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Quality of Care in Urology and the Michigan Urological Surgery Improvement Collaborative

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Abstract

Introduction: Collaboratives composed of surgeons or hospitals are an effective means to improve quality of care and value. Building on the success of the Collaborative Quality Initiatives program of BCBSM (Blue Cross and Blue Shield of Michigan) and Blue Care Network, MUSIC (Michigan Urological Surgery Improvement Collaborative) seeks to improve the quality of care for patients with prostate cancer across Michigan.
Methods: MUSIC was established in 2010. Support for data management and the coordinating center are provided by BCBSM. A private software vendor was selected to develop and support the web based data entry platform.
Results: MUSIC currently has 43 participating practices representing more than 200 urologists from diverse locations and practice types. Prospective data collection began in March 2011 and currently almost 9,000 cases of prostate biopsy or newly diagnosed prostate cancer have been entered in the registry. MUSIC priorities for quality improvement include fostering appropriate imaging for staging; making prostate biopsy more efficient and safe; improving outcomes after radical prostatectomy by tracking complications and patient reported outcomes, and providing collaborative learning in surgical technique; enhancing shared decision making between patients and providers; and evaluating the use of new oral antiandrogenic therapies.
Conclusions: MUSIC provides a unique opportunity for quality improvement initiatives in urology. Acceptance by urologists in various practice settings has been robust and indicates a commitment by members to positively contribute to better urological care through a shared learning environment.

Key Words: prostate; prostatic neoplasms; quality of health care; registries; health information management

Abbreviations and Acronyms

AUA = American Urological Association

BCBSM = Blue Cross Blue Shield of Michigan

CQI = Collaborative Quality Initiative

MUSIC = Michigan Urological Surgery Improvement Collaborative

TRUS = transrectal ultrasound

USQC = Urological Surgery Improvement Collaborative

Surgeons are a competitive lot. If a surgeon sees credible data demonstrating that another surgeon has fewer complications or better outcomes, he or she will likely make an effort to improve. To establish a collaborative learning environment among surgeons several key components are necessary, including the quality and integrity of the data, the trust that comparative data will not be used in punitive fashion by payers or publicly highlighted for a competitive advantage by others and the ability to learn in an efficient manner. Despite strong motivation for quality improvement good intentions may be overcome by cultural, personal, logistic or financial barriers. MUSIC was developed to harness the collaborative learning process and overcome these barriers in the specific field of prostate cancer.

Rationale for Quality Improvement Collaboratives

Modern interest in surgical collaboratives for quality improvement grew out of the Northern New England Cardiovascular Disease Study Group, which was founded in 1987.[1]

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Study received local institutional review board approval or exemption for collaborative participation by each MUSIC practice.

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When faced with apparently higher than anticipated mortality after cardiac surgery compared to other regions, the 23 surgeons from multiple institutions in the group began to prospectively collect and share data. The higher mortality rate was confirmed and not entirely due to case mix differences as originally postulated. Instead, differences in perioperative processes of care were identified as potential explanatory factors. The group systematically developed interventions to change several processes in 1990 and 1991. By 1996 hospital mortality rates across the collaborative had decreased by 24%. These efforts laid the groundwork for developing similar cardiovascular collaboratives in Michigan.

Quality Improvement Collaboratives in Michigan

Financially supported by BCBSM, a hospital based, regional collaborative for data collection, analysis and feedback began in 1997 with the goal of stimulating care improvements in Michigan in coronary angiography and coronary interventions.[2] Currently 33 hospitals participate and more than 300,000 coronary procedures have been entered in the registry. Since the initiation of this consortium, there has been a 20% reduction in hospital deaths, 92% reduction in emergent coronary artery bypass grafts, 36% reduction in contrast induced nephropathy and 40% reduction in vascular complications.

Also in the late 1990s there was considerable pressure from external groups such as the Leapfrog Group, and Michigan Health and Hospital Association to publicly report hospital and surgeon cardiac surgery mortality rates. Based partially on the model of the STS (Society of Thoracic Surgeons) Registry the Michigan Society of Thoracic and Cardiovascular Surgeons Quality Collaborative began in 2005 and soon thereafter garnered support from BCBSM. Quality improvement initiatives include perioperative mortality, postoperative renal failure, cerebrovascular accident, prolonged ventilation and use of internal mammary grafts.[2] The success of these 2 programs prompted BCBSM to expand the investment in quality collaboratives under the Value Partnerships Program. There are currently 18 collaboratives in the CQI of BCBSM, representing 73 Michigan hospitals.[2]

A fundamental concept without which the collaboratives would never have gotten off the ground was that BCBSM asked to see only aggregate and de-identified data, and would not have access to individual hospital or practitioner risk adjusted outcomes. These data would reside at the coordinating center of each collaborative to be used only by members. Rules of engagement agreed to by hospitals or practices also preclude using data from the collaborative to support a competitive advantage (ie no "billboards"), and mandate strict adherence to HIPAA (Health Insurance Portability and Accountability Act) regulations and individual patient confidentiality as well as trust and respect for colleagues. BCBSM financially supports the administrative activities of a coordinating center and trained abstractors at each hospital or practice group.

