

VA Center for Applied Systems Engineering



VA-CASE

**Three Year Report
FY12-14**

Mission Statement

The VA-Center for Applied Systems Engineering (VA-CASE) aims to integrate Healthcare Systems Engineering (HSE) within VA healthcare delivery systems in order to:

- promote systems improvement and
- support the implementation of innovative models of care delivery.

VA-CASE's mission is to become a catalyst enabling collaboration among clinical, administrative, operations, academic, and research partnerships within VA healthcare at local, regional, and national levels.

Table of Contents



VA-CASE Mission/Vision	3
Director’s Letter	6
Program Overviews	8
VA-CASE Organization Chart	9
Partnerships and Collaborations	10
Progress Against AIMS	
AIM1: Education and Training Programs	13
AIM2: Creating the Supporting Infrastructure	14
AIM3: Deployment of Rapid Implementation Strategies	17
AIM4: Support Innovative Models of Care Delivery	19
AIM5: Translate Research into Practice	21
AIM6: Pursue External Funding	23
Innovation to Impact Deployment Strategy	24
Evidence-Based Management	25



Programs	
VHA Engineering Technical Assistance Program (VE-TAP)	26
Program Management Office (PMO)	34
Transactional Systems Program (TSP)	44
Professional Development	52
Clinical Partnerships in Healthcare Transformation (CPHT)	58
Data Engineering Resources (DER)	74
VISN11 Program	78
Financial and Staffing Data	84
Business Metrics	86
Appendix A: Leadership and Key Staff	88
Appendix B: VHA Facility/VISN Office Engagement Sites FY12-14	94
Appendix C: Relevant VA-CASE Publications/Presentations	96
Appendix D: Staff by Program	102
Appendix E: Complete Project Listing FY12-14	106

Letter from the Director

Each year, VA-CASE aims to transform the VHA healthcare enterprise through enabling state of the art design, development and deployment of the next generation of VHA clinical delivery and administrative systems. Through the tremendous efforts of our staff, faculty, and academic partners, VA-CASE is quickly becoming the primary resource for Health Systems Engineering expertise within VHA.

It has been exciting to see a growing number of new partnerships, engagement efforts, and program initiatives in FY12-14. Our organization continues to expand, cultivating dynamic collaborations with academic partners and VHA National Program Offices.

Here is a brief summary of VA-CASE's accomplishments in FY12-14:

Partnership

Through FY12-14, we were able to leverage our \$4.50M in annual core funding into a total of \$40M center funding through expanded partnerships with several VHA National Program Offices, including CBO Purchased Care and Business Policy Program, the Office of Patient Care Services, and the National Homeless Program Office.

Engagement

Our staff and faculty supported over 1200 on-site engagements across 147 VHA healthcare facilities, 15 VISN offices and 20 National Program Offices.



Innovation

Through the use of our *Innovation to Impact* rapid deployment strategy, we were able to deploy over 90 distinct initiatives across VHA, with average timelines from concept to field implementation at 12-18 months, while maintaining the highest levels of quality and customer satisfaction.

We are proud to recognize and celebrate these remarkable accomplishments of our VA-CASE staff and faculty, our primary academic partners—Wayne State University and Purdue University—and our many VHA and VA partners. We are especially grateful for the continued support of our sponsors and key stakeholders: the Indianapolis, Ann Arbor and Detroit VAMC Leadership teams, the VISN11 Leadership team, and VHA Quality Safety and Value (QSV).

Our vision for FY15+ is to continue expanding our applications of Health Systems Engineering to support the transformation of VHA healthcare. We look forward to realizing this vision through the exciting future projects and partnerships at VA-CASE.

Heather Woodward-Hagg

Heather Woodward-Hagg, PhD

Director

VA-CASE Overview

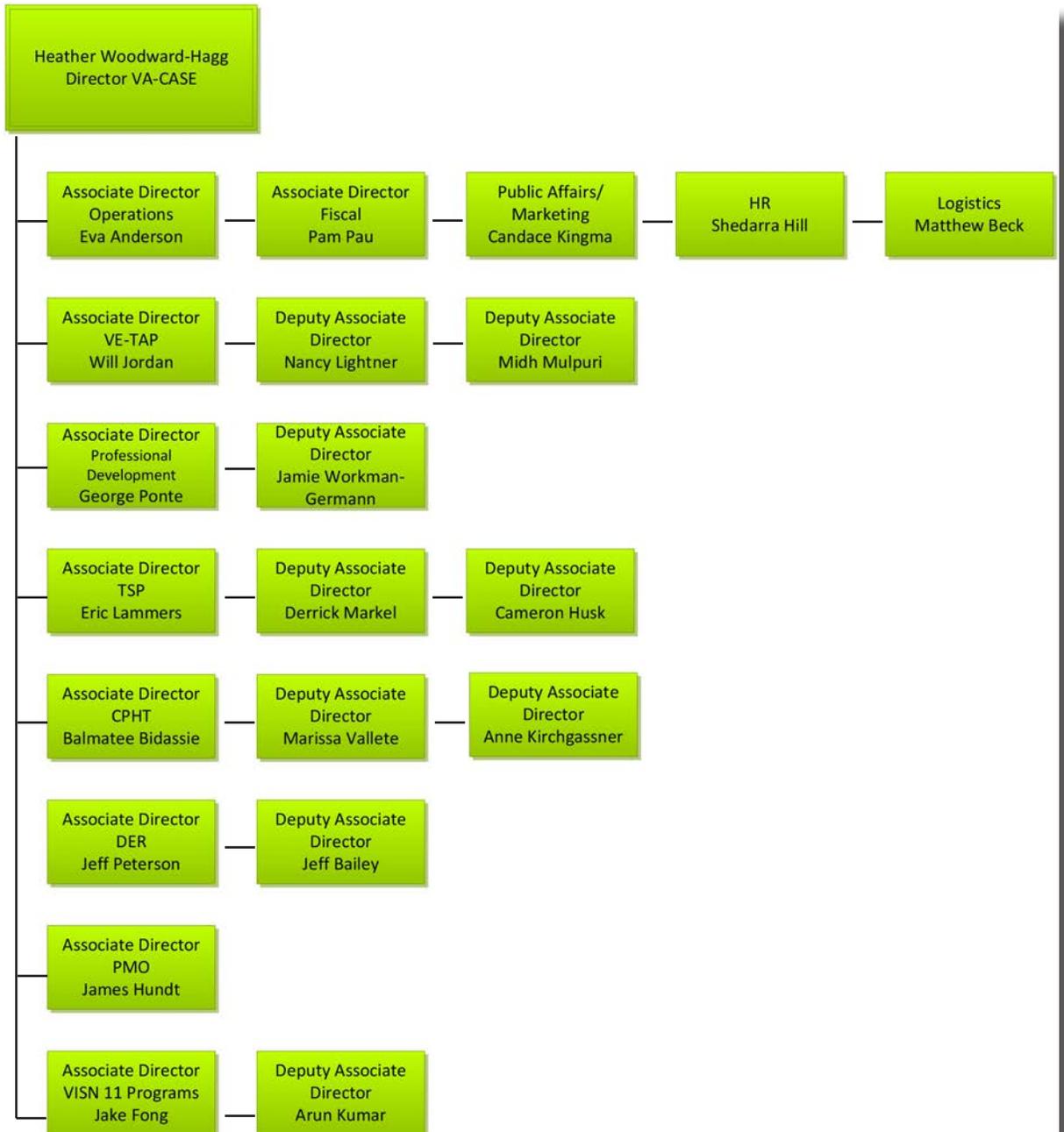
VA-CASE is an interdisciplinary Veterans Engineering Resource Center (VERC) built on a philosophy of partnership between Healthcare Systems Engineering (HSE) faculty and VHA administrative and clinical management and staff. Our center leverages the significant expertise present within VHA medical centers and affiliated academic partners in operational and technical systems engineering, informatics, and implementation science to facilitate transformation within VHA healthcare delivery systems.

VA-CASE is comprised of seven semi-autonomous program offices, each with a distinct focus, area of expertise and customer base. Each program is led by an Associate Director and at least one Deputy Director.

- VHA Engineering Technical Assistance Program (VE-TAP)
- Professional Development Program (PD)
- Transactional Systems Program (TSP)
- Clinical Partnerships in Healthcare Transformation (CPHT)
- Data Engineering Resource (DER)
- Program Management Office (PMO)
- VISN 11 Programs



VA-CASE Organizational Chart



VA-CASE Partnerships and Collaborations

VA-CASE staff and faculty consider our on-going partnerships with VHA National Program offices, as well as our academic affiliates, to be integral to the successful integration of HSE within VHA healthcare delivery systems.

The VHA and academic affiliate relationships were expanded to ensure a continuous stream of non-core funding, as well as Industrial/Systems and Informatics capacity to meet the needs of our customers.

Academic/Affiliate Partners

- Wayne State University
- Regenstrief Institute
- Purdue Center for Medication Safety Advancement
- Purdue School of Engineering & Technology
- Purdue-Calumet
- Indiana University School of Medicine
- Indiana University Purdue University - Indianapolis
- Worcester Polytechnic Institute
- University of North Carolina (UNC) Chapel Hill
- University of Georgia
- Northeastern University
- Northwestern University
- Miami University
- San Jose State University
- Wayne State University NSF Center for eDesign, Computational Intelligence and Design Informatics Lab



VA/VHA Partners

- Roudebush VA Medical Center, Indianapolis, IN
- Dingell VA Medical Center, Detroit, MI
- Hines VA Medical Center, Chicago, IL, Center of Innovation for Complex Chronic Healthcare,
- VA Ann Arbor Healthcare System
- VA Illiana Healthcare System
- VA Northern Indiana Health Care System
- Stroke QUERI
- HIV/AIDS QUERI
- Chronic Heart Failure (CHF) QUERI
- VISN 11 Network Office
- VISN 11 Contracting Office
- VHA Office of Patient Care Services (PCS)
- VHA Office of Patient Centered Care (OPCC)
- VHA Chief Business Office Purchased Care
- VHA Chief Business Office - Business Policy Office (CBO)
- VHA National ISO 9000 Compliance Division (ICD)
- VHA Office of Sterile Processing (OSP)
- VHA Office of Informatics/Analytics (OIA)
- VHA National Real Time Locating System PMO (RTLS PMO)
- VHA National Activation Office (NAO)
- VHA Central Patient Account Centers (CPACs)
- VHA Health Benefits Appeals (HBA)
- VHA Access and Clinic Administration Program (ACAP)
- VHA Office of Analytics and Business Intelligence (ABI)
- VHA National Program Kidney Disease
- VHA Center for Patient Safety
- VHA National Surgery Office (NSO)
- VHA Homeless Programs National Office
- VHA Office of Specialty Care (OSC)
- VHA Office of Specialty Care Service
- VHA Office of Systems Redesign and Improvement
- VHA Office of Rural Health (ORH)
- VHA Office of Construction and Facility Maintenance
- VHA Office of Policy and Planning (OPP)
- VHA Office of Human Resources and Administration
- DoD Bureau of Medicine, Navy Department



Specific AIMS/Key Drivers to Execution Against Primary VERC Functions

VA-CASE employs six specific AIMS/Key Drivers to catalyze change and innovation throughout VA Healthcare systems. Assessment of our impact on VHA is based on these AIMS.



1. Develop/implement education and training programs based in HSE disciplines, methods, and tools.
2. Optimize the VHA administrative infrastructure to allow integration of HSE resources into the executive leadership and the operational and clinical management structures of VHA facilities.
3. Deploy rapid implementation strategies, utilizing HSE techniques, such as Lean and Six Sigma, to enhance implementation and spread of transformed delivery processes.
4. Design, test and implement new clinical and administrative processes that support the development and implementation of innovative models of care delivery.
5. Support implementation, effectiveness and evaluation research that enables more rapid translation of clinical and health services research into practice, promotes innovation in operational processes, and enhances partnerships with researchers.
6. Pursue external, non-VA funding to support research and implementation of HSE within VISN11 and the rest of VHA.

VA-CASE made the impacts outlined on the following pages based on its AIMS/Key Drivers and on VHA Healthcare more broadly.

AIM1: Develop and implement training and educational programs based in HSE disciplines, methods and tools

VA-CASE training and educational programs focus on the development, dissemination and evaluation of HSE, Lean, Systems Redesign, and Clinical Informatics training programs for Senior Executive, Management, and Front-Line clinical and administrative staff.

Within our education programs, interdisciplinary teams composed of VHA and VA-CASE staff and faculty from our academic affiliates work to adapt traditional training curriculum to VA-specific requirements and develop innovative techniques for integrating accelerated learning methods. Significant accomplishments toward this aim include:

- **VHA Lean and Lean Six Sigma Training Programs:** The VA-CASE/ Purdue Lean and Lean Six Sigma Training, Education and Certification Programs have trained staff nationally in the Yellow Belt (Practitioner), Green Belt (Facilitator), Black Belt (Program Manager) and Senior Executive levels. Over 18,000 VHA staff and faculty participated in over 700 separate Lean and Lean Six Sigma Training and Facilitation Events. Since FY09, these programs have operated at a cost of ~30% of externally sponsored training, resulting in a cost savings to VHA of over \$17M.
- **VA Lean Practitioners Network:** The VA Lean Practitioners Network (VALPN) is an informal social networking forum for VA practitioners of Lean Healthcare hosted by VA-CASE staff and faculty. To date, this network has over 600 regular VHA participants.
- **VHA Lean Certification:** VA-CASE developed and deployed an internal VHA Lean Certification Program at the Yellow Belt, Green Belt and Black Belt Levels. To date, 2100 VHA staff have enrolled in this program.
- **Lean Management Pilots:** VA-CASE successfully launched a Lean Management Pilot across 10 VHA facilities in order to test the translation of transformational Lean Deployment Strategies within VHA. Participating pilot sites receive Lean Sensei and facilitation/training support in order to develop and test a Continuous Improvement Culture, including expertise and guidance in Large-Scale, System-level improvement efforts (Value Streams); Small-scale, unit-level improvement efforts (Continuous Daily Improvement); Strategic Deployment; and Leadership Development.

AIM1 Impact to VHA:

- Over 18,000 staff participated in Lean and Lean Six Sigma Training Programs, with over 2100 staff participating in Lean certification.
- \$17M in cost savings (as compared to training costs for external programs).
- Lean Enterprise Transformation strategy was translated and is now in testing/validation at 10 VHA facilities.

AIM2: Optimize the VHA administrative infrastructure to integrate HSE resources into the executive leadership, operational and clinical management structures of VHA facilities

VA-CASE support for optimizing AIM2 has focused on three primary areas: 1) building healthcare-based HSE capacity through active recruiting and effective staff development; 2) supporting development of a more robust informatics infrastructure; and 3) initiating and supporting programs that facilitate executive leadership engagement with HSE and operations and clinical management.

In support of this AIM, VA-CASE provided primary HSE support to several high-visibility national initiatives, including the Office of Informatics and Analytics (OIA) T-16 HMP/Hi2 Usability Analytics Project, the National Homeless Program Office, and the Health Benefits Appeals Office.

Significant accomplishments include:

- **IE/HSE Recruitment:** In FY12-14, VA-CASE successfully recruited and hired an additional 40 BS/MS/PhD level Industrial Engineers and Informatics staff for a total of 83 BS/MS/PhD level Industrial and Systems Engineers and Informaticists, with an average retention rate of 98%.
- **Engineering Intern/Co-op Program:** VA-CASE established an engineering internship program for which the Pathways Program was utilized to recruit and hire students and recent college graduates. Since its inception in FY13, we have hired 12 interns, 8 of which have graduated and have been converted non-competitively to positions with VA-CASE or other departments within the Richard L. Roudebush VA Medical Center.
- **Executive Sensei Program:** As part of the Lean Management System Pilot program, VA-CASE provided Executive and Mid-level Lean Sensei support to Lean Management Systems Pilot site leadership teams. This support includes mentorship and coaching on the application of Lean tools and methods, including A3 Thinking, Continuous Daily Improvement, Strategic Alignment/Deployment, Rapid Improvement, and Daily Management at the executive and mid-management levels—in support of Lean Enterprise Transformation.
- **Hi2 Usability Analytics:** Through the hi2 Usability Analytics Project, VA-CASE investigated the feasibility and potential value of creating a Usability Analytics Platform to monitor the efficiency, effectiveness, and satisfaction of the emerging

Health Management Platform (HMP). The hi2 project produced a business case for why a usability analytics platform is necessary for the continued improvement of Electronic Health Records (EHRs) and the quality of healthcare provided to our Veterans.

- **Health Benefits Appeals:** VA-CASE partnered with CBO's Business Policy department to design, develop, and implement an extensive database and corresponding web-based application for CBO's Health Benefits Appeals (HBA) process. The HBA process is an administrative procedure that provides Veterans with a method for requesting a review of an adverse decision issued by the VHA regarding a requested benefit. The developed applications significantly improved visibility into the appeals process, as well as CBO's ability to track and monitor health benefits appeals.
- **Make/Buy Decision Models:** VA-CASE faculty and staff developed computer-based cost models allowing for service-specific and area-specific decisions regarding the internal versus external cost comparison of Specialty Care Services. The goal is to develop computer-based decision models that VA can use to aid decision-making by VA physicians and facilities as care needs are identified. Make/Buy models for Dialysis, GI Clinical Procedures, Polysomnography/Sleep Studies and Acute Stroke/tPA were developed and deployed at the national level.
- **Integrating Systems Engineering into Homeless Programs Operational Planning:** The VHA Homeless Program partnered with VA-CASE to complete a gap analysis of VHA homeless programs. This analysis utilized a planning scenario to identify the current and projected numbers of homeless Veterans between 2013 and 2015 by VAMC catchment area. It also identified current and projected VA and community assets available to address the needs of homeless Veterans. Estimated needs and assets were compared to determine whether VA and VAMC catchment areas had sufficient resources to meet the estimated needs of homeless Veterans through the end of 2015. A first phase of the gap analysis was completed at all 147 VAMCs.
- **Patient Panel Size Intensity Adjustment Model for Patient Aligned Care:** VHA's Office of Informatics and Analytics (OIA) desired to modify and improve the current model to calculate primary care work intensity scores. VE-TAP Team examined the existing model and, based on the evaluation, identified opportunities for improvement in the model for prediction accuracy. The proposed version of the model combines patients' health conditions with their demographic information to predict their total demand on Primary Care (including telephone encounters) on a yearly basis. To assist in Primary Care management, the patient-level data was further aggregated to the provider, division, and station levels. By identifying panels of comparative predictable workloads, the total workload among providers was balanced as part of the new team-based healthcare system.
- **VA PAIRS Project:** The Practical Application of Intimate Relationship Skills (PAIRS) is an educational tool utilizing couples' counseling retreats to teach communication skills. The VA National Chaplain Service required

a systematic review of the PAIRS model, and the VA PAIRS Project was developed in response. As part of the VA PAIRS Project, VA-CASE developed a framework to integrate, sustain, and expand the PAIRS model. Our team evaluated the current program to document business processes, track key metrics throughout program implementation, and develop a national-level sustainment plan for the VA PAIRS program.

- **Readmission Causal Analysis and Resolution Toolkit (RCART):** This project is designed to evaluate and improve patient re-admission rates by providing methodologies for identifying patients prone to high re-admission, and proactively targeting solutions to reduce the factors that lead to re-admission after in-patient treatment. A web-based toolkit was developed to assist providers in extracting and analyzing the relevant data to identify high risk readmission patients, detect the related factors leading to potential readmission, and administer appropriate interventions for high-risk patients. Models are currently in validation.
- **Beneficiary Travel:** The Beneficiary Travel (BT) initiative is a nationwide effort to improve and standardize processes for Veteran Travel across VHA. VA-CASE Clinical Application Coordinators (CACs) designed content and programming, created VistA/CPRS templates, maintained documentation and completed a technical installation guide for these CPRS templates.

AIM2 Impact to VHA:

- Capacity/expertise of 80 fully-integrated IE/OSE/Informatics technical staff within VA-CASE
- Significant expansion in the application of Systems Engineering within executive, operations and clinical management within VA departments (Office of Informatics/Analytics, Office of Patient Care Services, Office of Patient Centered Care, VA Office of Policy and Planning, Health Benefits Appeals, Chief Business Office).



AIM3: Deploy rapid implementation strategies to enhance implementation and spread of transformed delivery processes, utilizing HSE techniques such as Lean and Six Sigma

Primary support for AIM3 comes from VA-CASE Professional Development Program and VHA Engineering Technical Assistance Program (VE-TAP).

The Professional Development Program provides local and national capacity for coaching interdisciplinary teams to apply rapid implementation strategies, such as Lean and Six Sigma, that improve and optimize current administrative and clinical delivery processes. VA-CASE initiatives supporting AIM3 utilize the training and innovative methods developed in AIM1 and AIM2 to facilitate the implementation of transformed delivery processes outlined in AIM4.

Achievements toward AIM3 include:

- **Lean Management Pilots:** Ten Lean Management System (LMS) pilot sites conducted 30 Value Stream Analysis sessions and over 200 Rapid Improvement Events, with over 2100 unique staff participating in these events. Additionally, these sites initiated Continuous Daily Improvement activities in over 135 departments, resulting in the implementation of over 2500 localized improvements.
- **Knowledge Management:** VA-CASE partnered with the HIV/AIDS QUERI to expand the library of Improvement Resource Guides (Toolkits) to include Lung Cancer, Prostate Cancer, Colorectal Cancer, Head and Neck Cancer, Palliative Care and PACT Improvement Resource Guides. These web-based tools provide a centralized location for Systems Redesign teams to manage and share information related to the timeliness and reliability improvement of the continuum of Cancer Care. These sites have received over 15,000 unique users since their launch in September 2010.
- **National Activations Office Knowledge Management Portal (NAO KMP):** VA-CASE analyzed the FY14 work requirements for the NAO and developed a 2nd iteration Knowledge Management Portal (KMP) to allow NAO to focus on enterprise customer needs and the design and

expansion of internal processes, while simultaneously constructing virtual collaboration, communication and oversight for knowledge portal functions.

- **Utilization Management Toolkit Development:** Sponsored by the Office of Utilization and Efficiency Management, VA-CASE is providing a mixed-methods evaluation of high-performing Utilization Management (UM) sites across VHA, making recommendations for models that could be spread within UM sites, and compiling content for a new online toolkit to support improved delivery of UM within VHA facilities.
- **VA-CASE Toolkit Series:** The Toolkit Series is a unique partnership between the Office of Patient Care Services, Office of Quality and Performance, Office of Systems Redesign, the QUERI programs, and VA-CASE that creates access to collections of ready-to-use, concrete innovations (tools) that can be implemented in departments and facilities to assist with improved processes and clinical performance. To date, this series has over 12,000 subscribers and 17,000 unique visitors across Cancer, PACT and Specialty Care Toolkit Series.
- **Wounded Warrior Project Lead Coordinator Support Project:** The Lead Coordinator (LC) model was created by a joint task force between DoD and VA for better Wounded Warrior Care Coordination. To evaluate the success of this model, VA-CASE is providing analysis, feedback and monitoring of the primary metrics associated with this program.
- **Rapid Process Improvement Workshops (RPIWs):** VA-CASE has conducted 170 RPIW Facilitation Training Courses (with 2600 participants), certified 69 RPIW facilitators across VHA—and another 351 are in queue to be certified.
- **Virtual Rapid Process Improvement Event Facilitation (RPIE) Workshops:** In FY13, VA-CASE staff and faculty developed and piloted a virtual training program for RPIE facilitators utilizing flip instruction methods. Six sessions were conducted in FY13/FY14, including thorough evaluation to compare/contrast effectiveness against traditional face-to-face facilitation instruction.

AIM3 Impact to VHA:

- Rapid Deployment strategies, including Rapid Process Improvement Workshops and our *Innovation to Impact* Deployment Model, fully translated, validated and utilized across VHA
- Innovative Knowledge Management Strategies fully developed, successfully applied, and effectively spread across multiple clinical pathways, with over 17,000 unique users.
- Lean Management Pilots successfully integrated rapid improvement techniques throughout the organizations as part of enterprise transformation efforts.
- Wide-spread recognition by VHA as a leader in HSE translation, application, and diffusion within healthcare delivery through our extensive publication and presentation portfolio.

AIM4: Design, test and implement new clinical and administrative processes that support the development and implementation of innovative models of care delivery

VA-CASE has provided significant support to national VHA programs in developing and testing innovative strategies for redesign, evaluation and characterization of optimal VA clinical and administrative processes.

To achieve AIM4, project teams work to fundamentally redesign administrative and clinical processes to optimize the quality, timeliness and cost of healthcare delivery. Pilots of innovative processes developed and tested—including Re-Usable Medical Equipment, Fee Basis Claims System Software Optimization, Non-VA Medical Care Coordination, Surgical Flow and Specialty Care—are currently in national roll-out. Significant accomplishments associated with AIM4 include:

- **Specialty Care Collaborative:** VA-CASE provided support to 23 facility-based teams in the VHA National Specialty Care Collaborative (Pilot Phase). VA-CASE Industrial Engineers provided support for the development/deployment of measurement tools and knowledge management to inform the Collaborative and further refine the PACT Change Package.
- **Surgical Flow Improvement Initiative:** VA-CASE provided coaching, facilitation and coordination support for the National VHA Surgical Flow Improvement Initiatives (SFII). The SFII provided a hybrid collaborative model, with integration of virtual symposia and on-site Rapid Process Improvement Workshops (RPIWs) facilitated across 20 participating facilities (40 RPIWs) by VA-CASE staff/faculty.
- **Fee Basis Claims System (FBCS) Optimization:** VA-CASE, in partnership with the Chief Business Office Purchased Care (CBOPC) Program, completed Alpha and Beta testing for optimized FBCS work processes. The results showed significant improvement in claims processing times and volume of claims processed per day. This project is currently in full national deployment.
- **Non-VA Medical Care National Standardization (NVNS):** The NVNS project is a collaborative effort between CBOPC and VA-CASE to standardize business processes associated with the execution, management, and oversight of all Non-VA Medical Care programs and functional areas. The NVNS project encompasses the entire Non-VA Medical Care process, from

the time a consult for Non-VA care is entered into CPRS until the claim is received and paid, as well as the following seven program/functional areas: Hospital Notification, Referral Requests/Authorizations, Customer Service, FBCS Claims Processing, VistA Claims Processing, Appeals, and Financial Management.

- **Clinical Program Consulting:** CBOPC–Business Systems Management (CBOPC–BSM) requested VA-CASE provide clinical consulting services to support enterprise-wide deployment of the Non-VA Medical Care Coordination (NVCC) model; 2) ensure the alignment of clinical business processes between NVCC and the future VHA non-VA medical care software package (Health Claims Processing, or HCP); and 3) assess clinical business components across 22 CBO Purchased Care initiatives. Additionally, VA-CASE was asked to ensure that the HCP business requirements, and their supporting business process/IT systems, met VHA clinical standards of practice. The VA-CASE team created and provided CBOPC–BSM with formal reports featuring outcomes and process maps from each workgroup. Additional project accomplishments include VA-CASE/R&D faculty member, Dr. Virginia Daggett’s development of a report that set forth the Routine Newborn Care Clinical Guidelines, as well as a gap/impact analysis of the 22 CBOPC initiatives.
- **Near Real Time Decision Support System Project (NRT DSS):** The NRT DSS project, currently in pilot at the Detroit VAMC, uses a System of Systems (SoS) approach to implement a framework for automation of the sterile processing cycle based on the Interactive Visual Navigator (IVN).
- **Interactive Visual Navigator (IVN):** IVN is a web-based application that presents interactive, multimedia instructions for the RME reprocessing procedure. IVN features an automated and dynamic work flow process, incorporating systems and human factors engineering principles to ease technician burden, reduce error in re-processing, provide automated data collection, support Quality Management requirements and reporting, and provide safer and better care to Veterans. The system development and deployment includes an iterative user-centered design process that relies on user feedback at each stage in Continuous Engineering Development (CED). IVN is current in deployment at 5 VHA sites.
- **Veteran Centered Design (VCD) Lab:** The Veteran-Centered Design Lab (VCD) is an innovative program in VA-CASE that utilizes a multi-disciplinary, human-centered approach to Design Thinking to transform both the delivery and experience of our Veterans’ Healthcare. The Richard L. Roudebush VAMC partnered with VE-TAP to facilitate a Stakeholder-driven, conceptual design process with the goal of consolidating these various services into an integrated, Veteran-Centered Cancer Care Center, as well as to optimize Pathology and Laboratory Services.

AIM4 Impact to VHA:

- Facilitated successful development, testing and national deployment of innovative models of care delivery across 7 distinct clinical and administrative processes within VHA (Cancer, PACT, Specialty Care, Surgical Flow, Non-VA Medical Care, Claims Processing, RME).
- Over 39,000 days of Industrial Engineering/Informatics support at a cost savings of over \$24M as compared to external consulting support + IVN purchase.

**AIM5:
Support
implementation,
effectiveness and
evaluation research
that enables more
rapid translation of
clinical and health
services research into
practice, promotes
innovation in
operational processes
and enhances
partnerships with
researchers**

VA-CASE has broadened existing collaborations to connect operational improvement and clinical researchers in VA to VERC faculty and staff.

