

Quality and Productivity Commission
33rd Annual Productivity and Quality Awards Program
"Empowering Innovative Solutions"

2019 APPLICATION

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

NAME OF PROJECT: MAKE IT A MOVIE NIGHT WITH AT-HOME CHEMOTHERAPY

DATE OF IMPLEMENTATION/ADOPTION: 12/5/2017

(Must have been fully implemented for a minimum of at least one year - on or before July 1, 2018)

PROJECT STATUS: Ongoing One-time only

HAS YOUR DEPARTMENT PREVIOUSLY SUBMITTED THIS PROJECT? Yes 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 For many years, patients with cancer were routinely scheduled for an inpatient hospital
 2 stay to receive chemotherapy. It was disruptive to the patient's life, and costly for the
 3 hospital. Finding a better method for the delivery of these treatments became a priority
 4 in the pursuit of less costly and more patient-centered care. In December 2017, Harbor-
 5 UCLA implemented computerized ambulatory drug delivery (CADD) pumps as an
 6 innovative alternative to the inpatient stay, safely and effectively moving infusion
 7 delivery of chemotherapy from the hospital to the home. With CADD pumps, patients
 8 receive care in their preferred environment where they can relax, listen to music, or
 9 enjoy movie night with their families - making what can be an uncomfortable process
 10 easier to undergo. In the year since the first outpatient CADD pump infusion, Harbor-
 11 UCLA Medical Center estimates elimination of 642.4 inpatient hospital bed days at a
 12 cost avoidance of \$1,695 each, totaling \$1,088,868 in cost savings. And as patients
 13 with cancer begin to live longer and more effective treatments become available, the
 14 demand for home infusion will continue to expand. CADD pumps offer an innovative
 15 way to provide compassionate, patient-centered care to individuals living with cancer.

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
\$ 1,088,868.00	\$	\$	\$ 1,088,868.00	<input checked="" type="checkbox"/>

ANNUAL = 12 MONTHS ONLY

SUBMITTING DEPARTMENT NAME AND COMPLETE ADDRESS Department of Health Services / Harbor-UCLA Medical Center Hematology and Oncology Division, Internal Medicine Department 1000 West Carson Street, Torrance, CA 90509		TELEPHONE NUMBER 310-222-2400
PROGRAM MANAGER'S NAME James J. Yeh, M.D.		TELEPHONE NUMBER 424-306-8220 EMAIL jamyeh@dhs.lacounty.gov
PRODUCTIVITY MANAGER'S NAME AND SIGNATURE (PLEASE CALL (213) 893-0322 IF YOU DO NOT KNOW YOUR PRODUCTIVITY MANAGER'S NAME) Keisha Belmaster 		6/14/2019 TELEPHONE NUMBER 424-306-6349 EMAIL kbelmaster@dhs.lacounty.gov
DEPARTMENT HEAD'S NAME AND SIGNATURE Christina Ghaly, M.D. 		DATE 6/28/19 TELEPHONE NUMBER (213) 288-8101

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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 to the County. What quality and/or productivity-related outcome(s) has the project achieved? Provide measures of success and **specify assessment time frame.** Use Arial 12 point font.

CHALLENGE: With rising treatment costs, cancer care represents one of the fastest growing segments of healthcare spending. At Harbor-UCLA Medical Center, hundreds of scheduled admissions for chemotherapy occur annually. The cost for an Acute Medicine day is estimated at \$3,075 and, on average, a typical hospitalization for infusional 5-FU chemotherapy is three days. This estimates to hundreds of hospital bed days and millions of dollars spent annually for chemotherapy instead of for patients with more acute medical needs. For patients, the initial reaction to a cancer diagnosis is often a fury of emotions including shock, sadness, and disbelief. Frequent hospital visits are common and can be distressing when patients would prefer being at home, surrounded by family and friends in a supportive environment while dealing with the reality of a cancer diagnosis and the need for treatment.

SOLUTION: Outpatient chemotherapy has the advantages of allowing safe drug administration at reduced healthcare costs while respecting patients' wishes to avoid hospitalization. Computerized ambulatory drug delivery (CADD) pumps are devices that allow patients to receive chemotherapy in a home setting. In January 2016, a task force composed of Harbor-UCLA leaders from pharmacy, nursing, physicians, medical informatics, and administration was assembled to address critical issues of safety and quality for patients receiving chemotherapy. One of the first initiatives undertaken by the group was deployment of ambulatory CADD pumps for patients receiving infusion chemotherapy (which involves the administration of medication through a needle or catheter). The Department of Pharmacy purchased 19 CADD pumps at a cost of \$1,895 each.

Implementation of the program was planned in monthly meetings by the Chemotherapy Task Force. Prior to December 2017, the only Department of Health Services facility using CADD pumps for outpatient chemotherapy was LAC+USC Medical Center. The Infusion Clinic and inpatient chemotherapy nurses at Harbor-UCLA received training on use of CADD pumps. Pharmacy staff were trained on how to package the medications for the devices, and also developed computerized protocols for chemotherapy regimens using these pumps.

Infusion Clinic appointment slots for outpatient CADD infusions were created in the electronic medical record and added to the scheduling appointment book. During the Infusion Clinic visit, nursing staff would assess the patient, administer pre-medications and chemotherapy agents by bolus, and then connect the patient to the

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CADD pump to begin infusional 5-fluorouracil. The patient would then be discharged home and scheduled to return to Infusion Clinic in 1-2 days (depending on the treatment regimen) to have the CADD pump disconnected by the nursing staff. A nursing protocol was also developed for after-hours trouble-shooting in the event a patient encountered problems with CADD pumps at home.

