New Territory

The Journey Continues

Banner Health®

Clinical Performance
Report 2013

Headquartered in Phoenix, Arizona Banner Health is one of the largest, nonprofit health care systems in the country. The system owns or leases 24 acute-care hospitals, in addition to long-term care centers, outpatient surgery centers and an array of other services including family clinics, home care, hospice services, and a nursing registry. Banner Health operates in seven states: Alaska, Arizona, California, Colorado, Nebraska, Nevada and Wyoming.

Having a High Tolerance for Ambiguity and a Passion for Complexity

Frederick Sanger, the British biochemist who twice won the Nobel Prize for chemistry, noted that anything new "is like a voyage of discovery into unknown lands, seeking not for new territory but for new knowledge. It should appeal to those with a good sense of adventure."

For at least several years it appears that we at Banner have been taking that voyage into uncharted territory and, in addition to a good sense of adventure, we have needed to have a high tolerance for ambiguity and a passion for complexity. In recent years leaders at Banner have experienced unprecedented levels of activities that are driven by numerous concurrently occurring activities as well as major strategic efforts.

One of our major efforts in 2013 was continuing to build our Banner Health Network to bring more beneficiaries into plans served by BHN and, where needed, more physicians into the network. BHN is one of our strategic centerpieces to transform Banner into an organization that operates effectively in both a value-based, population health management model and the traditional fee-for-service model. As to ambiguity, we are still not certain about the proportion of Banner's operations that will eventually be part of BHN's value-based population health management model. What we do know is that the proportion of Banner operations that are BHN-related is growing and will become a much larger piece of Banner's revenue and operations.

At the same time we are opening numerous Banner Health Centers and Clinics and working to gain new patients while expanding Banner Medical Group, our multi-specialty group practice of 900+ employed physicians. There were some two million visits to these centers and clinics in 2013. We are developing patient-centered medical homes in these health centers and launching an online patient portal to improve service to our patients as well.

Other activities abound. In the fall of 2013 we announced that we would be entering a new market in Fort Collins, Colorado with a new Banner hospital. We are also working to strengthen Banner Good Samaritan's position with respect to clinical services provided through the graduate medical program. Our drive for improved clinical quality is in a highly controlled and well-managed overdrive.

We are proud to be one of the recipients of Truven Health Analytics award as a Top 5 Health System in the nation, marking the third time in the past four years that Banner has received this honor.

Our focus on innovation continues unabated. For several years we have had a remote monitoring system called *i*Care to back up the bedside ICU team and monitor ICU patient information 24 hours a day. We are also breaking new ground in this area for medical-surgical patients and most recently focused on improved care for chronically ill patients served by Banner Health Network in their homes. Early indications are that this innovative program can provide enhanced care at lower costs and offer a better patient experience. The question now is, can the impact of this home-based *i*Care program be applied a broader cross-section of appropriately selected Banner Health Network patients? Again, new territory.

So much of our discussion – transformation of health care systems driven by value and risk, decreasing government reimbursement, increasing expectations for quality care, improved patient experiences, greater transparency, greater risk, and health care reform – has become part of our daily routine. While the impact of these forces remains unknown, it has become the reality all of us working in health care face regularly. Banner will continue to be successful because we have been willing to take proactive actions to address challenges. We all have to have a good sense of adventure as we navigate the change facing our industry in the years ahead.

Peter S. Fine
President & CEO

John A. Hensing, MD
Executive Vice President & Chief Medical Officer

Moving Forward

The cover of this report depicts people entering new territory, leaving behind a more structured world for one of adventure and of the unknown. Astronaut Sally Ride noted that "All adventures into new territory are scary." She would have known having travelled into the unknown realm of space several times, spending more than 300+ hours there.

While the future of health care may not be scary, it is definitely uncertain. We know the move toward managing health of populations (population health) will be key and we also know the idea of encouraging people to stay well (not treating them only when they are sick) and developing the true continuum of care will be important. Banner has been poised for this journey for nearly a decade, building a strong foundation, a one-way road to the future through its clinical process improvement work. The work has continually moved the organization forward and has been recognized by national quality rating organizations such as Truven Health Analytics which has named Banner one of the top five big hospital systems in clinical quality for multiple years.

The clinical improvement journey has charted new territory since the turn of the 21st century beginning with a smaller focused effort that has now become part of the organization's DNA in terms of how it approaches clinical quality.
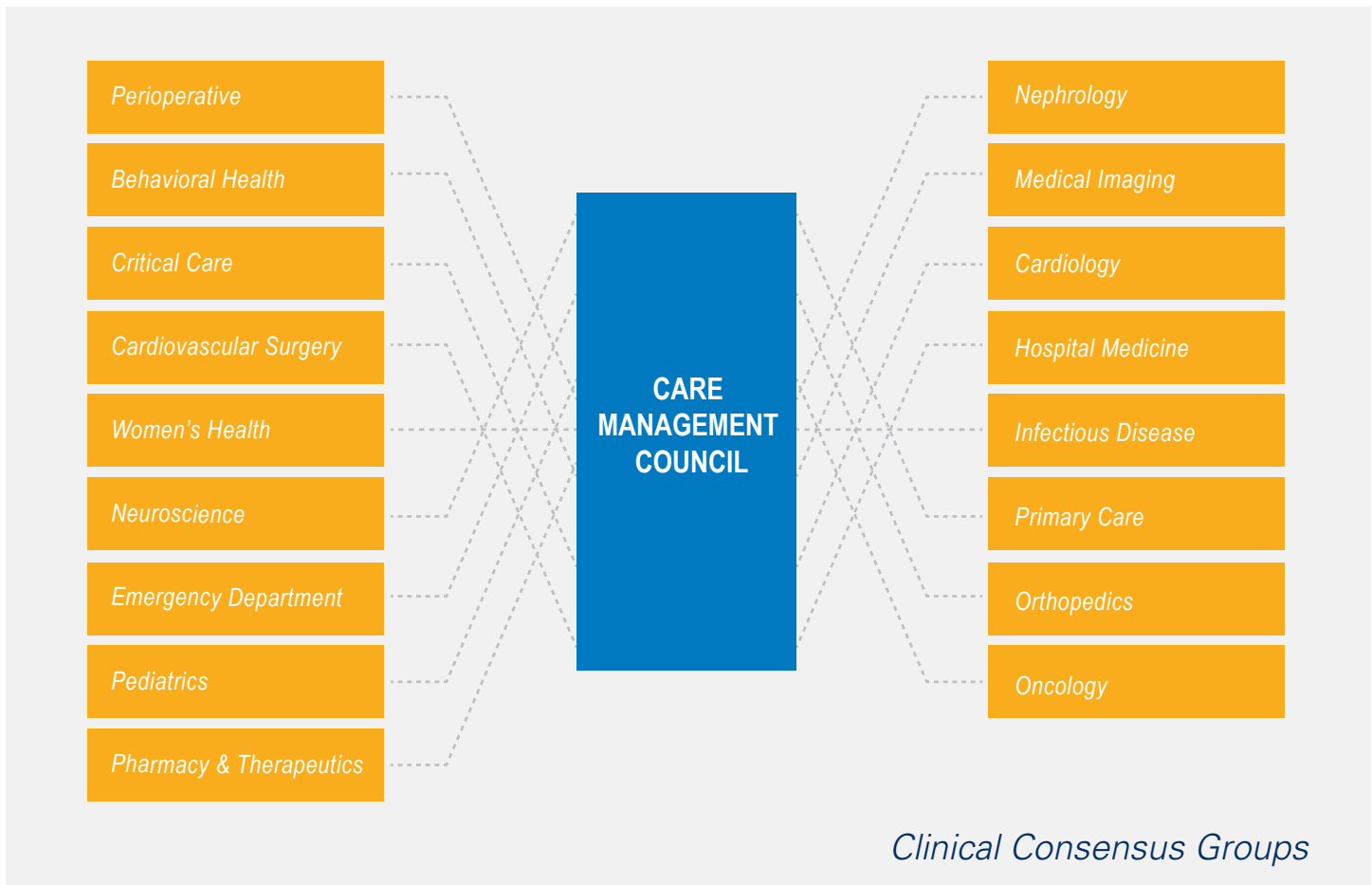
Beginning with a dozen functional teams that were focused on patient safety, utilization management and clinical data analysis among others as well as a few clinical improvement efforts focused on CMS core measures, Care Management's improvement process has evolved to include Clinical Consensus Groups (CCGs) and TRIaDs (Teams for Rapid Innovation and Design). Those small steps more than a decade ago have grown to greater than 50 teams dedicated to this improvement work today.

The improvement work is done by teams that focus on evidence-based practice as well as practice-based evidence to define, design and implement clinical practices, policies and standing orders that improve patient care at all Banner facilities.

The CCGs are multi-disciplinary groups of physicians and other clinicians who examine emerging issues and improvement opportunities in a specific clinical area. Increasing from a handful of groups five years ago, CCGs now number 17.

"Life is a one-way road. You can choose to keep moving forward to new territory. Or, you can choose to go in reverse because it is familiar territory, but then you get further away from ever moving forward."
- Anonymous

TRIaDs have focused accountable leadership for improving patient outcomes across the organization. Each of these teams has a dedicated medical director, clinical director and a process engineering director. The process engineer specializes in the

Perioperative		Nephrology
Behavioral Health		Medical Imaging
Critical Care		Cardiology
Cardiovascular Surgery		Hospital Medicine
Women's Health	**CARE MANAGEMENT COUNCIL**	Infectious Disease
Neuroscience		Primary Care
Emergency Department		Orthopedics
Pediatrics		Oncology
Pharmacy & Therapeutics		

Clinical Consensus Groups

development of metrics design processes. At the end of 2013, there were six TRIaDs: Women's Health, Perioperative, Hospital Medicine, Critical Care, Emergency and Ambulatory.

Additionally there are more than 30 Discipline Teams. These teams bring leaders in a single discipline or service delivery area together to standardize and improve clinical and/or operational performance systemwide by addressing care/service delivery; standards of professional practice; standards of patient care; and information, technology and workflow.

As the road has taken the organization forward, some of the earlier functional teams have disbanded, making room for additional CCGs and TRIaDs to delve deeper into process improvement.