We leverage the research expertise at our participating facilities by: (1) identifying and implementing evidence-based improvements in the delivery of healthcare (especially those developed and tested by our faculty); (2) designing strategies for implementing VERC initiatives that facilitate their adoption based on findings from the field of implementation science; (3) identifying opportunities for complementary research funding; and (4) developing research proposals for projects of mutual interest between the VERC and research centers. Significant accomplishments toward AIM5 include:

- **INSPIRE Stroke Collaborative:** The Intervention for Stroke Performance Improvement Using Redesign Engineering (INSPIRE SDP 09-158) received funding in January 2010 through a partnership with the VHA Stroke QUERI. VA-CASE staff is working to assess the impact of 1) OQP Stroke Special Project data on facility stroke improvement activities, and 2) SR-based intervention vs. quality indicator feedback alone on the improvement of two in-hospital indicators.
- **Lean Management System Deployment Strategy and Interactive SD model:** VA-CASE staff, led by Dr. Heather Woodward-Hagg, conducted a realist review of successful non-VA Lean Enterprise Transformation sites. The team also identified common strategies and mechanisms enabling the development of a robust Lean Management System operational deployment strategy and interactive system dynamics model to enable testing and refinement of deployment strategies. This work is currently utilized to support the VA-based Lean Management System pilot.
- **Serious Gaming for Stroke Policy:** The VA Stroke QUERI is actively engaged in identifying opportunities for advancement in Stroke Care for Veterans. VA-CASE developed an experimentation and gaming model to help the Stroke QUERI advance strategic thinking regarding

Stroke Care. VA-CASE Industrial Engineers collaborated with affiliate faculty to create a compact System Dynamics model of the VA Stroke System of Care and conduct multiple experimentation sessions with the Stroke QUERI. The tool will be deployed to the broader Stroke community and utilized by Stroke QUERI during their Strategic Planning cycle in FY14.

- **VA-CASE/R&D faculty member, Dr. Virginia Daggett**, and collaborators developed and submitted several proposals for funding, including a Care Intervention Program for stroke and traumatic brain injury (TBI) (TASK); Stroke QUERI Rapid Response related to Nursing Education development in the delivery of High Quality Stroke Care; VETS-CARE TBI iOS application; Collaborative Attitudes of Physicians and Nurses; and the Effect of Safe Patient Handling on Acute Care Patient Falls with Injury.
- **JGIM supplement:** Dr. Balmatee Bidassie, the VA-CASE CPHT Associate Director, organized a team of authors from VHA Medical Centers to develop a series of 10 manuscripts for submission to *JGIM* for a VHA PACT supplement in May 2013.

AIM5 Impact to VHA:

- Joint R&D/HSR&D/VERC funded faculty: 7 Investigators (Edward Miech, Debi Griffith, Allissa Russ, Jason Saleem, Virginia Daggett, Elizabeth Sternke, Jaime Ringer, Amy Strasburger), 2 Clinical Applications Coordinators (Jeff Fahner, Carlton (Mike) Fancher), and 3 Staff/Faculty (Angela Harris, Pearl Howard, Kathy Carlson)
- R&D/HSR&D/QUERI/SDP proposals submitted by VERC co-funded faculty:
 - “Telephone Assessment and Skill-building Intervention for Informal Caregivers” (Caregivers of Veterans post TBI and/or stroke), 4-year Nursing Research Initiative (NRI) with total budget of \$1,093,000, started October 2013
 - “Applying a B-TIME Approach to Implement Evidence Based Stroke Dysphagia Screening”, 4-year SDP with total budget of \$1,628,800, starting January 2015
 - High-functioning stroke teams: Evaluation of nurse champion roles and practices”, 1-year Rapid Response Proposal (RRP) with total budget of \$97,359, resubmitting for funding September 2014
 - “TBI in Outpatient Settings: Assessing Needs of Veterans, Caregivers and VA Staff” 1-year RRP with total budget of \$91,742, resubmitting for funding December 2014.
 - RE-INSPIRE (approved; 3-year SDP with total budget of \$946K, project started in April 2011, completed in 2013)
 - TASK (approved; 4-year \$1M, started in 2013)
 - Russ CDA (approved; 5-year \$563,000 started in 2013)
 - IMPROving Outcomes for VEterans with Diabetes - IMPROVED grant – approved 2014 – in Just-in-Time phase so no start date and budget established
 - Increasing Adoption of Home Dialysis in VA, start date 10/1/2014 for 18 months, \$149,900 budget

AIM6: Pursue external, non-VA funding to support implementation and research of Operational Systems Engineering (OSE) within VISN 11 and the rest of VHA

VA-CASE and our partners are pursuing funding and resources from other organizations that fund engineering research, healthcare research, and healthcare operations improvement.

In future years, we anticipate pursuing funding in partnership with engineering, medicine, nursing, and other academic programs at Purdue University, University of Michigan, Wayne State University, and other academic affiliates. Examples of potential funding sources include: Agency for Healthcare Research and Quality (AHRQ), Blue Cross organizations, Institute of Medicine (IOM), National Science Foundation (NSF), and Robert Wood Johnson Foundation (RWJF). Successful achievements related to AIM6 include:

- **National Science Foundation Grant:** Dr. Kai Yang and other VA-CASE Affiliate Partners were awarded a \$552,000 National Science Foundation grant to find efficiency models for Patient-Centered Medical Homes (PCMH), a model that improves health outcomes by focusing services on primary care. This is our first external (non-VA funded) grant for internal VA work.
- **Partnerships for Innovation—Accelerating Innovation Research Alliance (NSF):** VA-CASE partnered with Northeastern University to submit a proposal for up to \$800,000 of matching funds to support translation of research from the CMS Innovation Center for Healthcare Systems Engineering into VHA Healthcare Delivery. If funded, this RFP would provide support to "... accelerate the translation and transfer of existing research discoveries into competitive technologies and commercial realities, to promote the development of and/or the extension of an academic-based innovation ecosystem around an NSF-funded research alliance, and to enhance knowledge and practice of innovation in faculty and students."

AIM 6 Impact to VHA:

- \$552,000 external funding for research directly applicable to VHA
- Up to \$800,000 external funding for translation of Health Systems Engineering research into VHA healthcare delivery (if funded).

Innovation to Impact Deployment Strategy

One of VA-CASE’s core strengths is the application of Rapid Cycle Innovation, Implementation, and Impact strategies for project deployment in each of our primary programs. Phases of this strategy include:

Innovation Phase:

Planning: During the planning phase, initial customer insights lead to the identification of problems and the development of an initial project proposal. Proposals are developed and vetted through a review process.

Current State Analysis:

Within this phase, current state assessment and evaluation is completed.

Proof of Concept: Initial future state is developed and the innovation is fully integrated.

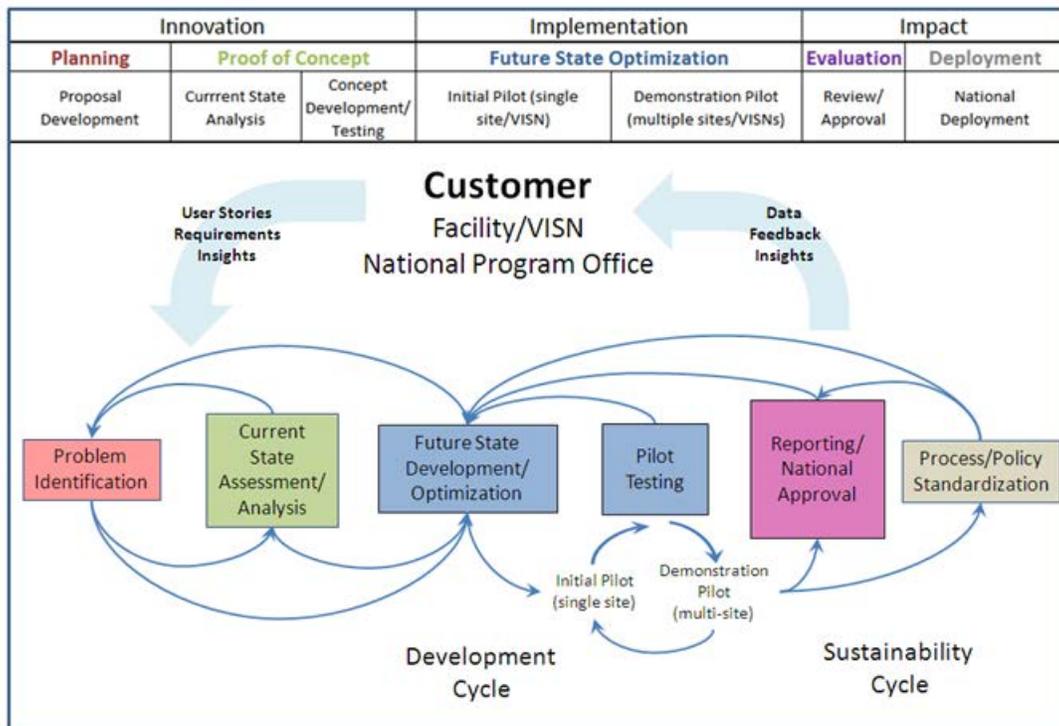
Implementation Phase:

Future State Optimization: Following future state development, pilot testing is conducted in progressively more complex environments (single site to multiple sites/VISNs). The primary characteristic of this phase is the rapid, customer-centered, continuous development cycle to inform optimization of the future state.

Impact Phase:

Evaluation: Reporting and national approval for the optimized future state is obtained.

Deployment: National implementation, reporting/auditing and policy changes implemented as appropriate.

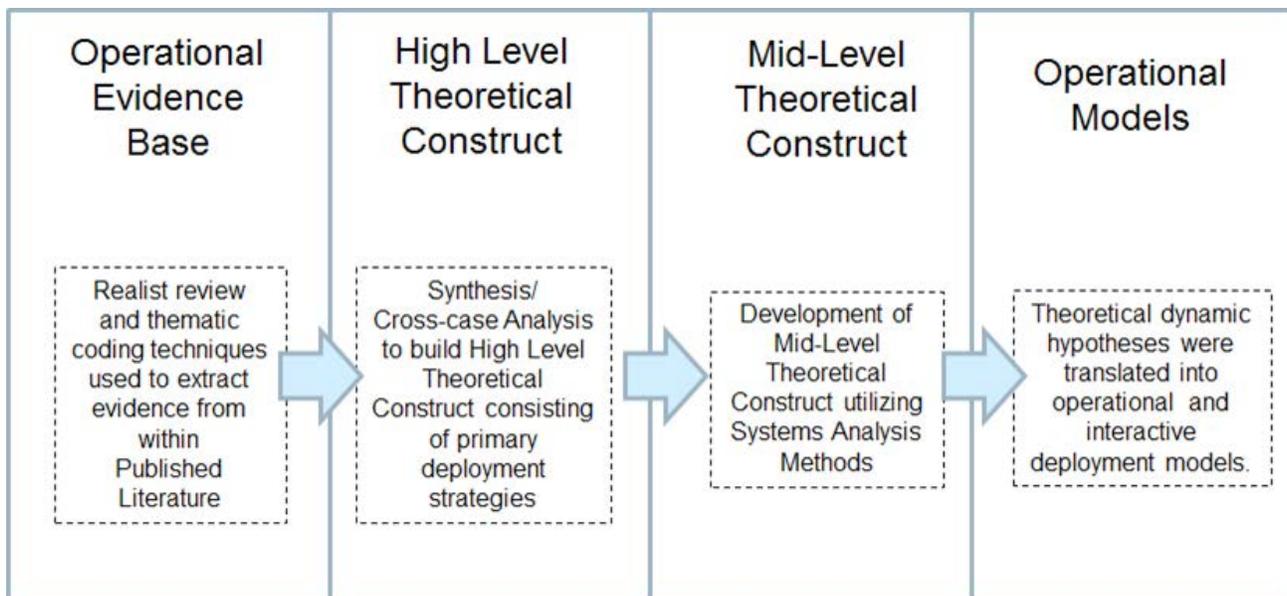


Evidence Based Management (EBMgt)

Evidence Based Management (EBMgt) describes the translation of research evidence base into management practice. This field is analogous and complimentary to the clinically based Evidence Based Practice (EBP) efforts that facilitate translation of the clinical evidence base into provider practice.

VA-CASE developed and deployed the following framework for the integration of systems approaches within an Evidence Based Management (EBMgt) Framework:

1. Build the Operational Evidence Base: Realist review and thematic coding techniques are used to extract key operational evidence.
2. Synthesize Evidence into High-level Theoretical Construct: Cross-case analysis methods are used to compare, contrast and synthesize the evidence base from the Realist Review into high level deployment strategies and primary outcomes.
3. Develop Mid-level Theoretical Construct: The synthesized evidence base is translated into mid-level theoretical dynamic hypotheses.
4. Translate into Operational Model: Key parameters and model structure of theoretical dynamic hypotheses are translated into interactive Operational Deployment Models.

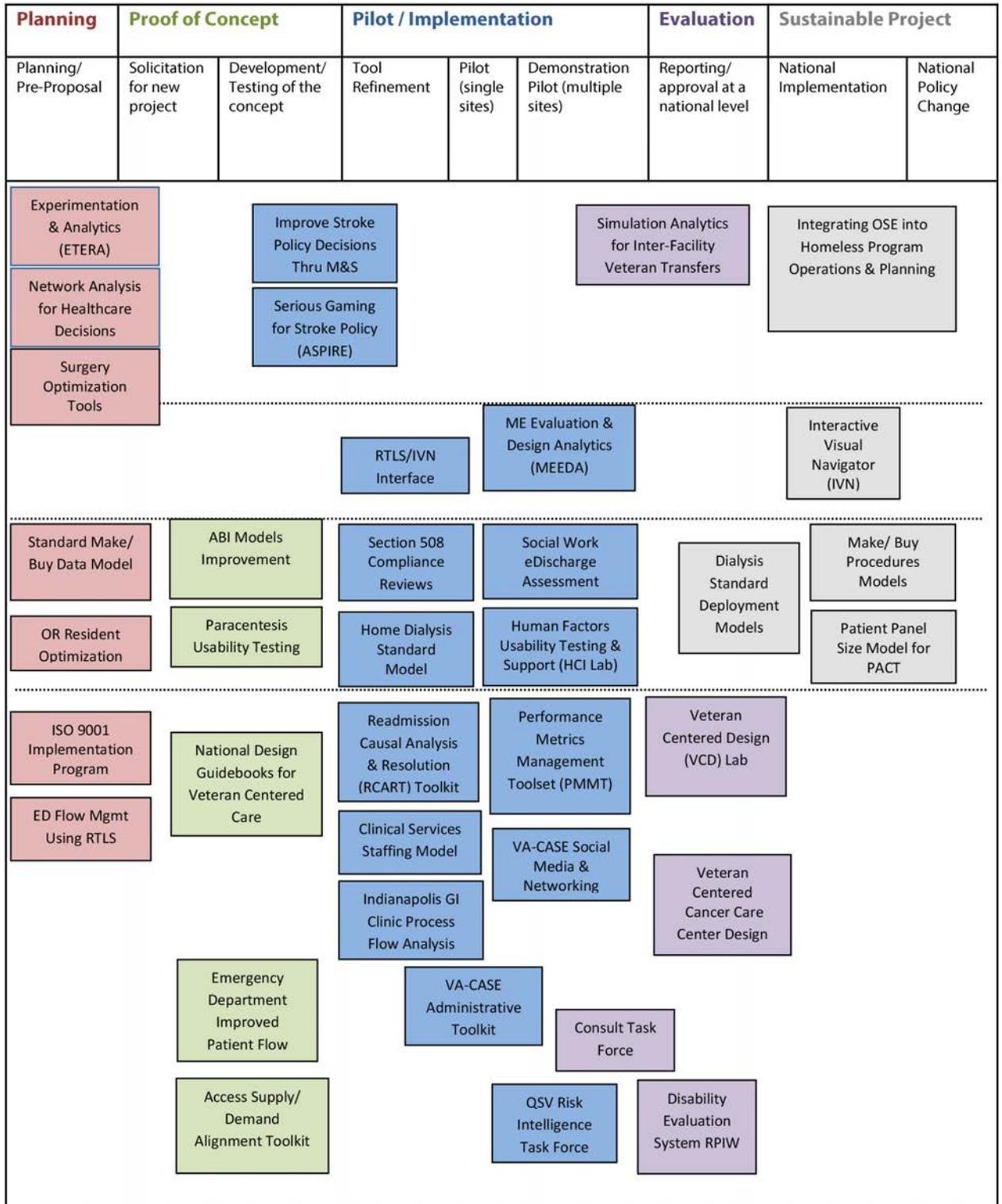




The VHA Engineering Technical Assistance Program (VE-TAP) provides training, mentoring, facilitation, and implementation in applying Operational Systems Engineering (OSE) rapid deployment strategies and advanced OSE tools within VHA, VISN11, and the VHA National Systems Redesign Programs. As an integrated strategy to provide Veterans with timely access to quality healthcare services, VE-TAP provides innovation for decision-making and operational assistance for achieving VA Strategic Objectives through the application of Healthcare Systems Engineering and System of Systems approaches and techniques. VE-TAP partners with National Program Offices to redefine approaches to issues that offices either encounter routinely or acquire as a result of special circumstances. When contracted, each new VE-TAP project is assigned a project manager and qualified personnel to address specific customer needs. Five VE-TAP service Program Lanes were developed from customer needs over the last five years:

- Applied Informatics Modeling & Simulation (AIMS) Services
- Medical Equipment Services (MES)
- Advanced Engineering Assessment Services (AEAS)
- Strategic Support Services (S3)
- Program Management Office (PMO) Services

VE-TAP Project Pipeline



Homeless Program Support Using Intergrated Operational Planning

VA-CASE is developing and deploying Integrated Operational Planning capabilities to focus VHA Homeless Programs operations at VAMC, VISN, and national levels on achieving the VA strategic target of ending Veteran homelessness. This framework includes three major capabilities: Gap Analysis, Operating Plans, and the Operational Planning Hub.

Program Objectives

The VHA Homeless Programs partnered with VA-CASE to conduct a gap analysis of VHA Homeless Programs. This analysis utilized a planning scenario that identified the current and projected number of Veterans facing homelessness between 2013 and 2015 by VAMC catchment area.

Program Results

Using the Gap Analysis Tool, each VAMC identified current and projected VA and community assets available to address the needs of Veterans facing homelessness. Estimated needs and assets were then compared to determine whether VA and VAMC catchment areas had sufficient resources to meet estimated needs through the end of 2015. Each VAMC identified operational improvement and community partnership strategies to develop their customized roadmap to ending Veteran homelessness.

Program Impact

VAMCs are using the Operating Plan Tool on a monthly basis to develop, track and continuously update this roadmap. The Operational Planning Hub further organizes Integrated Operational Planning

activities, providing easy access to key data and promoting dissemination of best practices throughout the system. While FY14 focused on rapidly developing and deploying the framework across the nation, FY15 will focus on disseminating and driving informed action throughout Homeless Programs operations nationwide.



Integrated Operational Planning Activities for Homeless Program Support

Interactive Visual Navigator (IVN) Program

Interactive Visual Navigator (IVN) provides an automated and dynamic work flow process, incorporating systems and human factors engineering principles to ease technician burden, reduce error in reprocessing, automate data collection, support Quality Management requirements and reporting, and provide safer and better care to Veterans. System development and deployment includes an iterative user-centered design process that relies on user feedback at each stage in the Continuous Engineering Development (CED) cycle.

Program Objectives

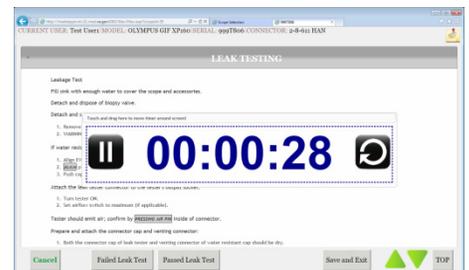
Endoscope reprocessing tasks are often long and complex, leaving the opportunity for incorrect execution or omissions. Since the SOPs are very complex, this process is highly prone to human error. Additionally, since instructional steps are numerous, it is very easy to omit steps. Implementing an IVN mitigates these potential errors, improving work conditions for the technician and reducing risk to the Veteran.

Program Results

IVN was designed as a web-based application that presents interactive multimedia instructions for the Reusable Medical Equipment (RME) reprocessing procedure. Manufacturers' instructions are used to construct Work Instruction Modules (WIMs) with content approved by relevant facility managers to ensure that WIMs conform with relevant guidelines, standards, and clinical practices. The IVN application uses human factors engineering processes to design WIMs that facilitate consistency of practice, standardization and transparency. IVN captures time and results data to

confirm accurate and complete reprocessing. Data captured by IVN is natively presented in the SQL Server Reporting services, and can be exported to combine with data collected by other applications.

IVN is currently configured to support endoscope reprocessing; however, IVN can also support any RME cleaning procedure or other



VA-CASE

workflow. The system is designed to interface with Near Real Time Modeling & Simulation (NRT M&S) systems and ISO 9001 conformance systems. Additionally, the system can interface and is designed to be complimentary with Real Time Locating Systems (RTLs) to provide a system of systems-configurable approach to automate or semi-automate asset tracking/processing while maintaining quality control, education, training, and competency requirements, as appropriate.

IVN was incremented to 2.4.1 after intensive development of document control functions that moved RME reprocessing towards ISO 9001 conformance, a goal established by the national RME steering committee.

Improvements to Version 2.4.1 include: a WIM Library with document revisions, a submission/approval mechanism, and a PDF generation. New to 2.4.1 are process looping and jumping functions, which accommodate new work flows uncovered as IVN deployment efforts continue at new facilities. The latest version retains IVN's branch logic, SQL database architecture, comprehensive competency checks, updated GUI, audible alerts, and flexible presentation of instructions.

Project Impact

The Detroit, Indianapolis, Miami, Danville, Saginaw, and Ann Arbor VAMCs currently have full implementations of IVN. Louisville, Broward, Battle Creek and Grand Rapids Facilities are in the validation phase (prior to operational use).



Scope Reprocessing Sessions

This page displays the scope reprocessing sessions with start time between 8/15/2013 and 8/22/2013

Operator	Model	Serial	Session Status	Start Time	Duration	Leak Test	Location	Action
yees1(Serge Yee)	OLYMPUS CF HI80AL I	2001639	Ready For Use	8/21/2013 2:01:48 PM	00:00:03	PASS	Unknown	View All Slides
yees1(Serge Yee)	OLYMPUS CF HI80AL I	2001639	Cancelled	8/21/2013 1:55:49 PM	00:00:42		Unknown	View All Slides
yees1(Serge Yee)	OLYMPUS CF HI80AL I	2001639	Cancelled	8/21/2013 11:23:25 AM	01:56:45	FAIL	Unknown	View All Slides
yees1(Serge Yee)	OLYMPUS CF HI80AL I	2001639	Being Processed	8/21/2013 11:22:15 AM			Unknown	View All Slides
yees1(Serge Yee)	OLYMPUS CF HI80AL I	2702829	Ready For Use	8/21/2013 2:01:41 PM	00:00:02	PASS	Unknown	View All Slides
yees1(Serge Yee)	OLYMPUS CF HI80AL I	2702868	Ready For Use	8/21/2013 2:01:25 PM	00:00:05	PASS	Unknown	View All Slides
yees1(Serge Yee)	OLYMPUS CF HI80AL I	2702868	Cancelled	8/21/2013 1:06:06 PM	00:00:50	FAIL	Unknown	View All Slides

HCI and Simulation Lab

The Human-Computer Interaction (HCI) and Simulation Lab provides the capability to detect and correct errors within interfaces that confuse end users or cause them to make unnecessary errors.

Program Objectives

The Lab supports the application of human-centered design principles into interface designs in an effort to reduce user frustration with difficult or ambiguous interfaces, resulting in a more comfortable work environment and higher patient safety. HCI and Simulation Lab personnel are trained to incorporate human factors into both electronic and physical interfaces. The Lab's prototyping services provide skeleton interfaces that are useful for reviewing and testing designs prior to full-scale development.

Design reviews and usability tests are conducted in alignment with established principles and protocols, providing recommended modifications that support correct system use. The HCI Lab includes a Usability Lab suite with Morae software installed on the desktop to

HCI and Simulation Lab - Services Offered

- Design** – assist in designing interfaces and processes in collaboration with established guidelines and are compliant with regulations. The results and user satisfaction with the interaction.
- Review** – conduct reviews of products and processes already designed for guidance.
- Test** – perform user acceptance, usability and compliance tests on products in development.
- Document** – write User's Guides for software, devices or processes developed associated with activities performed by the Lab.
- Prototype** – develop models adequate to demonstrate a design in order to perform user acceptance, usability and compliance tests on products in development.

Manufacturer's Model	Total	Completed	Outstanding
Optimus Model 1	20,000	12,000	8,000
Optimus Model 2	15,000	10,000	5,000
Optimus Model 3	10,000	8,000	2,000
Optimus Model 4	5,000	4,000	1,000
Optimus Model 5	3,000	2,500	500
Optimus Model 6	2,000	1,800	200
Optimus Model 7	1,500	1,300	200
Optimus Model 8	1,000	900	100
Optimus Model 9	800	750	50
Optimus Model 10	600	550	50



capture keyboard and mouse actions during on-site usability tests. In addition, we are capable of performing remote testing.

The Lab also coordinates with the on-site Clinical Simulation Lab to conduct medical device evaluations. The Clinical Simulation Lab contains a variety of life-like manikins that are presented in a realistic hospital setting to help users visualize patient conditions and test interactions between patients, devices, and staff members. Each review or test conducted by HCI and Simulation Lab personnel is concluded with a document outlining the processes used and the results identified during the test, as well as an analysis of the results.

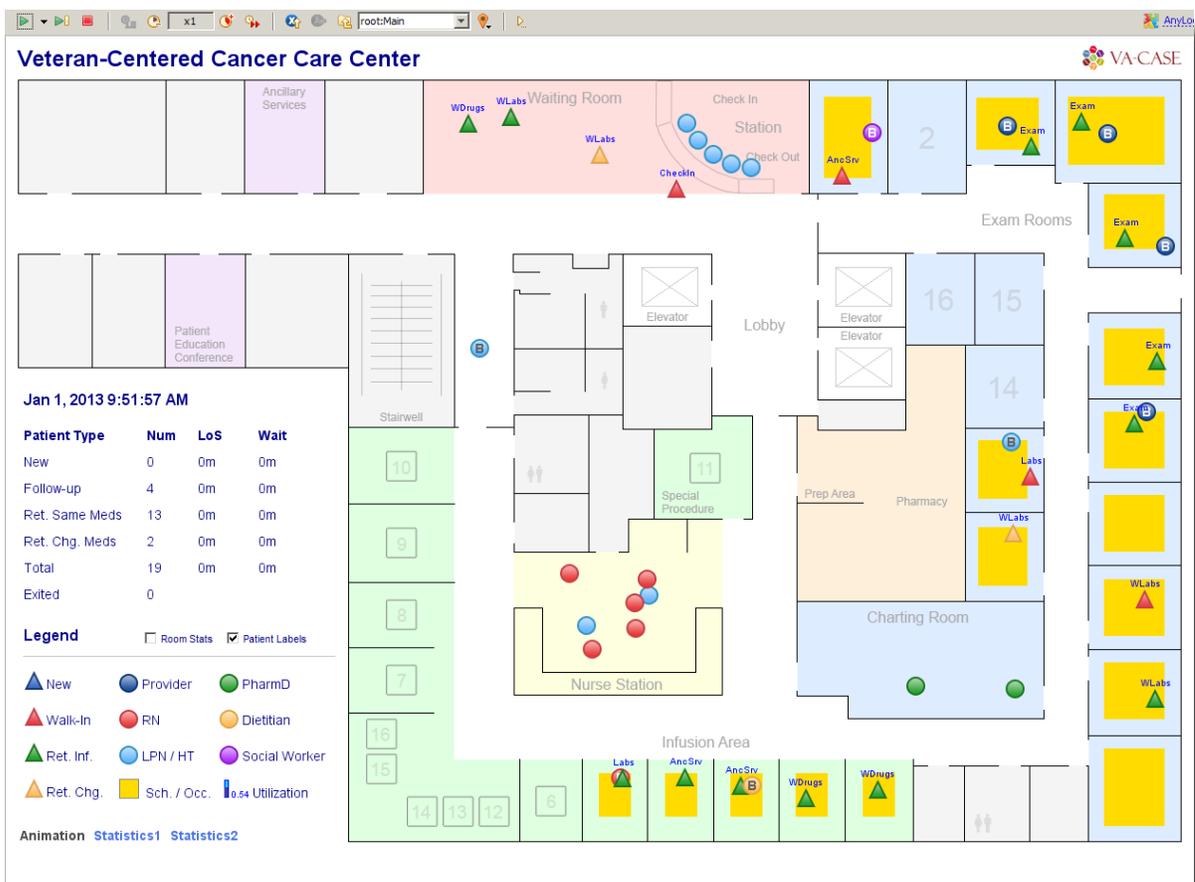
Program Results

One select HCI Lab project was the Paracentesis Kit Comparison Usability Test and Report. The Office of Improvement and Patient Safety contacted the HCI Lab about conducting usability tests on commercially available paracentesis kits under consideration for purchase by the

Richard L. Roudebush VAMC. A bedside, low-volume paracentesis scenario was selected for usability testing. Each of the four participants individually performed three scenario procedures on a TraumaMan® manikin using each kit type in random order. The tests took place between March 18 and April 8, 2014. The usability evaluation was conducted by VA-CASE HCI Lab and Clinical Simulation Lab personnel at the Roudebush VAMC in Indianapolis, Indiana.

Program Impact

HCI Lab personnel designed the usability test, prepared the simulation room, conducted the tests, and wrote the final report describing the procedure and the results. Data collected shows that one kit was the least preferred option. Preferences for the others differed depending on the expected use and user. Although none of the kits were deemed ideal, one kit received VA-CASE's overall recommendation. The Office of Improvement and Patient Safety reported that they purchased the kit recommended in the HCI Lab report. Additionally, several participants thanked the team for allowing them to participate in selecting the most suitable medical device, since they were not often invited to participate in this process.



VCD Lab Cancer Care Center

The Veteran-Centered Design Lab

The Veteran-Centered Design Lab (VCD) is a VA-CASE innovative program that utilizes a multi-disciplinary, patient-centered approach to transform both the delivery and experience of our Veteran's healthcare. This goal is accomplished by collaborating with Veterans and key stakeholders to design state of the art healthcare solutions.



