications for patients, eliminating the risk of either running out of necessary, life-saving medications or of going to the emergency room or urgent care for refills. Improving patient outcomes without increasing hospital costs was the greatest challenge of all. Diabetic foot care requires repeated surgical management and complex wound care to treat involved tissue. This would normally need increased hospital stay and facility utilization. To address this problem, HULA took a multidisciplinary approach to optimize inpatient (hospital) care. In doing so, we were able to improve limb salvage without lengthening inpatient hospital stay. Our data, which compared patients treated at Harbor-UCLA before the initiation of the HULA service reflected an average hospital stay of 9.7 days compared to a decrease to 7.1 average length of stay days following HULA.

Benefits
The benefits of HULA have been remarkable. By partnering with the endocrine service, patients have better glucose control and receive education on their disease which results in better overall diabetes management. Additionally, inpatients are linked into endocrine services upon discharge, providing streamlined access for better continuity of care. This systematic approach ensures that patients will continue to receive regular monitoring of glucose levels along with any required treatment. By partnering with the infectious disease service, patients benefit from more accuracy and monitoring of antibiotic regimens, which reduces incidences of antibiotic misuse and improves overall infection control and wound care. Patients also benefit from having the HULA clinic serve as a "safety net" for their primary care until they have been assigned a primary care provider, and no longer having to resort to an ER visit for medication refills. But the greatest benefit, by far, is limb preservation. The Harbor UCLA Limb Alliance and implementation of its multidisciplinary care delivery model has decreased the number of patients undergoing surgery and losing limbs as demonstrated in the data on Page 5.

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Linkage to the County Strategic Plan – 1 page only. Which County Strategic Plan goal(s) does this project address? Explain how. Use Arial 12 point font.

Goal I: Make Investments that Transform Lives
Anyone would agree that a person's quality of life is enhanced by good physical health. By implementing a multidisciplinary approach aimed at reducing amputations, the patient's health is assessed from a variety of clinical perspectives, leading to healthier, happier individuals living richer, more fulfilling lives.

Goal II: Foster Vibrant and Resilient Communities
The most vibrant communities are those where families are able to contribute socially as well as economically. By preserving limbs, patients maintain the physical ability to work and provide for their families outside the home, to be able-bodied caregivers inside the home, and to participate in social activities outside the home that stimulate the economy.

Goal III: Realize Tomorrow's Government Today
The future of health care is changing with the transition to and expansion of ambulatory care. The Harbor-UCLA Limb Alliance has elevated the treatment delivered to diabetic patients from expensive emergency room visits and inpatient hospital stays to more cost-effective outpatient visits that maximize the effectiveness of the visit by involving key specialists whom each focus on doing what they do best. These patients no longer have to schedule a separate appointment for each specialist; they schedule one visit and are cared for by specialists in podiatry, endocrinology, vascular surgery and infectious disease. This results in more effective, whole person care for every patient under a flexible model specifically aimed at responding to the needs of an ever-increasing patient demographic.

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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. Please indicate whether these benefits apply in total or on a per unit basis, e.g., per capita, per transaction, per case, etc. 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. Please indicate whether these are costs to the County or to other entities.

Cost Savings: A reduction or lessening of expenditures as a result of program outcomes. Please indicate whether these were expenditures by the County or by other entities.

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

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Outcome data compared 92 patients treated at Harbor-UCLA prior to the implementation of HULA to 158 patients treated after its inception. For below-the-knee amputations (BKA), there were 12 of 92 patients in the pre-HULA group (13%) compared to only 4 of 158 patients in the post-HULA group (2.5%). When we compared major amputations, defined as all patients who had either a transmetatarsal amputation and/or a below-the-knee amputation, the improvement in amputation rate was even better. In the pre-HULA group, 20 of 92 patients had a major amputation (21.7%), while only 15 of 158 in the post-HULA group required one (9.6%). Most significant of all is that these outcomes were achieved without an increase in overall inpatient length of stay (9.7 average days for the pre-HULA group compared to 7.1 days for the post-HULA group).

	Group 1 (n=92)	Group 2 (n=158)	p-value
TMA	11 (12.0)	14 (8.9)	0.43
BKA	12 (13.0)	4 (2.5)	0.001
Major Amputation (TMA+BKA)	20 (21.7)	15 (9.6)	0.01
Length of Stay	9.7	7.1	0.16

This translates into patients enjoying improved outcomes and preservation of their limbs without increased hospital costs. Because of its significance, this data has been accepted for podium presentation at the Western Vascular Conference to be held in September 2017. It has also been accepted for publication in the Journal of Vascular Surgery later this year. Through HULA, the County is contributing to better health for its citizens, but it isn't costing the County any additional money to do it. That is a social and fiscal win/win.