	Patient Safety Leadership
CARE MANAGEMENT COUNCIL	Performance Improvement
	Patient Education

Functional Teams, Work Groups, & Special Projects

| Perioperative | | Hospital Medicine |
| Critical Care | **CARE MANAGEMENT COUNCIL** | Emergency Department |
| Women's Health | | Ambulatory Care |

Clinical Performance TRIaDs

The Quality Journey at Banner

One of the organization's core strengths is its innovative approach to reducing the known lag time of 17 years between the identification of an evidence-based clinical practice to when it becomes a widely accepted and implemented practice. While clinical process improvement involves a strategic approach, execution is key. Execution, in fact, has become a core competence of the organization. This is accomplished through a three-step process which includes:

» *Define* the clinical practice (using clinical experts to study and determine practices that will significantly enhance care throughout Banner)
» *Design* how it will be performed (including education and communication of how the practice will be implemented)
» *Implement* the clinical practice using project management tools and techniques

Clinical practices describe a spectrum of care that can be delivered to a group of patients with a specified medical condition. Based on the strength of the evidence, these practices can further be categorized as expected (to be done every time) or recommended (based on clinician judgment). Expected practices are developed from the highest level of evidence-based research or strong consensus among practitioners across Banner Health.

Guiding the work of Care Management is the Care Management Council which is led by John Hensing, MD, executive vice president and Chief Medical Officer for Banner Health. The Council, composed of the organization's clinical and administrative leadership, meets quarterly to approve new clinical practices, policies and standing orders. It also monitors the work progress being made by the various Care Management teams toward achieving clinical excellence. Council decisions are reported first to the senior management team and then to the Quality Committee of Banner Health's Board of Directors. As the governing body for the organization, the Board provides guidance and also tracks the progress of work being done in Care Management. The Board has embraced the organization's mission of making a difference in people's lives through excellent patient care and clinical quality is a major component of that promise.
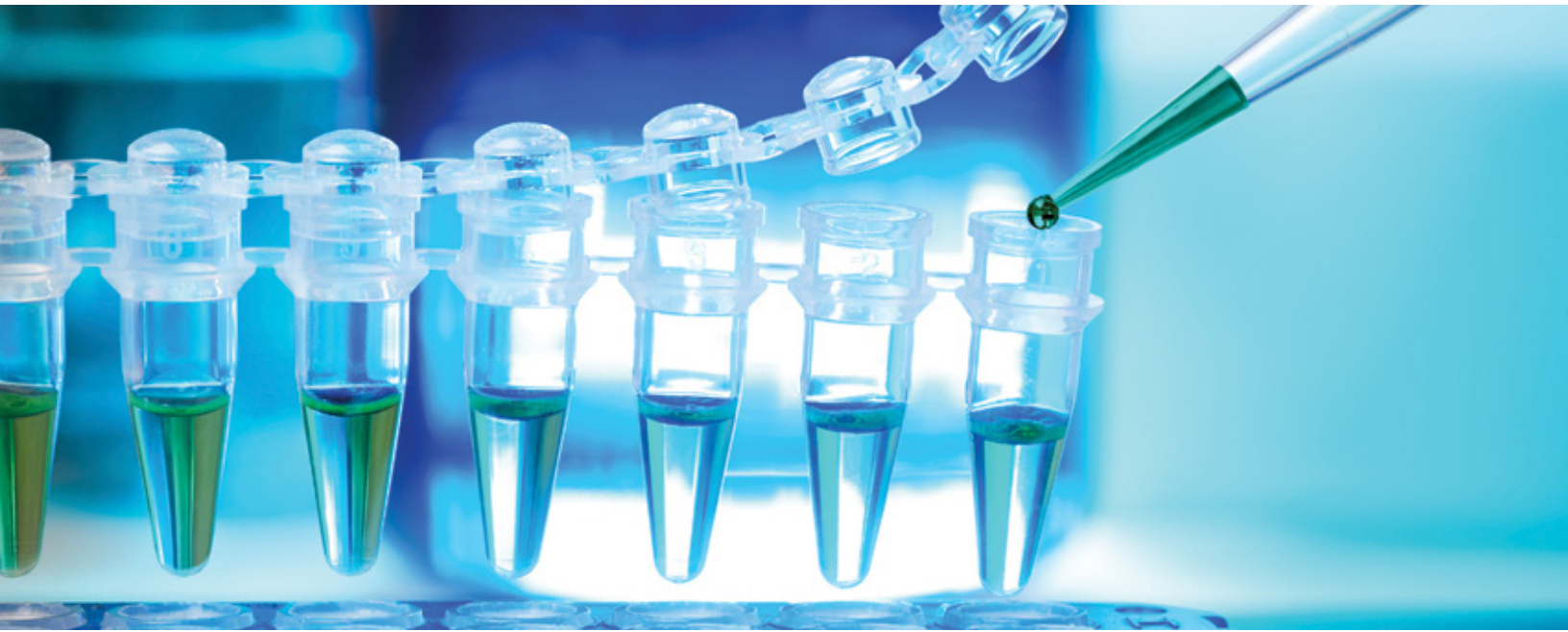
Improvement Architecture

Demonstrating national leadership in clinical quality, Banner continues its role as a mentor system with the Institute for Health care Improvement's (IHI) "Boards on Board" program. Banner is listed in the mentor registry for Governance and Improvement (along with other organizations such as Dana Farber Cancer Institute, Henry Ford Health System, and Virginia Mason Medical Center among others) because of the strong relationship between the Board's guidance and oversight of Quality and the work of the various improvement teams. Organizations throughout the world, in fact, contact Banner routinely to learn how this work has been organized, indicating industry leadership in clinical quality. Banner Health's ability to define and spread best practices and processes to accelerate progress toward safe care was also a determining factor in IHI's selection.

The Care Management Organization

Key functions and departments that are part of Care Management include:

» Chief Medical Officers
- *Providing medical leadership and expertise for clinical excellence.*
- Locally based Chief Medical Officers are involved in medical staff support and engagement, clinical operations monitoring and improvement, facility and regional and system leadership.

» Case Management
- *Managing the patient's stay so that staff nurses can manage the patient's day.*
- Functions include patient flow, discharge planning, utilization management and social services.

» Clinical Performance Assessment
- *Assessing and improving quality and safety of patient care.*
- Functions include regulatory compliance, peer review, process improvement, and patient safety.

» Clinical Innovation
- *Scanning, selecting and implementing innovative clinical strategies at Banner Health.*
- Functions include *i*Care, the nation's largest Simulation Medical Center and the beta site for "eHospital."

» Process Engineering
- *Applying operational science to improve efficiency, quality, and effectiveness.*
- Functions include performance measurement and analysis, productivity measurement and analysis, internal and external benchmarking, process analysis and improvement, program management and informal training.

» Clinical Outcomes and Analysis
- *Planning, analyzing, and presenting clinical performance information.*
- Functions include systemwide clinical safety initiative reporting, board reports for all business lines, clinical "business intelligence" development and support for clinical systems.

» Research
- *Leading scientific discovery and innovation.*
- Basic and clinical research faculty transcribe ground-breaking research findings into new identification, treatment, and prevention methods for Alzheimer's, Parkinson's, cardiovascular disease, fibromyalgia, orthopedics and arthritis.

» Clinical Informatics Design & Usability
- *Designing clinical applications for ease of use for the delivery of care.*
- Assesses how clinical applications are used, defines an optimal workflow and designs content and formatting to capture clinical data to improve patient care.

» Medical Informatics
- *Providing strategic direction for optimization and integration of clinical information systems to support care delivery across the continuum.*
- Creates opportunities to leverage Banner's clinical information systems to improve clinical and operational outcomes.

» Clinical Education
- *Developing, designing, delivering and assessing learning needs, programs and curricula for all clinical onboarding and ongoing education.*
- Includes all levels of clinicians and providers in areas from clinical practice and technical skills education to EMR/EHR training.

» Risk Management (Business Health)
- *Preventing and minimizing accidental loss to business.*
- Assesses and helps minimize losses through the use of safety measures and design of systems that help prevent accidents and injury.
- Includes analyzing potential hazards to prevent accidents and should they occur, handles them in such a way that their effect and cost are minimized.

» Infection Prevention
- *Reducing the risk of acquiring and transmitting infections in our patients, health care workers and visitors.*
- Facility-based and centralized staff working together through risk reduction, staff education, identification of transmissible infections, data analysis, and the implementation of evidence-based interventions.

Stretching Targets

Work carried on with new clinical strategic initiatives in 2013 by fulfilling Banner's driving strategy of applying science and evidence-based principles with every patient encounter. Members of senior management convene annually to explore improvement options that are recommended to the Board of Directors as part of Banner's strategic plan. These measures are used to determine how well Banner is executing its long-term driving strategies and supporting objectives. The driving strategy for Care Management improvement work is building an evidence-based delivery system that drives patient and population well-being. Strategic initiatives represent key actions that have been developed to achieve objectives or close the gap between measures of performance and targets. These initiatives define the organization's annual plan and how Banner executes its long-range plans.

Strategic Initiative work in 2013 included Value-Based Clinical Metrics (a composite score of measures that included acute myocardial infarction (AMI), Heart Failure (HF), Pneumonia (PN) and Surgical Care Improvement Project (SCIP)). Other initiatives focused on Providing Appropriate Clinical Care (CMS publicly reported measures composite scores) and decreasing readmission rates for AMI, HF, PN and readmission rates for all payer, age and diagnosis.

Another initiative focused the successful achievement of 17 Accountable Care Organization measures as defined by CMS. Among these measures are: medication reconciliation (reconciliation after discharge from an inpatient facility, screening for fall risk, influenza immunization for patients seen for a visit between October 1 and March 31, administration of pneumococcal vaccine for patients 65 years of age and older as well as adult weight screening and follow up among other measures.

« Results of the strategic initiative work appear in the adjacent table.