Program Results

One select Veteran-Centered Design Lab project was the Cancer Care Center design. Cancer care is a complicated process involving coordinated treatments across numerous departments, including: Oncology, Hematology, Radiation, Pharmacy, Nursing, Dietetics, and Social Work. These services are currently dispersed throughout the hospital, which contributes to extended wait times, patient safety concerns, and negative reports of Veteran satisfaction. The Richard L. Roudebush VAMC partnered with VA-CASE to facilitate a stakeholder-driven conceptual design process that could help the VAMC consolidate these various services into an integrated, Veteran-centered Cancer Care Center.

Program Impact

The resulting Cancer Care Center design includes the following features:

- All infusion bays are located on exterior walls and have windows overlooking a river. The importance of windows & natural light for patients receiving long infusions was discovered during our site visits and talks with patients.
- A "Hoteling" concept was introduced by which patients receive care in one exam room for the duration of their clinic visit. All activities, such as triage, blood draw, etc., occur in the patient's exam room, thus minimizing patient movement. Also, Veterans can use their exam room as a private waiting room with their family, or as a place to secure their belongings while visiting the cafeteria. This system was shown to be viable through our simulation of the process & floor plan.
- A satellite chemotherapy pharmacy was incorporated to reduce wait times for medication preparation and delivery, as well as facilitate clinical communication between pharmacists, providers, and patients.
- Dedicated work space for dieticians and social workers in the cancer clinic was designed to facilitate Veterans' access to these crucial services.
- An expansion of the existing pneumatic tube system was incorporated into the cancer clinic, allowing patient blood draws to be performed in exam rooms and samples to be immediately sent to the Pathology Lab. This design feature will both reduce patient movement and improve lab result turnaround time.



VA CASE Project Management Office (PMO) is a team of subject experts within VA who's mission is to provide the hands on assistance and expertise to an organization's need to accomplish project success through planning, organizing, motivating, and directing resources, procedures, and protocols. Our team has a history of accomplishing assignments and projects with outstanding results using our wide variety of skill sets and backgrounds. Our skills and expertise include:

- professional project management
- finance, logistics, technology, safety, patient care, clinical experience
- corporate knowledge
- leadership and team building

VA organizations approach PMO with challenging tasks to improve processes and procedures in a variety of health related projects. We have the flexibility and talent to accommodate all resource needs - whether it requires resources long term or short term. PMO uses a disciplined and results-driven approach to program and project management tools and our team members have diverse experiences to ensure success.

PMO Project Pipeline

	Planning	Proof of Concept	Pilot / Implementation			Evaluation	Sustainable Project		
	Planning/ Pre-Proposal	Solicitation for new project	Development/ Testing of the concept	Tool Refinement	Pilot (single sites)	Demonstration Pilot (multiple sites)	Reporting/ approval at a national level	National Implementation	National Policy Change
Mobile Apps				Health 4 Heroes					
				VETS-CARE Mobile App					
Toolkits								Toolkits	
OHRM PMO						Project Management Information System			
OHRM PMO								Beneficiary Travel	

Health for Heroes (H4H) Mobile Application

VA-CASE partnered with Wayne State University's mobile application development team to produce the Health for Heroes (H4H) mobile application.



Project Results

H4H aims to put health teams at Veterans' fingertips, note their questions, guide them in their personal health goals, and link them to helpful resources.

In addition to creating an additional gateway for Veterans to reach their health teams, the H4H mobile application provides strong security. SQLCipher, an open source library providing transparent, secure 256-bit AES encryption of SQLite database files, secures any Veteran data stored on the mobile device.

Project Results

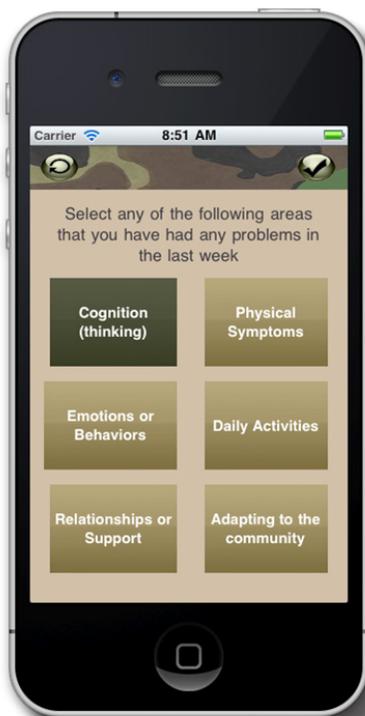
The WSU mobile development team completed the H4H mobile application in late 2012. However, completion occurred just after the Mobile Application Moratorium went into effect, which stopped the publication of the application at that time. The Moratorium lifted in late 2013 and the publishing of mobile applications commenced once they received certification from the VA Mobile Health Office. H4H is still awaiting the certification.

Project Impact & Future Directions

We need an application champion to push the application further through the certification process and ultimately get the application to the new VA App Store. In addition, we need an iOS developer to update the application for compatibility with the latest version of iOS.

Veterans Compensate, Adapt, Reintegrate (VETS-CARE) Traumatic Brain Injury (TBI) Mobile Application

VA-CASE partnered with HSR&D to develop the Veterans Compensate, Adapt, Reintegrate (VETS-CARE) TBI Mobile Application.



Project Overview

VETS-CARE is an intervention program created to assist in the care of Veterans with mild to moderate Traumatic Brain Injuries (mTBI). mTBI injuries are defined as physiological disruptions of brain function resulting front, as manifested by at least one of the following—alteration of mental state, loss of consciousness (LOC), loss of memory or focal neurological deficit that may or may not be transient—but where the severity of the injury does not exceed the following—post-traumatic amnesia (PTA) for greater than 24 hours, Glasgow Coma Score (GCS) of 13 - 15 after the first 30 minutes, and loss of consciousness in less than 30 minutes.

Project Objectives

This research project aimed to determine the feasibility and satisfaction of the VETS-CARE intervention with TBI Veterans. The feasibility and satisfaction metrics were gathered by putting the VETS-CARE algorithms in the hands of the Veterans (through the mobile application). The results of this study provide justification for further development of this mobile-based prototype of VETS-CARE.

Another research objective of this project was to estimate the effect sizes of three potential outcome measures—PHQ-9, Community Integration Questionnaire (CIQ), and Social Support Questionnaire (SSQ)—for future efficacy trial(s).

Project Results & Impact

At the conclusion of VA-CASE SDPER's involvement with the application, the initial prototype of the VETS-CARE TBI mobile application development cycle for the initial prototype ended. The VA-CASE SPDER mobile application developers also installed the application on the iPads that were associated with the VETS-CARE study.

47 Veterans participated in the research study. The overall satisfaction rating of the mobile application from the study was 4.19 out of 5. The satisfaction rating led the HSR&D investigator to seek additional funds to continue the development of the application. However, the future development of the mobile application will take place outside of VA-CASE.

Project Management Information System

The Office of Human Resource Management Program Management Office (OHRM PMO) was established in FY12. As part of its charter, the OHRM PMO developed a list of work requirements and long-term objectives needed for a Project Management Information System (PMIS). These system requirements addressed capability gaps related to PMIS management, internal design, development, build, and program interface. In late 4th quarter of FY13, OHRM PMO formally initiated contact with VA-CASE to support implementation of a PMIS using the current suite of VA-approved management software, including Microsoft Project 2010 and SharePoint 2010.

Project Overview

The Office of Human Resource Management Program Management Office (OHRM PMO) was established in FY12. As part of its charter, the OHRM PMO developed a list of work requirements and long-term objectives needed for a Project Management Information System (PMIS). These system requirements addressed capability gaps related to PMIS management, internal design, development, build, and program interface. In late 4th quarter of FY13, OHRM PMO formally initiated contact with VA-CASE to support implementation of a PMIS using the current suite of VA-approved management software, including Microsoft Project 2010 and SharePoint 2010.

Project Objectives

The objective of this collaboration was to showcase the full benefits of a PMIS when pooling in-house IT and project management resources. It is expected that upon completion of its second year tasks, OHRM PMO will have the capability to standardize and maintain its project files across the PMIS portfolio, create status dashboards to summarize key metric data for leadership, and present a user-friendly interface for use by internal and external project teams. The PMO enhancements planned for the FY15 phase of development and implementation will greatly improve executive-level strategic decision-making and data, integration of contracting documentation, and process workflows.

PMIS Results

VA-CASE developed the following list of PMIS requirements:

- A. Develop the means for OHRM PMO staff to transfer files and data into the PMIS.
 - a. The archived files from previous fiscal years will be transferred into the system by OHRM PMO. VA-CASE will assist by providing guidance and training on how to complete these actions.

- b. PMIS input information will come from: budget, team members, and invoices.
 - c. Old documents should be loaded into a document library and categorized appropriately.
 - d. VA-CASE will create a user guide for the archiving process.
- B. Develop and integrate remaining SharePoint workflows into OHRM PMO's processes in strategic planning, risk planning, and acquisition support in accordance with the PPB&E (Planning, Programming, Budgeting, and Execution) Model.
- a. Create workflows for: Issue module, Risk module, Investment review board, Acquisition, E-mail notifications, Invoicing, and Change requests.
- C. Enhance Program and Portfolio-level dashboards within PMIS. The user interface design needs to be enhanced, making it more palatable for the user experience by addressing specific needs.
- a. Project Manager needs to be able to review all projects under their supervision.
 - b. Portfolio Manager needs to be able to review all projects within his/her grouping from a high level.
 - c. Leadership needs to be able to see a very high level view of basic issues such as budget, schedule, and critical risk/issue.
- D. Conduct system transition, including training and system blueprint, from VA-CASE staff to OHRM staff.
- a. Create a transition plan for all training, handoffs, and completion dates.
 - b. Create training manual for use on each user level for the PMIS dashboard.
 - c. Create a system blueprint of the PMIS and provide training to OHRM PMO staff that will enable them to make changes to reports or workflows as needed.
 - d. Hold training sessions for users in multiple sessions for maximum participation.
 - e. Provide PMIS maintenance and sustainment plan.
- E. Ensure that PMIS is compliant with Section 508 by completing a 508 compliance checklist.

Toolkits

The Toolkit Series is a unique partnership between the Office of Patient Care Services, Office of Quality and Performance, Office of Systems Redesign, Quality Enhancement Research Initiative (QUERI) program and VA-CASE to identify “tools,” which are defined as any quality improvement innovation that is currently in use at a VA facility, but is not routine across the VA system.

Project Objectives

Tools are matched to one or more organizing concepts in a Toolkit, which functions as a SharePoint site that offers a collection of ready-to-use, concrete innovations that may be implemented in departments and facilities to help improve performance and/or employ change. Individual tools designated for inclusion within a Toolkit are developed by VA colleagues nationwide and then evaluated and vetted by teams of Subject Matter Experts that include VA clinical managers and policy makers.

The Toolkits aim to produce and disseminate quality improvement resources across the VA system. Based on the VA-TAMMCS (Team-Aim-Map-Measure-Change-Sustain) model, Toolkits provide a framework for Systems Redesign and Continuous Improvement tailored to the structure and needs of the VA systems taught in Collaborative (PACT, Cancer Care, Specialty Care, Surgical Flow). Project Results

Since 2010, over 60,000 unique visitors have accessed Toolkits across a wide range of care areas (see table below). To help connect communities of practice and disseminate information about the Toolkits, listservs were also created. To date, the Quality Improvement Toolkit Series has 4,688 subscribers and the PACT Toolkit has 2,511 subscribers. The listservs serve as the primary method for gathering new tools. When new tools are added to a Toolkit, a listserv message brings users back to the Toolkit.

Toolkit	Year Launched	# of Tools	# Unique Visitors (Through Sept. 30, 2014)
Lung Cancer	2010	38	7,069
Colorectal Cancer	2011	38	7,069
Prostate Cancer	2012	23	7,069
Head and Neck Cancer	2012	20	7,069
Cancer Survivorship	2012	6	7,069
Palliative Care	2012	45	7,069
PACT (Primary Care)	2011	84	15,668
Specialty Care	2013	28	1,534
Emergency Women's Services	2014	33 and 3 pathways	842
Utilization Management	2014	13	317

Project Impact

The following Toolkits are featured here as select examples of the project's impact:

PACT and Specialty Care Toolkits

Sponsored by the National Systems Redesign office, the Specialty Care Toolkit gathers tools to address issues related to specialty care in much the same way the PACT Toolkit gathers tools relevant to primary care. Both the PACT and Specialty Care Toolkits are organized around key components of primary or specialty care, and are displayed with a similar pillar organization.

Emergency Women's Services

Sponsored by Women's Health Services office, the Emergency Women's Services Toolkit was developed to address presentations specific to women in the Emergency Room (see figure to the right). This Toolkit is separated into national and

local tools. Three interactive pathways that allow clinical providers to navigate through clinical presentations in the E.R. were also developed.

Utilization Management

Sponsored by Utilization Management (UM) office, the Utilization Management Toolkit was created in conjunction with a qualitative analysis of UM processes and their National Utilization Management Integration (NUMI) application. The toolkit is organized by tools to assist with not meeting Interqual[®] criteria for admission or not meeting Interqual[®] criteria for continued stay.

For the qualitative analysis component, the VA-CASE team conducted a total of 148 interviews with staff members involved in the UM process across 24 interview sites. The results were compiled into a report detailing issues with the current status of UM and recommendations for future projections of the UM process.

Beneficiary Travel

VA-CASE partnered with Chief Business Office (CBO) Veteran Travel office from FY13 through FY14. Sponsored by Chief Business Office (CBO) and Veteran Travel, the Beneficiary Travel (BT) Initiative is a nationwide effort to improve and standardize documentation processes for BT across VHA.

Project Objectives

This initiative primarily focuses on standardizing documentation processes through the development and deployment of standardized BT clinical CPRS templates. Such national templates will help VHA satisfy the requirement to provide an accurate and consistent means of documenting and tracking nearest appropriate facilities (exceptions to facilities other than closest) and special mode transportation for Veterans receiving Aid and Attendance (A&A) or Housebound Benefits (HB).

- Provide technical expertise in VistA and CPRS for revising/ updating electronic documentation related to Beneficiary Travel (BT), such as consults, orders, templates, progress notes, and technical guides.
- Ensure that project managers produce timely developments and modifications, as needed from the Clinical Application Coordinator (CAC) on the BT CPRS and VistA technical components.
- Ensure that documentation and coordination comply with national CPRS template/consults approval committees.
- Collaborate on the national implementation deployment (Go-live support) planning with BT.
- Ensure the BT documentation outlines comply with CPRS consult management guidelines, including closing within a specified timeline.

Project Results & Impact

The VA-CASE Clinical Application Coordinator (CAC) actively participated with the BT team to design content and programming, create VistA/CPRS templates, maintain documentation, and present on national training calls. A complete technical installation guide was created, including features for creation, set up, settings and access, as well as step-by-step instructions.

The CPRS template identifies criteria that clinicians can use to document the certification and medical necessity for nearest appropriate facilities and special mode transportation for Veterans receiving A&A or HB. The resulting programming includes 116 Groups/Elements, 14 template fields, and 61 Health Factors.

The VA-CASE CAC presented the template at the national CAC monthly teleconference call in October 2014. The template has been exchanged with additional facilities, and support for its technical installation has been provided. The template was also presented to the national Informatics Council, and work is in progress to incorporate the template into a CPRS patch for national deployment.

Finally, workflow process mapping was created, showing the flow from clinician to CPRS to printing and finally to the BT staff, where responsibility ends with the patient being notified of travel approval or an exploration of alternative plans (see figure below).

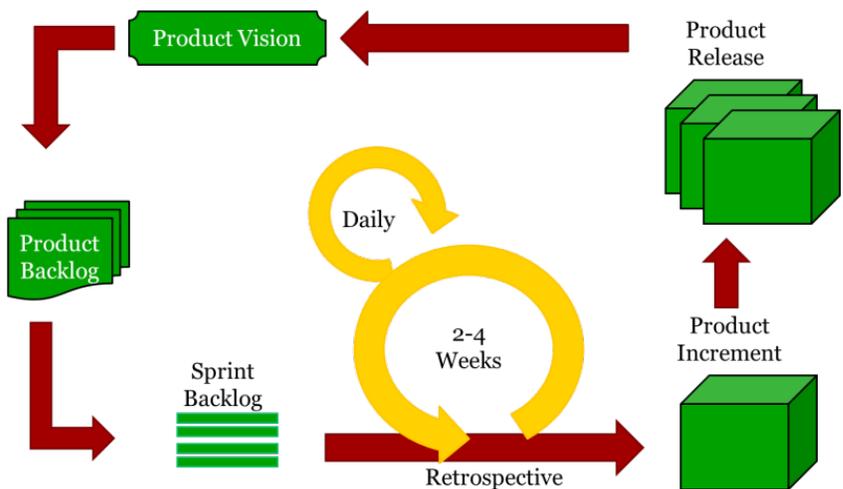
Future Directions

Planning is underway to create VSSC reports, train BT and VISN staff, identify IC requirements for patching, and conduct additional field testing.

Development Process

VA-CASE developed the mobile applications outlined in this report by using Agile Scrum Methodology.

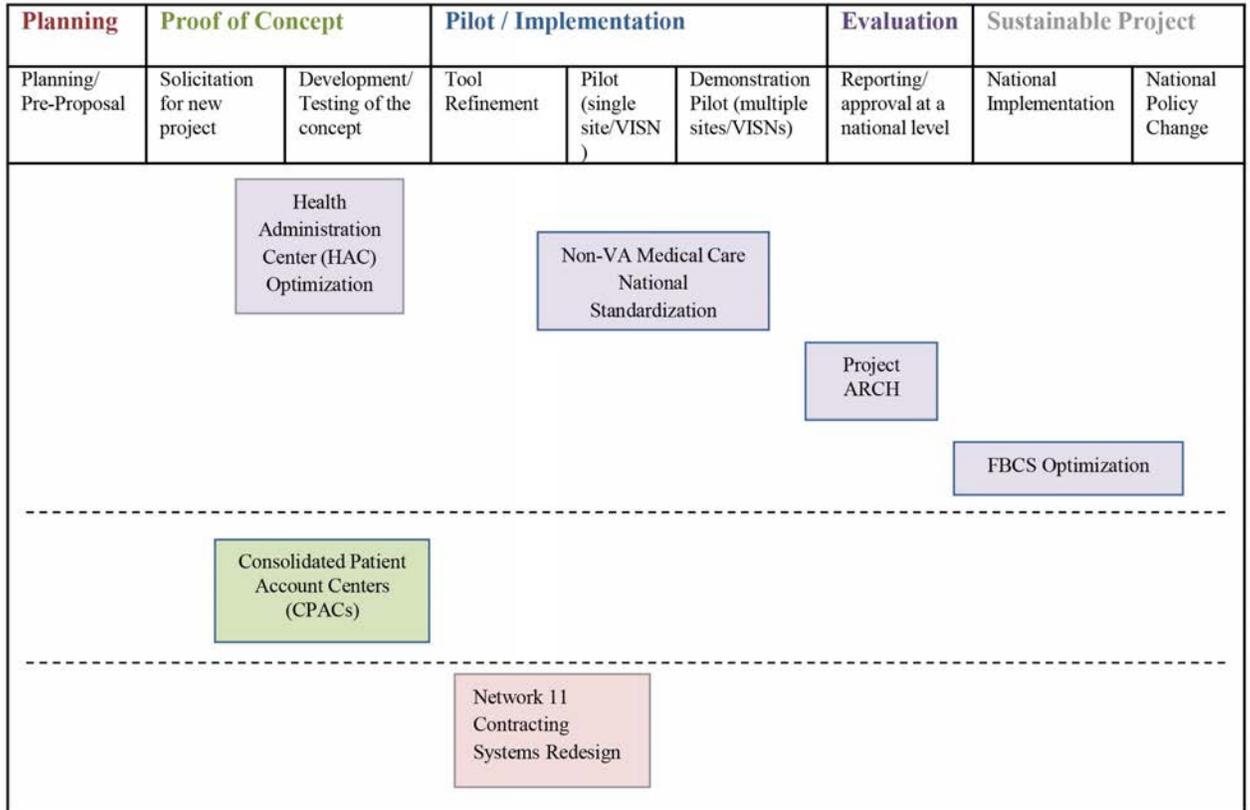
Scrum projects are divided into sprints, which are work packages that typically last one week, two weeks, or three weeks. At the end of each sprint, stakeholders and team members meet to assess the progress of a project and plan its next steps. This allows for adjustment in a project's direction based on completed work rather than speculation or predictions.





The overarching goal of the Transactional Systems Program (TSP) projects is the optimization of processes associated with the business/administrative aspects of the delivery of VA healthcare. TSP's primary partnership is with the Chief Business Office Purchased Care (CBOPC) to design, test, and implement optimized business processes in collaboration with station-level, non-VA medical care offices. CBOPC is responsible for the management and delivery of healthcare services external to VA facilities for which Veterans and their dependents are eligible. In addition to CBOPC, our project portfolio includes partnerships with CBO Business Policy, CBO Revenue Operations–Consolidated Patient Account Centers (CPACs), the Office of Rural Health, and the Network 11 Contracting Office.

TSP Project Pipeline



Non-VA Care Coordination (NVCC) Pilot

The Non-VA Care Coordination (NVCC) Initiative is one of the VHA Transformational (T21) Initiatives. In FY09, CBOPC partnered with VA-CASE to develop a future state process that improved efficiency and effectiveness for the front-end of the non-VA care delivery process.

Project Objectives

The NVCC Pilot aimed to improve care coordination and reduce variation within both the referral and authorization process and the management of non-VA care medical records. The future state process was developed by VA-CASE in conjunction with non-VA care staff from three VISN11 medical centers and Subject Matter Experts (SMEs) from various Fee Units across the country.

Project Results & Impact

In FY10/FY11, VA-CASE supported the pilot by creating and maintaining standardized referral templates; developing and analyzing quality and timeliness metrics; completing the Voice of the Customer Survey; and providing ongoing technical support. Based on the pilot outcomes, CBOPC determined to nationally deploy NVCC. The VA-CASE Clinical Informatics Team is now serving as the national Clinical Application Coordinators, providing assistance and support to the 21 deployment sites for the creation, installation, and use of the Non-VA Care CPRS referral templates and templated progress notes.

● Equal to or better than target
● Within +/- 10% of target
● Greater than +/- 10% of target

Performance Results	Target	Referral Submission Month			
		Mar-11 ³	Apr-11	May-11	Jun-11
1. Referral Review					
1.1. % of Referrals Submitted Using Appropriate Templates	90%	25 of 30 ● 83%	42 of 50 ● 84%	49 of 50 ● 98%	44 of 50 ● 88%
1.2. % of Administrative Reviews Completed <i>within Tracking Period</i> ²	90%	22 of 24 ● 92%	43 of 43 ● 100%	43 of 46 ● 93%	38 of 40 ● 95%
1.3. % of Clinical Reviews Completed <i>within Tracking Period</i> ²	90%	27 of 28 ● 96%	49 of 49 ● 100%	45 of 47 ● 96%	46 of 48 ● 96%
1.4. % of Approval/Denial Decisions Made within 7 Days	90%	29 of 30 ● 97%	47 of 50 ● 94%	44 of 50 ● 88%	44 of 50 ● 88%
1.5. Average # of Days from Referral Submission to Decision <i>within Tracking Period</i> ²	5.0	2.9	3.0	2.1	4.0
2. Authorization Entry					
2.1. % of Auths Entered into FBCS <i>within Tracking Period</i> ²	90%	10 of 21 ● 48%	22 of 39 ● 56%	38 of 44 ● 86%	34 of 35 ● 97%
2.2. % of Auths Entered within 4 Days of Approval	90%	5 of 21 ● 24%	12 of 39 ● 31%	28 of 44 ● 64%	31 of 33 ● 94%
2.3. Average # of Days from Referral Submission to Auth Entry <i>within Tracking Period</i> ²	7.0	12.8	8.4	4.9	2.9
2.4. % of Auths Entered into FBCS After Care Provided <i>within Tracking Period</i> ²	10%	4 of 10 ● 40%	2 of 22 ● 9%	1 of 38 ● 3%	0 of 33 ● 0%
3. Appointment Management					
3.1. % of Auths with Appts Scheduled in VISTA Appt Mgmt <i>within Tracking Period</i> ²	90%	17 of 21 ● 81%	41 of 42 ● 98%	44 of 45 ● 98%	33 of 35 ● 94%
3.2. Average # of Days from Referral Submission to Scheduling Date <i>within Tracking Period</i> ^{2,4}	14.0	4.6	8.8	7.8	5.2
3.3. % of Referrals with Date of Appt within 30 Days of Submission ²	90%	14 of 21 ● 67%	34 of 42 ● 81%	32 of 45 ● 71%	21 of 35 ● 60%
3.4. Average # of Days from Referral Submission to Date of Appt	30.0	19.5	18.8	26.1	39.9
3.5. % of Appts Scheduled that Result in No Shows or Cancellations <i>within Tracking Period</i> ²	10%	4 of 20 ● 20%	6 of 39 ● 15%	6 of 41 ● 15%	2 of 28 ● 7%
4. Clinical Documentation & Closure					
4.1. % of Referrals Closed within 30 Days of Appt Date	90%	19 of 21 ● 90%	35 of 38 ● 92%	35 of 42 ● 83%	24 of 34 ● 71%
4.2. Average # Days from Appt Date to Closure <i>within Tracking Period</i> ²	30.0	5.6	5.8	6.2	8.2
4.3. Average # Days from Referral Submission to Closure <i>within Tracking Period</i> ²	60.0	16.3	20.3	19.4	23.6

NVCC Pilot Quality and Timeliness Metrics Dashboard

Fee Basis Claims System (FBCS) Optimization

In FY10, CBOPC and VA-CASE collaborated with Subject Matter Experts (SMEs) from various Fee offices across the country to develop standardized business processes that optimized the use of FBCS software.

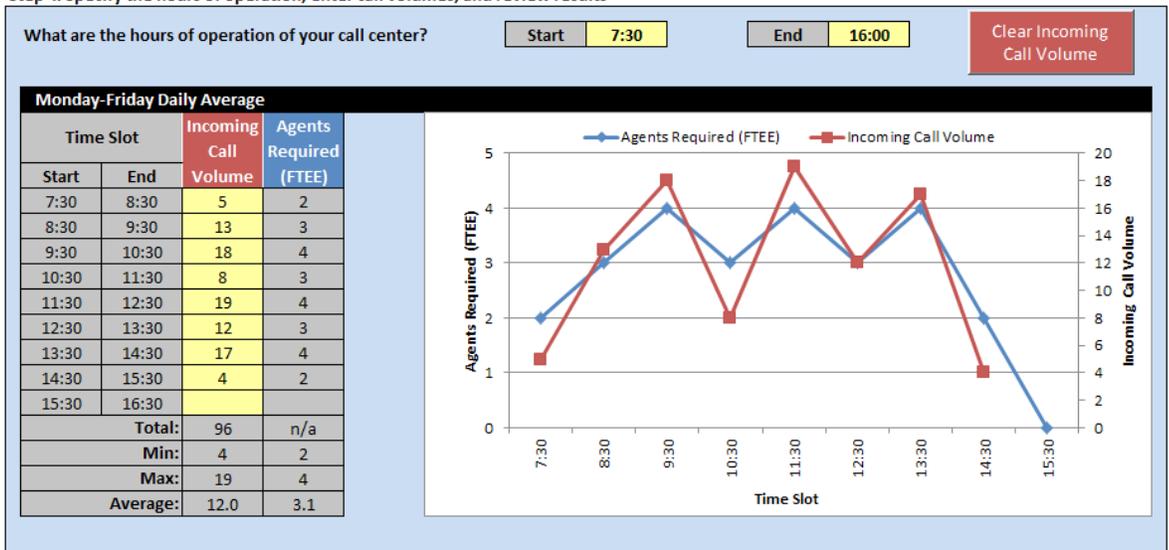
Project Objectives

Scanning, verification, distribution and processing, clinical review, and customer service calls were targeted as key focus areas for optimization, as these were identified as areas in which frequent process bottlenecks occurred.

Project Results & Impact

The VA-CASE team developed detailed Implementation Guides, Technical Guides, and Excel-based tools to assist Fee Management in implementing the optimized processes. In FY11/FY12, the optimized FBCS processes were piloted at Alpha and Beta test sites. The pilot results showed improved timeliness in processing claims and an increase in the volume of claims processed per day. Based on these outcomes, CBOPC decided to deploy FBCS Optimization at the national level. As of September 2014, when comparing throughput rates between the Baseline and Post-Implementation periods among 82 facilities that had experienced at least 3 months of Post-Implementation, total claims processed per month improved an average of 49 percent.

