

**Quality and Productivity Commission**  
**27th Annual Productivity and Quality Awards Program**  
*"Saluting County Excellence"*

**2013 APPLICATION**

Title of Project (Limited to 50 characters, including spaces, using Arial 12 point font):  
**A Sleep Medicine Service Plan Designed For 2014**

**DATE OF IMPLEMENTATION/ADOPTION:** NOVEMBER 15, 2011  
 (Must have been implemented at least one year - on or before June 30, 2012)

**PROJECT STATUS:**  Ongoing  One-time only

**HAS YOUR DEPARTMENT PREVIOUSLY SUBMITTED THIS PROJECT?**  Yes  No

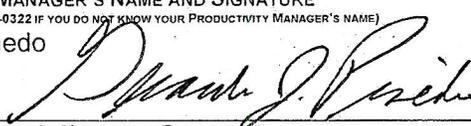
**EXECUTIVE SUMMARY:** Describe the project in 15 lines or less using Arial 12 point font. Summarize the problem, solution, and benefits of the project in a clear and direct manner

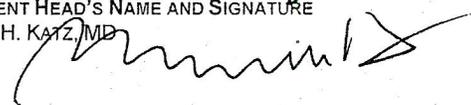
1 Sleep disorders, especially obstructive sleep apnea syndrome (OSAS), are highly  
 2 prevalent among LA County patients. Effective treatment alleviates disabling symptoms,  
 3 reverses high cardiovascular mortality and stroke risks, prevents road crashes and  
 4 reduces health care costs. Increasing demand for Sleep Medicine services has far  
 5 outpaced service levels. We developed and improved a high-quality, patient-centered,  
 6 cost-effective Sleep Medicine Program at Olive View that expands services without  
 7 additional space and minimal resources. We have replaced costly in-laboratory testing  
 8 with home sleep testing and autoCPAP titration as the first-line approach to diagnosis  
 9 and CPAP prescription. Continuous outpatient care after OSAS diagnosis to optimize  
 10 treatment adherence and benefit is emphasized. The care model consists of 4  
 11 components: 1) Screening and scheduling; 2) Sleep studies; 3) Clinics; and 4) Walk-in  
 12 services. Our solution has resulted in benefits that include improved cost-effectiveness,  
 13 access, equity, efficiency, and quality of Sleep Medicine care. Performance measures  
 14 include increased sleep study completion rates, decreased sleep study and clinic wait  
 15 times, excellent patient satisfaction and high polysomnography peer-review scores.

(1) ESTIMATED/ACTUAL ANNUAL COST AVOIDANCE	(2) ESTIMATED/ACTUAL ANNUAL COST SAVINGS	(3) ESTIMATED/ACTUAL ANNUAL REVENUE	(1) + (2) + (3) TOTAL ESTIMATED/ACTUAL BENEFIT	SERVICE ENHANCEMENT PROJECT
\$ 779,100	\$ 583,200	\$ 290,242	\$ 1,652,542	Yes

<b>SUBMITTING DEPARTMENT NAME AND COMPLETE ADDRESS</b> RESPIRATORY CARE/SLEEP MEDICINE RM 6B-107 - OLIVE VIEW-UCLA MEDICAL CENTER 14445 OLIVE VIEW DRIVE SYLMAR, CA 91342	<b>TELEPHONE NUMBER</b> 818-364-4422
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<b>PROGRAM MANAGER'S NAME</b> Jeanne Wallace, MD, MPH	<b>TELEPHONE NUMBER</b> 818-364-4424 <b>EMAIL</b> jwallace@dhs.lacounty.gov
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<b>PRODUCTIVITY MANAGER'S NAME AND SIGNATURE</b> (PLEASE CALL (213) 893-0322 IF YOU DO NOT KNOW YOUR PRODUCTIVITY MANAGER'S NAME) Gerardo Pinedo 	<b>DATE</b> 6/18/2013	<b>TELEPHONE NUMBER</b> (213) 240-8104 <b>Email</b> gpinedo@dhs.lacounty.gov
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<b>DEPARTMENT HEAD'S NAME AND SIGNATURE</b> MITCHELL H. KATZ, MD 	<b>DATE</b> 6/18/2013	<b>TELEPHONE NUMBER</b> (213) 240-8101
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**LINKAGE TO THE COUNTY STRATEGIC PLAN (DETAIL IS REQUIRED FOR COUNTY DEPARTMENTS):**  
**OPERATIONAL EFFECTIVENESS**

**FACT SHEET – LIMITED TO 3 PAGES ONLY:**

**CHALLENGE**

Sleep disorders, especially obstructive sleep apnea syndrome (OSAS), are highly prevalent among LA County patients. Effective OSAS treatment alleviates disabling symptoms, reverses high cardiovascular mortality and stroke risks, improves hypertension, prevents road crashes and dramatically reduces health care costs. Other treatable sleep disorders, including insomnia and narcolepsy also cause major disability and health care spending. As demand has exceeded available services, many patients with sleep disorders do not receive care commensurate with the community standard.