Core Measures and Variation Initiatives	Desired Direction	2013 YE Performance	2013 Targets	2013 Stretch Targets
Provide Appropriate Clinical Care CMS Publicly Reported (VBP)				
Value-Based Purchasing	↑	**98.2%**	97.8%	98.1%
AMI Readmissions	↓	**13.9%**	13.6%	12.2%
HF Readmissions	↓	**18.2%**	16.9%	15.2%
PN Readmissions	↓	**11.0%**	10.3%	9.3%
All Cause-non VBP Readmissions	↓	**9.4%**	12.0%	10.8%
Improve Care For Pioneer Member Through Banner Model For Population Health Management				
Successful Achievement of 17 ACO Measures as Defined by CMS	↑	**52.1%**	44.7%	49.0%
Reduce Variation in Blood Utilization				
Percent Reduction in Utilization Based on Blood Usage	↓	**11.0%**	20.2%	19.8%
Reduce Variation in Utilization in Clinical Care Across the Organization				
Reduce Variation in Orthopedics Practices and Resource Utilization	↑	**91.0%**	83.0%	87.0%
Improve Care of Pediatric Pts in the Ambulatory Setting				
Pediatric Asthma Ambulatory Composite Score	↑	**72.2%**	23.0%	33.0%
Reduce Costs in Preoperative Supplies Across Banner				
Reduction in Overall Supply Cost	↑	**$13,718,901**	$10,000,524	$12,000,629

Legend: ■ =At or Exceeding Stretch ■ =Meeting Target ■ =Not at Target

Quality Initiatives - 2013 Year End Results

Information Techology and Medical Records

An Electronic Medical Record or EMR is critical in terms of guiding a health care organization toward clinical excellence, patient safety and operating efficiency. A fully developed EMR covers the spectrum of care from a physician's office to the hospital and if necessary, to home care. Banner created a strategic initiative a decade ago called Care Transformation that addressed the implementation of a comprehensive EMR across all Banner facilities and a separate but interfaced EMR across all Banner employed physicians' practices.

This effort involved combining elements of work redesign, related and critical cultural change, as well as "hardwiring"

of evidence-based clinical practices to achieve the vision. Critical to the initiative has been the work of Banner's Care Management division whose leadership created the vision of improving the quality and safety of patient care through the widespread adoption of evidence-based clinical practices that are supported by technology and the full adoption of computerized physician order entry (CPOE) and documentation.

Two key factors created the enterprise vision that enabled the rapid rollout of this technology across Banner: synergy among key departments such as Information Technology, Care Management and Clinical Operations and the creation of a model that provides a standardized approach to technology and clinical operations which could be replicated across all Banner facilities. This model enables

less expensive, rapid information system implementations and the adoption of standardized workflows and evidence-based best practices. As a result Banner has now become recognized as a national leader in the use of electronic records to make patient care safer and more efficient.

Banner's broad suite of fully integrated clinical applications plays an important role for the organization. Twenty-one Banner Health facilities have achieved HIMSS Analytics Stage 7, currently the highest stage in the adoption of electronic medical records as acknowledged by HIMSS Analytics, a wholly owned nonprofit subsidiary of the Healthcare Information and Management Systems Society.

HIMSS Analytics monitors and recognizes levels of EMR adoption and meaningful use in hospitals in the United States, Canada and other countries. The Stage 7 recognition by HIMSS Analytics is a compelling example of Banner Health's emergence as a national leader in health care. As of December 31, 2013, Banner Health's 21 Stage 7 hospitals were among only 160 (or 2.9% of the 5,458 in the HIMSS database) of hospitals in the nation at this top level of EMR use.

Banner's experience indicates that information technologies can be used effectively and efficiently to enable clinicians to provide a higher level of patient care. The organization has discovered novel uses of EMR systems to target specific disorders and health issues, resulting in significant outcome improvements. There

is also the life-saving power of clinical collaboration in hospitals throughout Banner that are connected to intensive care specialists working from our remote intensive care centers.

Banner Health has developed one of the most successful corporate Information Technology organizations in health care today. Banner IT is a single, enterprise-level technology organization that has developed, deployed, and today operates broad suites of highly standardized and integrated information technology and biomedical engineering products and services across a large and geographically dispersed health care organization.

Banner's information technology strategy and performance has helped Banner achieve a number of recent national awards and recognitions, including recognition as a Most Wired Health care System.

Because Banner is a national leader in the implementation and use of the EMR, organizational leaders actively participate in and help shape health information exchange efforts in Arizona, Colorado and Alaska. Since all Banner facilities are always viewing the complete set of Banner clinical data (some going back more than 10 years), they are all seamlessly sharing clinical information across millions of inpatient encounters and patients. Internally Banner is effectively operating one of the largest and richest Health Information Exchanges in the United States today.

Stage	Cumulative Capabilities	2013 Q3	2013 Final
Stage 7	Complete EMR; CCD transactions to share data; Data Warehousing; Data continuity with ED, ambulatory, OP	2.2%	2.9%
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS	11.1%	12.5%
Stage 5	Closed loop medication administration	20.9%	22.0%
Stage 4	CPOE, Clinical Decision Support (clinical protocols)	15.1%	15.5%
Stage 3	Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology	31.9%	30.3%
Stage 2	CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging, HIE capable	8.4%	7.6%
Stage 1	Ancillaries - Lab, Rad, Pharmacy - All Installed	3.5%	3.3%
Stage 0	All Three Ancillaries Not Installed	6.9%	5.8%

Data from HIMSS Analytics™ Database © 2014   N = 5,437   N=5,458

EMR Adoption Model ^{SM} *2013*

Strategic Improvement Work

More Patients Make Their "Home" at Banner's Patient Centered Medical Homes

Now almost a household word in America, the Patient Centered Medical Home (PCMH) provides an organized, team-based approach to health care that will take us back to the future in terms of health care. The "home" model is led by a clinician who provides comprehensive and continuous health care to patients with the ultimate goal of providing maximized health outcomes for patients in the primary care setting – which includes family practice and internal medicine.

Today's reality is that only 54.9% of patients receive the recommended preventive care they need. Furthermore, some

"I think the Teach Back is working well. Patients are making comments about the direction they have received and take more accountability for their own care."

50% of patients leave their primary care provider's office not understanding what they were told. The average adherence rate for prescribed medicine is less than 50% and fewer that 10% of patients sustain or participate in lifestyle changes.

To help patients receive better care, PCMH is a team-based health care delivery model led by a primary care clinician who provides comprehensive and continuous health care resulting in better patient access to care, care that is highly coordinated and collaborative and couples the opportunity to improve the health of patients while reducing health care costs.

There is substantial and growing evidence that a health care system built upon the PCMH framework will improve outcomes, result in more efficient use of resources and accelerate systems-based improvements in physician practices. Berwick, Nolan and Whittington (2008) identify the PCMH with its focus on access, health literacy, care coordination and population management, as an important redesign that strengthens primary care. They note that PCMH supports the "triple aim" of improved individual care, improved population health and reduced population-level care costs.

PCMH has been strategically designed with collaboration among various departments including decision support, clinical information systems and patient self-management that takes into consideration health coaching, health literacy and cultural considerations.

The delivery system is designed with screenings and assessments embedded in the workflow, services that are centralized, an enhanced role for the medical assistant and a case manager and pharmacist who are added to the care team. The ambulatory case manager coordinates care with the patient to assist with patient self-management support that includes setting up primary care/specialist follow-up appointments, identifying the need for pharmacy services as well as coaching and motivation.

When pharmacy services are requested, a Pharm D would partner with physicians to provide better outcomes. As part of chronic condition management, this partnership would provide medication education, disease state education, diet and lifestyle education, drug therapy management and medication adjustment (or initiation) if necessary.
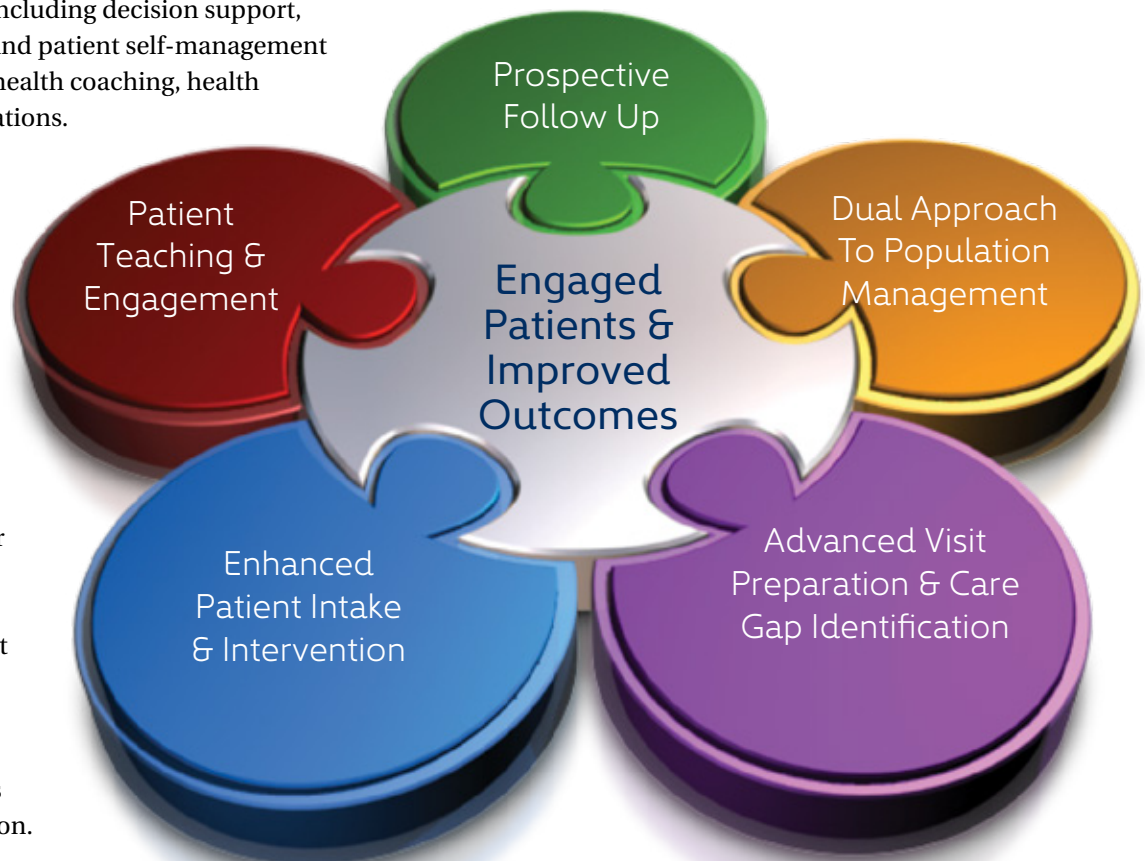
Several Banner Medical Group clinics and health centers around the system have already implemented medical homes and more are planned in the future. The benefit of PCMH goes two ways – it benefits the patient and provides a more satisfying work experience for providers. The following comments have been made by providers:

"I feel like the patients are better informed because they get more time."

"Easier to work as a team. I feel as if I have more time."

"I think the Teach Back is working well. Patients are making comments about the direction they have received and take more accountability for their own care."