Step 4. Specify the hours of operation, enter call volumes, and review results



FBCS Optimization Call Center Staffing Tool

Health Administration Center (HAC) Simulation Model

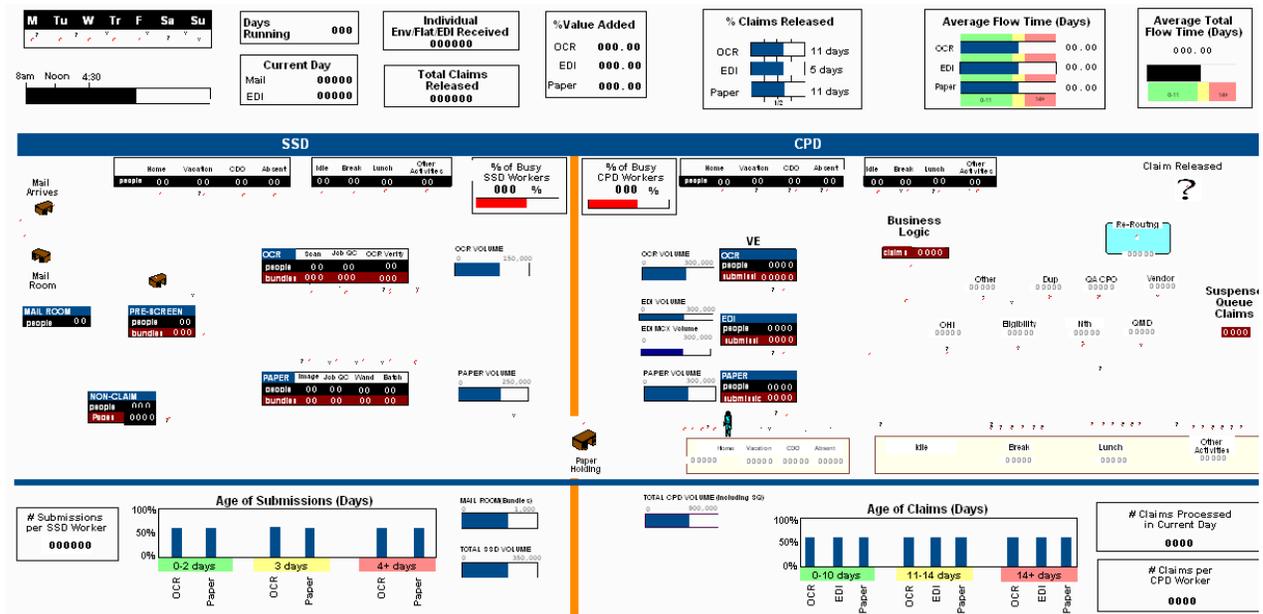
In partnership with the HAC and Purdue University North Central, VA-CASE created a process simulation model of the HAC's claims process for CHAMPVA claims.

Project Objectives

The intent of the model was to capture the current state of claims processing and, through the use of scenario analysis, allow HAC personnel to evaluate strategic, and to a lesser extent, tactical changes to the HAC operation.

Project Results & Impact

The simulation model was validated in late FY11. In conjunction with the model, VA-CASE evaluated the HAC's Support Services Department (SSD) and presented a report of findings and process improvement recommendations. The model is to be used to test these process changes in a virtual environment to ensure change management success prior to implementing the changes on the SSD production floor.



HAC Simulation Model

CBO Business Policy Division – Health Benefits Appeals (HBA) Application Development & Implementation

In FY12, VA-CASE partnered with CBO’s Business Policy division to design, develop, and assist with the implementation of process improvements in CBO’s HBA process.

Project Overview

The HBA process is an administrative procedure that provides Veterans a method for requesting a review of an adverse decision issued by the Veterans Health Administration (VHA) regarding a requested benefit. CBO provides oversight of the appeals program and perfects appeals before certification to the Board of Veterans Appeals (BVA).

Project Results

The project was separated into two phases. In Phase 1, VA-CASE developed an extensive database and corresponding web-based application aimed at 1) improving CBO’s ability to track and monitor health benefits appeals and 2) increasing visibility into the process. The objective of Phase 2 was to complete enhancements and expand the reporting functionality of the database and web-based application. Phase 2 was completed at the end of FY13.



HBA Tracking Database

Non-VA Medical Care National Standardization (NVNS)

The NVNS project is a collaborative effort between VA-CASE and CBOPC to standardize business processes associated with the execution, management, and oversight of all Non-VA Medical Care programs and functional areas.

Project Objectives

The NVNS project encompasses the entire Non-VA Medical Care process, from the time a consult for care is entered into CPRS until the claim is received and paid. This process is comprised of the following seven program/functional areas: Hospital Notification, Referral Requests/Authorizations, Customer Service, FBCS Claims Processing, VistA Claims Processing, Appeals, and Financial Management.

Project Results & Impact

NVNS is separated into three phases. Phase 1, which was completed in FY13, involved 1) capturing current state business processes in high performing Non-VA Medical Care sites that included both consolidated and individual medical center units, and 2) assessing those processes for incorporation into the standardized future state processes. Phase 2, which began in FY14, involved the development of future state standardized business processes, performance metrics, desk procedures, training materials, and a plan for testing the future state process. All recommendations were vetted through a two-tiered process involving SMEs and CBOPC leadership. Full implementation and deployment will occur in Phase 3, which is scheduled to begin in FY15.

Project Access Received Closer to Home (ARCH)

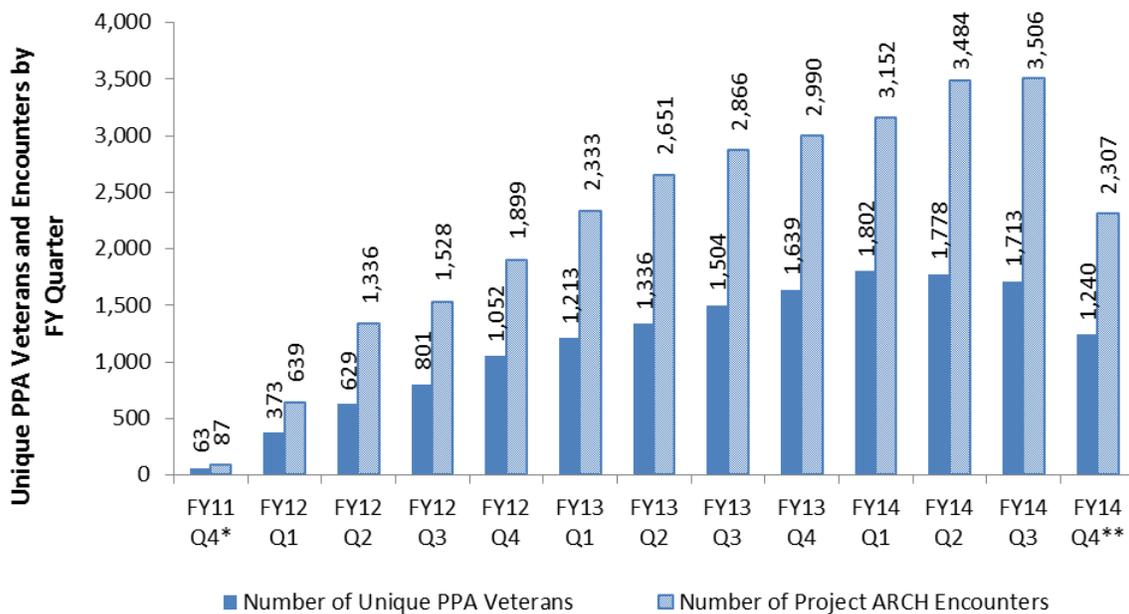
Project ARCH is a three-year pilot administered by CBOPC and funded through the Office of Rural Health (ORH).

Project Objectives

The goal of Project ARCH is to provide Veterans with health care services closer to where they live by partnering with non-VA community health care providers. In FY13, CBOPC requested VA-CASE provide program/project management and technical writing services for the purpose of convening and managing an Integrated Project Team (IPT) focused on the development of recommended options for extension, expansion and/or permanence of Project ARCH and the drafting of an Executive Decision Memorandum (EDM) for submission to CBOPC, ORH, and VHA leadership.

Project Impact

In FY14, the IPT was formed and completed the EDM which outlined recommendations for the future of Project ARCH. VA-CASE assisted with completing numerous briefings for the VA Deputy Secretary and VA Secretary on the EDM, transition planning activities, and on potential sustainment options after the public law expires.



PPA = Participating in Project ARCH from August 29, 2011 through August 31, 2014 (n=5,945)

* Intake of Project ARCH patients began on August 29, 2011. Therefore counts for FY11 Q4 include only patients with visits from August 29, 2011 through September 30, 2011.

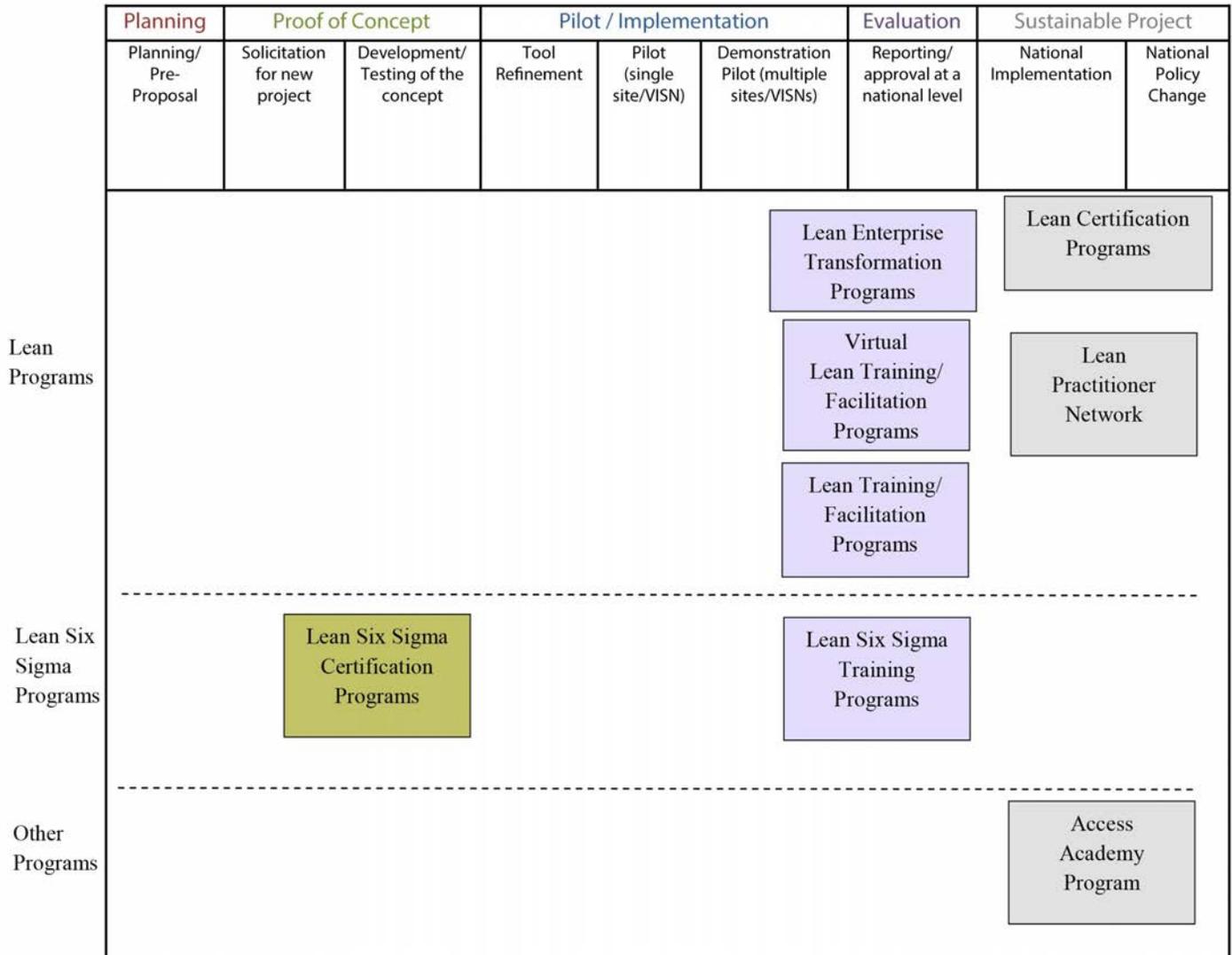
** Counts for FY14 Q4 include only patients with visits from July 1, 2014 through August 31, 2014.

Number of Unique Veterans and ARCH Encounters by Quarter



The Professional Development Program provides Systems Engineering-based educational activities to VA staff and leadership. The program is a national VA leader in developing Lean curriculum, certifying Lean Managements Systems, and facilitating Improvement events. The formal training sessions, based on Lean and Lean Six Sigma Healthcare strategies, incorporate both didactic and hands-on learning experiences, methods, and techniques. The strength of our skilled faculty lies in their ability to make adjustments to program content and meet program deliverables. Evaluation assessments consistently confirm that our faculty maintains a high level of performance. Our evaluation measurements—where our faculty score >4 on a scale of 1-5—ensure our customers' satisfaction. Our program works closely with stations, VISNs, and Central Office departments and staff members to provide a bridge for integrating Lean and fostering incorporated improvement capacity.

Professional Development Project Pipeline



Lean Training and Certification Programs

Modeling the behavior of Continuous Quality Improvement (CQI) we continue to develop and provide VA staff with the knowledge, skills, and support needed to implement and sustain successful Lean and Six Sigma Healthcare projects within VHA healthcare facilities.

Program Objectives

Our formal training sessions incorporate both didactic and hands-on learning experiences in Lean and Lean Six Sigma Healthcare methods and techniques. Additionally, launched in FY12, we provide Lean Certification open to all VA staff who have participated in the various training courses. All VA-CASE Lean and Lean Six Sigma training courses and certification programs are based on fully validated VA-specific competency models. These programs are complemented by a VHA Lean Healthcare Community of Practice established specifically to support the ongoing implementation of SR/Lean projects within the VA.

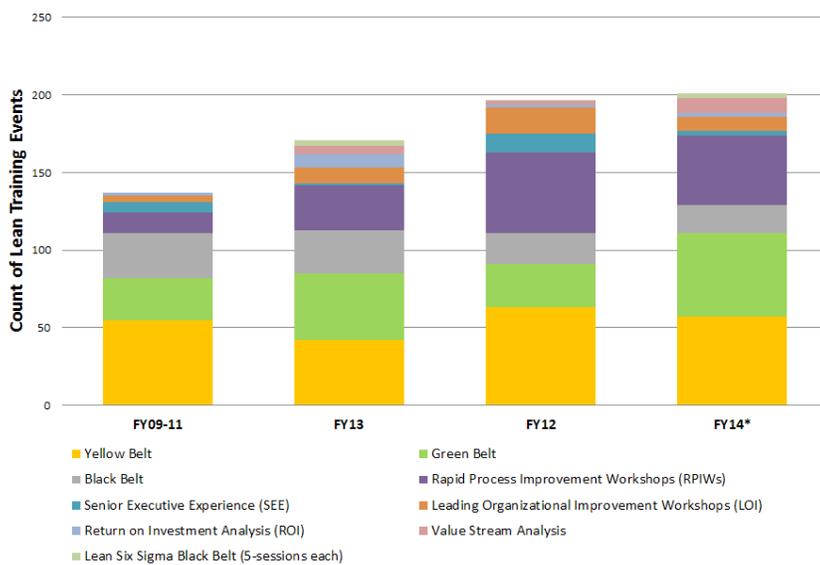
The Lean and Lean Six Sigma training and facilitation programs include training and instruction in an introduction to Lean methods (Yellow Belt), Lean project facilitation (Lean Green Belt), Lean and Lean Six Sigma Program Management (Lean Black Belt, Lean Six Sigma Black Belt), Return on Investment Analysis (ROI) as well as Senior Executive and Mid-Manager Lean Training (Senior Executive Experience and Leading Organizational Improvement). Additionally, VA-CASE provides facilitation support for

Rapid Process Improvement Workshops (RPIWs), Value Stream Analysis (VSA) and Transformational Plan of Care (TPOC) events.

Program Results

As shown in the figure to the left, we have conducted over 700 separate Lean and Lean Six Sigma Training and Facilitation events, for more than 18,000 VHA staff. This training has resulted in Lean Certification for over 675 VA staff, with an additional 1500 staff in queue to receive certification. Since FY09, these programs have operated at a cost of approximately 30% of externally sponsored

training, resulting in a cost savings to the VA of over \$17M.



VA-CASE Lean Training Events by Type and FY

Lean Enterprise Transformation Programs

Over the years, Professional Development has evolved from delivering primarily Lean and Six Sigma-based training to VA Medical Centers (VAMCs), VISN offices, and National Program Offices to our current model of delivering more sophisticated Lean and Six Sigma support to these customers.

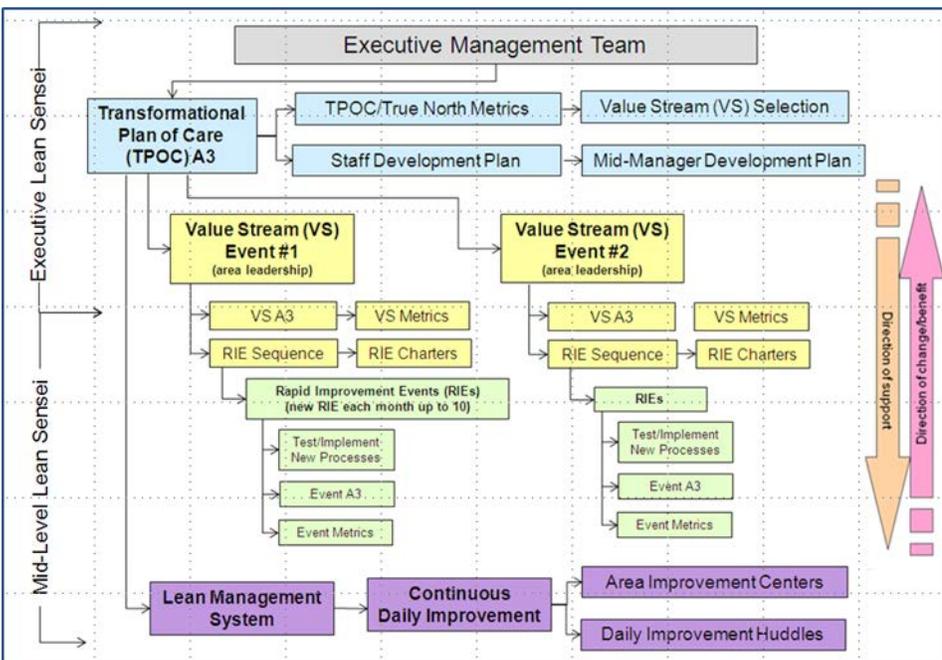
Program Objectives

This evolved model, based on the Lean Enterprise Transformation (LET) strategies of successful healthcare organizations, like ThedaCare and Denver Health, provides a more persistent presence that encourages building relationships between VA-CASE facilitators and pilot sites in order to 1) assist with their application of Lean/Six Sigma and 2) help them develop a Lean Management System within their own organizations.

Within this framework, a Transformation Plan of Care (TPOC)/Transformational Value Stream (TVSA) is conducted annually by the executive team to ensure strategic alignment with organizational efforts through key (True North) metric and Value Stream selection (see figure below). Value Stream and Rapid Improvement Events within selected systems of care are utilized to produce system level improvements to True North Metrics. Lean Management System deployment aligns management systems throughout the organization, facilitating small-scale, unit-based efforts as well as the use of continuous daily improvement methods to readily support local process improvements by front line staff.

VA-CASE faculty support for these efforts consists of a sensei/mentor/coach

for the executive level staff of the pilot organization, as well as a sensei/mentor/coach for the mid-level management, Systems Redesign staff, and front-line staff. The executive level coach is there to help guide the facility leaders in the use of Lean tools for strategic planning, strategy deployment, alignment of Lean activities and resources, creation of Lean infrastructure (systems and processes) and development of leader standard work that supports



Transformation Plan of Care (TPOC)/Transformational Value Stream (TVSA)

the system. The mid-level coach is there to 1) support the events, such as Value Stream Analysis (VSAs) and RPIWs; 2) facilitate the CDI (Continuous Daily Improvement) rollouts; and 3) build capability and capacity for the program by teaching and engaging mid-level managers, Systems Redesign, and front line staff.

Program Results

The VHA Lean Enterprise Deployment strategy has been in pilot deployment across 7 VHA Health Systems from between 12 and 35 months, with an average deployment time of 23 months. This program was initially launched at the Richard L. Roudebush VAMC in Indianapolis in 2012. As part of their Transformational Plan of Care (TPOC)—the enterprise-level Lean planning event—Indy launched six Value Streams (VSs) during the year, which included a total of 53 RPIWs (Rapid Process Improvement Workshops). They also rolled out 40+ new CDI (Continuous Daily Improvement) huddle areas and taught six Lean “Belt Training” courses. VA-CASE was there to guide and assist this work, and throughout 2013, six additional sites began working with VA-CASE to implement or continue their development of a Lean Management System, including Palo Alto, CA; Cincinnati, OH; New Orleans, LA; Syracuse, NY; and FHCC Lovell and Jesse Brown, both in Chicago, IL.

Program Impact

Mixed methods evaluation was utilized to quantify the impact of the deployment programs and facilitate understanding of deployment strategy successes and failures.

As outlined in the table to the right, results from the FY12-14 evaluation of the Lean Enterprise Transformation pilot sites show the program to be very successful. Estimates based on initial pilot results indicate that deployment and transformation timelines have been reduced to <5 years. In FY 14 alone 30 Value Streams were opened across the 6 longest deployed sites, involving 250 distinct improvement events and over 2,500 unique staff participants. Additionally, Lean Management System methods, such as continuous improvement huddles and area improvement centers have been initiated in approximately 140 units, facilitating the implementation of over 2,300 small-scale, local improvements.

Initial analysis of qualitative interviews conducted with site representatives indicate that Lean Transformation approaches, such as A3 thinking, have become the way of reporting and conducting improvement within their organizations. Sites also report improved organizational strategic alignment and data-based decision making, with managers indicating improved understanding of how improvement efforts are linked to organizational strategic goals. The average cost per site for external consultant and facilitation support during the pilot has been \$300,000/year (range = \$130,000-\$650,000).

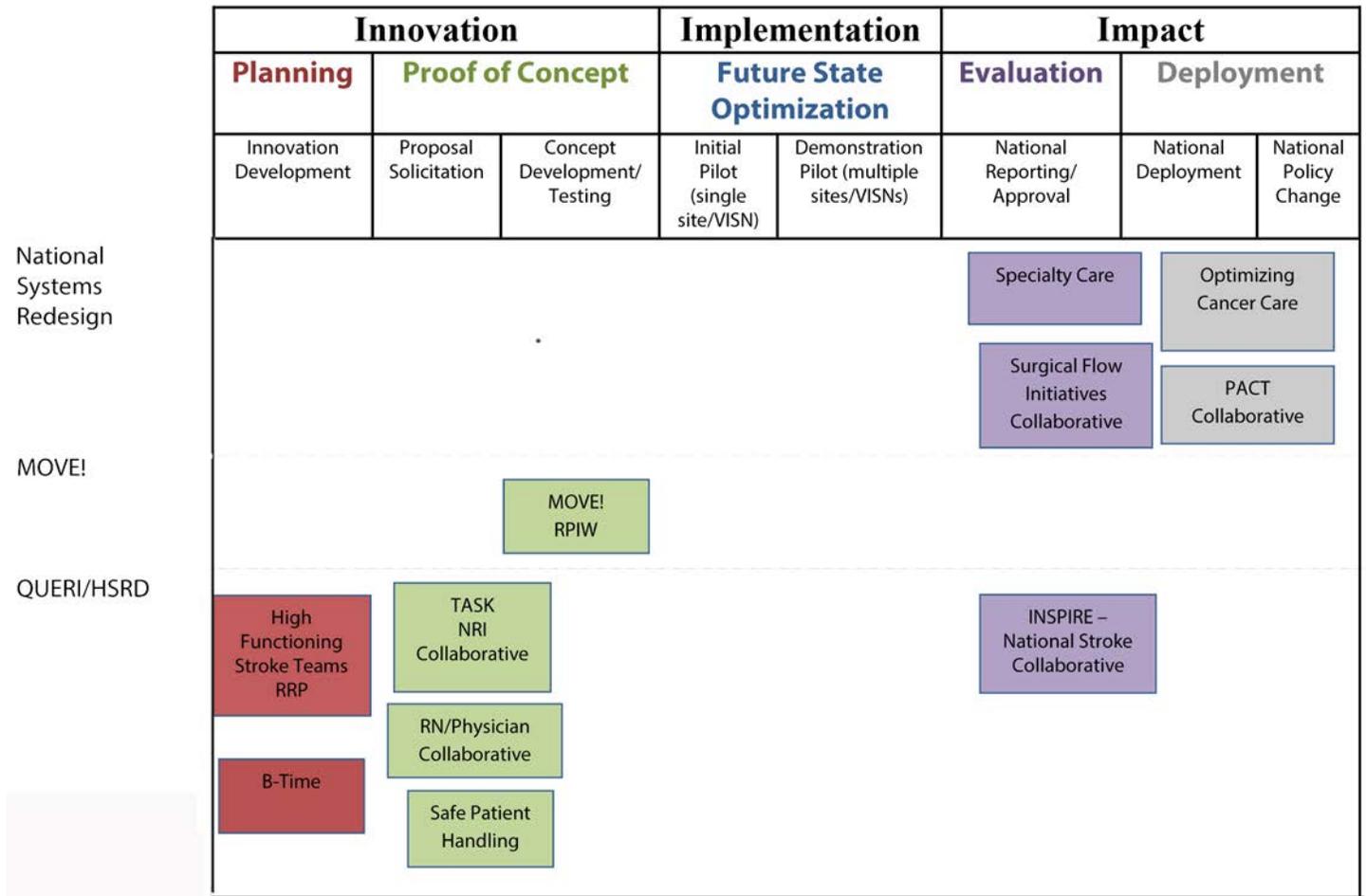
Lean Enterprise Transformation Pilot Sites (through end of FY14)						
Evaluation Components	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6
# of Month LET Deployment	35	24	24	24	18	14
# of Value Streams Opened	7	3	8	5	4	3
# of RPIWs/RPIEs Conducted	93	15	44	9	32	14
# of Unique Staff Participating on RPIWs	770	334*	351	325	381	329
# of Lean Management System/Continuous Daily Improvement Areas Initiated	56	30	0	21	27	5
# of Improvements Initiated via Lean Management System (Continuous Daily Improvement)	2065	no data	no data	250	52	6
# of Unit Based Initiatives (A3s)	35	74	11	5	29	5
		(FY13 data only*)				

Results of Lean Enterprise Transformation Pilots



The Clinical Partnerships in Healthcare Transformation (CPHT) is a partnership with VHA and VA-CASE that accelerates the integration of Applied Systems Redesign (SRD)/Operational Systems Engineering (OSE) into everyday business practices throughout the VHA. Our VA-CASE CPHT team of engineers and academic partners utilize SRD/OSE principles and tools to design, test, and implement optimized business processes and promote increased efficiency, effectiveness, accountability, accuracy and standardization of workflow and decision-making. Our key VHA partners include the National Optimizing Care Committee, National Office of Specialty Care, and the National Surgery Office.

CPHT Project Pipeline



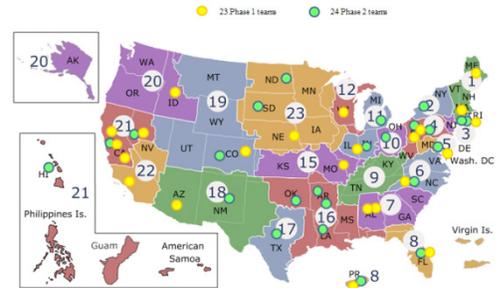
Specialty and Surgical Care Improvement Event (SSCC)

Specialty and Surgical Care Improvement Event (SSCC) (Phase 2)

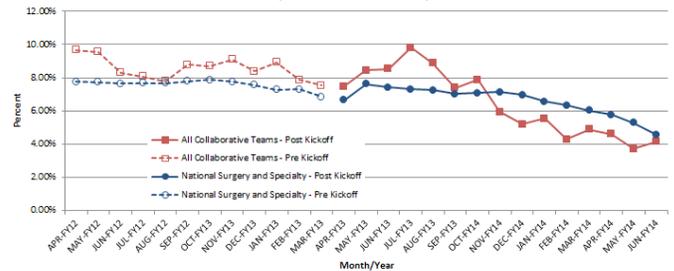
Project Overview & Objectives

The Specialty and Surgical Care Collaborative was a VHA-wide learning collaborative that included 24 clinical teams as participants from different specialty and surgical areas. A total of four virtual learning sessions were offered from May 2013 through March 2014. These sessions focused on Access, Care Coordination and Management, and Practice Redesign strategies and offered

Specialty and Surgical Care Collaborative VISN Map



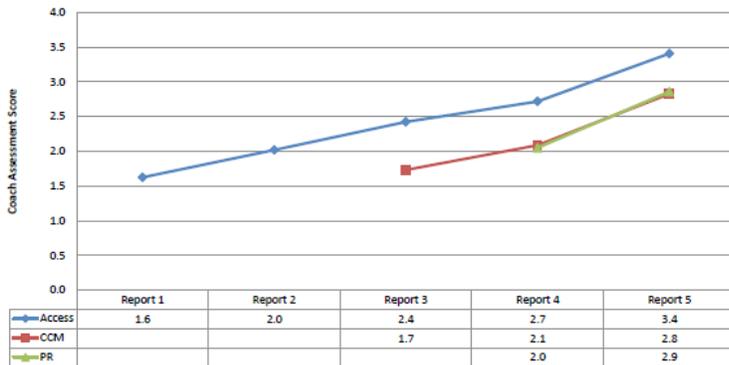
Percent of Consults Identified as "Cancelled" (From VSSC Consult Cube)



Summary of Performance (All 24 Teams NATIONAL)

- Trend across Pillar most recent achievement score
 - 2.5 = tests of change begun, no measureable progress
 - 3.0 = several successful tests of change with outcomes
 - 3.5 = testing multiple changes; measureable progress over >2 data points

Average Score Trend across Pillar



opportunities for teams to network and work with their VHA team coaches.

