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## Caring Wisely: A Program to Support Frontline Clinicians and Staff in Improving Healthcare Delivery and Reducing Costs

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We describe a program called “Caring Wisely”<sup>®</sup>, developed by the University of California, San Francisco’s (UCSF), Center for Healthcare Value, to increase the value of services provided at UCSF Health. The overarching goal of the Caring Wisely program is to catalyze and advance delivery system redesign and innovations that reduce costs, enhance healthcare quality, and improve health outcomes. The program is designed to engage frontline clinicians and staff—aided by experienced implementation scientists—to develop and implement interventions specifically designed to address overuse, underuse, or misuse of services. Financial savings of the program are intended to cover the program costs. The theoretical underpinnings for the design of the Caring Wisely<sup>®</sup> program emphasize the importance of stakeholder engagement, behavior change theory, market (target audience) segmentation, and process measurement and feedback. The Caring Wisely<sup>®</sup> program provides an institutional model for using crowdsourcing to identify “hot spot” areas of low-value care, inefficiency and waste, and for implementing robust interventions to address these areas.

Designed and launched by the UCSF Center for Healthcare Value in 2013, the annual Caring Wisely<sup>®</sup> program identifies projects that meet the following criteria: (1) potential to measurably reduce UCSF Health’s costs of care without transferring costs to patients, insurers, or other providers; (2) plan for insuring that health outcomes are maintained or improved; (3) envision disseminating the intervention within and beyond

UCSF; and (4) demonstrate commitment and engagement of clinical leadership and frontline staff.

Caring Wisely<sup>®</sup> consists of 3 stages: (1) the Ideas Contest—an open call to all faculty, staff, and trainees to crowdsource the best ideas for identifying areas of waste; (2) the Request for Proposals stage; and (3) the Project Implementation stage, during which project and implementation science teams meet regularly to develop an implementation strategy for each of three projects with the first test of change occurring within 3-6 months. Project specific budgets are limited to \$50,000, and program administration costs approximately \$150,000 per year, for a total program budget of about \$300,000 per year.

Since 2013, three Caring Wisely<sup>®</sup> program annual cycles have been completed, encompassing 9 specific projects. The projects have been led by a variety of individuals including physicians, nurses, pharmacists, administrators, and residents, and topics have ranged from reducing overutilization of tests, supplies, and treatments to improving patient throughput in the perioperative period and reducing length of stay. Estimated cumulative savings to date from the Caring Wisely<sup>®</sup> program have exceeded \$4 million. We conclude that a program that empowers frontline project teams to work on crowd-sourced ideas with institutional leadership support and implementation science coaching is an effective strategy for reducing in-patient healthcare costs while maintaining high quality care. *Journal of Hospital Medicine* 2017;12:662-667. © 2017 Society of Hospital Medicine

Strategies are needed to empower frontline clinicians to work with organizational leadership to reduce healthcare costs and improve high-value care. Caring Wisely<sup>®</sup> is a program developed by the University of California, San Francisco’s (UCSF) Center for Healthcare Value (CHV), aimed at engaging frontline clinicians and staff, connecting them with implementation experts, and supporting the development of targeted interventions to improve value. Financial savings from the program more than cover program costs.

Caring Wisely<sup>®</sup> provides an institutional model for implementing robust interventions to address areas of low-value care.

Launched in 2013, the annual Caring Wisely<sup>®</sup> program consists of 3 stages for identifying projects that meet the following criteria:

- Potential to measurably reduce UCSF Health’s costs of care without transferring costs to patients, insurers, or other providers
- Plan for ensuring that health outcomes are maintained or improved
- Envision disseminating the intervention within and beyond UCSF
- Demonstrate commitment and engagement of clinical leadership and frontline staff.

The first stage is the Ideas Contest, a UCSF Health-wide

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**TABLE 1.** Key implementation science principles addressed by specific Caring Wisely® program components.