Enhanced PCMH Care Model

Prospective Follow Up

Dual Approach To Population Management

Patient Teaching & Engagement

Engaged Patients & Improved Outcomes

Enhanced Patient Intake & Intervention

Advanced Visit Preparation & Care Gap Identification

Banner's Simulation Medical Center

Banner Health entered the new territory of Simulation training a number of years ago. Simulation is first and foremost about patient safety to make certain that learning leads to caregivers mastering competencies in patient care. These caregivers and clinicians have the opportunity to practice low-frequency, but high-risk events. Banner has three major simulation centers that cover the system. They are part of the only system-accredited simulation centers for both the American College of Surgeons (ACS) and the Society for Simulation in Health care.

Considered a "virtual hospital" Banner Simulation Medical Center is one of the largest centers of its kind in the world and is taking medical education efforts to new levels. The 55,000-square-foot facility in downtown Mesa, Arizona has many of the features found in any major hospital: an intensive care unit, an emergency department, two operating rooms with virtual operating capabilities including a DaVinci Robot, a neonatal care center and eight-bed recovery wing. Its patients are computerized mannequins (also called patient training

simulators). Though this innovative facility is located in Mesa, simulation medical education occurs throughout the Banner system.

The Simulation Education and Training Center, also known as SimET, at Banner Good Samaritan Medical Center has more than 8,000 visits a year to include: residents, surgeons, nurses, emergency medical technicians and other health care professionals and ancillary staff who are trained there annually. Good Samaritan Medical Center is a teaching facility where the medical residents use simulation to reach their competency-based graduate medical education milestones. Robotic training simulators are used to assess competency from a system level for physicians and residents. Virtual reality simulators and laparoscopic trainers are available 24 hours a day to the surgical and obstetric residents. The SimEt Center is the only Fundamentals of Laparoscopic Surgery testing center in Arizona.

In Colorado, the 1,500-square-foot center at McKee Medical Center in Loveland has state-of-the art training bays, multiple mannequins to simulate all age groups and debriefing rooms. In addition, the conference room has teleconferencing capabilities where clinicians can test and refine their skills in a safe, but realistic environment – without ever touching an actual patient. The fully equipped patient care rooms simulate care scenarios in emergency, surgical, critical care, obstetrics and medical environments.

The Colorado Simulation team travels to all the Western Region facilities to deliver on-site simulations, either by shipping the mannequins there or driving the Simulation van to the facility. These simulations occur on the unit with the multidisciplinary team that delivers care to the patient at that facility. On-site simulation allows process flow to also be evaluated in order to assure the best of patient care.

Additionally a "mini sim lab" opened on the shared campus that houses Banner Baywood Medical Center and Banner Heart Hospital. There, in 300 square feet of dedicated space, clinicians and others learn ways to improve their skills and enhance patient safety. There are two mannequins for nurses and others to practice on as well as four computer stations at a mock nurses' station. Learners can practice a clinical skill such as inserting a bladder catheter on the mannequin and then go to the computer to learn appropriate charting.

The results of training have been impressive. Since 2006 every entering new resident has passed the central venous catheter course before every seeing an actual patient. Complications from central line placement have been reduced by 92% for pneumothorax and there has been an 83% decrease in line infections.

Similarly Advanced Cardiac Life Support training courses have been revamped. Revisions to the course now include the use of weighted checklists, training to errors and high fidelity simulation. Both low-end and high-end simulation with errors (clinicians learn to anticipate errors) have resulted in increases in learning of about 300%

Standardized on-site mock codes have also been implemented throughout the system to allow for assessment and remediation of learning. An innovative electronic tool propagates an immediate debriefing guide. The data collected from the annual competency education day (ACED) mock codes and on-site mock codes is helping to drive needed education and remediation in this high-risk low-frequency event.

In 2009 the Simulation Center received reaccreditation from the American College of Surgeons Level One Accredited Education Institutes. There are some 50+

accredited institutes around the world and Banner's Simulation Center continues to be one of the very few non-academic, non-university associated simulation programs. Other programs include those at Harvard, Stanford, Mayo Clinic, UC Irvine, USC, Duke and Penn among others. Banner's reapplication is unique because it was done as a system application. The application was approved making Banner the only institution in the world that is accredited as a whole across an entire health care system.

In 2010 the Society for Simulation in Health care, the largest simulation organization in the world, implemented its own separate and more involved accreditation process. Institutions can apply for accreditation in one or more of five different areas of expertise in simulation and the review involves an arduous process including an all-day site visit. Today there are only 33 institutions in the world that have been certified by SSH, and there are only two others that have been accredited in all five of the areas of expertise. They are the U.S. Department of Defense and the Weiser Institute. The Banner Simulation program learned in early 2013 that it would be joining the ranks of those two organizations because it, too, was accredited as a system in all five areas of expertise.

# Banner *i*Care – Providing Peace of Mind to Families and Care Providers

*i*Care uses a two-way, audiovisual communication system that allows staff to see and speak directly with the patient in a room. Patients can see and hear the nurse on a monitor located across from their beds. Linked from intensive care rooms the eICU®, or *i*Care system, pairs audiovisual and information technologies with intensive care physicians, or intensivists, back-up nurses and other caregivers at the bedside and help monitor ICU patient information 24 hours a day, seven days a week. The added plus of *i*Care is that physicians can work remotely from places such as Los Angeles and as far away as Tel Aviv as they monitor patients at Banner facilities.

With *i*Care, intensivists are able to virtually be at the bedsides of dozens of patients in ICUs in Banner hospitals and medical centers. The specialists, however, work from a remote command center. A key benefit of the *i*Care system is its ability to pick up and trend nearly imperceptible changes in a patient's condition or vital signs. Because intensive care patients are so medically fragile, this early warning system can help head off life-threatening complications.

*Banner has had one of the lowest mortality rates in the industry for the past three years.*
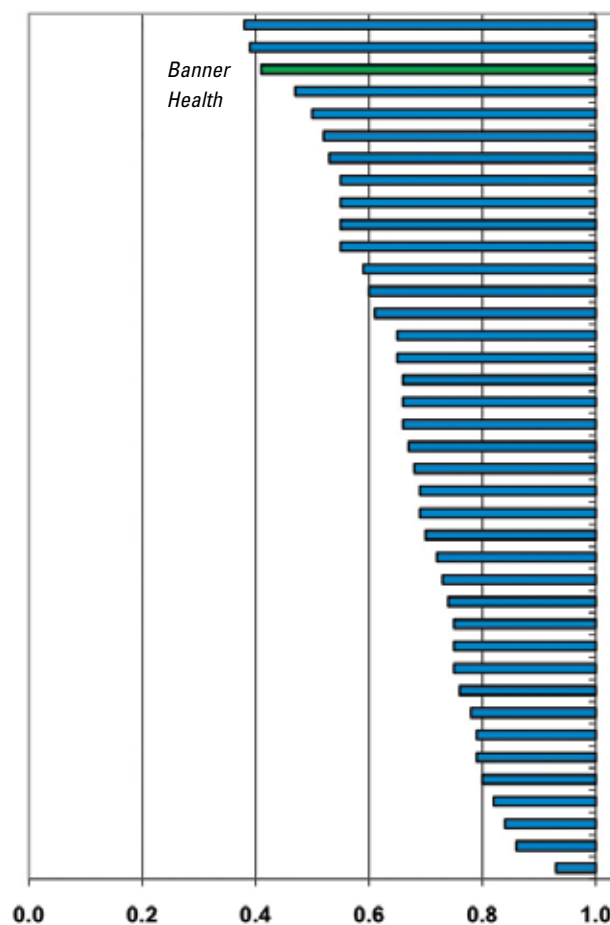
Hospital Mortality Ratio - Q3 2013

APACHE Predicted
Banner Performance
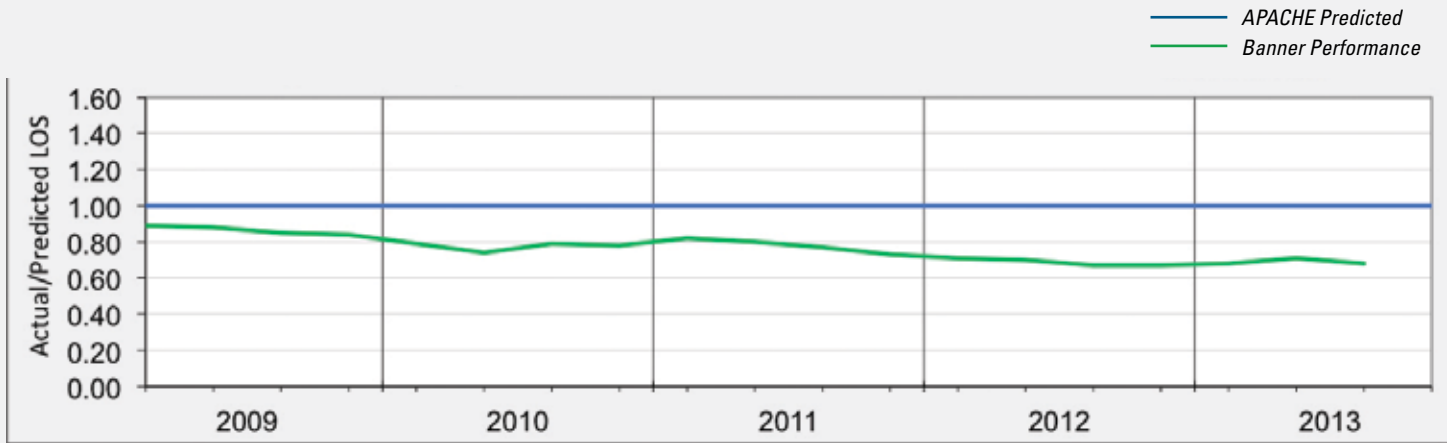
ICU Length of Stay

When intensivists detect a problem or concern, they can talk live to the caregivers at the bedside via voice and video and discuss treatment and interventions. This timely response can often result in shorter hospital stays with fewer complications for the patient. The intensivist is not a replacement for any caregivers at the hospital but is seen as an additional practitioner who has access to all the patient's vital signs, medical records, test results, X-rays, and other items found in the medical record. These caregivers provide a second set of eyes and ears to hands-on providers at the bedside.

The results have been impressive with significantly reduced mortality rates in the ICUs.