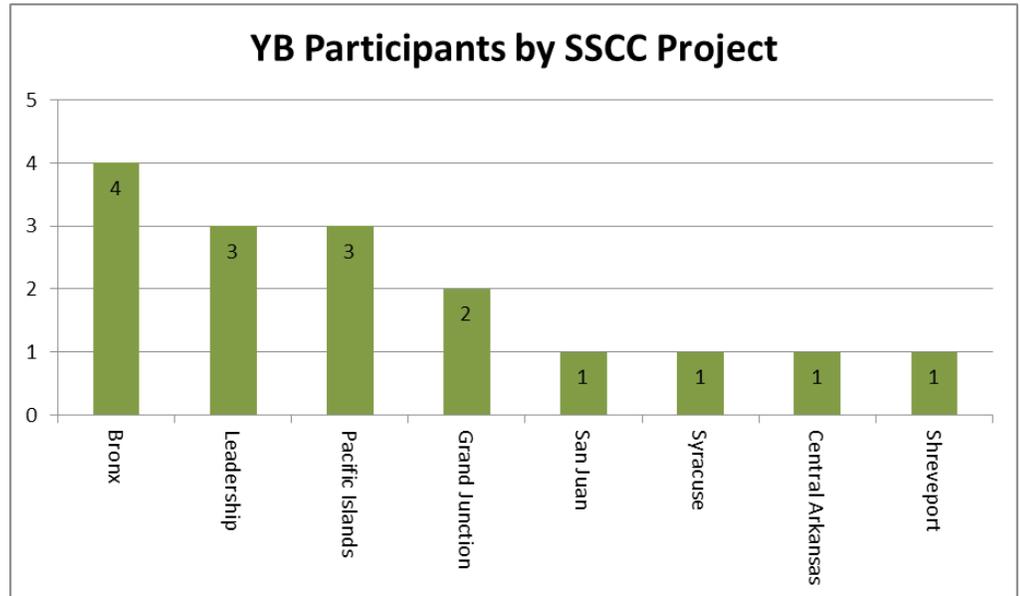
Project Results

VA-CASE facilitated the measurement practices of collaborative metrics for the national planning team and individual participating teams, held weekly "Industrial Engineer Office Hours" throughout the collaborative, presented collaborative measures and measurement practices to participants during pre-work calls,

monitored and reviewed routine reports submitted by teams, participated in planning calls, supported individual coaches and teams as needed, and completed an analysis of metrics, Plan-Do-Study-Act activities and coach scores (from team reports) at the end of the collaborative.

Project Impact

Teams participated in 228 individual Plan-Do-Study-Act activities by the end of the collaborative. Team members were also invited to participate in Lean Yellow Belt training during FY15. Participants from 8 different collaborative teams are enrolled in the training so far (see Yellow Belt (YB) participants by SSCC Project in the figure to the right).



Specialty and Surgical Care Improvement Event – Return on Investment (Phase 2)

Project Overview & Objectives

The Specialty and Surgical Care Collaborative evaluation team conducted a Return on Investment (ROI) evaluation for the FY13-14 offering of the Specialty and Surgical Care Collaborative training program. The objective of VA-CASE’s CPHT staff was to, among other tasks, continue to collect team data and analyze the VSSC data in order to understand the impact this training may be having on the outcomes most important to the organization.

Project Results & Impact

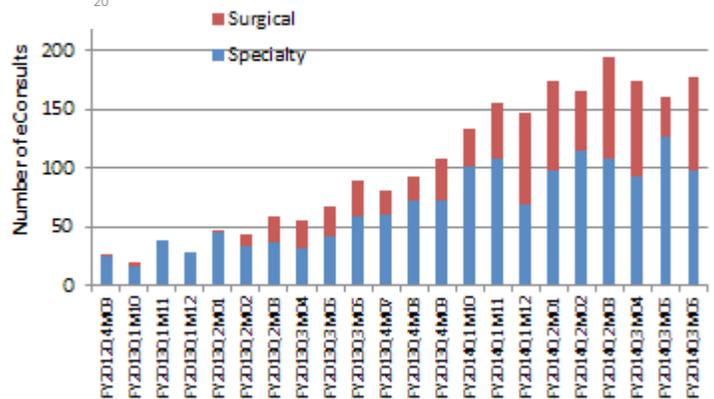
CPHT staff, with input from the Specialty and Surgical Care Collaborative evaluation team, collected collaborative team data through the end of July 2014, which included data through June 2014, and analyzed selected measures associated with the collaborative through August 2014. CPHT worked with the evaluation team to provide VHA stakeholders with a complete evaluation report that can help them determine the success of this training program. Some examples of the data provided by CPHT are shown below.

Business Impact

Measures	Average Participant Estimated Impact <small>(improvements x attributed to collaborative x confidence)</small>					
	All		Specialty Track		Surgical Track	
	N	%	N	%	N	%
Improvement in Ambulatory Sensitive Admissions	33	8.50%	25	8.24%	8	9.46%
Reduction in Contract Cost	34	11.96%	25	9.05%	9	20.02%
Reduce Cancellations	36	14.37%	27	11.29%	9	23.61%
Reduce No Shows	37	17.25%	28	14.60%	9	25.49%
Increase Multiple Appointments in Same Trip / Reduce Average # of Separate Appointments	36	18.08%	26	14.10%	10	28.45%
Reduce Missed Opportunities (unused medical appts)	37	19.35%	28	16.84%	9	27.16%
Reduction in Feed Out Patients	34	19.80%	26	18.01%	8	22.70%
Decreasing Risk	35	20.63%	26	17.30%	9	30.24%
Decreasing Costs	36	22.11%	27	18.89%	9	31.80%
Increase in Patient Satisfaction	37	24.40%	27	21.59%	10	38.83%
Decreasing Cycle Time	38	26.40%	29	23.81%	9	34.76%
Improving Quality Other than Patient Care	40	28.47%	30	24.83%	10	40.47%
Increase in Clinic Efficiency	37	29.60%	28	28.01%	9	34.44%
Increasing Productivity	38	29.97%	28	26.46%	10	39.80%
Access to Care	37	33.90%	28	33.28%	9	35.82%

*Includes only respondents' data if answered all three questions (Improvement %, attribution %, and confidence %)
responses represent average % therefore average for all % will not equal sum of specialty track % + surgical track %

Number of eConsults
(all collaborative teams combined)



Specialty and Surgical Care Improvement Event – Sustain and Spread (Phase 3)

Project Overview & Objectives

During FY14, planning occurred for a new phase of the Specialty and Surgical Care Collaborative. The initial objective was to develop improvement capability within the VISN Medical Center facilities in order to implement and sustain/spread SSCC concepts and strategies into specialty and surgical care practices. Participants were to gain expertise in improving access to their core clinical practice while integrating new venues of Specialty and Surgical Care.

Project Results & Impact

In response to the change in focus on access issues within the VA, this project became preparation for the FY15 collaborative. The CPHT deliverables that came out of this project included enhanced common measurement tools, an updated Pre-work Guide, a revised Measurement Guide and a newly formatted team report template.

Surgical Flow Improvement Initiative (SFII)

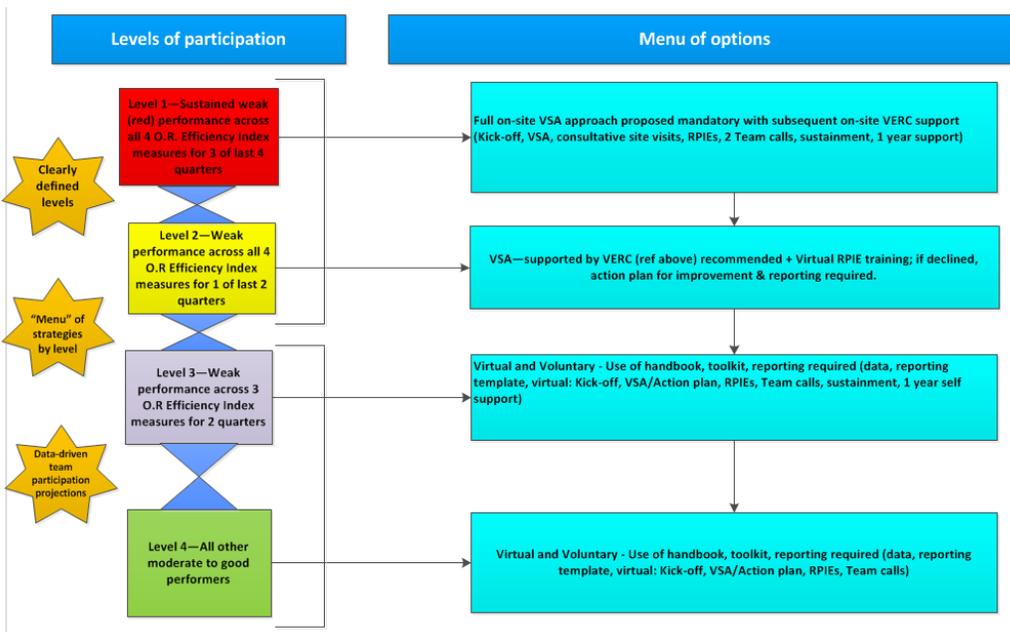
Project Overview

The Veterans Health Administration (VHA) Office of Systems Redesign (SR) and Improvement, in collaboration with the (VHA) National Surgery Office (NSO), will be conducting a national Surgical Flow Improvement Initiative (SFII) in FY 2014 and FY 2015 with several phases. The objective of the national SFII is to improve VHA operating room flow, efficiency, and operations. The sites participating in the Surgical Flow Improvement Initiative will be designated at multiple levels of participation based upon an algorithm applied to sites' performance as reflected by the NSO-released O.R. Efficiency Index. The O.R. Efficiency Index is released quarterly as a component of the VA Surgical Quality

Improvement Program (VASQIP) report.

Based upon performance challenges reflected in the O.R. Efficiency Index, sites receiving the highest level of support for this improvement initiative are likely to include numerous stakeholders, including but not to be limited to: the Chief of Surgery, O.R. Nurse Manager, Chief of Staff, Systems Redesign Coordinator, Chief of SPD, EMS Chief (or responsible supervisor for

O.R. EMS), Surgeon(s), O.R. Nurse(s), additional staff to provide a "Fresh Eyes" approach, and Technical/Data Support staff. In addition, at the VISN level, there should be involvement by VISN Surgical Workgroup members, including the VISN Chief Surgical Consultant (VCSC), VISN Anesthesia representative/designee, VISN O.R. Nurse Manager representative/designee, and VASQIP Nurse, among others.



Algorithm used for this initiative

A key component of this improvement initiative is the application of a Value Stream Analysis (VSA) approach, which is sustained by in-person and virtual support from VA-CASE and Systems Redesign staff through the use of tools, process improvement activities, and data analysis/measurement support. Key measures comprising the O.R. Efficiency Index include: First Case On-Time Starts, O.R. Cancellation Rates, O.R. Utilization, and O.R. Lag Time (Turnover Time), with additional definitions for each measure available through the VASQIP reporting site.

To execute this improvement initiative, VA-CASE will provide implementation support services in FY14 and FY15. This support will include 1) administrative support for improvement activities at multiple levels within participating sites; 2) coordination of all direct (on-site and virtual) interactions at Level 1 and Level 2 sites; and 3) technical support to the SFII planning and steering groups. More specifically, VA-CASE Industrial Engineers (IEs) will conduct a series of local Rapid Process Improvement Events (RPIEs) identified in the third phase of the initiative, and will participate as observers during the initial VSA site visits at Level 1 and 2 sites. IEs will also provide technical support to Level 1, 2, and 3 sites, with these designated by name.

Project Objectives

- Improve O.R. timeliness and efficiency for VAMCs that require improvement based upon objective data from the O.R. Surgical Efficiency Index.
- Fully utilize VistA Surgical Package data fields and data collection/analysis methodologies

to drive intra-operative surgical flow improvement.

- Conduct the national Surgical Flow Improvement Initiative (SFII).
- Offer VERC Support Services SOW for FY14 – 15 (07/21/14) – Ver 6 Page 5.
- Address Spread/Sustainment barriers and strategies early to enhance probability of long-term success (i.e. build on “lessons learned” during FY13 surgical flow sustainment project).
- Improve pre-operative, post-operative, and non-O.R. patient flow processes as contributory to intra-operative patient flow.
- Develop a tailored strategic deployment plan for each VAMC identified for the most intense level of involvement (Level 1 and 2 sites per SFII algorithm).
- Make surgical flow improvement tools widely available to support all VA.

Project Results & Impact

The current state of the national SFII includes:

- 12 Completed VSAs as of 12/9/14 in the following locations:
 - Omaha, Fresno, Alaska, New Orleans, Wilkes-Barre, East Orange, Brooklyn, Lovell, Saginaw, Boise, Amarillo, and Lake Baldwin
- 8 RPIW 1s Completed
 - Omaha, Fresno, New Orleans, Wilkes-Barre, East Orange, Brooklyn, Alaska and Saginaw
- 1 RPIW 2 Completed
 - Fresno

- 16 Facilities received the original request for participation from the National Surgery Office & Office of Systems Redesign/Improvement:
 - 13 sites confirmed participation and confirmed VSA dates.
 - 1 site was removed from participation list due to improvement (Miami).
 - 1 site is participating in Lean Management System pilot, with progress to be monitored (Hines).
 - 1 site was added and confirmed for participation (Wichita).
- VA-CASE input to SFII Guidebook/Toolkit was provided and completed in May 2014, including the following tools:
 - VSA Definition, General Metric Overview, VSA Pre-Work, Value Stream Mapping Sample

SFII results are featured by facility and date in the following figure.

Facility	VSA Date	CONFIRMED	PD FACULTY	CPHT FACULTY	CPHT RPIW Support	RPIW 1	RPIW 2	RPIW 3
Omaha	8/19/2014	YES	Ponte	Corum	Garrison	9/15/2014	N/A	N/A
Fresno	9/2/2014	YES	Poynor	Kirchgassner	Bargeloh	9/22/2014	11/17/2014	1/19/2015
Alaska	9/16/2014	Yes	Poynor	Slaughterbeck	Tingley	12/8/2014	N/A	N/A
Wilkes-Barre	9/23/2014	Yes	Poynor	Wright	James	11/17/2014	N/A	N/A
New Orleans	9/23/2014	Yes	Workman-Germann	Howard	Dendinger	N/A	N/A	N/A
East Orange	10/7/2014	Yes	Harris	Howard	Mika	12/3/2014	3/3/2015	N/A
Brooklyn	10/21/2014	Yes	Harris	Kirchgassner	Tingley/Mika	12/8/2014	N/A	N/A
Lovell Chicago FHCC (N.Chicago)	10/28/2014	Yes	Poynor	Slaughterbeck	Valette	1/12/2015	N/A	N/A
Saginaw	11/4/2014	Yes	Cech	Howard	James	12/9/2014	N/A	N/A
Boise	11/18/2014	Yes	Birkle	Corum	Harris	3/17/2015	N/A	N/A
Amarillo	12/2/2014	Yes	Poynor	Tingley	Dendinger	2/2/2015	N/A	N/A
Lake Baldwin	12/2/2014	Yes	Ponte	Kirchgassner	James	N/A	N/A	N/A
Las Vegas	1/6/2015	Yes	Johnson	Corum	Dendinger	TBD (Mar15)	N/A	N/A
Wichita	TBD (Feb15)	TBD	TBD	Wright	Amburgy	TBD (Apr15)	N/A	N/A
Jesse Brown	N/A	N/A	N/A	N/A	Slaughterbeck	N/A	N/A	N/A
Total sites=15	Comp VSA's-13		LMS site			Comp RPIW's-8	Comp RPIW's-1	Comp RPIW's-0
	Pend VSA's-1		Pending dates			Pend RPIW's-4	Pend RPIW's-1	Pend RPIW's-1
			Completed					
			N/A for this site					

Project Next Steps

The next steps for the SFII include:

- Schedule Wichita VAMC Value Stream Analysis (VSA) for Jan/Feb 2015
- Continue to obtain signed Partnership Agreements from facilities (2 pending)
- Fully execute VA-CASE-supported VSAs and RPIWs
- Aggregate and analyze data to measure initiative progress
- Execute Rapid Process Improvement Event (RPIE) training in Jan 2015

National Activations Office (NAO)

National Activations Office (NAO) – Checklist (Content Development, Content Analysis, Design and Utilization)

Project Overview

In FY14 the National Activation Office (NAO) approved a project to develop a new computerized checklist that could be used by the NAO to standardize, consolidate, and validate new facility openings—resulting in an overall safer environment for our Veterans.

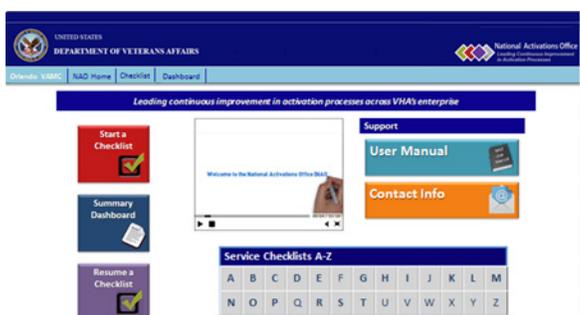
Project Objectives

The NAO Checklist “Go Live” is being created as a standardized electronic checklist tool that allows the NAO, in conjunction with VACO program offices and Subject Matter Experts (SMEs) in the field, to help identify major requirements needed for individual services and programs. The checklist will help NAO appropriately rationalize whether a service or program is ready for operations. Service and program requirements will be documented in a computer-based “checklist” that will provide a report of requirements “met,” “partially met” or “not met,” as well as actions required prior to operation, if any.

Project Results

In FY14, 13 checklists were researched and created (in paper versions and prototype MS Access versions) by interviewing the “Voice of the Customers” in the following thirteen selected services:

1. Intensive Care Unit (ICU)
2. Sterile Processing Services (SPS)
3. Community Living Center (CLC)
4. Emergency Management Services (EMS)
5. Environmental Safety
6. Environmental Services (Housekeeping)
7. Inpatient Mental Health- Nursing Unit
8. Police and Security
9. Ambulatory Care - Women’s Health
10. Imaging

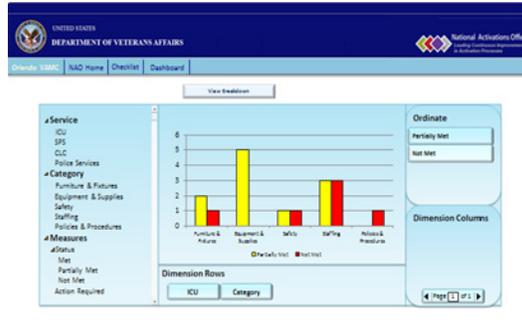


- 11. Pharmacy
- 12. Ambulatory Care- Primary Care
- 13. Inpatient Surgery-Post Operative Nursing Unit

Next, these thirteen services/programs were broken down into five categories and subcategories identified by NAO as the basic, critical requirements for opening a new VA healthcare service in a new facility, including furniture & fixtures, equipment & supplies, safety, staffing, policies & procedures.

Finally, three development models were utilized to produce the final multi-user checklist:

- In the **first model**, a simple, single-user checklist in MS Excel was used to record the checks of services and categories completed by facilitators at each facility.



- The **second model** included a standalone database (MS Access) to be used by single users to record information on the checklist and disseminate results through a web-based report.
- The final **third model** uses a shared multi-user, web-based system (MS SharePoint) to complete the checklist at different locations in real time to record checklist results and provide immediate feedback.

Several workgroups were established to formulate and design these tools and to test and validate the checklist's effectiveness and implementation:

- **Content Development/Analysis Workgroup** reached out to over sixty-seven SMEs within VHA to review checklist content specific to their areas of expertise and to validate the thirteen services and programs.
- **System Design/ Product Development Workgroup** build three models of the checklist to be tested with the first being a simple Excel document, second a MS ACCESS database, and finally a SharePoint shared checklist NAO Go Live system.
- **Usability and 508 Compliant Workgroup** created usability guides which will test the functionality of each of the models created and provide a basic usability test to see the functionality of the systems with the client.

Project Impact

At the end of FY15, the final version of the checklist will be circulated as a **National Release** to allow leadership and members of the NAO community to conduct a full-scale utilization test with maximum amounts of site participation. A final review of functionality will be assessed prior to national release.

National Activations Office (NAO) –Knowledge Management Portal (KMP)

Project Overview

In FY13, a SharePoint-based Knowledge Management Portal (KMP) was created to provide a “one-stop shop” of NAO Activation Program information, collaboration platforms, self-directed training and Activation-related problem-solving materials.

Project Results

In FY14, VA CASE was contracted to continue development and expansion of the KMP, including creation of an extensive library of activation documents, templates, lessons learned and other helpful materials. The expanded KMP will also feature an “Ask an Expert” section that routes users’ activations-related questions to experts who provide prompt, informed answers. The KMP will also include a helpful FAQ section, blog and mailing list.



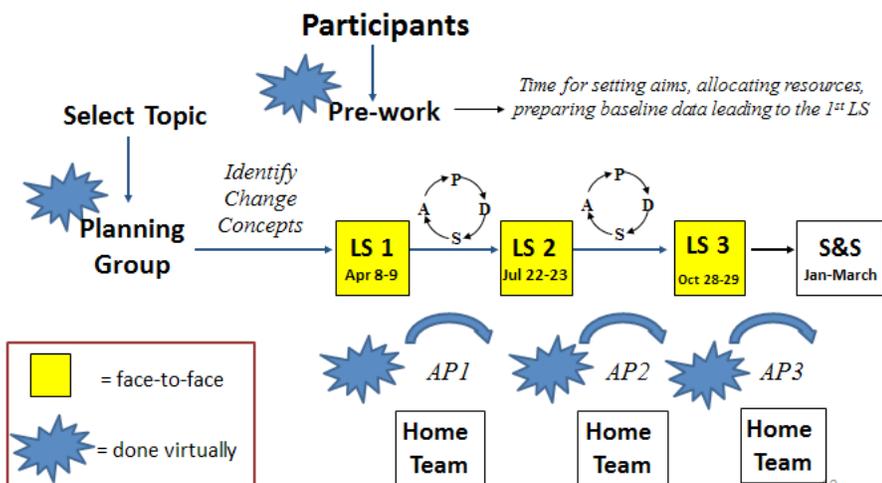
Integration of Chaplains in Mental Health Care (MH-C)

Project Overview & Objectives

The Department of Defense (DoD) and VA jointly formed the Integrated Mental Health Strategy (IMHS) Strategic Action (SA) Plan #23 based on studies suggesting that Veterans and service members who suffer from mental health problems frequently turn to chaplains. This joint IMHS SA resulted in a series of researched and vetted recommendations for improving mental health care for Veterans and service members through the integration of chaplain services. These recommendations served as the foundation for a Joint Incentive Fund (JIF) proposal, a component of which includes conducting a learning collaborative (see figure below) with the following objectives:

- Learn about strong practices for effectively integrating chaplaincy into PTSD and mental health care services at participating sites.
- Teach quality improvement techniques to teams of mental health professionals and chaplains.
- Establish participating facilities as resources for other sites seeking to better integrate mental health and chaplain services.

Each learning session (LS) during the collaborative is centered on process improvement, with teams working on interdisciplinary aims across the following focus areas:



Joint Learning Collaborative Process with Learning Sessions

Learning Session 1 (Screening & Referrals)

Evaluate current practices for screening patients for spiritual and mental health needs with the intention of strengthening existing practices and/or implementing new research-informed screening practices where none exist. Strengthen and/or develop clearly articulated processes for referring patients between disciplines, including processes to contact the other discipline, communicate the core issue, articulate a basic care plan, and conduct follow-up.

Learning Session 2 (Assessment & Communication/Documentation)

Develop, improve, and/or ensure standardized use of multidimensional spiritual and mental health assessments that can contribute to making effective referrals and providing relevant healthcare information to the other discipline. Establish regular communication practices, ideally as part of recurring integrated care team meetings, and document care and consults in a useful manner to the other discipline (at facilities where chaplain documentation of care is expected).

Learning Session 3 (Interdisciplinary Relationships)

Champion cross-disciplinary training opportunities to, at a minimum, inform colleagues about the aims of and rationale for this learning collaborative. Develop a better understanding of chaplain and mental health provider roles. Session culminates in the

development of formal documentation of how mental health and chaplain services collaborate (e.g., care coordination agreement).

Project Results & Impact

There are seven VA and seven DoD teams participating in the collaborative, which is currently in the last action period (AP3). A sample of one VA team's data is featured in the figure to the right. Some team metrics for this collaborative include:

- % patients screened for mental health or pastoral needs
- % of mental health providers or chaplains educated on role of chaplain or mental health services, respectively
- % of patients who screen (+) for spiritual needs and are referred within 24 hours
- % of consults completed within seven days of referral
- Increase % of consults
- Increase # of consults
- % of staff using formal consult template
- % couples receiving relationship assistance within 60 days (unique to one team)

At the close of AP3 and the beginning of the sustain/spread phase, all teams are expected to report-out to their local facility leadership on their improvement efforts and the project's impact using a VA-TAMMCS presentation template.

Specialty Care Transformation (SCT)

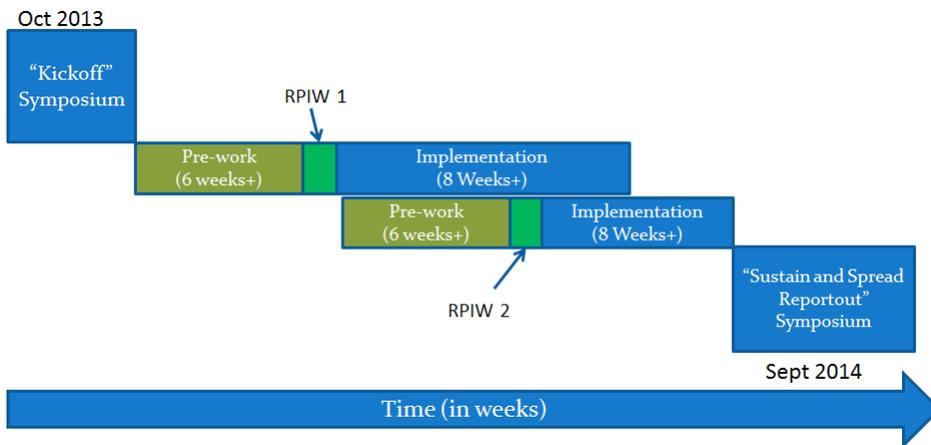
Specialty Care Transformation – HYbrid Collaborative

Project Overview

The Office of Specialty Care Services (OSCS) (formally the Office of Specialty Care Transformation (OSCT)) invited participation in a Request for Proposal process to obtain FY13 funding to develop team-based, multi-specialty care, referred to as Specialty Care (SC) Neighborhood. The goal of the request for proposal was to improve access to specialty care for Veterans. Ten teams nationwide participated in this process improvement initiative.

Project Objectives

OSCS hired VA-CASE to provide implementation support services. The figure below illustrates the CPHT approach to the Hybrid Collaborative model, which consisted of a kickoff virtual symposium, two Rapid Process Improvement Workshops (RPIWs), and a sustain/spread report-out conducted through a virtual symposium one year later.



SCT Hybrid Collaborative Model

Project Results & Impact

The kickoff symposium outlined the sustainment and spread vision of specialty care improvement approaches, and planned the specific goals and strategies for each site’s work. Teams were introduced to their CPHT Industrial Engineers (IEs) and learned how to conduct RPIWs (see “RPIW Agenda” figure below). RPIW1

focused on capacity-building, where the CPHT facilitator did most of the guidance and teaching. RPIW2 was designed to empower the teams to 1) own the RPIW process; 2) lead new projects in the planning phase with the help of CPHT on-site staff; and 3) utilize the processes and tools after the project ended.

	Mon	Tue	Wed	Thu	Fri
8am - 9am	Kick-off remarks by RPIW Champion; RPIW process summary; ground rules; process current state discussion.	Review Day 1; collect baseline data for current state; conduct additional process observation visits if needed.	Review Day 2; introduce "small tests of change" concept (PDSA cycles).	Review Day 3. Discuss final actions and activities to be completed this day.	Discuss final presentation details with team; team photo.
9am - 10am	Voice of the customer data gathering (VOC); waste walk (process observation visits).	Collect baseline data for current state; conduct additional process observation visits if needed.	Gap analysis; identify improvement ideas to test and assign PDSAs.	Conduct PDSA cycles. PDSA team activities documented with action photos.	Team makes report-out presentation to Leadership.
10am - 11am	Voice of the customer data gathering (VOC); waste walk (process observation visits).	Review and finalize collected current state data; discuss process flow and introduce flow cell concept.	Conduct PDSA cycles. PDSA team activities documented with action photos.	Conduct PDSA cycles. PDSA team activities documented with action photos.	
11am - 12pm	VOC results; waste walk observations.	Discuss the ideal state; begin to develop the process future state.	Conduct PDSA cycles. PDSA team activities documented with action photos.	Conduct PDSA cycles. PDSA team activities documented with action photos.	Debrief with team. Celebrate and adjourn.
12noon - 1pm	LUNCH				
1pm - 2pm	Flow chart current state of process; define process measurements.	Continue development of future state.	Conduct PDSA cycles. PDSA team activities documented with action photos.	PDSA teams report-out; summarize PDSA results.	VERC Staff Flyout
2pm - 3pm	Flow chart current state of process; define process measurements.	Complete future state.	Conduct PDSA cycles. PDSA team activities documented with action photos.	Final data collection and analysis; identify tested changes to implement as process improvements.	
3pm - 4pm	Complete current state flow chart and identify needed process data; discuss A3 format and begin to develop report-out slide set.	Develop and practice informal progress presentation to Management Guidance Team (MGT). Present to MGT 3:30-4:00 pm.	PDSA teams report-out; summarize PDSA results.	Develop the confirmed state; develop improvement implementation plan (90 days) and control plan; finalize A3 and report-out presentation.	
4pm - 4:30pm	Day 1 summary and look at Day 2 agenda. Adjourn.	Day 2 summary and look at Day 3 agenda. Adjourn.	Day 3 summary and look at Day 4 agenda. Adjourn.	Day 4 summary and look at Day 5 agenda. Adjourn.	