Key Program Components	Key Purpose
Ideas Contest	-frontline, target-audience input and engagement -promote social norms for reducing healthcare costs
Requests for Proposals	-confirm the opportunity gap, and the cost savings expectations -stakeholder input and engagement
Caring Wisely Steering (Executive) Committee	-ongoing, executive leader support for removing barriers & supporting critical new work
Works in Progress (WIP) Seminars	-teamwork; unique perspectives -design thinking enhanced by diverse perspectives -problemsolving -monitor progress
Launch Event and Media Campaign	-awareness and engagement -social norms/social ecology
Key Program Staff	Key Functions
Director & Program manager	-visible leader; effective communicator -implement communication strategy -mediate bidirectional relationships between projects & sponsor -maintain engagement of frontline and executive sponsors -plan sustainability/maintenance and dissemination phases
Data analyst	-measurement and feedback, which is critical for confirming care gaps, cost-saving opportunities, and guiding rapid cycle improvements
Implementation scientist(s) ... including behavioral/social scientists, economists, systems engineers, etc, as needed.	-help identify appropriate conceptual framework(s) for embedding theory into intervention design; build logic model -design process evaluation plan to inform rapid-cycle improvements -interpret findings from rapid-cycle feedback and guide adaptation
Data scientist	-apply data visualization techniques to catalyze behavior change

call (to learn more about UCSF Health: [https://www.ucsf.edu/sites/default/files/052516\\_About\\_UCSF.pdf](https://www.ucsf.edu/sites/default/files/052516_About_UCSF.pdf)) to identify areas that may be targeted to reduce unnecessary services, inefficiencies, and healthcare costs. We use a crowdsourcing platform—Open Proposals—to solicit the best ideas from frontline clinicians and staff.<sup>1</sup> Open Proposals is a secure, web-based platform for transparent and collaborative proposal development that displays threads of comments, responses, and revisions, and allows submissions to be “liked.” Open Proposals is managed by the UCSF Clinical and Translational Science Institute, funded by the National Center for Advancing Translational Sciences (Grant Number UL1 TR000004) at the National Institutes of Health. Using institutional e-mail lists for faculty, staff and residents, as well as described at monthly managers and directors meetings, the Ideas Contest is announced each year by the Chief Medical Officer and the CHV leadership. The Caring Wisely® Executive Steering Committee, which consists of CHV and senior UCSF Health system leaders, selects the top 5-10 ideas based on the above criteria. Each winning idea receives a \$100 gift certificate for a popular restaurant in San Francisco, and the list of winners is announced to the entire UCSF community.

The second stage is the Request for Proposals. The Caring Wisely® program solicits proposals that outline implementation plans to target specific areas identified through the Ideas

Contest. Finalists from the Ideas Contest are encouraged to submit proposals that address the problem they identified, but anyone affiliated with UCSF Health may submit a proposal on a winning idea. There is an approximately 4-week open submission period during which applicants submit brief 2-page proposals on the Open Proposal platform. This is followed by a period of optimization that leverages the social media aspect of the Open Proposals platform in which the UCSF Health community asks clarifying questions, make suggestions, and modifications can be made to the proposals. All submissions receive written feedback from at least one Steering Committee member. In addition, the Caring Wisely® Director directly invites relevant UCSF colleagues, administrators, or program leaders to comment on proposals and make suggestions for improvement. Plans for assessing financial and health care delivery impacts are developed in collaboration with the UCSF Health Finance department. UCSF Health managers and leaders who are stakeholders in project proposal areas are consulted to provide input and finalize proposal plans, including the identification of existing personnel who can support and drive the project forward. Proposers use this feedback to revise their applications throughout this stage.

The third stage is Project Implementation. The Caring Wisely® Executive Steering Committee selects up to 3 winners from the submitted proposals. Using the program crite-

**TABLE 2: A Structured Approach to Designing Interventions to Reduce Overuse of Healthcare Services**

	PLAN	DO	STUDY	ACT
Key Program Activities	Stakeholder engagement & alignment Define and measure overuse gap Establish behavior change target(s)	Learn from previous efforts to change target behavior Pilot test intervention components with key stakeholders Create community awareness and excitement Identify key champions	Identify key informants from frontline Measure intervention delivery and reach Employ strategy for real-time monitoring of target behavior	Feedback process and impact evaluation to key stakeholders. Engage stakeholders on sustainability plan.
Intervention Design Activities	Understand the target behavior* <sup>3</sup>	Intervene on the target behavior <sup>3</sup>	Conduct process and impact evaluation of intervention <sup>3</sup>	Revise design and implementation strategy
	1. What knowledge, attitudes, and social norms predispose to the target behavior?	1. Incorporate component(s) that address predisposing factors. Tailor to different audiences.	1. Evaluate impact of intervention on predisposing, enabling and reinforcing factors.	1. Based on process evaluation, do you modify strategy and/or which factors to target?
	2. What factors enable the target behavior? What factors impede the desired behavior?	2. Incorporate component(s) that make the desired behavior "easy" by redesigning work flows or eliminating barriers.	2. Measure impact of intervention on target behavior(s).	2. Does impact evaluation support the logic model?
	3. What factors reinforce the target behavior? **	3. Incorporate component(s) that reward/reinforce the desired behavior.	3. Measure impact of intervention on overuse gap.	3. Have new barriers emerged that were not obvious initially?