APACHE Predicted
Banner Performance
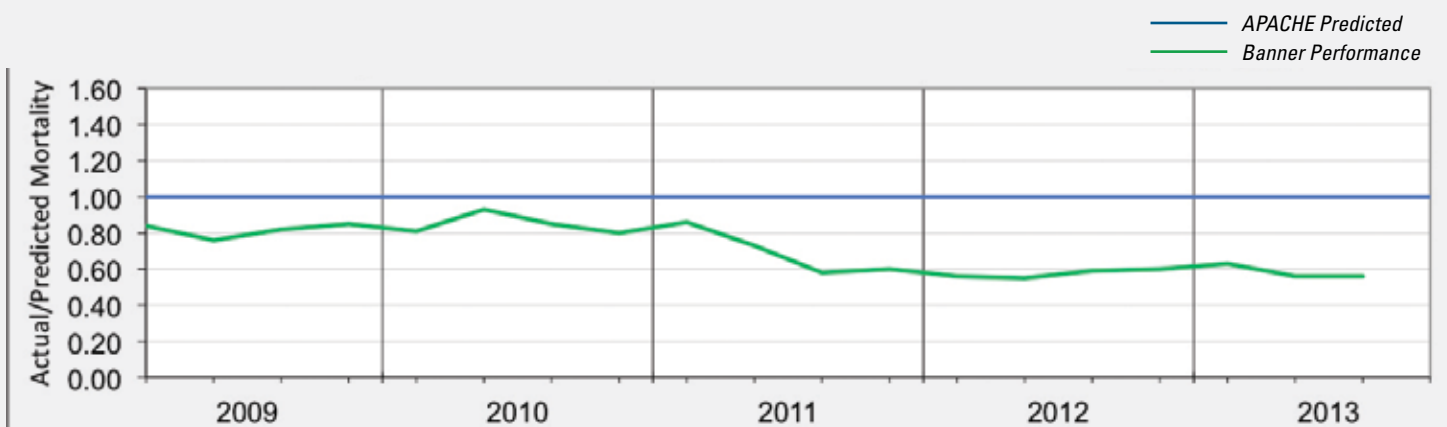
ICU Mortality

SPOTLIGHT ON CLINICAL CARE

Expertly Implementing Ventilator Care Clinical Practices

"It was the best experience," Tina Hooper, then bedside nurse at Banner Thunderbird Medical Center, recalled about her role as a facility lead for the reducing ventilator-associated pneumonias effort. Sponsored by the Critical Care TRIaD, the project to reduce these pneumonias specifically in delirium patients demonstrated how facility team buy-in, engagement and focus on patient-centeredness could result in significant clinical improvements. A system-level, standard project design with customized education at the facility level ensured there was support for the effort as well.

"As a bedside nurse, I found that stepping into the role of a facility implementation leader was both challenging and rewarding," Hooper recounted. "I had worked on the roll-out of the Chlorhexidine project where I assembled a multi-disciplinary team with people from pharmacy, infection prevention, supply chain and others. The process really opened my eyes as to what was expected. It was exciting to step out of my unit and assume a broader role. Instead of being a manager, I managed my peers with education and information about the improvement process."

The ventilator care project involved three clinical practices: Ventilated Patient Oral Care; Delirium Identification, Prevention & Treatment; and Ventilation and Sedation Management. More than 400 articles were critically appraised to create these clinical practices as part of the Define stage of the Define, Design and Implement (DDI) process Banner's clinical improvement work follows. During the Design phase, bedside leaders, members with multi-disciplinary perspectives (nursing, intensivists, pharmacy, etc.) as well as those with facility perspective (large, small and regional) met to develop detailed design for each of the clinical practices. Detailed education and communication plans were developed during this stage as well.

Once the Design phase was completed, the practices moved into the Implementation phase.   Tina Hooper, was selected as the facility lead at Banner Thunderbird. Her success with this effort was due to the fact that she understood and believed in the new implementation model, that she had excellent relationships with her peers, and her ability to develop a team to, as she said, "take a journey together." Her supervisor was also very supportive of Tina's involvement and explained Tina's role to her peers as well. Additionally, Tina found the intensivists involved in the project great to work with. The entire effort was "personally satisfying," she observed. "I love learning new things. I had the opportunity to work outside my regular role. I truly enjoyed working with my peers and networking as well."

To support her as well as other implementation leads, the Critical Care TRIaD held regular status meetings to determine what went well and what needed improvement so that all would go smoothly. The results were stunning. There was a 50% reduction in pneumonia cases systemwide and financial results of $1million in cost avoidance. One of the key learnings from this effort was that some of the best improvement ideas come from the bedside operational team.

It's a Beautiful New Day in the Neighborhood

A new concept is being trialed at Banner Boswell Medical Center – the "health neighborhood." The Banner "health neighborhood" is a new model for health care that:

» Is aligned to improve triple aim outcomes

» Works with providers who have high value practice patterns

» Reduces inappropriate variation

» Serves patients in the most appropriate clinical care and cost-effective setting

» Delivers results in a coordinated patient experience

» Aligns incentives and compensation that supports the neighborhood project

» Identifies membership growth opportunities

The health neighborhood represents a large collective group that covers the continuum of care services and delivery models to include wellness, home care, hospital, hospice, primary care physicians, ancillary care and shared decision making. The objective is to create an accessible and cost-effective network to support the management of the health and well-being for the Sun City population.

The goal is to improve both communication and coordination of care for both providers and patients in the Sun City area, including education and resources as well as enhanced access to services and care. The Neighborhood is expected to be aligned with an insurance product (e.g., Blue Cross/Blue Shield Advantage) that grows members and engages payers in risk-based models. One of the focuses of the project is to create cost efficiencies for high-cost, high-acuity and high-risk patients. An oversight committee ensures that structures and teams are in place to successfully support this effort. Additionally, care councils will identify improvement opportunities in areas such as technology, compensation and operations.

The Banner Boswell Health Neighborhood is a long-term project that will include both short- and long-term timelines and milestones.

Value-Based Care and Population Health Management

Banner Health is committed to improving the health of the populations it serves and is very well-positioned in assessing and developing market approaches, including bundling, medical homes and ACOs, that align incentives for providers, health insurers, and employers around paying for value (outcomes) rather than activity (doing things to and for patients).

Banner Health was one of 32 organizations across the country to be selected as a Medicare Pioneer Accountable Care Organization and more than 57,000 Medicare members were attributed to the Banner Health Network which began caring for and managing the health of these members on January 1st, 2012. The Medicare Pioneer ACO is a value-based model designed to provide members an improved patient care experience (including quality and satisfaction), improved health of populations and a reduction in the cost of health care.

Banner Health Network (BHN) is among a handful of organizations in the country that have conclusively established through first-year success that accountable care organizations (ACO) can reduce Medicare costs. In the report released during late January, 2014 by the Centers for Medicare and Medicaid Services (CMS), two

Pioneer ACOs were identified as achieving 41 percent of the total overall reduction in 2012 spending growth in this nationwide demonstration project. The research report, The Effect of Pioneer ACOs on Medicare Spending in the First Year, was compiled for CMS by L&M Policy Research, an independent research firm in Washington DC.

BHN's focus on providing highly collaborative care, especially for chronic, complex patients, was a key to early success. Surrounding at-risk patients with supportive care, in particular during care transitions, was an important strategy that helped to reduce hospital admissions and readmissions, for example. Advanced information technology was another important component of the ACO infrastructure, giving providers more information about the beneficiaries in their care.

"While the basis for this pilot model has merit, we also find that there is potential for changes that will result in far greater savings and better care in coming years," said Chuck Lehn, Chief Executive Officer for Banner Health Network. "Most important we seek elements that would engage beneficiaries in the model as partners in maintaining wellness and managing their care."

SPOTLIGHT ON CLINICAL CARE

Helping Families Navigate Serious, Life-threatening Illness or End of Life Care:

You could say caring for the elderly as well as those who are near the end of their life's journey is in Dr. Bridget Stiegler's genes. "I seem to have been drawn to this profession," she reflected recently. "My grandmother loved and cared for older people and my mother worked at the Beatitudes assisted living facility caring for older, more vulnerable people. I like to be present and I feel very centered when helping families navigate their suffering. It's a very humbling experience."

Dr. Stiegler noted that she has had the opportunity to work at Good Samaritan Medical Center for the last eight years. "After completing internship and residency in Internal Medicine, I spent a year as chief resident and then joined the Academic Medical Service as an Internal Medicine teaching attending physician," she continued. "Last summer I followed my heart and transitioned my practice to full-time palliative care medicine. I had a number of experiences along the way that helped me determine that caring for the most vulnerable patients was my true calling, and having the opportunity to participate in the Delirium work group was one of those opportunities."

In 2011 Dr. Stiegler volunteered to be the internal medicine representative on this work group that was developing the Provision for Appropriate End of Life care. One of her mentors, Dr. Paul Stander, alerted her to the fact that there was a systemwide group studying the rates and implications of delirium in the hospital. This group would subsequently develop a clinical practice that would outline the management of patients diagnosed with delirium. Dr. Stiegler then contacted Dr. Doug Cutler, the medical leader of the Hospital Medicine Triad, and expressed her interest in being involved and was invited to join the group.

"From the time of the first kick-off meeting, I was made to feel welcome," she recalled. "I was honestly self-conscious because the team was incredibly focused, efficient and organized. I found myself doing a great deal more listening than participating. At times I had some clinical experience to share that I felt was relevant to the discussion from a provider's perspective, and when I did, dynamic discussion followed.

"My experience in medicine to that point had been front lines – admitting patients, caring for them on the floor, teaching residents and navigating the discharge process," Stiegler continued. What she had not yet seen however was a glimpse into the often complicated, behind-the-scenes work that really ensures the consistently reliable care that Banner provides. "My involvement with the delirium work group was eye-opening and I was humbled to see how issues are researched, policies are reviewed and how new clinical practices and policies are built from the ground up. The leaders of the group were absolute professionals – kind, capable and responsive. Meetings were fluid, relevant, time-conscious and productive. It was like a master class in group leadership. They even found something useful for me to do – write the Delirium Executive Summary," she added with a grin.

For Dr. Stiegler it was the first time she saw the extensive work that is done behind the scenes every day so that she and other providers can provide excellent patient care. "The infrastructure that we work in must be solid, modern, reliable, reproducible and measurable," she explained. "I, as a doctor, am not the one that makes this happen. Simply stated, I gained much more than I gave and for this I am truly grateful. After this experience, I see myself as a member of a much larger team and have even more solid loyalty to and understanding of our system, and deeper appreciation for the many layers of gifted people who form the foundation of our organization. Because of my participation, I had much more confidence about declaring my interest in palliative care as well."