RPIW Agenda

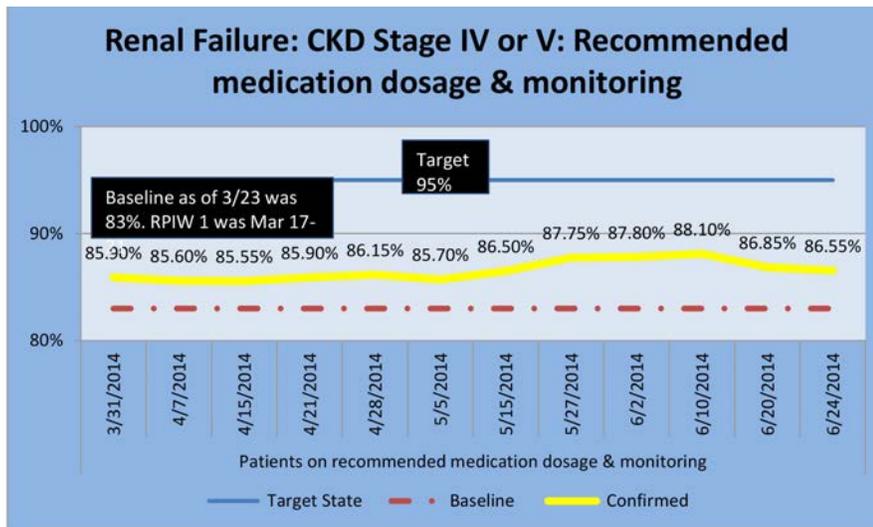
Specialty Care Transformation – Return on Investment (ROI)

Project Overview

The Specialty Care Transformation (SCT) Hybrid Collaborative ROI project was designed to measure the hard and soft savings of implementing process changes during the Specialty Care Transformation Hybrid Collaborative, as well as the potential for future growth based on initial improvement concepts in specialty care.

Project Results

Collected data is displayed within the ROI project to show past and current process improvements as well as anticipated future growth. This lifecycle measurement will provide continual data for future projects and user capabilities, and a valid picture of real time ROIs for specialty care clinics. One site’s data collection and display is featured in the figure below.



Data Collection and display for one of the ten SCT teams

Specialty Care Transformation – Sustain and Spread

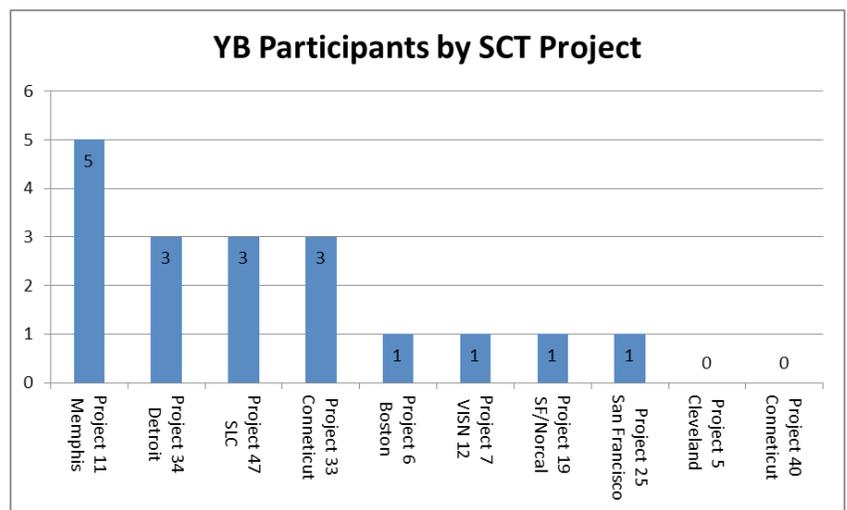
Project Overview & Objective

The Specialty Care Transformation (SCT) Hybrid Collaborative Sustain and Spread phase occurred from October to December 2014, immediately following the collaborative Symposium II. The objective of the Sustain and Spread phase was for project teams to update their Industrial Engineers (IEs) on Sustain and Spread efforts.

Project Results & Impact

IEs provided guidance on overcoming barriers, collected additional process improvement information (i.e., updates on PDSAs), and reviewed newly collected data.

Furthermore, CPHT encouraged the project teams to participate in Yellow Belt (YB) training. As of January 15, 2015, 18 SCT participants had registered for YB training. Such training will ultimately allow collaborative participants to obtain YB Certification.



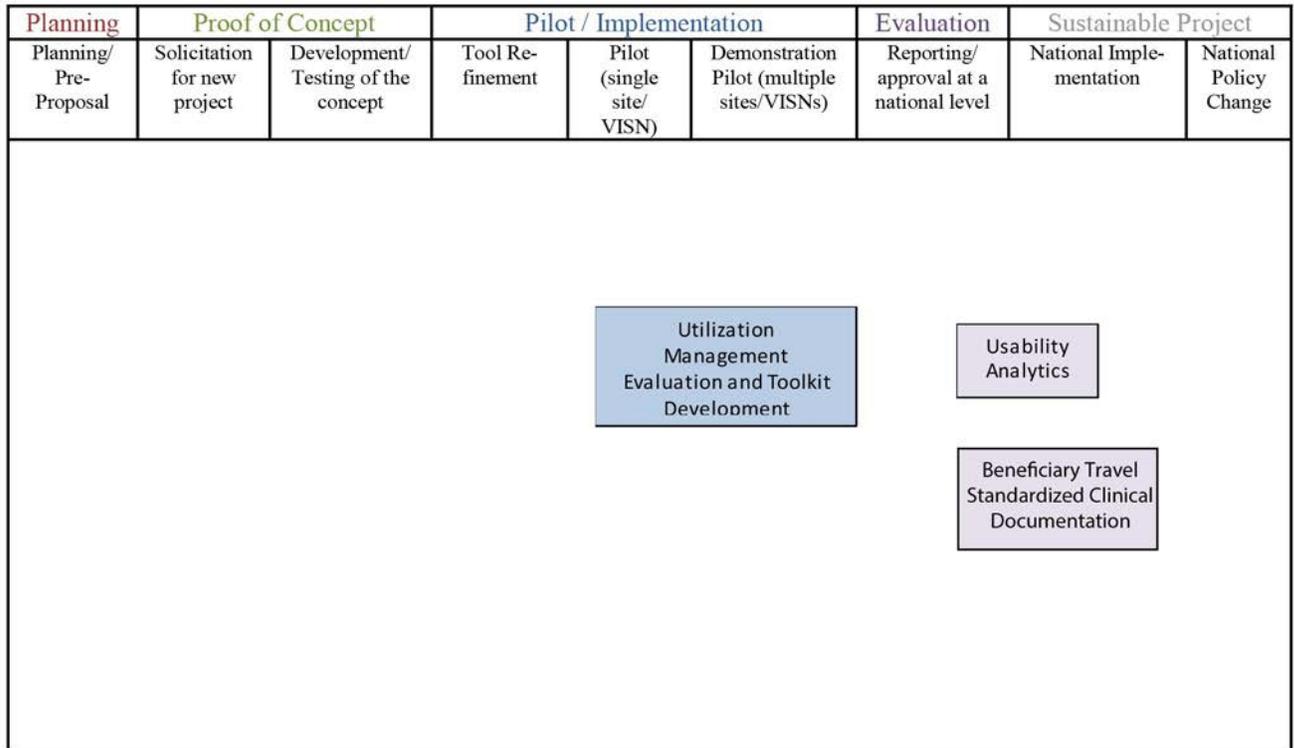
SCT Yellow Belt Training Participants by Project Team



Data Engineering Resources (DER) provides support derived through the design and adaptation of management systems theories, program management approaches and data engineering centered on informatics and analytical services. This design is built to support continual improvement and efficiencies in healthcare systems. In addition to providing resources to support external data engineering, the DER program provides internal program and project management expertise to support a variety of initiatives.



DER Project Pipeline



Data
Engineering
Workstream



Office of Administration Human Resources Administration (OAHRA)

OAHRA is tasked with acting as the landlord for all the rental property occupied by VA departments within the greater Washington D.C. area, which includes 8 buildings and 1.6 million square feet of space. The OAHRA initiative has two distinct objectives: updating AutoCAD drawings for areas under VA control, and automating an invoicing system for rental spaces.

Project Overview

The first task involved updating and validating the outdated AutoCAD drawings for each of the leased areas under VA control. This was a monumental task that involved coordinating access to each building during business hours without disrupting the day-to-day activities of each area. Two to three teams of three people were on the ground in Washington for several weeks measuring and correcting the outdated drawings. Once each drawing was corrected, all the data was entered into the AutoCAD software and vetted with the leasing department within OAHRA.

Project Results and Future Development

Tied to this task is a GIS prototype for two of the buildings that layers in equipment, common space and eventually actual personnel assets. The GIS prototype has been successfully demonstrated to the customer and now awaits access to each data source that the customer wants layered into the dynamic layering platform.

The second task involves updating a manual process by collating and compiling three distinct rent costs for the GSA into an automated invoicing system. This automated system is also to be interfaced with the GIS prototype to capture all spatial data in one place. The initial phase of this project is to be completed by the end of September 2014, with Phase Two beginning October 2014.

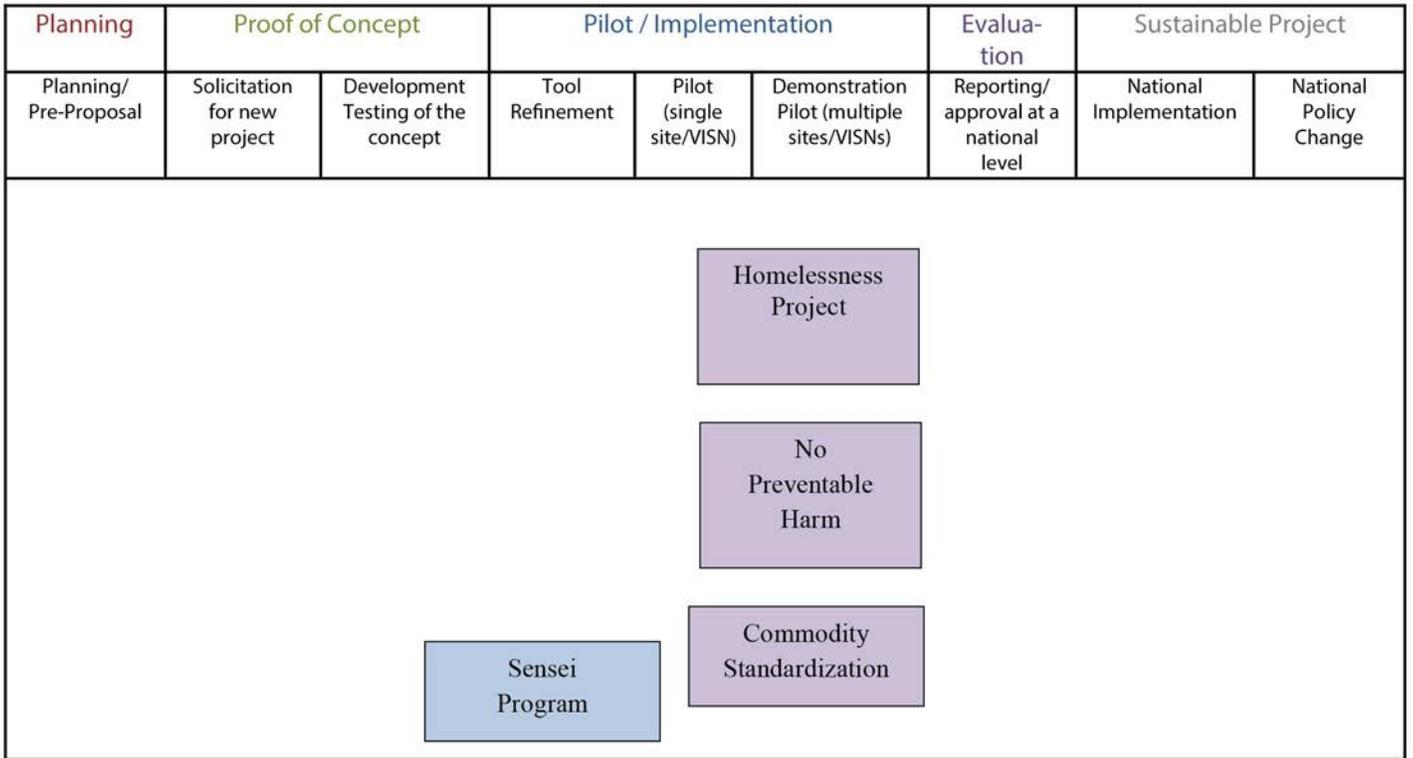


Floor Plan View and Navigation Processes for GIS Prototype

VISN 11 Program

The VISN 11 Program works with the VA Veterans in Partnership Network (VISN 11), including the VISN 11 Network Office and the associated eight VA Medical Centers, to provide the learning and application of Systems Redesign principles. Our program provides VISN 11 staff with the knowledge, skills, and support needed to design, develop, pilot, implement, coordinate/manage, and sustain/spread Systems Redesign, Lean or process improvement initiatives through partnership with an industrial engineer, improvement advisor or process improvement professional.

VISN 11 Project Pipeline



Sensei Partnership Program

In October 2012, VISN 11 collaborated with both VA-CASE's VISN 11 Program and Professional Development Program to develop the Lean Sensei Partnership Program. This initiative offered Senior Consultants/Consultants with extensive experience in Organizational Lean Transformation as part of VISN 11's Lean Transformation efforts.

Project Objectives

The major objectives of the Lean Sensei Partnership Program were for Senior Consultants to coach and mentor today's Senior Leaders to promote organizational change through Lean Transformation; Obtain a wide array of experiences and expertise, and to objectively transfer that learning to others; and Provide direct and immediate feedback necessary for supporting organizational change.

Project Results & Impact

Facility and VISN Leadership were paired and matched with expert-trained VA-CASE Senior Consultants to assist their respective Senior Leaders with organizational transformation. Senior Consultants initiated contact with their matched/paired facilities starting in January 2013, when they began the year-long relationship and organizational transformation process. Facility Systems Redesign Coordinators, being integral to the transformation process, served as liaisons between Senior Consultants and Facility Leadership.

As part of transformation efforts, several facilities have developed their Strategic A3 and Lean Transformation Plan of Care to include Value Stream Analyses as well as an associated cadence of Rapid Improvement Events, projects, just-do-its, and Lean Management System elements.

Senior Consultants are also working with VISN and Facility Leadership to fundamentally change and improve upon the annual Strategic Planning process through a focused approach on Strategy Deployment and Oversight. Lean methodology and tools such as A3 Thinking/Root Cause problem-solving, coupled with visual management for effective oversight, are now incorporated into the annual VISN 11 Strategic Planning Summit. At the April 2014 V11 Strategic Planning Summit, for instance, participants re-focused their efforts on explicitly performing a critical few priorities rather than several more trivial initiatives.

Homelessness

Since 2012, VA-CASE VISN 11 Program has collaborated with the VISN 11 Homeless Team to help reduce VISN 11 Veteran Homelessness. Ending Veteran Homelessness is a top national priority identified by President Obama and the Secretary of Veterans Affairs. For the past three years, all facilities in VISN 11 have worked together to reduce the average time for securing homeless Veterans with housing to less than 75 days.

Program Objectives

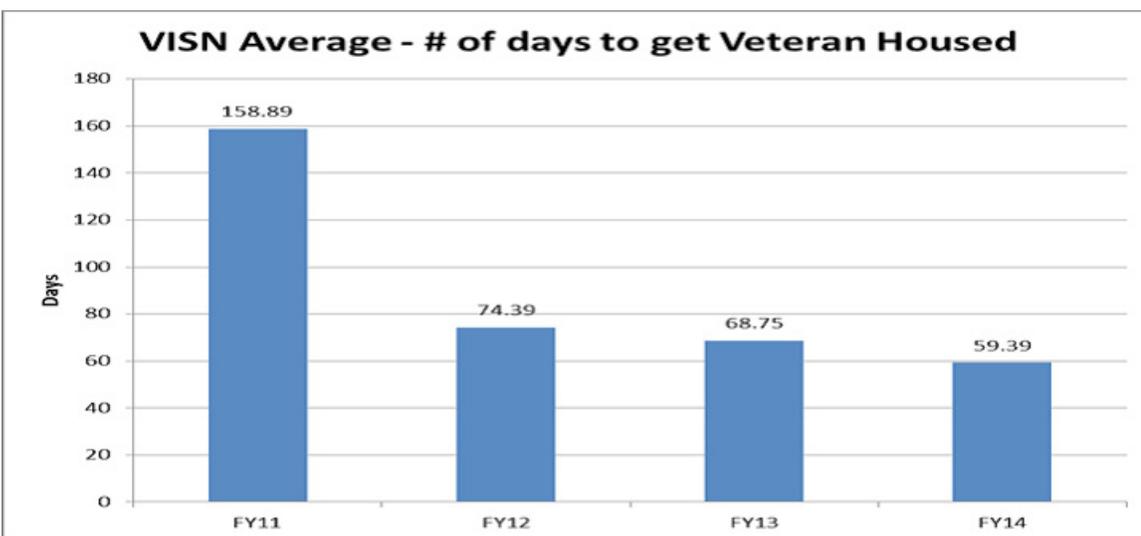
Continuous cycles of improvement are conducted to ensure that we continually strive for better processes and ultimately improve the services we provide to our Nation’s Heroes and Veterans.

Through a structured process improvement framework involving Lean tools like Strategic and Tactical A3s, data collection, process mapping, visual management and other tools, the VISN 11 Homeless Team has met and surpassed their goal. For three successive fiscal years, the VISN’s average number of days from admission to lease decreased from 158.89 days in FY11 to 74.39 days in FY12; 68.75 days in FY 13; and finally to 59.39 days in FY14. That’s an overall reduction improvement of 62.6%, which surpasses the 75 day goal (as illustrated in the figure below).

Furthermore, for FY14, VISN 11 facilities improved their facility-specific measures and targets: 71.4% of VISN 11 facilities have surpassed their individually identified metrics, and 100% of have demonstrated improvements.

Program Impact

In summary, the VA-CASE VISN 11 Program and VISN 11 Homeless Program was a valuable partnership. The VA-CASE VISN 11 Program, in conjunction with Systems Redesign, were able to use the rich data from the VISN 11 Homeless Program to paint a clear picture of VISN 11’s Homeless Veteran population. By employing Lean thinking and processes to end Veteran



homelessness, the VA-CASE VISN 11 Program was recently cited by the National Homeless Program as a strong practice. VA-CASE will continue to support VISN 11 Homeless Program in their quest to end Veteran Homelessness.

Ann Arbor VAMC & Welcome Center Project

From May to June 2014, the Veteran-Centered Design Lab, in collaboration with the VA-CASE VISN 11 Program, provided consultative design services to Ann Arbor VA Medical Center. A three-phased, human-centered design process (Investigation/Ideation/Integration) was used to create Veteran-Centric processes, flow, and utilization of space in the atrium and Veteran Welcome Center of Ann Arbor VAMC.

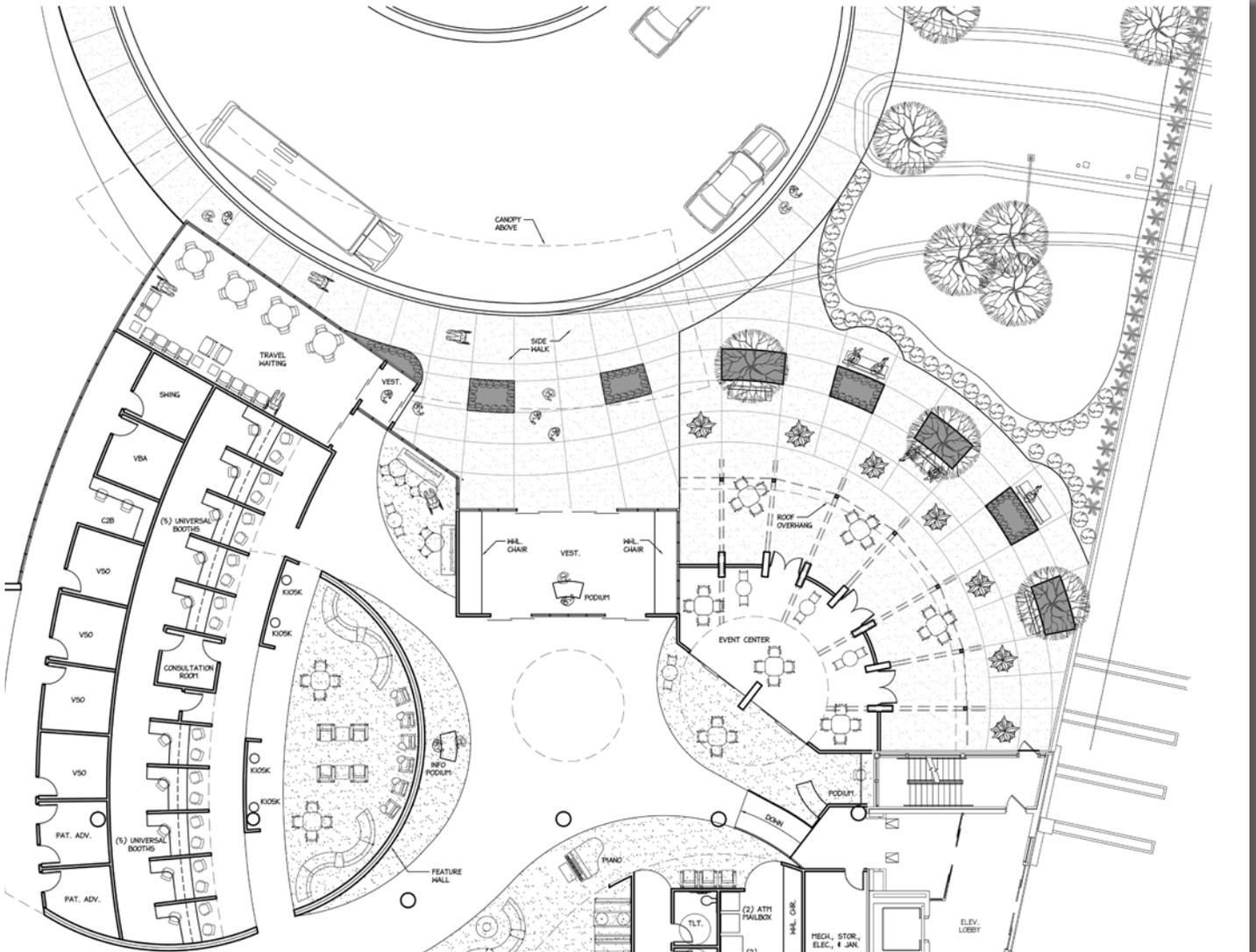
Project Objectives

The Ann Arbor VAMC & Welcome Center Project aimed to:

- Identify “State of the Art” Veteran-centered elements of Medical Center atriums & Welcome Centers; Rank the inclusion of these elements based on priority & feasibility; and
- Utilize deliverables and insights from the Ann Arbor VAMC Atrium and Veteran Welcome Center project to inform National Design Guidelines.

Project Results

Results from this program involved rethinking or rebranding the Veteran experience at VAMCs. VAMC atriums, for instance, can be designed to reflect a hotel experience, with an information desk that functions similarly to a concierge service. Other medical center designs, such as a cafeteria with higher quality and more nutritious food options, a canteen that offers a boutique shopping experience, and services that allow Veterans a choice when it comes to technology, all approach design decisions from the perspective of the Veteran.



Ann Arbor VAMC Welcome Center

Financial and Staffing Data

VA-CASE received \$64,990,280 of funding from multiple sources in FY12-FY15 (FY15 estimated), as depicted in the table below:

Funding by Program	FY12		FY13		FY14		FY15*	
	Core Funding	Non-Core Funding	Core Funding	Non-Core Funding	Core Funding	Non-Core Funding	Core Funding	Non-Core Funding
Transactional Systems Program	\$ 170,000	\$ 700,000	\$ 150,000	\$ 1,700,000	\$ -	\$ 2,600,000	\$ -	\$ 2,600,000
Clinical Partnerships in Health Transformation	\$ 220,000	\$ 650,000	\$ 85,000	\$ 1,280,000	\$ -	\$ 3,452,692	\$ -	\$ 3,452,692
Data Engineering Resources Program	\$ 450,000	\$ 1,100,000	\$ 370,000	\$ 1,250,000	\$ -	\$ 1,167,233	\$ -	\$ 1,167,233
Professional Development	\$ 60,000	\$ 3,500,000	\$ 50,000	\$ 2,500,000		\$ 4,047,355		\$ 4,047,355
VE-TAP	\$ 250,000	\$ 1,100,000	\$ 50,000	\$ 4,120,000		\$ 5,123,000		\$ 5,123,000
VISN11			\$ 80,000	\$ 300,000	\$ 80,000	\$ -	\$ 80,000	\$ -
VA-CASE Admin Staff	\$ 300,000		\$ 465,000		\$ 1,920,000		\$ 1,920,000	
Totals	\$8,500,000		\$12,400,000		\$18,390,280		\$18,390,280	

VA-CASE funding by Program for FY12-14 are shown the table below. Note that we aimed to considerably diversify our funding allocations starting in FY14 and programs were expected to be self-supporting with no core funding support. The Professional Development (PD) and VE-TAP each accounted for ~25% of funding during FY14, with the other established programs (Transactional Systems and Clinical Partnerships) each accounting for approximately 15%. Data Engineering Resources is the new program with limited non-core funding, but was 100% self-funding in FY14. Estimates indicate continued growth across all programs in FY15.

Funding by Program	FY12		FY13		FY14		FY15*	
	Core Funding	Non-Core Funding	Core Funding	Non-Core Funding	Core Funding	Non-Core Funding	Core Funding	Non-Core Funding
Transactional Systems Program	\$ 170,000	\$ 700,000	\$ 150,000	\$ 1,700,000	\$ -	\$ 2,600,000	\$ -	\$ 2,600,000
Clinical Partnerships in Health Transformation	\$ 220,000	\$ 650,000	\$ 85,000	\$ 1,280,000	\$ -	\$ 3,452,692	\$ -	\$ 3,452,692
Data Engineering Resources Program	\$ 450,000	\$ 1,100,000	\$ 370,000	\$ 1,250,000	\$ -	\$ 1,167,233	\$ -	\$ 1,167,233
Professional Development	\$ 60,000	\$ 3,500,000	\$ 50,000	\$ 2,500,000		\$ 4,047,355		\$ 4,047,355
VE-TAP	\$ 250,000	\$ 1,100,000	\$ 50,000	\$ 4,120,000		\$ 5,123,000		\$ 5,123,000
VISN11			\$ 80,000	\$ 300,000	\$ 80,000	\$ -	\$ 80,000	\$ -
VA-CASE Admin Staff	\$ 300,000		\$ 465,000		\$ 1,920,000		\$ 1,920,000	
Totals	\$8,500,000		\$12,400,000		\$18,390,280		\$18,390,280	

VA-CASE expenditures by type of expense are shown in the table below. Note that in FY14, approximately, 48% of VA-CASE funding was allocated to staff and faculty salaries and 43% allocated to contract/IPA mechanisms with academic affiliates. Of the remaining funds, 5% of funds were allocated to student programs and 5% to travel expenses and materials/supplies.

Expenditures by Type	FY12		FY13		FY14		Totals	
	\$ Amount	% of Total	\$ Amount	% of Total	\$ Amount	% of Total	\$ Amount	% of Total
Salaries - Direct Hires	\$ 4,120,000	48%	\$ 6,600,000	53%	\$8,756,570	48%	\$ 19,476,570	50%
Salaries - Contracts/IPAs	\$ 3,400,000	40%	\$ 4,650,000	38%	\$7,838,278	43%	\$ 15,888,278	40%
Salaries - Students	\$ 100,000	1%	\$ 100,000	1%	\$845,432	5%	\$ 1,045,432	3%
Materials/Supplies	\$ 180,000	2%	\$ 500,000	4%	\$500,000	3%	\$ 1,180,000	3%
Lean Certification	\$ -		\$ -				\$ -	0%
Travel	\$ 700,000	8%	\$ 550,000	4%	\$450,000	2%	\$ 1,700,000	4%
Totals	\$8,500,000		\$12,400,000		\$18,390,280		\$39,290,280	

As shown in the chart below, VA-CASE services were provided to the VA at a rate ~60% of the cost of the GSA schedule for similar services, resulting in an overall savings to VA from FY12-14 of \$24M.