\*Perform this through literature review, as well as local institution exploration with relevant stakeholders

\*\*What "good" things happen to the individual when they perform the target behavior? What "bad" things happen to the individual if/when they stop performing the target behavior

ria above, each project is scored independently, discussed in committee, and rescored to identify the top proposals. Each selected project receives a maximum budget of \$50,000 that can be used for project materials, activities, and salary support for project leaders or staff. In addition to funding, each project team receives input from the implementation science team to co-develop and implement the intervention with a goal of creating a first-test-of-change within 3-6 months. A key feature of Caring Wisely® is the partnership between project teams and the Caring Wisely® implementation team, which includes a director, program manager, data analysts, and implementation scientists (Table 1).

The \$150,000 administrative budget for the Caring Wisely® program provides 20% support of the medical director, 50% support of a program manager/analyst, and 10% support of an implementation scientist. Approximately 5% support is donated from additional senior implementation scientists and various UCSF Health experts based on project needs. To make most efficient use of the Caring Wisely® program staff time with the project teams, there is a weekly 60-90 minute works-in-progress session attended by all 3 teams with a rotating schedule for lead presenter during the first 6 months; these meetings occur every 2-3 weeks during the second 6 months. Caring Wisely® program staff and the implementation scientist are also available for 1:1 meetings as needed. The Caring Wisely® Executive Steering Committee is not paid and meets for 90 minutes quarterly. Custom reports and modifications of the electronic health record are provided by the UCSF Health clinical informatics department as part of their operating budget.

The collaboration between the project teams and the implementation science team is guided by the Consolidat-

ed Framework for Implementation Research (CFIR)<sup>2</sup> and PRECEDE-PROCEED model—a logic model and evaluation tool that is based on a composite of individual behavior change theory and social ecology.<sup>3</sup> Table 2 illustrates how we weave PRECEDE-PROCEED and Plan-Do-Study-Act frameworks into project design and strategy. Each funded team is required to submit an end-of-year progress report.

Cost and cost savings estimates were based on administrative financial data obtained through the assistance of the Decision Support Services unit of the Finance Department of UCSF Health. All costs reflect direct institutional costs, rather than charges. For some projects, costs are directly available through computerized dashboards that provide year-to-year comparisons of specific costs of materials, supplies, and services (eg, blood transfusion reduction, surgical supplies project, OR efficiency program). This same dashboard also allows calculation of CMI-adjusted direct costs of hospital care by service line, as used in the perioperative pathways program evaluation. In other cases, the Decision Support Services and/or Caring Wisely® program manager created custom cost reports based on the key performance indicator (eg, nebulizer therapy costs consist of medication costs plus respiratory therapist time; CT scan utilization for suspected pulmonary embolus in emergency department; and antimicrobial utilization for suspected neonatal sepsis).

Ongoing monitoring and sustainability of Caring Wisely® projects is supported by the Caring Wisely® program leaders. Monitoring of ongoing cost savings is based on automated service-line level dashboards related to cost, utilization, and quality outcomes with quarterly updates provided to the Caring Wisely® Steering Committee. Depending on the project or program, appropriate UCSF Health senior leaders