Gallery Walk at the Clinical Symposium.

Building a Culture of Improvement

During the spring of 2013, leaders of the various Discipline Teams gathered for a two-day session to celebrate the success of their work with other Discipline Team leaders. In round-robin poster sessions, team leaders shared successes accomplished, barriers overcome (or that still were barriers) and planned goals for the year ahead.

The morning address was by Kathy Malloch, PhD who discussed the importance of functional integration in health care. Senior Management Team members were in attendance and stayed through the afternoon as sessions were presented.

Poster sessions covered the Discipline Team improvement efforts underway that was supporting strategic initiatives, clinical improvements, process improvements and cost savings. Attendees commented on how rewarding the experience had been and were glad to have made new connections with other colleagues around the system.

Other important connections included creating synergy among Discipline Teams, Clinical Consensus Groups, TRIaDs and Functional Teams.

Discipline Team leaders presented their posters highlighting achievements, successes and barriers during the Clinical Symposium.

Discipline Teams

- » Acute Rehabilitation Unit
- » Outpatient Treatment
- » Behavioral Health
- » Cardiovascular (Cath Lab)
- » Clinical Care Operations
- » Critical Care
- » Culinary & Nutritional Services
- » Emergency Department (ED)
- » Endoscopy
- » Environmental Services (EVS)
- » Facility Services
- » Lab
- » Med-Surg
- » Medical Imaging
- » Non-Invasive Cardiology
- » Oncology
- » Pediatrics/NICU
- » Perioperative
- » Progressive Care
- » Respiratory Therapy
- » Spiritual Care
- » Therapies
- » Volunteer Services
- » Women Infant Services (WIS)
- » Associate Administrators
- » Nurse Executives
- » Operation Integration Council

Work Groups

- » Clinical Nutrition Work Group
- » Dialysis Work Group
- » Interpreter Work Group
- » Pain Work Group
- » Professional Practice Work Group
- » Radiation Oncology Work Group
- » Wound/Skin Care Work Group

Research at Banner

The Alzheimer's Prevention Initiative (API) Trial marked a milestone in late 2013 when cognitively healthy adults enrolled in a major a major prevention trial in Colombia, South America. These first participants received doses of an experimental anti-amyloid antibody – crenezumab – designed to delay or prevent the onset of Alzheimer's disease.

The groundbreaking autosomal dominant Alzheimer's disease trial, designed to determine whether the investigational drug may delay or prevent the onset of symptoms of Alzheimer's disease in individuals with a genetic risk of Alzheimer's disease is described by the National Institutes of Health (NIH) as a cornerstone of the National Plan to Address Alzheimer's Disease.

The study will include approximately 300 people from a large extended family in Colombia who share risk for a rare genetic mutation that typically triggers Alzheimer's symptoms around age 45. The trial targets those who are destined to develop Alzheimer's disease because of their genetic history.

The NIH, Banner Alzheimer's Institute (BAI), the University of Antioquia in Colombia, and Genetech (a member of the Roche Group) originally announced the $100 million prevention trial in May, 2012 with support from NIH's National Institute on Aging, BAI and Genetech.

Since then, the researchers and their colleagues have developed the clinical trial design, enabled the infrastructure for conducting a clinical trial with amyloid brain imaging in Colombia, conducted preliminary brain imaging and other biomarker studies, and secured the government approvals needed to conduct the trial. They have also established a registry of nearly 3,300 members of the extended family who have been medically and cognitively evaluated, setting the stage to enroll interested and eligible participants into the trial over a period of 18 months. The trial is expected to end in 2020 and results will be made public thereafter.

Participants in the double-blind, placebo-controlled trial receive an injection of either crenezumab or a placebo at set intervals for up to five years. Crenezumab is an antibody therapy that Genentech in-licensed from Swiss biotech company AC Immune SA. The study is of sufficient size and duration to be able to address the question of whether the drug can reduce a participant's chances of developing the disease's disabling and irreversible

symptoms and preserve memory and thinking abilities. It will also explore whether treatment can slow the progression of Alzheimer's biomarkers, and whether these biomarkers could be used in the future to more rapidly test promising experimental prevention therapies. Researchers will use advanced imaging techniques, cerebrospinal fluid tests and sensitive cognitive measures to monitor whether the accumulation of amyloid and other tell-tale proteins in the brain is reduced, whether brain size and function is maintained, and, most importantly, whether mental performance is preserved.

This approach shifts the research paradigm from trying to reverse disease damage to exploring whether it is possible to attack and block its cause at the earliest point—which can be a decade or more before symptoms surface. If successful, it may allow accelerated evaluation and approval of drugs to fight Alzheimer's.

As a part of the international API, formed to accelerate the evaluation of experimental therapies, the study represents a significant shift in researchers' attempts to detect, treat and ultimately prevent Alzheimer's. It will also offer a robust test of what is often called the amyloid hypothesis. This yet to be proven hypothesis suggests that accumulation of the protein amyloid in the brain plays a key role in the progression of Alzheimer's disease and that anti-amyloid treatments may someday slow or even stop

Banner Alzheimer's Institute

Banner Alzheimer's Institute is a nonprofit organization dedicated to the goal of ending Alzheimer's disease without losing another generation. It is helping to launch a new era of Alzheimer's research—detection, treatment and prevention at the pre-symptomatic stage—and to establish a comprehensive model of care that can be the national standard. BAI was founded in 2006 by Banner Health.

Alzheimer's Prevention Initiative

The Alzheimer's Prevention Initiative (API) is an international collaborative formed to launch a new era of Alzheimer's prevention research. Led by the Banner Alzheimer's Institute, the API will conduct prevention trials in cognitively healthy people at increased genetic risk for Alzheimer's disease. It will continue to establish the brain imaging, biological and cognitive measurements needed to rapidly test promising prevention therapies and provide registries to support enrollment in future prevention trials. API is intended to provide the scientific means, accelerated approval pathway and enrollment resources needed to evaluate the range of promising Alzheimer's prevention therapies and find ones that work without losing another generation.

Grupo de Neurociencias de Antioquia

Grupo de Neurociencias de Antioquia (GNA), at the University of Antioquia in Medellín, is ranked as one of the best research groups in Colombia. For more than three decades, GNA has characterized what is now considered the world's largest population with early-onset familial Alzheimer's disease. GNA has also characterized large and paradigmatic populations with other forms of dementia and other neurogenetic disorders.

About Genentech

Founded more than 30 years ago, Genentech is a leading biotechnology company that discovers, develops, manufactures and commercializes medicines to treat patients with serious or life-threatening medical conditions. The company, a member of the Roche Group, has headquarters in South San Francisco, California.

the progression if started before the disease has extensively damaged the brain.

In this groundbreaking public-private partnership, data and samples from the trial will be shared with the research community after the trial is over. The study design and data sharing agreement are intended to find faster ways to test the growing number of investigational treatments being tested to prevent the clinical onset of Alzheimer's.

Dr. Tariot and Dr. Eric M. Reiman from the Phoenix-based BAI lead API and are conducting this trial in close cooperation with Genentech's research and clinical team and a Colombian team, API Colombia, headed by Dr. Francisco Lopera of Grupo de Neurociencias de Antioquia at the University of Antioquia in collaboration with several local institutions as Hospital Pablo Tobón Uribe, IPS Universitaria, Hospital de Yarumal and Fundación Universidad de Antioquia.

"There is no guarantee that the investigational treatment will work, but there is only one way to find out," said Dr. Reiman. "We are excited about the opportunity to find faster ways to test prevention therapies and to help find one that works as soon as possible."

About 5.2 million Americans are living with Alzheimer's today, a number that could nearly triple to a projected 13.8 million by 2050. Globally, the disease and other dementias are expected to affect nearly 115 million by then.

Denali Center
Fairbanks, Alaska

Awards and Accolades

Performance Excellence Awards

Each year Banner recognizes significant improvement work throughout the organization with Performance Excellence Awards. The awards honor project work outside the improvement efforts that focus on strategic initiatives. Awards are submitted to and reviewed by members of the Performance Improvement Team of Care Management which provides oversight to the program.

During 2013 facilities/entities were asked to submit a project that exemplified work that was aligned with Banner Health's vision of clinical excellence and innovation. The award criteria parallel those used by the Malcolm Baldrige National Quality Award as well as other state quality programs.

Categories of the awards include Vision, Inspiration and Spotlight. Factors used to evaluate entries include how each application scores against the established evaluation criteria. Vision Award recipients demonstrate the highest achievement in all categories of the criteria. Inspiration Award recipients demonstrate the beginning stages of achieving the established criteria and they achieve high level scores in several of the categories. Improvement projects that receive the Spotlight Award designation show the beginning stages of achieving the selection criteria. Judging is done by those highly skilled in process improvement.
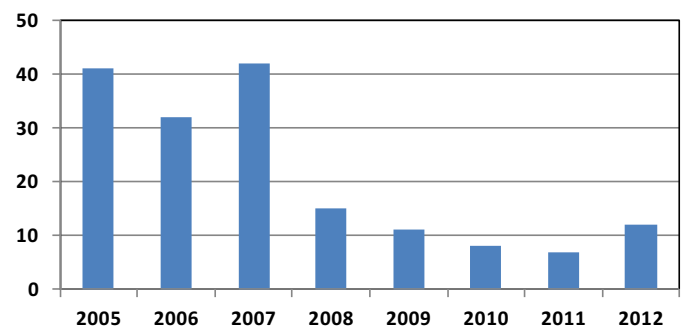
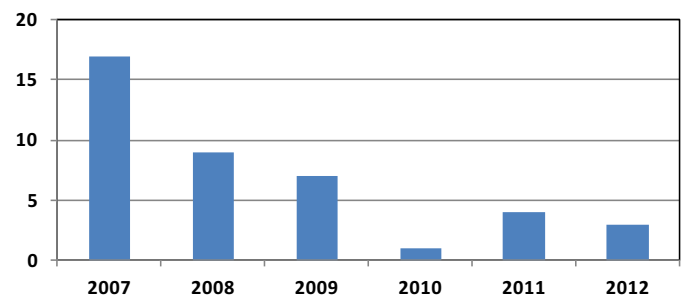# Vision Award Recipient:
Denali Center

The Nurse Practitioner Role in Improving Quality and Reduction of Re-hospitalization Rates

In 2007, Denali Center identified a high rate of emergency room (ER) visits and hospitalizations of long-term care (LTC) residents secondary to urinary tract infections, pneumonias, and other acute conditions. Challenges identifying complex medical changes, delays in response from physicians and on-call physicians unfamiliar with a patient's complex medical condition would often lead to unnecessary transfers to the ER and hospitalizations. In addition, a lack of geriatric specialization in the community was also seen as a deficit.