VA-CASE Cost for Services compare to GSA Rates	FY12	FY13	FY14	Totals
	\$ Amount	\$ Amount	\$ Amount	\$ Amount
Salaries - Direct Hires	\$ 4,120,000	\$ 6,600,000	\$ 8,756,570	\$ 19,476,570
Salaries - Contracts/IPAs	\$ 3,400,000	\$ 4,650,000	\$ 7,838,278	\$ 15,888,278
# of days of Engineering/Informatics Support Provided	9400	13000	17260	39660
VA-CASE Engineering/Informatics Cost/Day	\$800.00	\$865.38	\$961.46	\$891.70
GSA Rates - Sr. Engineering Support (\$180/hour)				
GSA Rates - Sr. Scientist (PhD) Support (\$210/hour)				
GSA Rates for 39660 days of Engineering/ Informatics Support (\$1500/day)				\$59,490,000
VA-CASE Rates for 39660 days of Engineering/Informatics Support (\$891.70/day)				\$35,364,848
FY12-FY14 Savings for VA-CASE vs GSA Industrial Engineering/Informatics Support				\$24,125,152

Metrics

Strategic Pillar	Strategic Goals	VERC Annual Objective	Strategic Targets	Goal/Target
				National VERC
Leading People	*Successful Integration of Industrial and Systems Engineers within VHA	*Improve VERC Retention and Student Conversion Rates	- % Retention (Technical Staff)	>80%
			- % Retention (non-Tech Staff)	>70%
			- % coop/intern/fellow conversion to full time	>90%
	*Support Veteran Workforce of the Future	*Provide Robust Work Environment	- # of VERC VA Employees	varies
			- AES Scores	>4
			- % employees with veteran status	>25%
Leading Change	*Provide Highest Levels of Customer Service	*Develop/Deploy Robust Program and Project Management Infrastructure	- % employees with >30% SC disability	>10%
			- % on-time project start	>90%
			- % of project with 100% deliverables met	>80%
			- % on-time project completion	>70%
Business Acumen	*Support VHA Culture of Fiscal Responsibility	*Leverage core funding for partnerships with other non-SR/VERC entities	- Avg Customer Satisfaction Score (1-5)	>4
			- Total amount of VERC Funding by FY	varies
		*Demonstrate/Validate VERC ROI	- % of funding non-SR/VERC	>75%
			- % ROI as compared to GSA	>1.5X
			- ROI cost avoidance (project based)	varies
			- % of VERC Admin/Overhead	<15%
Results Driven	*Enable development, testing and wide-spread deployment of innovative models of care delivery	*Expand External (non-VERC) Partnerships	- % of funding to new products/innovation (vs process redesign)	>25%
			- Total # of projects	
			- % of projects w/ National Program Office Partnerships	>75%
	*Enable/Facilitate more rapid translation and deployment of research into practice	*Demonstrate National Impact of Initiatives	- % of projects w/ VISN/Facility partnerships	>50%
			- % of projects in National Deployment	>50%
		*Expand HSRD/QUERI Partnerships	- % of projects w/ HSRD/QUERI partnerships	>20%
			- # of presentations	varies
*Increase publications/presentations related to VERC work	- # of publications	varies		

VA-CASE Annual Results			Directors Staff	VE-TAP	TSP	PD	CPHT	DER
FY12	FY13	FY14	FY14 only					
97%	89%	98%	100%	100%	95%	100%	93%	100%
100%	100%	94%	83%	100%	100%	92%	96%	90%
	80%	100%	100%	NA	NA	NA	4	NA
51	75	110	11	19	23	18	30	9
4.2	3.96		NA	NA	NA	NA	NA	NA
39%	36%	39%	36%	26%	35%	39%	33%	68%
25%	19%	22%	27%	21%	17%	33%	17%	20%
98%	100%	99%	100%	100%	89%	100%	100%	100%
88%	91%	99%	100%	97%	100%	100%	100%	NA
85%	88%	98%	100%	97%	100%	93%	100%	NA
			NA	NA	NA	NA	NA	NA
\$8,500,000	\$12,400,000	\$ 18,490,280	\$2,000,000	\$ 5,123,000	\$ 2,600,000	\$ 4,047,355	\$ 3,552,692	\$ 1,167,233
79%	90%	92%	NA	98%	96%	98%	100%	68%
1.88	1.74	1.56		NA	NA	NA	NA	NA
	\$11,650,500	\$9,295,152		NA	NA	NA	NA	NA
9%	13%	10%	10%	NA	NA	NA	NA	NA
35%	33%	34%	NA	NA	NA	NA	NA	NA
52	75	124	9	58	9	14	31	3
88%	90%	91%	23%	100%	89%	93%	100%	100%
62%	77%	77%	66%	93%	22%	93%	88%	0%
54%	76%	81%	100%	81%	89%	86%	100%	66%
23%	24%	19%	11%	29%	0%	21%	13%	0%
12	29	40	11	11	1	1	14	2
13	19	18	7	3	3	1	4	0

Appendix A: Leadership and Key Staff

Director's Office

Heather Woodward-Hagg, PhD, is currently the Director of the VA Center for Applied Systems Engineering (VA-CASE) and serving as the Acting National VERC Director. Dr. Woodward-Hagg is also the Chief of the Systems Redesign Service at the Roudebush VA Medical Center in Indianapolis, IN. Prior to joining VA-CASE, Dr. Woodward-Hagg was a Research Scientist at the VA Center for Implementing Evidence



Based Practice (VA-CIEBP) in Indianapolis, as well as the Director of Performance Improvement Programs for the Regenstrief Center for Healthcare Engineering (RCHE). Dr. Woodward-Hagg has directed a statewide collaborative of Purdue School of Engineering and Technology faculty partnering with Indiana hospital and healthcare providers in translation of quality engineering methodologies. She holds Bachelor of Science degrees in Ceramic Engineering and Mechanical Engineering from University of Missouri-Rolla, a masters degree in Materials Science and Engineering and a PhD in Manufacturing Engineering (Health Systems emphasis) from Worcester Polytechnic Institute.

Eva M. Anderson, BS, is the VA-CASE Associate Director of Operations and is responsible for operations, human resources, public affairs/marketing, and logistics, and additionally provides oversight for all administrative functions of the organization. Ms. Anderson previously served as the Human Resources Officer at the Richard L. Roudebush VA Medical Center, in which she successfully lead a team through various projects and improvements during a



time of rapid national and local growth while utilizing lean initiatives. During that time, she also served as a member of the Executive Leadership Council, which sets the goals and direction of the Medical Center at the senior executive level; and also was a member of the Patient Veteran Centered Care Committee, which is a guiding body for the mission of putting veterans at the center of their care experience. Ms. Anderson holds a Bachelor of Science degree from the Kelley School of Business at Indiana University in Business Management and in Human Resources Management.

Pamela A. Pau, PMP, is currently the VA-CASE Associate Director of Fiscal. Ms. Pau works at the



John D. Dingell VA Medical Center in Detroit, MI. Pam oversees budget and contracts for VA-CASE and supervises all administration for the Detroit team. Prior to joining the VA, Pam was a Global Program Manager for Electronic Data Systems (EDS) working at the General Motors World Headquarters in

Detroit, MI supporting GMAC. As an experienced Program Manager with Fortune 500 and international experience, Pam has proven success in Information Technology program management, sales, marketing, qualitative and quantitative analysis and reporting, contracting and financial reporting, vendor management, human resources, customer service and multicultural team building. Pam's global team was comprised of system engineers, database administrators, and project management personnel, located in Germany, South Africa, Argentina, Brazil, Canada, and the U.S.

VHA Engineering Technical Assistance Program (VE-TAP)

Will Henry Jordan, CAPT USN (Ret), Associate Director, manages five technology program lines



with numerous projects, including Reusable Medical Equipment, Operational Systems Engineering Services, and Strategic Technology Projects. He represents VA-CASE in national, VISN, and local conferences and meetings. Mr. Jordan is a Navy Veteran with over 35 years of experience in program development, operational

systems integration, and applied engineering. Prior to joining the VA, Mr. Jordan was the Vice-President of Operations, Senior Analyst, and Technology Security Officer for Simulex, Inc., a software research, design, systems integration, and services company located in the Purdue University Research Park in West Lafayette, IN. He has a Bachelor of Science in Physics from the University of Missouri–Columbia, a Master of Science with Distinction in Systems Technology from the Naval Post Graduate School, and is certified as a Naval Nuclear Propulsion Engineer.

Midh Mulpuri, MBA, MS, Deputy Associate Director and Program Manager for Modeling and Simulation



(M&S), has over a decade of experience in M&S, and has applied M&S to a diverse set of problems in Defense, Homeland Security, and Education and Healthcare. Mr. Mulpuri is passionate about informing decision-making by utilizing the right simulation methods, effective user interfaces, and

advanced computing technologies. He graduated from Purdue University, West Lafayette, IN with a bachelor's degree in Computer Engineering and from Arizona State University, Tempe, AZ with a master's degree in Business Administration. Mr. Mulpuri's prior experience

the Implementation Lead in Clinical Informatics for the Regenstrief Institute and the Tech Lead for M&S at Simulex, Inc.

Nancy J. Lightner, PhD, Deputy Associate Director and Program Manager for

Advanced Engineering Assessment Services (AEAS), and the Director of the HCI and Simulations Lab develops and supports tools to assist in decisions on whether to provide specific care to Veterans (dialysis, gastroenterology services, polysomnography, and stroke care) or to outsource the care to non-VA



facilities. Prior to joining VA in September 2011, Dr. Lightner spent ten years in higher education, teaching software development principles and publishing articles related to human factors in software design and software engineering. She has also worked as a software engineer and project manager in various industries, including defense, healthcare, and insurance. Dr. Lightner holds a Bachelor of Science degree in Computer Science from the Indiana University of Pennsylvania, an MBA from Pennsylvania State University, an MS in the Human Factors area of Industrial Engineering, and a PhD in Management Information Systems from Purdue University. She is active in several international conferences that integrate research with applications in industry.

Hakimuddin Neemuchwala, BSIE, Deputy Associate

Director and Program Manager, has over six years of professional experience in manufacturing and healthcare. Mr. Neemuchwala has experience in simulation, operation research, process analysis, and optimization, as well as assisting teams and organizations with the development and implementation of processes. He graduated with a bachelor's degree in Industrial Engineering from Wayne State University in 2008, and is currently pursuing his Master's in Lean Operations from Wayne State University. He is Six Sigma Green Belt Certified and is a member of the Institute of Industrial Engineering.

Program Management Office (PMO)

James Hundt, MBA, MSSI, Associate Director most recently served in the Executive Office of the President as a Program Examiner of the National Security Division of the Office of Management and Budget. James, a former Army (mustang) officer, earned a bachelor's degree in Systems Engineering from the U.S.



Military Academy at West Point, an MBA in finance from Northwestern University's Kellogg School of Management, and a master's degree in Strategic Intelligence from the National Intelligence University, where he continues to serve as an adjunct professor.

Transactional Systems Program (TSP)

Eric Lammers, BSE, Associate Director, joined VA-CASE in 2010 supporting and leading several key systems engineering projects, including the Non-VA Care Coordination (NVCC) pilot, Fee Basis Claims System (FBCS) Optimization national deployment, and Health Benefits Appeals (HBA). Prior to joining VA-CASE, Mr. Lammers spent four years at Production Modeling Corporation (PMC), a Dearborn, Michigan-based Industrial Engineering consulting company,



where he acquired diverse consulting experience by supporting and managing various industrial engineering projects across multiple industries in the private sector. He received a Bachelor of Science degree in Industrial & Systems Engineering from the University of Michigan in 2006 and obtained Lean Healthcare Black Belt certification from Purdue University in 2011. Eric is currently pursuing a Master of Science in Engineering Management at the University of Michigan.

Cameron Husk, BSE, Deputy Associate Director, has served as the lead engineer on a multi-year systems redesign project with the Network-11 Contracting Office (NCO 11). Mr. Husk trained contracting staff in Lean principles, conducted Rapid Process Improvement Workshops, and provided systems engineering support as an embedded engineer in NCO 11. His private sector experience includes



Quality Engineering, Aerospace Design, Logistics, and Manufacturing. His military service covers five years in the US Army, includes a combat tour in Afghanistan, and continues in the Indiana National Guard. Cameron earned a Bachelor of Science degree in Mechanical Engineering from the Rose-Hulman Institute of Technology in 2007, holds LEAN Green Belt certification, and is pursuing his Black Belt.

Derrick Markel, BSE, Deputy Associate Director, is an Industrial Engineer serving as the Program Manager for the Non-VA Medical Care National Standardization (NVNS) project. Derrick graduated from the University of Michigan with a bachelor's degree in Industrial and Operations Engineering, focused on healthcare optimization, process improvement, LEAN/Six Sigma, and ergonomics/human factors. Prior to completing his education, Derrick served in the United States Navy for six years as an Electronics Technician.



Professional Development

George Ponte, MS, Acting Associate Director for Professional Development, has facilitated Station,



VISN and National Advanced Clinical Access improvements, is a member of the National Systems Redesign Educational Committee, and a facilitator for the Yellow Belt, Green Belt and RPIW classes. He was the VISN 1 Systems Redesign Coordinator from 2005 to 2011, and is a member of the National

Cancer Care Planning Committee. He co-chaired the Committee that developed the Improvement Advisor Academy program and curriculum, and currently serves as lead Faculty Director for the Improvement Advisor Academy and faculty for the Access Academy. Mr. Ponte is a national resource expert in the application of Lean, Systems Redesign and Systems Engineering within VHA healthcare and is a valued and frequently requested national speaker.

Jamie Workman-Germann, MSME, Lean Program



Manager and Deputy Associate Director, has years of experience implementing Lean programs/systems in healthcare as well as developing Lean curriculum and educational materials. Ms. Workman-Germann also serves as an adjunct faculty member in the Purdue School of Engineering and Technology at

Indiana University Purdue University–Indianapolis (IUPUI), where she formerly held the role of tenured associate professor before leaving to pursue Lean implementation in healthcare systems. Prior to joining VA-CASE, Ms. Workman-Germann was the Manager for Performance Improvement at a private hospital, where she established their Lean improvement system and served as Lean education coordinator for the organization.

Kimberly E. Johnson, PsyD, MA, received her Doctor of Psychology, PsyD—Clinical Psychology at John F.



Kennedy University, in Pleasant Hill, CA in 2006, a Master's degree in Clinical Psychology from John F. Kennedy University in 2005, a Bachelor's degree in Computer Science from the University of Idaho, and a Master's certificate Executive Program for Scientists and Engineers from the University of California, San Diego. As an engineer, Dr.

Johnson worked as an R&D Firmware Engineer and a Senior Marketing Manager and Director of Consumer Imaging at Hewlett Packard. She also worked at Adobe, Inc. as a Senior Business Development Manager. After obtaining her doctorate in Clinical Psychology, she worked in several clinical inpatient and outpatient settings, had her own private practice, and worked as a Primary Care Psychologist within VA. She helped to revise the Yellow and Green Belt Lean training courses, and is now responsible for the Certification of Lean Yellow and Green Belt applicants.

Gabriela Garrity, BS, MSW, Supervisory Program

Specialist received her BA in Psychology at Loyola



University and MSW, Clinical & Administrative Social Work from Tulane University. Gaby has 23 years experience within the VHA including as Patient Safety Manager, Performance Improvement and Accreditation Manager; Advanced Clinical Access Manager and Systems Redesign-LEAN Program Manager. Prior to VHA Gabriela worked at

Tulane University Medical School Pulmonary Research Unit. She has worked on deployment of the LEAN Management System within the Southeast LA VHCA; VISN and National Collaborations. Gaby is working on the Central Business Office / Purchased Care (CBO PC) project and overseeing our LEAN Management System.

Clinical Partnerships in Healthcare Transformation (CPHT)

Balmatee Bidassie, Ph.D., Associate Director, has broad-based experience in computer science, electrical engineering, industrial engineering, academics,



statistics, research, safety & health, healthcare, project management and operations. Prior to joining VA-CASE, Dr. Bidassie held various leadership positions at Eaton Corporation where she served as a global Certified LEAN Six Sigma Black Belt responsible for developing and leading Design for Six Sigma (Product Development), Lean Manufacturing, Lean Six

Sigma projects as well as mentoring 100+ candidates, including senior executive staff, toward certification. As a Senior Product Engineer, she was awarded a patent for developing a "Method of Grouping Message Identifications and Parameter Identifications for A Diagnostic System (SAE J1587 Databus)". Dr. Bidassie received her Bachelor of Engineering degree in Electrical Engineering from City University of New York, two Master Degrees from Columbia University of New York: Master of Arts (Statistics), Master of Science (Electrical Engineer with a concentration in Telecommunication) and doctorate from Purdue University (Industrial Engineering).

Marissa A. Vallette, Ph.D., Deputy Associate Director,



works as a Project Manager for the Specialty Care Transformation (SCT) Hybrid Collaborative. Dr. Vallette has worked for Fortune 500 companies, including Caterpillar and United Parcel Service (UPS), and worked in both inpatient and outpatient healthcare settings. While serving as an industrial engineer in a wide range of

industries, she developed experience in human factors,

Lean manufacturing, project management, logistics, data analytics, and healthcare consulting. Dr. Vallette has a Master of Science in Industrial and Systems Engineering from Northern Illinois University and a Bachelor of Arts in Mathematics and Spanish from Lawrence University. She received her Ph.D. from Purdue University in Industrial Engineering, specializing in human factors in healthcare; her dissertation examined interface and information flow within and between two of the most widely deployed electronic health record (EHR) systems.

Anne Kirchgassner, RN, MSN, Deputy Associate



Director, serves as the Program Manager for the NAO National Activation Office project, Surgical Flow Improvement Initiative and the Mental Health/Chaplin Service Collaborative. Mrs. Kirchgassner received her MSN in Nursing Administration from Indiana University.

Her background as a nurse includes Medical, Surgical and Intensive Care Unit staff nurse, Unit manager of a Surgery ward, Quality Management Coordinator, Risk Manager, Ambulatory Care call center nurse, Inter-facility transfer nurse and Patient flow coordinator. She is considered a national Subject Matter Expert for the Bed Management Solution and patient flow. Her most recent role at the Indianapolis VAMC was as a Systems Redesign Coordinator with a focus on the Value Stream for

Mental Health Service. She has certifications in VA/Purdue Yellow, Green and Black Belts in Lean Systems Redesign.



Christine L. Corum, MSIE, supports both PACT and Specialty/Surgical national collaboratives. She has served as co-coach and collaborative faculty, presenting on improvement tools such as

measurement, process mapping and practice redesign. Prior to joining VA-CASE, she was an Associate Professor of Mechanical Engineering Technology at Purdue University, where she taught undergraduate courses related to engineering materials, manufacturing, and quality systems for over 17 years. She received a B.S. in Metallurgical Engineering from the University of Missouri-Rolla, and an M.S. in Industrial Engineering from Purdue University. She is a Senior Member of the American Society for Quality (ASQ), a Certified Quality Engineer, and a United States Air Force Veteran.

Data Engineering Resources (DER)

Jeffrey Peterson, BSN, MS, Associate Director, graduated from South Dakota State University with a bachelor's degree in Nursing.



He served in the U.S. Army for 22 years during which he completed a master's degrees in Health Care Finance and Health Care Administration, and completed the Command and General Staff College course work. After retirement, Mr. Peterson pursued a master's

degree in Project Management. Prior to joining VA-CASE, he spent 38 years in Nursing, most of which were in senior management positions.

Jeffrey Bailey, BS, Deputy Associate Director, serves as the Program Manager for the NAO Project and the Project Manager for the Health Benefits Project, where he created the back-end database and the Health benefits web application. Mr. Bailey also served as the lead for the VA-CASE Pathways Internship Program. He completed a bachelor's degree in Computer Information and



Technology from IUPUI.

VISN11 Program

Jake Fong, MBA, FACHE, CSSBB, VISN 11 Systems Redesign Coordinator and VA-CASE Associate



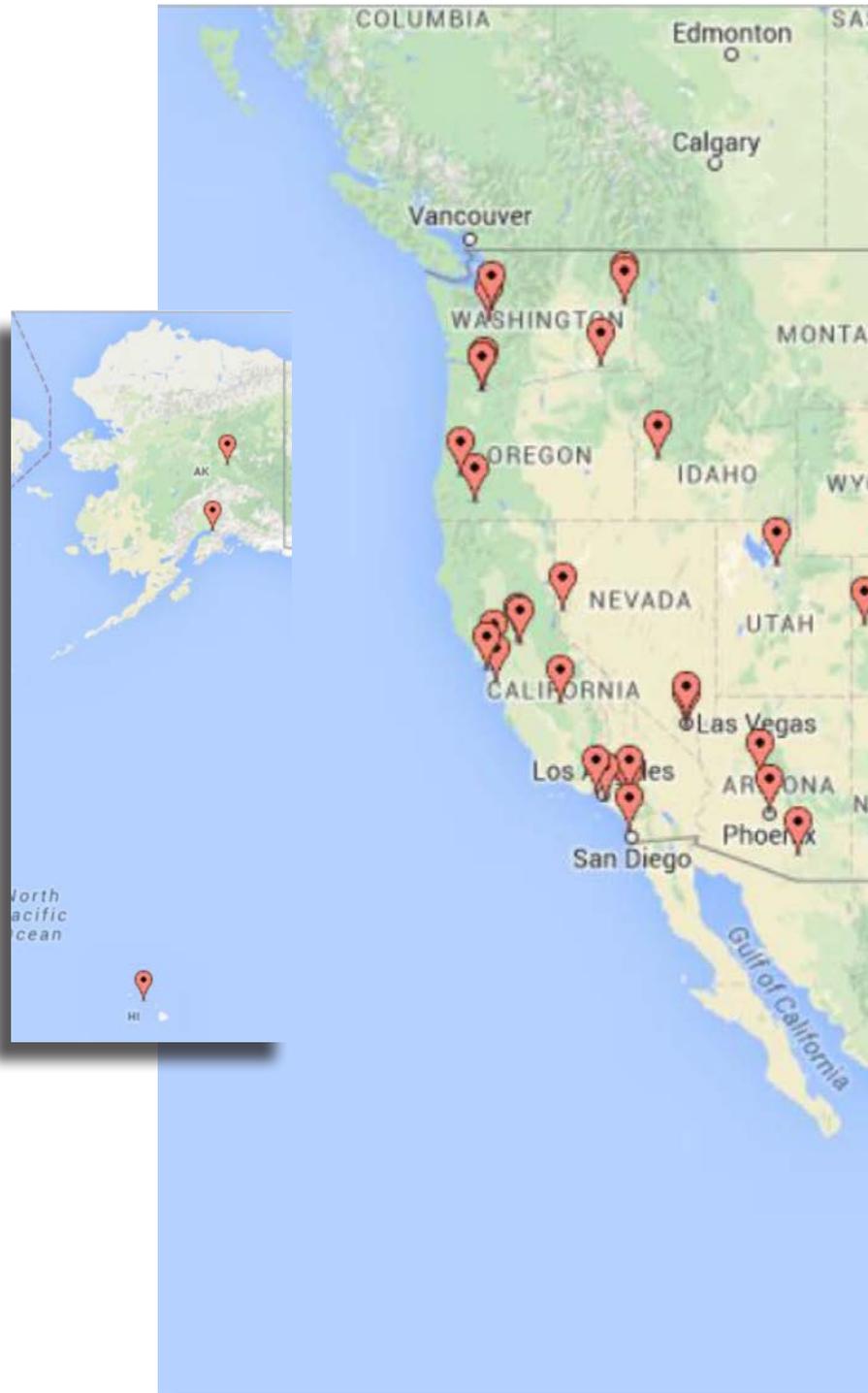
Director, develops and oversees improvement initiatives within VISN 11. Mr. Fong previously held several prior VA positions including the Systems Redesign Program Manager for VA Southwest Healthcare Network (VISN 18), and the Health Systems Specialist for VA Health Care Upstate New

York (VISN 2). He received his bachelor of science from Cornell University and his Master's in Business Administration in Health Systems Administration from the Graduate College of Union University. Mr. Fong is a Certified Six Sigma Black Belt and a Fellow of the American College of Healthcare Executives.

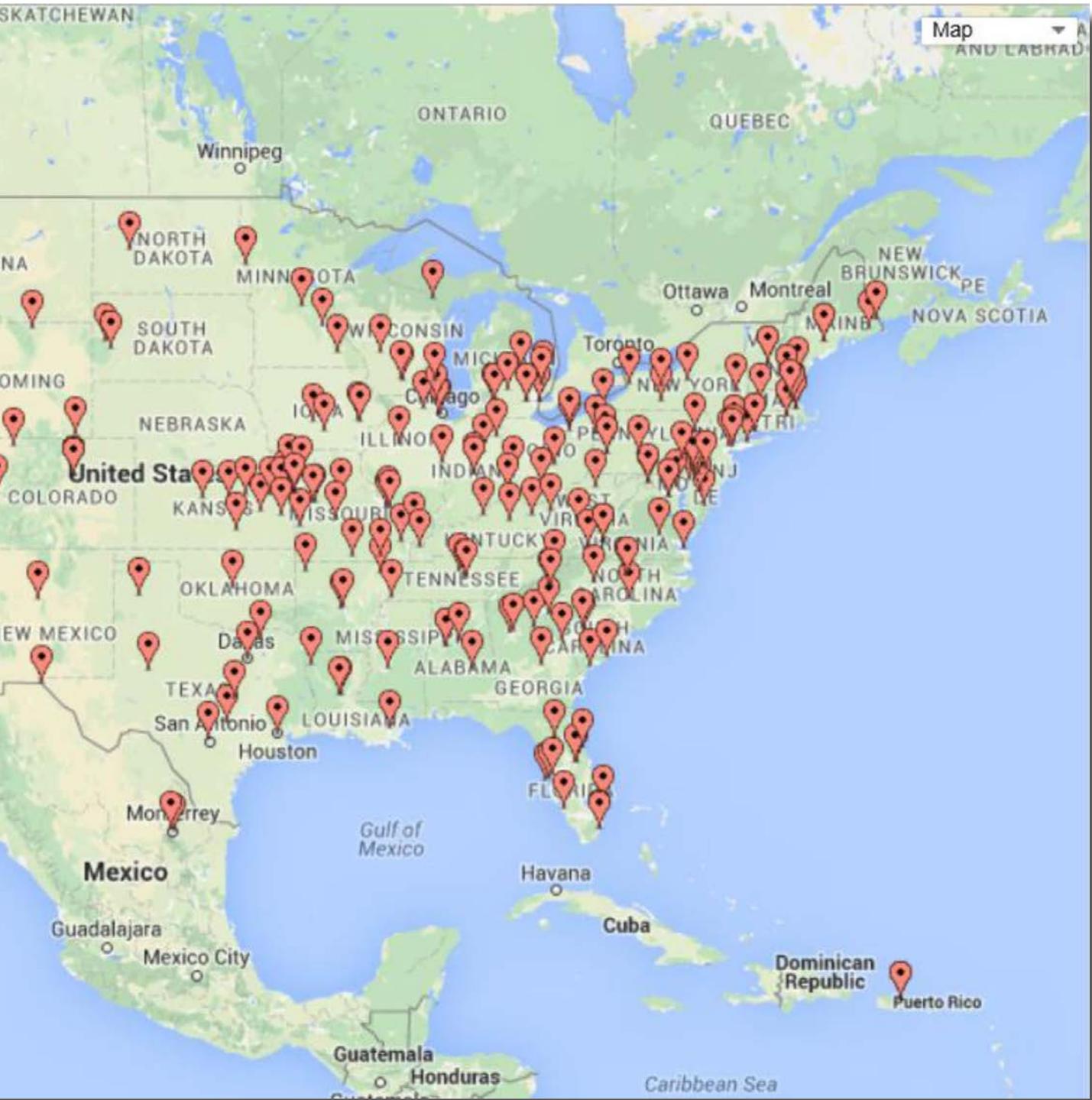
Appendix B: VA-CASE Engagement Locations

The Site Map of VA-CASE Engagement/Support/Training by VHA Facility/VISN Office indicates the VHA facilities and VISN offices where VA-CASE staff and faculty provided engineering and/or informatics consultation, training or project team support FY12-14. Note that individual markings may indicate multiple engagements.

In FY14 over 600 distinct engagements (engineering and/or informatics consultation, training or project team support) were conducted by VA-CASE staff and faculty across all 147 VHA healthcare facilities), 15 VISN offices and 20 National Program offices.



Markers denote VA-CASE Industrial Engineer or Informatics



support/training or engagement activity. Individual markings may indicate multiple engagements.

Appendix C:

Publications and Presentations

Publications

- Bidassie, B., McGlothlin, J.D., Barany, J.W., McCabe, G.P., Duffy, V.G., Witz, S.M. (in review). *Development of a Predictive Model for Low Back Musculoskeletal Disorders based on Occupational and Lifestyle Risk Factors*. Manuscript submitted for review.
- Ma, X.Y., Yang, K., Reeves, P., Yu, S., (2012) "Transforming the Sterile Processing Department through RFID-based healthcare Workflow Technologies", To be submitted to *International Journal of Medical Informatics*. 2012 Conference: Industrial and Systems Engineering Research Conference,
- Ma, X.Y., Yang, K., (2012) "Design of a medical rule engine for healthcare workflow management in Sterile Processing Department", To be submitted to *International Journal of Medical Informatics*.
- Ma, X.Y., Yang, K. *Transforming Sterile Processing Departments by Service-Oriented Business Process Management and Healthcare Workflows*, *International Journal of Business Process Integration and Management*. (IJBPIIM), Volume X, No. X, 201X
- Woodward-Hagg, H., & Bar-On, I., (2013) "Large System Transformation within Healthcare Organizations utilizing Lean Deployment Strategies," *Proceedings from the 31st International Conference of the System Dynamics Society*, Cambridge, MA.
- Bidassie, B., Davies, ML., Stark, R., Boushon, B. "VA Experience in Implementing Patient-Centered Medical Home Using a Breakthrough Collaborative." *Journal of General Internal Medicine*. (Impact Factor: 3.42). 04/2014; DOI: 10.1007/s11606-014-2773-5
- Qiu, S., Chinnam, R., Murat, A., B. Batarse, Neemuchwala, H., Jordan, W. "A Cost Sensitive Inpatient Bed Reservation Approach to Reduce Emergency Department Boarding Times", *Health Care Management Science* (under revision), September, 2013.
- Hillsman, C., Wang, Y., Nazzal, D. *A Semi-Automatic Mold Cost Estimation Framework Based Upon Geometry Similarity*; *International Journal of Advanced Manufacturing Technology*, vol.66, numbers 5-8, 2013; Springer Pub., March 2013
- Hassmiller, K., Wheeler, S., Mayorga, M., Wickramage, N., "Perspective Matters: Choosing a Simulation Study Design for Optimizing Colorectal Cancer Outcomes". We present the problem statement and motivation for developing a North Carolina-based agent-based model to support research and translation priority setting around colorectal cancer screening. After introducing the model, we will discuss the decision we faced about simulation study design and the advantages and disadvantages of alternate approaches including cohort based, multiple cohort, or population based designs.
- Qiu, S., Chinnam, R., Murat, A., "Improving ED Patient Flow: Multi-Class Admit Prediction Models t Triage" To predict inpatient bed demand from ED, we propose a multi-class classification model that predicts the target admit ward for the patient using information readily available right at triage. It overcomes the shortcomings of extant binary prediction models that lack the ability to predict the target admission ward to facilitate timely coordination and reduces patient waiting times and boarding.