**TABLE 3. Summary of Caring Wisely® Projects, Fiscal Year 2014 – Fiscal Year 2016**

Title	Project Objective	Principle Intervention Components	Target Patient Population	Primary Unit of Analysis	Balancing Metrics
Year 1: Fiscal Year 2014					
Blood Transfusion Reduction	Reduce excess red blood cell transfusion	Guideline education; Media campaign; EMR decision support	Orthopedic Surgery/Hospital Medicine → all hospital	Packed red blood cell units per hospital discharge	Return to OR
Nebulizer-MDI Transition	Promote transition to MDI within 24 hours of nebulizer therapy	Education; Media campaign	Hospital Medicine	Nebulizer treatments per hospital medicine discharge	Length of Stay Readmission
IV-to-PO Switch	Reduce IV meds in patients able to take PO meds	EMR audit tool with PharmD outreach	Patients receiving IV medications approved for interchange	Medication cost difference for accepted conversions	Return to IV therapy Length of Stay
Year 2: Fiscal Year 2015					
Surgical Supply Cost Reduction	Substitute lower cost surgical supplies when appropriate	Audit/feedback/profiles; Financial incentive	Neurosurgery, Orthopedic Surgery, OHNS	Operating room supply costs per department	Length of Stay Readmission
Perioperative Efficiency	Improve patient flow and efficiency in perioperative period	Community engagement; Process mapping; Audit/feedback/profiles	All surgical services at Mission Bay hospital	Average operating room turnover time per month	Return to OR
CT for PE Risk Prediction	Increase guideline-concordant use of CT for suspected PE	Guideline education; EMR prediction tool	Parnassus Hospital Emergency Department	CT scan per eligible emergency department patient	Length of ED Stay Return to ED for pulmonary embolus
Year 3: Fiscal Year 2016					
ERAS Pathways	Enhance patient recovery and experience after surgery	Education; Audit/feedback/profiles	Colorectal Oncology and Gynecologic Oncology Services at Mission Bay Hospital	CMI-adjusted direct cost per hospital discharge	Return to OR Length of Stay Patient Experience
Neonatal Sepsis Risk Prediction	Reduce prophylactic antibiotic use for babies at risk for sepsis	Education; EMR prediction tool	Newborns at Mission Bay Hospital	Antibiotic utilization per 100 eligible newborns	Return to NICU Length of Stay
Post-Operative Debrief	Identify and fix safety and quality issues	Education; EMR tool	All surgical services at all hospitals	Surgical safety climate score	OR turnover time

ABBREVIATIONS: CMI; case-mix index; CT, computed tomography; ED, emergency department; EMR, electronic medical record; ERAS, enhanced recovery after surgery; MDI: metered dose inhaler; NICU, neonatal intensive care unit; OHNS, otolaryngology, head and neck surgery; OR, operating room; PE: pulmonary embolus.

determine the level of support within their departments that is required to sustain the program(s). Ongoing monitoring of each program is also included in the strategic deployment visibility room with regular rounding by senior health system executives.

Since 2013, there have been 3 complete Caring Wisely® cycles. The Ideas Contest generated more than 75 ideas in each of the past 3 cycles, ranging from eliminating redundant laboratory or radiological studies to reducing linen and food waste. We received between 13-20 full proposals in each of the request for proposal stages, and 9 projects have been implemented, 3 in each year. Funded projects have been led by a variety of individuals including physicians, nurses, pharmacists, administrators and residents, and topics have ranged from reducing overutilization of tests, supplies and treatments, to improving patient throughput during the perioperative period (Table 3). Estimated cumulative savings to date from Caring Wisely® projects has exceeded \$4 million, based on the four projects shown in Table 4. The IV-to-PO switch program and the neonatal sepsis risk prediction project (Table 3) have been successful in reducing

unnecessary utilization, but cost and savings estimates are not yet finalized. Three funded projects were equivocal in cost savings but were successful in their primary aims: (1) increasing the appropriateness of CT scan ordering for suspected pulmonary embolus; (2) shortening operating room turnover times; and (3) implementing a postoperative debrief program for the systematic documentation of safety events, waste, and inefficiencies related to surgery.

We developed an innovative program that reduces hospital costs through crowdsourcing of ideas from frontline clinicians and staff, and by connecting these ideas to project and implementation science teams. At a time when healthcare costs have reached unsustainable levels, the Caring Wisely® program provides a process for healthcare personnel to make a positive impact on healthcare costs in areas under their direct control. Through the Open Proposals platform, we have tapped a growing desire among frontline providers to reduce medical waste.

A key criterion for the Caring Wisely® program is to propose changes that reduce cost without adversely affect healthcare quality or outcomes. While this is an important

**TABLE 4** Cost Savings and Balancing Metrics for Selected Caring Wisely® Projects

Title	Study Population	Outcome Measures	FY13	FY14	FY15	FY16	Total
Year 1: Fiscal Year 2014							
Blood Transfusion Reduction	All hospital discharges	Cost Savings	Baseline	\$871,885	\$839,887	(\$4,993)	\$1,706,779
		Return to OR		8.7%	9.3%	10.4%	
Nebulizer-MDI Transition	Hospital Medicine discharges	Cost Savings	Baseline	\$222,392	\$146,810	tbd	\$369,202
		CMI-adjusted ALOS	n/a	3.78	3.57	3.71	
		Readmission	17.5%	17.5%	17.0%	18.3%	
Year 2: Fiscal Year 2015							
Surgical Supply Cost Reduction	Orthopedic Surgery, OHNS, and Neurosurgery hospital discharges	Cost Savings		Baseline	\$836,147*	\$131,611*	\$967,758
		CMI-adjusted ALOS <sup>#</sup>		1.77	1.69	1.61	
		Readmission**		7.3%	7.6%	7.1%	
Year 3: Fiscal Year 2015							
ERAS Pathways	Gynecologic and Colorectal Oncology hospital discharges	Cost Savings			Baseline	\$1,366,358	\$1,366,358
		CMI-adjusted ALOS			3.65	3.30	
		Readmission			13.3%	12.3%	
		Recommend Hospital			92.7%	92.8% top box	
		Recommend Staff			65.4%	72.1% top box	
							\$4,410,097