Focused on evidence-based research, a collaborative model of care was designed using a full-time nurse practitioner who became intimately aware of health care needs, baseline functioning, subtle changes in health care status, and resident and family goals of care. The nurse practitioner follows a caseload of 75-80 LTC residents, providing frequent visits and identifying early changes in clinical condition. The on-site care includes routine primary care, urgent visits, diagnostics and treatment of acute illnesses in collaboration with the PCP. Early intervention reduces the need for transfer to a higher level of care. Focusing on the diagnoses with a high incidence of readmission, Denali Center developed pneumonia and UTI protocols that in conjunction with a nurse practitioner model of care has reduced our ER visits by 30%, readmissions by 76% and hospital admissions by 82%. Rates of improvement has been sustained and or continued to improve since implementation in 2008.

Hospitalizations From 2005-2012
70.73% Reduction

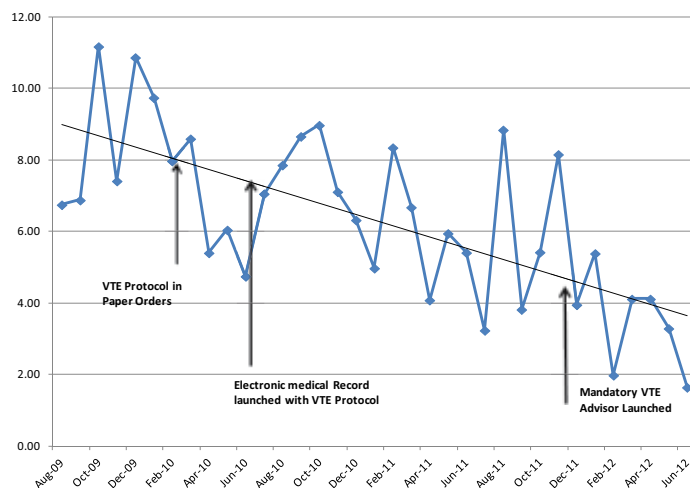*Re-Admissions From 2007-2012*
82.35% Reduction

Vision Award Recipient:
Banner Good Samaritan Medical Center

Pulse Oximetry Screening to Detect Congenital Heart Defects in Asymptomatic Newborns

Congenital Heart Disease (CHD) is the most prevalent form of birth defects and is one of the leading causes of infant death in the United States. BGSMC nurses successfully implemented an evidence-based practice (EBP) change to the process of newborn pulse oximetry screening for the detection CHD. The purpose of the project was to evaluate evidence on the routine use of pulse oximetry in newborns to detect critical CHD and implement an EBP change that would improve patient outcomes. A detailed review of the literature resulted in a clear recommendation for performing a pulse oximetry assessment after 24 hours of life to detect CHD. Early screening is a low-risk, non-invasive and cost neutral nursing intervention for the newborn that can result in significant reduced morbidity and occasional mortality. A screening protocol was designed and implemented and since implementation in October, 2011, BGSMC has detected nine congenital defects in newborns. The EBP change has resulted in increased excellence in patient care, as evidenced by improved patient outcomes and increased patient and family satisfaction.

Vision Award Recipient:
Banner Good Samaritan Medical Center

Venous Thromboembolism (VTE) Prevention

Venous thromboembolism (VTE), inclusive of deep venous thrombosis (DVT) and pulmonary embolism (PE), is associated with substantial adverse health-related outcomes and financial burden. PE is recognized as the cause of death for more than 100,000 hospitalized patients in the United States every year. The literature suggests that nearly half of all VTEs are hospital-acquired, and multiple clinical trials have provided irrefutable evidence that thromboprophylaxis reduces the incidence of VTE.

In 2009, BGSMC resolved to establish the VTE event rate. A review of all 2008 discharges by ICD-9 code and of 2009 live events assessed by positive radiology studies, established conclusive evidence that a minimum of one VTE event was occurring every other day. With this insight, it was necessary to determine what providers were doing to prevent VTE. A computerized "VTE Prophylaxis Dashboard" was established which tracked live-time provider utilization of both mechanical and pharmacologic VTE prophylaxis. This revealed a 20% "No Prophylaxis" rate amongst all medical and surgical patients. To address this issue, a VTE Protocol (risk assessment tool and order set) was designed and implemented Thereafter, VTE prophylaxis rates increased to 89%, achieving a 59% relative risk reduction for hospital acquired VTE.

BGSMC Total VTE Events 2009-2012
Total VTE/1000 Discharges - Relative Risk Reduction=59%

Inspiration Award Recipients

Cardon Children's Medical Center
Preventing Ventilator Associated Pneumonia in the PICU

Banner Thunderbird Medical Center
Complexity Intervention Unit (CIU)

Spotlight Award Recipients

Cardon Children's Medical Center
Preventing Inadvertent Extubation in the NICU

Cardon Children's Medical Center
Improving Discharge Timeliness in the Cardon Children's General Pediatric Floors

Banner Baywood Medical Center
Pharmacist Managed Diabetes Clinic – Improving Patient Outcomes through Collaborative Care

Fairbanks Memorial Hospital/Denali Center
Improving the Patient Discharge Process through a Lean Lens

Banner Thunderbird Medical Center
Coronary CT Angiography (CCTA) in the Evaluation of Acute Chest Pain

Banner Del E Webb Medical
CenterBanner CORE Center for Orthopedics Co-Management Model

Additional Applicants & Projects

Banner Del E Webb Medical Center
Refrigerator and Freezer Monitoring

North Colorado Medical Center
ED Throughput Innovation

Banner Good Samaritan Medical Center
Clinical Pharmacy Epoetin Target Drug Program

Banner Health - Corporate
Supply Chain Blue Book

Banner Thunderbird Medical Center
Team Based Nursing Care Model

Banner Baywood Medical Center
Sharing Leadership Through Change Management To Create & Sustain a Culture For Safe Patient Handling and Patient Mobility Assessment

Banner Boswell Medical Center
Safe Patient Monitoring from A Central Monitoring Room

Banner Thunderbird Medical Center
Nurse Administered Nitrous Oxide Analgesic

Sterling Regional Medical Center
Oncology Rehabilitation

Banner Boswell Medical Center
Flashes of Brilliance

Banner Medical Group
Outpatient Supply Formulary

North Colorado Medical Center
Implementing Very Early Skin-to-Skin contact (SSC) During Cesarean Delivery Procedure in the Operating Room

Banner Baywood Medical Center/ Banner Heart Medical Center
Providing Stroke Support from a Primary Stroke Center to a Specialty Hospital on a Shared Campus

Banner Medical Group
Concierge Services

Banner Good Samaritan Medical Center
Ultrasound Paracentesis Clinic

Banner Good Samaritan Medical Center
Transitional Care Medicine

Banner Del E Webb Medical Center
TJC Life Safety/EOC Electronic Document Review Session

North Colorado Medical Center
Outpatient Heart Failure Management Program

Banner Gateway Medical Center
GOT IT Campaign-Response to Monitor Alarms, Reduction of Nuisance Alarms and Alarm Fatigue.

Banner Good Samaritan Medical Center
Registered Nurse Certification Program

Achievements and Accolades During 2013

Articles

» Is There a Case for Personalized Therapy of Pancreatic Cancer?" in *Clinical Advances in Hematology & Oncology*. Vol. 10, issue 5, May 2012.

» "A Phase 1B Trial of 24-hour Intravenous PX-12, a Thioredoxin-1 Inhibitor in Patients with Advanced Gastrointestinal Cancers" in *Investigational New Drugs* epub, June, 2012.

» "Reduced Acute Bowel Toxicity in Patients Treated with Intensity-modulated Radiotherapy for Rectal Cancer" in *International Journal of Radiation Oncology*, Vol. 82, no. 5 by J Samuelian, D.O, M. Callister, MD (BMDACC) et. al.

» "Analysis of Radiology Business Models" in the *Journal of the American College of Radiology*, October, 2012 by D. Enzman, MD and D. Schomer, MD (BMDACC).

» "Facilitating a Joint Commission Survey that Flows" in *The Source*, November, 2012, Vol. 10, iss.11 by Tom Snyder (BCC-Phx.)

» "Central Venous Catheter Protective Connector Caps Reduce Intraluminal Catheter-Related Infection" in *The Journal of Association for Vascular Access*, volume 17, no. 4, Winter, 2012 by C. Ramirez (BEMC) and T. Lee (BEMC).

» "Effects of Spleen Status on Early Outcomes After Hematopoietic Cell Transplantation" in *Bone Marrow Transplantation*, Dec. 2012 by G. Akpek, MD (BMDACC).

» "Association between Insurance and Socioeconomic Status and Risk of Advanced Stage Hodgkin Lymphoma in Adolescents and Young Adults" in *Cancer*, December 15, 2012 by E. Smith, MD (CCMC Ped. Oncology), A. Ziogas, PhD and H. Anton-Culver, MD.

» "The Banner Psychiatric Center: A Model for Providing Psychiatric Crisis Care to the Community while Easing Behavioral Health Holds in Emergency Departments" in *Kaiser Permanente Journal*, Winter 2013, Vol 17, Iss.1by P. Little-Upah (BBHH), C.Carson, MD, R. Williamson, MD, T. Williams (BBHH), N. Mehta (BBHH), J. Buehrle (BCC-Phx.) and S. Kisiel (BGSMC).

» "The Evolution of Banner Health's Case Management Program" in *Professional Case Management Journal*, March, 2013 by L. Stutz, (BCC-Phx.).

» "Parastomal Hernia Repair" written in conjunction with Mayo Clinic in *Surgical Clinics of North America*, March, 2013 by R. Craft, MD (BMDACC).

» "Analysis of Radiology Business Models" in the *Journal of the American College of Radiology*, Vol.10, Iss.3, March, 2013 by D. Enzmann and D. Schomer, MD (BMDACC).

» "Effect of Nonpayment for Hospital Acquired Catheter-Associated Urinary Tract Infection," Letter to the Editor in *Annals of Internal Medicine*, 158:221, 2013 by D. Edwards, MD (BGMC).