ValleyCare patients had no access to Sleep Medicine services until 2001 when sleep studies were outsourced. In December 2004, we opened the Olive View Sleep Laboratory to decrease costs and increase quality. In July 2007 we created adult and pediatric sleep clinics in existing space with outside funding for fellow trainee staffing. Sleep Medicine referrals have since burgeoned. During 2011-12, only 49% of 944 sleep study referrals were completed. Wait times reached almost 1 year for sleep studies, and >9 months for clinic appointments. We looked for ways to better use our resources to meet this increasing demand.

**SOLUTION**

We have developed and improved a high-quality, patient-centered, cost-effective Sleep Medicine program at Olive View. In the last year, the program has expanded services to meet rising demand with no additional space or resources other than 1 fellow trainee. We are now accepting sleep study referrals from other County facilities to meet managed care deadlines.

In November 2011, we began home sleep testing (HST) to lower costs and increase access for patients at high OSAS risk. As of July 2012 we: 1) expanded Sleep Medicine clinics to 4 sessions/week utilizing existing sleep laboratory space; 2) expanded sleep testing capacity to >1200 studies/year; 3) improved sleep laboratory quality by participating in a national peer-review program, and patient satisfaction and safety monitoring in preparation for American Academy of Sleep Medicine (AASM) accreditation; 4) developed a walk-in CPAP treatment initiation, adherence and monitoring service; 5) initiated an inpatient consultation and sleep testing service; and 6) expanded services for neuromuscular and cardiac disease-related central sleep breathing disorders, as well as insomnia and narcolepsy.

Our solution is at the leading edge of a movement in Sleep Medicine that shifts it from a laboratory-focused to a patient care-focused sub-specialty. The program responds to

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the DHS strategic goal of transforming "from an episodic, hospital focused system to an integrated high-quality delivery system focused on prevention, early intervention, and primary care with appropriate referrals for specialized services." It works within DHS managed care plan that anticipates ACA implementation in 2014.

The major emphasis is detection and appropriate treatment of OSAS. Addressing an enormous gap between resources and demand, in-laboratory testing is replaced by HST and autoCPAP titration as the first-line approach to diagnosis and CPAP prescription. Continuous outpatient care after OSAS diagnosis to optimize treatment adherence and benefit is emphasized.

OSAS care adheres to a standard algorithm and is comprised of four components:

- 1) Referral screening and scheduling
  - Referrals are screened for appropriateness and assigned to sleep testing or sleep clinic if testing is not appropriate.
  - Patients assigned to sleep testing with a high OSA risk score are set up for HST; others are scheduled for in-laboratory polysomnography.
  - CPAP patients who are stable and adherent are scheduled for streamlined CPAP clinic; others are scheduled for clinics located in the sleep lab.
- 2) Sleep studies
  - a. In-laboratory polysomnography
    - A 2 bed laboratory runs 5 nights/week and provides day tests required for AASM accreditation.
    - QA programs include participation in the AASM Interscorer Reliability (ISR) program, patient satisfaction and safety monitoring.
  - b. Home (portable) sleep testing (HST)
    - Patients are educated and complete overnight HST that is returned the next day for downloading, scoring, interpretation, and a treatment plan.
    - Appropriate CPAP treatment can be started the same day.
  - c. Home AutoCPAP titration
    - Patients diagnosed by HST or for whom CPAP titration is not achieved in-laboratory are educated and set-up with autotitrating devices. They return in 1 week for data download and a fixed CPAP prescription.
- 3) Sleep clinics (run by a Sleep Medicine specialist)
  - Provide state-of-the-art care and efficiency with on-site CPAP device downloading, outcome assessment tools and CPAP accessories.
- 4) Walk-in services in the Respiratory Department available 8 AM-5 PM Mon-Fri
  - Run by RCPs supervised by a Sleep Medicine specialist and require no additional staffing.
  - Provide CPAP monitoring, adherence checks, autoCPAP titration, trouble shooting and urgent sleep-related medical care.