A primary concern for the task force was patient safety. Eight chemotherapy medicine regimens (*listed in the table on Page 6, Column A*) were identified as suitable for CADD pump use. These eight regimens all included 5-fluorouracil, a chemotherapy medication that could safely be given by continuous infusion without requiring overnight hospitalization.

The first CADD pump for outpatient chemotherapy medication was issued for use on December 5, 2017. We collected information over the course of the first year of implementation in order to estimate the overall effectiveness of outpatient CADD pump utilization from both the fiscal and patient experience perspectives.

BENEFITS:

Over one year between December 2017 and December 2018, thirty-five patients received a total of 178 outpatient chemotherapy infusions through CADD pumps, averaging five infusions per patient. Based on the data collected, including the average lengths of hospitalizations for various chemotherapy regimens, an estimated 642.4 hospital bed days were avoided over one year with the implementation of CADD pumps. The difference between the estimated average cost of an inpatient Acute Medicine day (at \$3,075) and the estimated average cost of an Outpatient Medicine visit (at \$1,380) is \$1,695. By multiplying the number of avoided Acute Medicine Days by the \$1,695 difference in cost, the estimated cost avoidance as a result of CADD pump implementation totaled \$1,088,868 in the first year. This is a strong indicator that the shift towards outpatient chemotherapy is a cost-effective way to provide patient-centered care for cancer patients.

In addition, each one of the 642.4 avoided hospital bed days also represents days where patients were able to receive chemotherapy in a more patient-centered, innovative way. Instead of going into the hospital and receiving treatment in a clinical setting (and in the company of relative strangers), patients were able to plan their treatment around an enjoyed activity, like movie night with family and friends. The ability to receive needed cancer treatment at home in a familiar and supportive environment enhances the patient's physical comfort and psychological well-being, which can also contribute to a more positive prognosis.

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When asked about using the CADD pump, patients have commented, “it’s nice to be home” and “thank you for this”, expressing appreciation for the convenience of this innovative treatment option. The hundreds of hospital bed days avoided have afforded Harbor-UCLA the capacity to improve the delivery of quality healthcare to all our patients. The benefits of the CADD pump program are two-fold: a service enhancement to patients with cancer that offers a new level of convenience, as well as cost avoidance to Los Angeles County of more than \$1 million, and the potential for even greater savings as the program continues to expand.

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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.

Strategic Goal: Make Investments That Transform Lives; Strategy I.2 - Enhancing our Delivery of Comprehensive Interventions.

Investing in CADD pumps is a transformative, patient-centered means of delivering chemotherapy. With CADD pumps, Harbor-UCLA can provide up-to-date cancer treatment at home for patients, regardless of societal circumstance.

Strategic Goal: Foster Vibrant and Resilient Communities; Strategy II.2 - Support the Wellness of our Communities.

Cancer treatment is physically, mentally, and emotionally exhausting. The investment in CADD pumps for patients with cancer allows them to receive treatment at home, surrounded by family and friends to provide emotional support and comfort. Patients have expressed that receiving cancer treatment at home has improved their well-being and morale.

Strategic Goal: Realize Tomorrow’s Government Today, Strategy III.3 – Pursue Operational Effectiveness, Fiscal Responsibility and Accountability.

By investing new means of delivering chemotherapy, this project supports a patient-centered and cost-effective means of care for cancer patients. The shift in delivering chemotherapy from the hospital to the infusion clinic and home has fiscal benefits given the significantly higher costs of chemotherapy administration in the hospital compared to at an outpatient facility.

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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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\$ 1,088,868.00	\$	\$	\$ 1,088,868.00	<input checked="" type="checkbox"/>

For each of the eight chemotherapy regimens used in the CADD pump project (**Column A**), the average hospital length of stay (**Column B**) was calculated using hospitalization data from 2015 through 2017. Thirty-five patients used the CADD pump in the first year (December 2017 to December 2018) and received a total of 178 outpatient infusion treatments (**Column C**). Each infusion treatment was multiplied by the average length of inpatient stay for that regimen, resulting in the number of estimated avoided hospital days (**Column D**). Each avoided hospital day was multiplied by \$1,695 (the difference between the estimated average costs of an Inpatient Acute Medicine day (at \$3,075) and an Outpatient Medicine visit (at \$1,380). Finally, totals for each regimen (**Column E**) were added to determine the total estimated cost avoidance. Harbor-UCLA’s CADD pump outpatient chemotherapy program has saved Los Angeles County over one million dollars.

Chemotherapy Regimens Delivered via CADD pump (Column A)	Average Length of Inpatient Stay (in Hospital Days) (Column B)	# of Outpatient Infusion Treatments Received (Column C)	Estimated Number of Hospital Days Received (Column D)	Estimated Savings (Hospital Day x \$1,695 each) (Column E)
FLOT	2.1	13	27.3	\$46,273.50
FOLFIRI	2.8	18	50.4	\$85,428.00
FOLFIRI-A	3.6	63	226.8	\$384,426.00
FOLFIRI-pan	3.5	1	3.5	\$5,932.50
FOLFIRINOX	3.2	7	22.4	\$37,968.00
FOLFOX-A	3.2	23	73.6	\$124,752.00
FOLFOX-H	3.2	10	32	\$54,240.00
FOLFOX	4.8	43	206.4	\$349,848.00
TOTALS		178	642.4	\$1,088,868.00