» "Pharmacokinetics and Efficacy of Pemetrexed in Patients with Brain or Leptomeningeal Metastases" in the *Journal of Neuro Oncology*, April 2013 by P. Kumthekar, MD; S Grim, MD; M. Avram, MD; V. Kaklamani, MD; I. Helenowski, MD; A. Rademaker, MD; M. Cianfrocca, MD et. at (BMDACC).

» "Delay in Surgical Treatment and Survival after Breast Cancer Diagnosis in Young Women by Race/Ethnicity" in *JAMA Surgery* by E. Smith, MD (CCMC Ped. Oncology), A. Aiogas, PhD and H. Anton-Culver published online, April 24, 2013 at www.jamasurg.com.

» "Molecular Profiling and the Reclassification of Cancer: Divide and Conquer" book chapter in the American Society Clinical Oncology Education Book by J. Rivera, MD (BGMC), C. Swanton, MD and R. Kurzrock, MD (BMDACC).

» "A Monte Carlo Simulation to Analyze the Cost-Benefit of Radioactive Seed Localization vs. Wire Localization for Breast Conserving Surgery in Fee-for-Service Health care Systems Compared to Accountable Care Organizations in *American Journal of Roentgenology*, June, 2013 by V. Loving, MD; D. Edwards, MD; K Roche; J. Steele, MD; S.Sapareto, MD; S. Bryum, MD and D. Schomer (all BMDACC).

» "Aortic Annulus Measurement and Relevance to Successful Transcatheter Aortic Valve Replacement: A New Technique Using 3D TEE" in *Journal of Interventional Cardiology*, vol. 26, No. 3, 2013 by A. Pershad, MD; M. Morris, MD; K. Fang, MD; and G. Gellert, MD (BGSMC).

» "Pilot Study to Assess Toxicity and Pharmacokinetics of Docetaxel in Patients with Metastatic Breast Cancer and Impaired Liver Function Secondary to Hepatic Metastases" in the *Journal of Oncology Pharmacy Practice*," July, 2013 by E. Rivera, MD (BMDACC).

» Two book chapters in Mastering Simulation, September, 2013 by C. Cheney (BCC-P).

» "Practitioner Application" on "A Longitudinal Study of Clinical Peer Review's Impact on Quality and Safety in US Hospitals" in *Journal of Health care Management*, September/October, 2013 by M. Simington (BCC-P).

» "A Simplified Pathway for Total Knee Arthroplasty Improves Outcomes" in the *Journal of Knee Surgery*, November 14, 2013 [epub ahead of print] by T. Loftus, MD; C. Agee (both BCC-P), R. Jaffe, MD; J. Tao, MD; and D. Jacofsky, MD (CORE Institute).

Presentations/Posters

» "Health Literacy and Teach Back" at the Professional Nurse Educator Group, October, 2012 by M. LeGal (BGSMC) and A. Warwick (BGSMC).

» "Apothem Symposium in Washington, DC on December 4, 2012 moderated by Michael McQueen, MD. The recorded session was recently made available on the Vapotherm website.

» "Eniluracil + 5 Fluorouracil + Leucovorin (EFL) vs. Capecitabine Phase 2 Trial for Metastatic Breast Cancer" at the San Antonio Breast Cancer Symposium, December, 2012 by L. Seabrooke, MD (BMDACC).

» "Aligning Cancer Quality Metrics Across the Continuum of Community-based and Academic Medicine Using a Prioritization Pool" – Abstract 270 at ASCO Quality Care Symposium Nov. 30- Dec.1 by D. Edwards MD (BGMC) and M. Cianfrocca, MD, et.al.

» "Utility of Donor Leukocyte Infusion (DLI) for the Treatment of Drug-resistant Viral or Fungal Infections in Allogeneic HCT Recipients: A CIBMTR Analysis" at the annual meeting of the Cellular Therapy Working Committee in Houston on February 15, 2013 by. Akpek, MD (BMDACC).

» "Physician Preferences for Involvement in Survivorship Care: Are Benign Gynecologists Ready" at the Society for Gynecologic Oncology Annual Meeting in Los Angeles, March, 2013 by M. Schlumbrecht, MD (BMDACC), et.al.

» "Implementation of a Comprehensive Health care Worker Influenza Immunization Program at the Arizona Infectious Diseases Society 2013 Annual Spring Conference", March 1-3 by M.Bessell (MD) and J. Ivaska (both BCC-Phx.).

» "An Approach with Sepsis" at the SHS/HIMSS Conference on March 3, 2013 by M. Mackey and N Biedron (both BCC-Phx.).

» "Adipose Tissue Engineering" at the Irish Association of Plastic Surgeons in Dublin, Ireland in March, 2013 by Craft, R., MD.

» "Banner MD Anderson Cancer Center Oncology Nursing Journey" at the Global Academic Programs Conference in Houston on April 3, 2013 by L. Yoder (BGMC and (BMDACC).

» "Medical Comorbidities and the Impact on Quality of Care for Patients with Head and Neck Cancer" at the Global Academic Programs Conference in Houston, April 4, 2013 by S. Ghosh, MD (BMDACC).

» "A Monte Carlo Simulation to Determine the Cost-Effectiveness of Radioactive Seed Localization for Surgical Lumpectomy of Breast Cancer in a Transaction-based versus Bundled Episodic Payment System" at the Global Academic Programs Conference in Houston on April 4, 2013 by S. Ghosh, MD (BMDACC).

» "MRI May Improve Biopsy Accuracy in Patients with Intermediate Risk Tumors" at the Global Academic Programs Conference in Houston on April 5, 2013 by J. Chang, MD (BMDACC).

» "Case Study: Using a Custom Clinical Improvement Methodology (Define, Design, Implement) to Cut Ventilator-Associated Pneumonia Cases in Half" at the Premier Western Regional Conference in Los Angeles on April 11, 2013 by M. Mackey (BCC-Phx.) and T. Hooper (BBWMC).

» "Optimization of the Acquisition and Reconstruction Parameters for a Time-of-Fight PET/CT Scanner" at UT MDA GAP Conference, April, 2013 by T, Chang, MD; E. Rohren, MD; S. Passalaqua, MD; C. Kappadath, MD; J. Clark, Jr., MD; D. Schomer, MD and O. Mawlawi BMDACC.

» "The Journey to Population Health Management: The Banner Story" at the Scottsdale Institute's Annual Spring Conference, April 17, 2013 by T. Burdick, D. Dahl and J. Hensing, MD (all BCC-Phx.).

» "The Impact of Medical Comorbidities on Quality Indicators for the Management of Head and Neck Cancers" at the UT MDA GAP Conference, April, 2013 by T. Shellenberger, MD; D. Edwards, MD (both BMDACC) and R. Weber, MD (MDACC).

» "Saggital Fat-Suppressed T2-Weighted Breast Imaging at 3T: Introducing a Manual Prescan Procedure to Solve Challenges with Heterogeneous Left-to-Right Side Fat Saturation at the MDA GAP Conference, April, 2013 by V. Loving, MD and D. Schomer MD (BMDACC).

» "Diffusion MRI for Oncological Evaluation in the Abdomen and Pelvis – A Short Review and Application at BMDACC at UT MD Anderson Cancer Center Global Academic Programs, April 2013 by J. Chang, MD; R. Mirza, MD; J.Ma, MD; J. Hazie, MD and D. Schomer, MD (BMDACC).

» "Beyond Molecular Imaging: The Emergence of Biological State Imaging" at the MDA GAP Conference in Oslo, Norway, May 14, 2013 by D. Schomer, MD (BMDACC).

» "Metabolic Imaging with Quantum Dots" at UTMD Anderson Global Academic Programs Conference in Oslo, Norway, May 14, 2013 by D. Schomer, MD and J. Change, MD (BMDACC).

» "Future Roles for Hospitalists in the New Health care Environment" at the Society of Hospital Medicine National Annual Meeting in Washington D.C. on May 17, 2013 by L. Spratling, MD (BBMC).

» "HIEs and Interoperability" at the Arizona Chapter of HIMSS, May 17, 2013 by B. LaBranche (BCCP).

» "IR Management of Neuroendocrine Tumors" at the Neuroendocrine Tumor Regional Conference, Phoenix, May, 18, 2013 by A. Price, MD (BMDACC).

» "Banner Health Ongoing Professional Practice Evaluation" at the Premier Conference, June13, 2013 by J. Brooks (BCCP).

» "Rapid Identification of Methicillin-Sensitive Staphylococcus aureus from Positive Blood Cultures Using the Verigene System: A Systemwide Impact on Patient Treatment and Physician Compliance" at the American Society of Microbiology General Meeting in Denver, May 18 by B. Koeneman(LSA), J. Silverberg (BGMC), A. Khalsa (BGSMC), H. Fisher (LA), K.McCabe (LA), Saubolle (LA) and A. Mochon,(LA).

» "Update on the Treatment of Breast Cancer" for the National Association of Hispanic Nurses at the Wellness Community on June 18, 2013 by E. Rivera, MD (BMDACC).

» "Early Warning System (EWS): Research and innovation improves patient outcomes" by C. Cadaret (BCC-P) and N. Ashurst (BGSMC) at the ANCC National Magnet Conference, October 2, 2013 in Orange County, CA.

» "A System-Wide Care Pathway for Enhanced Recovery after Bowel Surgery Focusing on Alimentation and Ambulation Reduces Complications and Readmissions" presented by Terrence J. Loftus, MD, FACS, (BCC-P) at the American College of Surgeons Clinical Congress on October 7, 2013 in Washington DC. Other authors were Susan Stelton, MSN, RN (BGSMC) and Brett W. Efaw, MS (BCC-P).

» "Banner Health Case Study" webinar for Scottsdale Institute by M.Parris, J.Donie (both BCC-P) and E. Drazen, October 28, 2013.

» "Successful Applications Using Systems Engineering" at Achieving Transformational Change in Health care conference, Texas MD Anderson Cancer Center in Texas on November 7, 2013 by A. Kekic (BCC-P).

» "Inspiring Quality in Surgical Health Care – Quality Improvement Programs that Improve Outcomes and Reduce Costs" panel discussion including John Hensing, MD (BCC-P) and Nirav Patel, MD (BGSMC) at the American College of Surgeons (ACS) Surgical Health Care Quality Forum Arizona on Friday, November 8, 2013.

» "Evaluation of an Early Warning Score Model with and without Level of Consciousness Determination" at the CHEST conference by J. Reisetter (BCC-P), November, 2013.

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