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- Leverage commercial DME savings passed on as significant discounts and upgrades for HST and PAP devices.

We are launching a satellite clinic at High Desert Medical Center that will provide HST and CPAP management via electronic communication with the Olive View Sleep Medicine staff and specialists to address a major geographic barrier to Sleep Medicine care access. Once in place, it can be replicated at selected medical homes within the LA County healthcare system.

The Sleep Medicine program also provides state-of-the-art services for insomnia (including cognitive behavioral therapy) and narcolepsy that involve interaction with mental health providers. We provide pediatric sleep testing and a weekly clinic, as well as sleep disordered breathing services for Olive View Neuromuscular Clinic patients.

In January 2013, Dr. Yee, DHS Chief Medical Officer, created a Sleep Medicine-Specialty Primary Care Work Group that includes specialists from Olive View, LAC-USC and Harbor. The group has decided that Sleep Medicine services can best be provided to LA County patients via a county-wide Sleep Medicine service plan that uses the Olive View program as its model.

### **BENEFITS**

Our solution has resulted in benefits that include significant cost-savings as well as improved cost-effectiveness, access, equity, efficiency, and quality of Sleep Medicine care as demonstrated by the following measures and indicators.

- Sleep study capacity has increased to >1200/yr and completion rate from 49 to 85%.
- Wait time for in-laboratory studies has decreased from ~1 yr to 5 mo.
- Wait time for HST is same day – weeks.
- 66% of HST are positive for OSAS, justifying CPAP treatment without lab resources.
- Our in-laboratory polysomnogram scorers and interpreters achieve monthly ISR scores >85% exceeding AASM standards.
- >99% sleep laboratory patient satisfaction and high outpatient satisfaction documented by numerous written testimonials
- Sleep Medicine clinic wait time has decreased from 9 to 5 mo.
- We are helping LA County managed care meet its wait time requirement for sleep studies by accepting referrals from other County healthcare facilities.
- 90 inpatient consultations this year, most providing sleep testing in the hospital bed.
- State-of-the art CPAP devices for our patients cost only \$250/yr over 5 yr by leveraging on-site DME services that require no extra personnel for CPAP discounts and upgrades.
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**COST AVOIDANCE, COST SAVINGS, AND REVENUE GENERATED (ESTIMATED BENEFIT):** 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.

**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.

(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 Yes
\$779,100	\$ 583,200	\$ 290,242	\$1,652,542	Yes

**ANNUAL = 12 MONTHS ONLY**

- Cost avoidance of 980 sleep studies if they had been outsourced to outside laboratories at Medicare rates of \$795 per study( 980 studiesX\$795 = \$779,100).
- Estimated cost savings due to lower health care utilization by OSAS patients when they are treated with CPAP. Cost savings with CPAP treatment have been calculated to be \$81 per member per month by Cai O et al. *The American Journal of Managed Care* 2012; Vol 18: e225-233. Our estimate is based on 600 patients being treated with CPAP as an outcome of our program (\$81 pmpm X12 monthsX600 patients = \$583,200).
- Revenue from sleep clinic visits. Estimated revenue based on Medicare rates.

Clinic Visits:	CPT	#	Reimbursement
* Initial strfwd complexity	99242	1,040	\$97,260.80
Initial – Mod complexity	99244	119	\$22,406.51
Follow-up –Low complexity	99243	642	\$81,906.36
Follow-up – Mod complexity	99244	428	\$80,588.12
<b>Total</b>		<b>2,229</b>	<b>\$282,161.79</b>

**Inpatient Consultations:**

Mod Complexity	99254	50	\$5,997.50
Low Complexity	99253	25	\$2,083.00
<b>Total</b>		<b>75</b>	<b>\$8,080.50</b>

**Total Estimate Revenue** **\$290,242.29**

\*Clinical evaluation & treatment plan done at time of sleep study interpretations.

Revenues estimated according to Medicare reimbursement rates for comparable CPT codes • 2,229 clinical evaluations and clinic visits – ranging from \$93-\$188 each depending on level of complexity = \$282,161 • 75 inpatient consultations - ranging from \$83 -\$120 each depending on complexity=\$8080.50.