\*Savings based on calendar year 2015 and 2016 to be consistent with recent publication of OR-SCOR evaluation<sup>†††</sup>30-day all cause readmission UHC definition

<sup>#</sup>CMI-adjusted ALOS was averaged across 4 departments: Neurosurgery, Orthopedics, OHNS and Spine

Abbreviations: ALOS, average length of stay; CMI, case mix index; ERAS, enhanced recovery after surgery; OHNS, otolaryngology, head and neck surgery

consideration in selecting projects, there is limited power to detect many of the most clinically relevant outcomes. We find this acceptable because many of the sponsored Caring Wisely® project goals were to increase compliance with evidence-based practice guidelines and reduce harms associated with unnecessary treatments (eg, blood transfusion, nebulizer therapy, CT scan, antimicrobial therapy). Selected balancing metrics for each project are reported by established quality and safety programs at UCSF Health, but we acknowledge that many factors that can affect these clinical outcomes are not related to the cost-reduction intervention and are not possible to control outside of a clinical research study. Therefore, any response to changes in these outcome and balancing measures requires further analysis beyond the Caring Wisely® project alone.

We believe one of the key factors in the success of the Caring Wisely® program is the application of implementation science principles to the intervention design strategies (Table 1). These principles included stakeholder engagement, behavior change theory, market (target audience) segmentation, and process measurement and feedback. Because we are conducting this program in an academic health center, resident and fellow education and engagement are also critical to success. In each project, we utilize the PRECEDE model as a guide to ensure that each intervention design includes

complementary elements of effective behavior change, intended to increase awareness and motivation to change, to make change “easy,” and to reinforce change (Table 2).<sup>3</sup>

The Caring Wisely® program—itsself a multifaceted intervention—embodies the same PRECEDE dimensions we apply to each specific project. The Ideas Contest serves as a tool for increasing awareness, attitudes, and motivation across the clinical enterprise for reducing healthcare costs. The support provided to the project teams by the Caring Wisely® program is an enabling factor that makes it “easier” for frontline teams to design and implement interventions with a greater likelihood of achieving early success. Timely measurement and feedback of results to the hospital leadership and broadcasting to the larger community reinforces the support of the program at both the leadership and frontline levels.

Collaboration between project teams and the Caring Wisely® program also provides frontline clinicians and staff with practical experience and lessons that they can apply to future improvement work. Project teams learn implementation science principles such as constructing a pragmatic theoretical framework to guide implementation design using CFIR model.<sup>2</sup> Incorporating multiple, rapid-cycle tests of change allows teams to modify and adapt final interventions as they learn how the target audience and environ-

ment responds to specific intervention components. Access to real-time, actionable data and a data analyst is essential to rapid cycle adaptation that allows teams to focus on specific units or providers. We also find that cross-fertilization between project teams working in different areas helps to share resources and minimize duplication of efforts from the clinical and staff champions. Partnering with UCSF Health system leaders at every phase of project development—from proposal selection, development, and final evaluation of results—enhances sustainable transition of successful projects into clinical operations.

The costs and coordination for the first cycle of Caring Wisely® were supported by the UCSF Center for Healthcare Value. Upon completion of the evaluation of the first cycle, UCSF Health agreed to fund the program going forward, with the expectation that Caring Wisely would continue to achieve direct cost-savings for the organization. The Caring Wisely team provides a final report each year detailing the impact of each project on utilization and associated costs. Currently, program costs are approximately \$150,000 for the Caring Wisely program leaders, staff, and other resources, and \$50,000 for each of 3 projects for a total program cost of \$300,000 per year. Projects included in the first three cycles have already saved more than \$4 million, representing a strong return on investment. This program could be a model for other academic health centers to engage frontline clinicians and staff in addressing healthcare costs, and lends itself to being scaled-up into a multi-system collaborative.

## LIST OF ABBREVIATIONS

UCSF—University of California, San Francisco; PRECEDE—Predisposing, Reinforcing, and Enabling Constructs in Educational Diagnosis and Evaluation; PROCEED—Policy, Regulatory and Organizational Constructs in Educational and Environmental Development

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