- Toolkit Team, "Crowd Sourcing Metric-Driven Quality Improvement: The Veterans Administration (VA) Example", Article based on toolkits approved for publication in The Joint Commission Journal on Quality and Patient Safety
- Online Toolkits for Metrics-Driven Quality Improvement – accepted by the Joint Commission Journal on Quality and Patient Safety (anticipated pub Oct 2013).
- Dunbar, C., "Connecting to Patients via Social Media: A Hype or A Reality?", Journal of Medical Marketing.
- York, L., Brude, B., Luck, J., Bowman, C., Midboe, A., Smith, N., Elened, M., Girard, J., Griffith., D., Edwards, G., Ahluwalia, S., Zisser, A., Asch, S., "Online Toolkits for Metric-Driven Quality Improvement: The Veterans Health Administration Managed Grassroots Approach" The Joint Commission Journal on Quality and Patient Safety, Published December 2013, vol 39, no. 12: 561-569
- Luck, J., Bowman, C., Yorks, L., Midboe, A., Taylor, T., Gale, R., Asch, S., "Multimethod Evaluation of the VA's Peer-to-Peer Toolkit for Patient-Centered Medical Home Implementation", Journal of General Internal Medicine, December 2013.
- Luck, J., York, L., Bowman, C., Gale, R., Smit, N., Asch, S., "Implementation of a User-Driven Online Quality Improvement Toolkit for Cancer Care" Journal of the American Informatics Association (Under review as of December 2013).
- Toolkit Team "Mixed Methods Evaluation of a Medical Home Toolkit" – under review for JGIM Special Issue on VA PACT. Online Toolkits for Metrics-Driven Quality Improvement – accepted by the Joint Commission Journal on Quality and Patient Safety (anticipated pub Oct 2013).
- Daggett, V. S., Woodward-Hagg H., Damush, T. M., Plue, L., Russell, S., Allen, G., Williams, L. S., Chumbler, N. R., Bravata, D. A Healthcare Systems Redesign Project to Improve Dysphagia Screening. Journal of Nursing Care Quality (In press).
- Miller, K. K., Chumbler, N. Carlson, K., Daggett, V. Tele-rehabilitation to promote exercise in Veterans post-stroke: An observational pilot study. *International Journal of Physical Medicine and Rehabilitation* (In press).
- Daggett, Virginia, Linda Williams, Nicholas Burrus, Jennifer Myers, Laura Plue, Joshua Robinson, Edward Miech, Heather Woodward-Hagg, and Teresa Damush. "Nursing Education: A Critical Need in the Delivery of High Quality Stroke Care." *Stroke* 45, no. Suppl 1 (2014): A90-A90.
- Williams, Linda S., Virginia Daggett, James Slaven, Zhangsheng Yu, Danielle Sager, Jennifer Myers, Laura Plue, Heather Woodward-Hagg, and Teresa Damush. "Does Quality Improvement Training Add to Audit and Feedback for Inpatient Stroke Care Processes?" *Stroke* 45, no. Suppl 1 (2014): A18-A18.
- Daggett, V. S., Woodward-Hagg, H., Damush, T. M., Plue, L., Russell, S., Allen, G., & Bravata, D. M. (2014). Health Care Systems Redesign Project to Improve Dysphagia Screening. *Journal of nursing care quality*.
- Matt, B. H., Butler, P. D., Woodward-Hagg, H. K., & Kokoska, M. S. (2013). Lean six sigma applied to ultrasound of the head and neck: changing patient management. *Otolaryngology--Head and Neck Surgery*, 149(2 suppl), P68-P69.

- Daggett, V., Bakas, T., Murray, L., Woodward-Hagg, H., Williams, J. G., Maddox, K., ... & Ellis, R. D. (2014, May). Feasibility and satisfaction with the VETerans Compensate, Adapt, REintegrate (VETS-CARE) intervention. In BRAIN INJURY (Vol. 28, No. 5-6, pp. 554-555). TELEPHONE HOUSE, 69-77 PAUL STREET, LONDON EC2A 4LQ, ENGLAND: INFORMA HEALTHCARE.
- Cox, L. M., Fanucchi, L. C., Sinex, N. C., Djuricich, A. M., & Logio, L. S. (2014). Chief Resident for Quality Improvement and Patient Safety: A Description. *The American journal of medicine*, 127(6), 565-568
- Lobo, B. C., Johnson, K., Wannemuehler, T. J., Matt, B. H., Woodward-Hagg, H. K., Shipchandler, T. Z., & Kokoska, M. S. (2014). Incorporating Lean Six Sigma Training within an Otolaryngology Residency Program. *Otolaryngology--Head and Neck Surgery*, 151(1 suppl), P29-P30.
- Matt, B. H., Woodward-Hagg, H. K., Wade, C. L., Butler, P. D., & Kokoska, M. S. (2014). Lean Six Sigma Applied to Ultrasound Guided Needle Biopsy in the Head and Neck. *Otolaryngology--Head and Neck Surgery*, 151(1), 65-72.

Referred Conference Proceedings

- Lightner, N., Keyhani, S. *Developing Tools to Assist VA Policymakers in Decisions on "Making" or "Buying" Care*, National HSR&D/QUERI Conference, Washington DC, 19 July 2012.
- Ma, X.Y., Lu, S.Y., Yang, K. *Service-Oriented Architecture for SPDFLOW: A Healthcare Workflow System for Sterile Processing Departments*, IEEE International Conference on Services Computing, 2012. (The acceptance rate is 17%)
- Ma, X.Y., Yang, K., Reeves, P., Yu, S., (2012) "RFID-based healthcare workflow management in Sterile Processing Department", Industrial and Systems Engineering Research Conference (ISERC), Orlando, Florida.

Presentations

- Bidassie, B. *Improve Surgical Flow through a Hybrid Collaborative Model*, Industrial and Systems Engineering Research Conference (ISERC 2013), San Juan, Puerto Rico.
- Chumbler, N., Sternke, E., Sahay, A., Bidassie, B., Daggett, V., (2012) *Designing, Implementing, and Evaluating Successful Toolkits in VA*. Health Services Research & Development Service (HSR&D)/QUERI National Conference, Maryland, American Industrial Hygiene Conference & Expo (AIHce) in Denver, July 18, 2012.
- Ellis, R., Fard, Yank, K., M., Jordan, W., Lightner, N., Yee, S., *Management of medical equipment reprocessing procedures: A human factors/system reliability perspective*, AHFE International 2012, 4th International Conference on Applied Human Factors and Ergonomics, San Francisco, CA, 21-25 July 2012.
- Ellis, R., Yee, S., Lightner, N., Yang, K., Jordan, W., *Human factors evaluation of medical equipment reprocessing instructions*, AHFE International 2012, 4th International Conference on Applied Human Factors and Ergonomics, San Francisco, CA, 21-25 July 2012.
- Fahner, J., Jacobitz, R., Walker, J., *Presentation, National Veterans electronic Health University (VeHU) virtual event*, HSR&D/QUERI National Conference in National Harbor, Maryland, July 19, 2012.

- Lightner, N., Ellis, R. D., Yee, S., Yang, K., Jordan, W. (2012) "Human Factors Considerations for a Reusable Medical Equipment Reprocessing Support System". *Proceedings of the 2nd International Conference on Human Factors and Ergonomics in Healthcare*, San Francisco, California, USA, July 21-15, 2012.
- Ma, X.Y., Yang, K., Reeves, P., Yu, S., (2012) "Real-time Operation Room Workflow Management. Industrial and Systems Engineering Research Conference (ISERC), Orlando, Florida, May 19-23, 2012
- Wang, J., Murat, E.A., Neemuchwala, H., and Yang, K. (2012). Proactive Management of Operating Room by Using Simulation. Presented at ISERC Annual Conference, Orlando FL.
- Wang, J., and Yang, K. (2013). Predict under- and over-run probability of lists of cases by Type IV Pearson Distribution. To be Presented at ISERC Annual Conference, San Juan, Puerto Rico.
- Wang, J., Murat, E.A., Neemuchwala, H., and Yang, K. (2012). Proactive Management of Operating Room by Using Simulation. Presented at ISERC Annual Conference, Orlando FL.
- Yang, K., Lightner, N., Yee, S., Fard, M., Jordan, W., Using computerized technician competency validation to improve reusable medical equipment reprocessing system reliability, AHFE International 2012, 4th International Conference on Applied Human Factors and Ergonomics, San Francisco, CA, 21-25 July 2012.
- HIMSS published article on WSU receiving NSF grant to study Efficiency models in VA patient centered Medical Homes. <http://www.govhealthit.com/news/nsf-funded-study-find-efficiency-models-va-patient-centered-medical-homes>
- Kim, J., Junheung, P., Kim, K., Jordan, W. Lederle, M., "Development of Hidden Cost Factor Extraction System (HiCoFES) for Reusable Medical Equipment", INFORMS HealthCare 2013, Chicago, IL
- Bidassie, B. PACT Leadership Virtual Conference Series VeHU on Thursday, November 14th 2014. Leadership VA PACT: How to Build the Goldmine: Tools and Resources for Practice Redesign
- Bidassie, B. Improve Surgical Flow through a Hybrid Collaborative Model IIE Annual Conference and Expo. San Juan, Puerto Rico (2013).
- Wang, J. and Yang, K. Estimation of the probability of surgery lists over- and under-run. Industrial and Systems Engineering Research Conference (ISERC 2013). San Juan, Puerto Rico.
- Ma, X.Y., Yang, K., Bidassie, B. Bridging primary and specialty care by collaborative healthcare workflow, Industrial and Systems Engineering Research Conference (ISERC 2013), San Juan, Puerto Rico.
- Eapen, SM and Bidassie, B. Optimizing Cancer Care through Collaborative Approach . IIE Annual Conference and Expo. San Juan, Puerto Rico. Annual Conference and Expo. San Juan, Puerto Rico (2013).
- Bidassie, B. Improve Surgical Flow through a Hybrid Collaborative Model, Industrial and Systems Engineering Research Conference (ISERC 2013), San Juan, Puerto Rico.
- Eapen, S.; Bidassie, B. Optimizing Cancer Care through Collaborative Approach, Industrial and Systems Engineering Research Conference (ISERC 2013), San Juan, Puerto Rico.
- Ma, X.Y., Ma, X.Y., Yang, K., Bidassie, B. Bridging primary and specialty care by collaborative healthcare workflow, Industrial and Systems Engineering Research Conference (ISERC 2013), San Juan, Puerto Rico.

- Qiu, S., Chinnam, R., Murat, A., "Improving patient Flow Through Enhanced Visibility and Modeling for Bed Supply & Demand Alignment"; INFORMS Annual Meeting, Phoenix, October, 2012
- Qiu, S., Chinnam, R., Murat, A., "Improving Patient Flow: Models for ED", Wayne State University ISE Department Graduate Research Symposium, November, 2012
- Qiu, S., Chinnam, R., Murat, A., "Improving Patient Flow: Models for ED", VA-CASE F2F, Indianapolis, November 7th, 2012 (poster)
- Qiu, S., Chinnam, R., Murat, A., "Streamlining Patient Flow: Models for ED", POMS Annual Conference, Denver, May, 2013.
- Qiu, S., Chinnam, R., Murat, A., "Streamlining Patient Flow: Models for ED", INFORMS Healthcare, Chicago, 2013, INFORMS HEALTH CARE National Meeting, Chicago, June, 2013.
- Qiu, S., Chinnam, R., Murat, A., "Improving Patient Flow: Models for ED", Presentation to Chief of ED of Detroit VAMC Dr. Batarse, Detroit, April, 2013
- Qiu, S., Chinnam, R., Murat, A., "Improving Patient Flow: Models for ED", Presentation to Detroit VAMC Director Dr. Reeves, Detroit, May, 2013
- Qiu, S., Chinnam, R., Murat, A., "Improving emergency department patient flow through analytics, Wuhan University of Technology, August, 2013, China
- Musunuri, S., "Spreading Access to Health Care Quality Improvement Lean Tools", Institute of Industrial Engineers Annual Expo, May 2013, San Juan, Puerto Rico.
- Kyoung-yun, K., "Design Evaluation for Reusable Medical Equipment", Interview with Bio-Engineering Team & Repair Facility Staff, October, 2012, Detroit, MI.
- Kyoung-yun, K., "Design Evaluation for Reusable Medical Equipment", Interview with Bio-Engineering Team & Repair Facility Staff, November, 2012, Indianapolis, IN.
- Kyoung-yun, K., "RME Design Evaluation System - TCO Analyzer Development and VISN 11 Deployment", December 2012, Wayne State Staff, Detroit, MI.
- Kyoung-yun, K., "RME Design Evaluation System - TCO Analyzer Development and VISN 11 Deployment", March, 2013, Wayne State Staff, Detroit, MI.
- L. S. Williams, V. Daggett, J. Slaven, Z. Yu, D. Sager, J. Myers, L. Plue, H. Woodward-Hagg, T. Damush. *Does Quality Improvement Training Add to Audit and Feedback for Inpatient Stroke Care Processes?* Oral presentation, International Stroke Conference February 12, 2014, San Diego, CA.

- Kyoung-yun, K., "System demonstration and new requirement analysis", May, 2013, Detroit, MI.
- Kyoung-yun, K., "Medical Equipment Evaluation Decision Analytic System", June, 2013, Wayne State University, Detroit, MI.
- Kyoung-yun, K., "Development of Hidden Cost Factor Extraction System (HiCoFES) for Reusable Medical Equipment". June 2013, INFORMS 2013 Healthcare Conference, Chicago, IL.
- Dunbar, C., "Connecting to Patients via Social Media: A Hype or A Reality?", February, 2013, Association for Marketing and Health Care Research, Montana.
- Dunbar, C., D'Ambrosio, A., "Usability Analytics Platform: Leveraging a Patient-Centered Model of Care" COMPLEX Adaptive Systems Conference, November, 2013, Baltimore, MD.
- Dunbar, C., D'Ambrosio, A., "Usability Analytics Platform: Leveraging a Patient-Centered Model of Care" HIMSS Government Health IT Conference.
- V. S. Daggett, T. Bakas, L. L. Murray, H. Woodward-Hagg, J. Gleason Williams, K. Maddox, A. Allen, S. Russell, D. Ellis. *Feasibility and Satisfaction with the VETeranS Compensate, Adapt, REintegrate Intervention*. Oral presentation, 10th World Congress on Brain Injury, March 21, 2014, San Francisco, CA.
- V. Daggett, L. Williams, N. Burrus, J. Myers, L. Plue, J. Robinson, E. Miech, H. Woodward-Hagg, T. Damush. *Nursing Education: A Critical Need in the Delivery of High Quality Stroke Care*. Oral presentation, International Stroke Conference February 12, 2014, San Diego, CA.
- Bradley Petty, MD; Neil Nayak, MD; Andrea Burmeister, P.A.; Steven Margolis, BS; Sai Shruthi Musunuri, BS; Ruchika Gutt, MD; Steven H Krasnow, MD; Hosai Hesham, MD " *Head and neck cancer: Evaluating timeliness of care and the impact of Cancer Care Coordination*". Poster presented at ENT National Meeting, Orlando, FL, September, 2014.

Manuscripts in Preparation

- Bidassie, B., McGlothlin, J.D., Barany, J.W., McCabe, G.P., Duffy, V.G., Witz, S.M. (in review). *Development of a Predictive Model for Low Back Musculoskeletal Disorders based on Occupational and Lifestyle Risk Factors*. Manuscript submitted for review.
- Hassmiller Lich, K., Beadles, C., Homer, J., Cheng, E., Bosworth, H., Bravata, D., Williams, L, Kramer, E., Matchar, D. "A Dynamic Computational Model of Stroke to Support Identification of Policy and Research Priorities in the Department of Veterans Affairs" submitted for review to *Health Care Management Science*, November 19, 2012.

Book/Book Chapters

- Bidassie, B (2012) "Microergonomics: Healthy Workplace and Healthy Lifestyles". *Occupational Ergonomics – Principles and Applications* (2nd Edition). Editor Bhattacharya A. & McGlothlin J. Taylor and Francis Chapter 39, 1041-1064.

Appendix D: Staff by Program

We currently have 144 employees over seven programs, including 80 professional staff.



Administrative Staff

Eva Anderson, BS
Virginia Daggett, PhD
Shedarra Hill, MBA
Candace Kingma, BA, JD
Madeline Lucena-Pulst,
Julie Morgan
Pam Pau, PMP
Linda Sparks
David Whittmore, MBA

Associate Director, Operations
Nurse Researcher
Administrative Officer
Public Affairs Specialist
Health Systems Specialist
Health Systems Specialist
Associate Director, Fiscal
Health Systems Specialist
Program Analyst

DER

Jeffrey Bailey, BS
Malisa Narber, BS
Jeff Barnd, BS
Pilar Gamble, MS
Zachary Hoffman
Russell Humphries, BS
Nsikak Inyang
Nhat Nguyem, BS
Marcus Oliver, MS
Juan Perez, MS
Jeffrey Peterson, MS
Gage Hensley

Deputy Associate Director
Program Analyst
Program Analyst
Administrative Officer
Student Trainee
Health Systems Specialist
Student Trainee
Student Trainee
Health Systems Specialist
Industrial Engineer
Associate Director
Student Trainee

CPHT

Ted Amburgy, MBA
Victoria Baker, MBA
Rebecca Bargeloh, MSN, RN
Lawanda Cheatham, BS
Christine Corum, MA
Ryan Dendinger, BA
Antoinette Easterling, BS
David Garrison, MHA
Timothy Harrison, MBA
Angela Howard, MSN, RN
Theodora James, BS
Dalton Lancaster
Elaine McCracken,
Ryan Mika, BSIE
Richard Olivero,
Tonya Reznor, BS

Program Analyst
Program Analyst
Health Systems Specialist
Program Analyst
Industrial Engineer
Student Trainee
Program Analyst
Program Analyst
Industrial Engineer
Health Systems Specialist
Student Trainee
Student Trainee
Industrial Engineer
Industrial Engineer
Industrial Engineer
Program Analyst

Michele Rhoutsong, MBA
 Makeyta Roberson, MPA
 Steven Sanchez, BSNE
 Joseph Slaughterbeck, MPH
 Kristen Tingley, BS
 Craig Triscari, BSIE
 Laura Wright, BS

Program Analyst
 Program Analyst
 Industrial Engineer
 Program Analyst
 Program Analyst
 Industrial Engineer
 Program Analyst

Professional Development

George Ponte, MS
 Jamie Workman-Germann, MS
 Lillian Barrios, MPH
 Matthew Beck, BS
 Gabriel Christy
 Elijah Erwin, BS
 Gabriela Garrity, LCSW
 Debbie Griffith, EdD
 Angela Harris, BS
 Larkin Harris, MSW
 Keith Henry, AS
 Anne Johnson
 Kim Johnson, PsyD
 Paul Moore
 Brian Poynor, RN. MSM
 Jenna Ramsey, AS
 Wade Walling
 Kenny Williams

Associate Director
 Deputy Associate Director
 Program Analyst
 Program Analyst
 Student Trainee
 Administrative Officer
 Health Systems Specialist
 Health Systems Specialist
 Program Analyst
 Health Systems Specialist
 Program Analyst
 Health Systems Specialist
 Health Systems Specialis
 Materials Coordinator
 Health Systems Specialist
 Program Analyst
 Student Trainee
 Program Analyst

TSP

Stacie Bergman, BS
 Geoffrey Black, MBA
 Christopher Bui, BSIE
 Chris Carmichael, BS
 Valerie Curtis, BA
 Shaiju Eapen, BSIE
 Maclean Eke, MSCE
 Carlos Garcia, MBA
 Edward Gensert, BSIE
 Lindsay Hall, MHA
 Kirby Haskins, MBA
 Chris Heathcote, BSIE
 Ming-Pu Hsu, MBA

Business Management Officer
 Industrial Engineer
 Industrial Engineer
 Industrial Engineer
 Project ARCH Manager
 Industrial Engineer
 Industrial Engineer
 Program Manager
 Industrial Engineer
 Project Manager
 Program Analyst
 Industrial Engineer
 Industrial Engineer



Cameron Husk, BSME
Matt Johnson, BSIE
Persephone Johnston, BSIE, MS
Tim Koponen, PhD
Eric Lammers, BSIE
Derrick Markel, BSIE
Elaine McCracken
Shruthi Musunuri, MS
Richard Olivero
Anthony Pak, BSIE
Lincoln Ridge, BSCIMT
Craig Wagoner, MSE
Celeste Wallace, BS
Devon York

PMO

David Allen, BSEET, RF Engineer
Nicole Comer, AS
Naomi Conn, MPA
Gail Edwards, RN, BSN
Susan Gordon, BS
Erin Hubert, BSEM
James Hundt, BSSE, MBA, MSSI
Anna Langford, BS
Rick Lodde, MBA, BS
Bill McFarland
Natalie Riley, BS
Joshua Rose, BS

VE-TAP

Lauren Ausra, BS
Kathy Carlson, BA
Andrew Carlstrom, BA, MS
Craig Carpenter, MBA, BS
Terry Chastain
Tharasa DiMeo
Jason Germann, AS
Tim Harrison, MBA
Cyrus Hillsman, PhD, MSE, BS

Deputy Associate Director
Industrial Engineer
Industrial Engineer
Industrial Engineer
Associate Director
Deputy Associate Director
Industrial Engineer
Industrial Engineer
Industrial Engineer
Industrial Engineer
Industrial Engineer
Program Analyst
Industrial Engineer
Administrative Officer

Program Analyst
Administrative Officer
Industrial Engineer
Project Manager
Program Analyst
Program Analyst
Associate Director (
Deputy Associate Director
Business Management Officer
Program Analyst
Health System Specialist
Program Analyst

Data Systems Lead
Deployment Support Lead
VCD Lab Program Manager
Program Analyst
Program Analyst
Program Analyst
Business Management Officer
Industrial Engineer
Industrial Engineer



Paul Holtz, RN, MBA

Chris Hughes, MS

Steven Ishida, BS

Will Jordan, BS, MS

Mike Lederle, BS, MSIE

Nancy Lightner, PhD, MSIE, MBA, BSCS

Don Lindbergh, AS, BA

Kyle Maddox, AS, BS

Lisa Miao, BS, MS

Robert Morgan, AS

Midh Mulpuri, BS, MBA

Hakim Neemuchwala, BSIE

Jarrod Otter, BS

Trish Stokes-Pham, MSME

Bruce Vannice, BS

Serge Yee, JD, BSIE

Industrial Engineer

Principal of Patient Experience & Service Design Strategy

Analytics Lead

Director (Acting), Associate Director (VE-TAP)

Industrial Engineer

Deputy Associate Director (VE-TAP), HCI Lab Director

Health System Specialist

Human Factors Engineer

Operations Lead

Program Analyst

Deputy Associate Director (VE-TAP)

Deputy Associate Director (Business Operations)

Deployment Manager

Verification Lead

Administrative Officer

Project Manager



Appendix E: Complete Project Listing FY12-14

VHA Engineering Technical Assistance Program (VE-TAP)

Applied Informatics Modeling & Simulation Service (AIMS)

StratHub

- CORE/ETERIS
- Improved Lean Management
- SYS Dynamic (Collaboration WPI)
- SBIR Ph1 Support (Collaborative Duke)
- Analytic Support (Collaborative UNC)

NRT-DSS

- Clinical Simulations: OR, SPS, GI, EENT, Pharm
- Surgery Duration Estimator
- Patient Flow/PACU
- Patient Flow/ED Improvement

SimPlan

- Inter-facility Transfer
 - Geropsychiatric Care, Mental Health
- Experimentation
- Cancer Care Center SIM Tools
 - Capacity Planner, GUI Interface
- VA - VBA Process Transformation
- Homelessness
 - GAP Analysis Tool, Strategic Planning Tools, Mental Health
- PACT Demo & Sim Lab
- CBOPC State Home (TSP)
- CBO CPAC Suppt (TSP)
- NVNS Sim Suppt (TSP)

Advanced Engineering Assessment Services (AEAS)

Usability Testing and Support

- Section 508 Compliance
- HCI Lab
- Paracentesis UT
- Genie Pittsburgh Assessment Support
- IND CBI
- CPRS Response Time
- IMPROVED
- OIA-HI
- SimLab Collaboration

Make-Buy Models

Standard Make-Buy Data Model Polysomnography, GI, LASI, tPA Stroke, TeleStroke CBO Support

OPP Support

Mobile Surgical Units TF Make-Buy Validation

HRS&D National Conference Comp & Pen Radiation/ Oncology Chemotherapy

Dialysis

Dialysis Clinics

Make-Buy, Validation, Implementation Home Dialysis Model

AB/ Models

CAN Model Improvement

Medical Equipment Services (MES)

Design Evaluation (DE)

MEEDA, TCO

Interactive Visual Navigator (IVN)

Code Development RTLS Interface

Technical Architecture and Infrastructure Deployment

Sustainment Helpdesk, Training

O&M

Strategic Support Services (S3)

Veteran Centered Clinical Systems Engineering Services (VCCSEJ)

VISN 11 CSE Projects CBOC Analysis

Wifi Seminar Support Tools Electronic Antibiotic

Stewardship Cancer Care Center Scheduling Tool VISN 6 Lab Support

Wounded Warrior Project

DOD-VA Data Analysis

Data Analysis

WTS Clinical IE Support

GI Clinic, Radiology Clinic

Emergency Department Inpatient Flow Clinical Services Staffing

Surgery Optimization Tools

Stanford Surgical Tool, OR Resident Scheduling RCART

ED Application, Outpatient Clinical Demand, VACO TF Network Analysis for Healthcare

IND Fiscal Review & Flow Management VA-CASE AO Support Tool

PMMT

Project Support Toolkit

ISSS, ACCESS Data Tool, Training & Competency Tool

Social Media

VA-CASE Blog PMCOE

SEBok VA Wiki

SEKA Portal

Informatics Collaboration, Risk Management KA

Missed Opportunities

VISN 11 Fiscal Forecast Model VERC Dashboard

VCD Lab

IND Pathology Lab DE-OHRA

Mental Health Danville HRS&D SharePoint Standard CBOC

PCS National Design Guidebook IND Radiation Lab

IND GI Assessment VOC Outpatient Care

IND Community Outreach

IND Cancer Care Center

Design & Innovation, Analytics VIP Collaborative (SPDER)

Ann Arbor VAMC Admin and Atrium Design

Program Management Office Services (PMO)

Toolkits

PACT, Specialty Care, Emergency Services for Women, UM

H/2

Social Media Enterprise/Lean

Social Media: VA Lean Practitioners Network (VLPN)

Transactional Systems Program (TSP)

VHA Chief Business Office Purchased Care

Business Systems Management

Fee Process Evaluation

Make/Buy Models

Fee Basis Claims Systems (FBCS)
(Optimization)

Non-VA Care Coordination (NVCC) Pilot

HAC Support Services Department
(SSD) Process Improvement

NVCC National Deployment – Voice of
the Veteran Survey

Non-VA Medical Care National
Standardization (NVNS)

Clinical Program Consulting

NVCC Clinical Applications Coordinator
(CAC) Support

Standing Inventory Elimination Tool
(SIET)

Operations

Health Administration Center (HAC)

Simulation Model

HAC Claims Processing & Eligibility
(CP&E) Optimization

VHA Chief Business Office Business Policy

VA Internet Quorum (VAIQ) Current
State Process Evaluation

Health Benefits Appeals (HBA)

Application Development &
Implementation

VHA Chief Business Office Revenue Operations

Consolidated Patient Account Center (CPAC) Process
Observation

Office of Rural Health

Program Administration

Project Access Received Closer to Home (ARCH)

Professional Development

Lean Education/Training

Lean Certification

DEED

Rapid Process Improvement (RPIE) Training/Co-Facilitation
Program

Consolidated Patient Accounting Center (CPAC)

Lean Management System (LMS) Program

Improvement Advisor Academy

Chief Business Office Purchased Care - Lean Six Sigma Training

Social Media Enterprise/Lean

Social Media: VA Lean Practitioners Network (VLPN)

Clinical Partnerships in Healthcare Transformation (CPHT)

Specialty and Surgical Care Collaborative

Specialty and Surgical Care Collaborative (Phase 2)

Specialty and Surgical Care Collaborative Return on Investment
(Phase 2)

Specialty and Surgical Care Collaborative Sustain and Spread
(Phase 3)

Specialty Care Transformation

Specialty Care Transformation Hybrid Collaborative

Specialty Care Transformation Hybrid Collaborative
Return on Investment

**Improving Patient-Centered Care via Integration of
Chaplains with Mental Health Care**

Surgical Flow Improvement Initiative FY14

National Activations Office

National Activations Office: Knowledge Management
Portal

National Activations Office: Electronic Checklist

Evidence-Based Practice and Management

Application of Bayesian Networks in Consumer Service
Industry with Additional Applications in Healthcare
Simulation Model

Aligning Transitions of Care for Post-Stroke Patients
with Hypertension

External Facilitators in an Acute Stroke Quality
Improvement Collaborative in the Veterans Health
Administration

Completed Projects

Patient Aligned Care Team Collaborative
Weight Management Program for Veterans (MOVE!®)
Cancer Care Quality Improvement Measurement Tools
Access Academy
Operation Safe Place

Data Engineering Resources (DER)

Beneficiary Travel Initiative
OAHRA (Office of Administration Human Resources
Administration)
The 10N project (a SharePoint access project)

VA Informatics Development Education Academy
(VA-IDEA)

VISN 11 Program

VISN 11 Lean Management System – Sensei
Partnership Program/VISN 11 Facilities

Homelessness Initiative/ VISN 11 Facilities

Ann Arbor Welcome Center/Atrium Project

Green Environmental Management System/ VISN
11 Facilities

Logistics Commodity Standardization Initiative

No Harm Initiative/ VISN 11 Facilities

Patient Flow Initiative/ VISN 11 Facilities

Northern Indiana and Saginaw VAMCs/VISN 11

Richard L. Roudebush
VA Medical Center
1481 W. 10th Street
Indianapolis, IN 46204
317-988-3089
Candace.Kingma@va.gov

<http://www.indianapolis.va.gov/VERC>