It is important to note the potentially meaningful differences between these surgical collaboratives and a registry that merely aggregates data but has no quality interventions, a concept emphasized at the time that the early collaboratives were formed.[3] A stand-alone registry and one embedded in a collaborative must be credible to the physicians with oversight of the data collection process and participation in all aspects of validation.

However, a registry may be just the first link in the chain that leads to improved quality. Data must be analyzed and presented to surgeons in a format that is useful and actionable. Most importantly there must be engagement at the individual surgeon level to understand the analyzed data and willingness to discuss the ramifications and possible interventions to improve outcomes. What are the different processes or structures at a hospital with superior results compared to one with less favorable outcomes? The concept of the collaborative relies on learning from each other because no single hospital, group or surgeon has a monopoly on the knowledge that leads to excellent care. This learning most commonly comes from direct interactions at collaborative wide meetings held 3 or 4 times per year. At each practice or hospital it is critical that there must be a "clinical champion" who will lead the efforts in each practice or hospital. Finally, it is necessary to translate the knowledge gained in the collaborative into specific quality improvement interventions from which the impact can be measured. This cycle of data collection and measurement, analysis, discussion, interventions and then remeasurement is repeated in topics deemed most important and interesting by collaborative members. A registry without the opportunity for collaborative learning does not have as great a potential for quality improvement.

Why would BCBSM make such a substantial investment in the infrastructure of data abstractors and coordinating centers in the collaboratives? The business case for financial support of a collaborative rests on providing the highest quality care at the best value for their customers, on the financial benefit accrued from decreasing expensive complications and on the potential for improved relationships with providers.[4–6] Surgical complications are expensive. Specifically thromboembolic and respiratory complications after general surgery can add more than $18,000 and $52,000, respectively, to the cost of inpatient surgery.[7] Hospitals may be able to recoup the expense or even increase profit through up coding and changes in DRG (diagnosis related group) reimbursement but payers and purchasers ultimately bear the brunt of the economic impact.[5,7,8] Englesbe et al suggested that only a 1.8% decrease in complications in a 3-year study period would lead to recoup of investment in the infrastructure for another BCBSM sponsored CQI, the Michigan Surgery Quality Collaborative, for general and vascular surgery.[5] Thus, payers see the value of efforts to make care more efficient and decrease complications, and BCBSM believes that hospital or practice based collaboratives are the most effective means to this end.

This concept of pay for participation in a collaborative learning approach differs from other quality improvement initiatives commonly used, such as a financial incentive for performance on quality metrics relative to a benchmark or a network that strives to direct patients to apparent centers of excellence.[9]

Preliminary Experience with Urology Collaborative

Three academic and private practices formed USQC in 2009 to begin the process of collaborative learning in urology. Miller et al detailed the conceptual and logistic framework, and important principles underlying such a practice based surgical collaborative.[10] Even with negligible external financial support USQC prospectively collected a single page data form completed by the surgeon, analyzed the data and provided feedback to the group by teleconferences and a yearly in-person meeting. The group expanded to 5 and then 7 practices in 2010 and 2011, respectively. USQC demonstrated a decrease in inappropriate bone scan imaging for low risk prostate cancer and critically evaluated the use of immediate postoperative intravesical chemotherapy for bladder cancer.[11–13] Importantly the USQC leadership also learned organizational lessons that translated into the development of MUSIC.

MUSIC Structure and Goals

In 2010 one of us (DCM) obtained a grant from the BCBSM Foundation to support the preliminary work to formally apply for the launch of MUSIC. As MUSIC became operational, personal relationships that had developed during years of shared patient care between MUSIC leadership and urologists around the state became the bedrock of early commitments to participate. In addition, urologists were eager to do something positive to demonstrate their commitment to improve care rather than resort to the usual reactive posturing to the myriad of pressures and critiques facing urology and health care in general. The concept that a collaborative network could work to decrease waste and provide better outcomes resonated with urologists. While many were initially somewhat skeptical that a payer supported infrastructure could remain independent, the checks and balances built into the framework of MUSIC as well as the 15-year experience in Michigan with other collaboratives tempered this concern. While enthusiasm about MUSIC was not based on the perception that a financial incentive for practices would be forthcoming, an important facilitator of this effort was adequate support for the time and effort expended by providers and staff to collect the data. Most urologists held a long-term view that if we as specialists did not deliver better value and outcomes in the care that we provide, someone else would likely impose blunt, potentially ill-advised solutions.

The Department of Urology at University of Michigan applied to be the MUSIC coordinating center, housing the data and developing the support staff, including analytical support. The director (DCM) and co-director (JEM) along with the project manager (SML) recruited participants, developed standard operating procedures for data collection, created an infrastructure for auditing data via on-site visits and organized tri-annual meetings. This team personally visited all membership practices to talk with and answer questions from the physicians and administrative staff. The clinical champion of each practice was tasked with attending the collaborative-wide meetings, overseeing data collection and serving as the local conduit of information to the other providers in the group.

With time a set of operating principles was codified and distributed. An executive committee, publications committee and several task oriented working groups on topics of interest were established with specific responsibilities. At each practice a person or persons in the office was identified to become a trained abstractor(s). BCBSM provided financial support for 0.25 to 2.0 FTEs (full-time equivalents) depending on case volume accrued in the registry. A software vendor was selected to develop and support the web based data entry platform. Currently 43 practices representing more than 200 urologists participate in MUSIC (see Appendix). Finally, 3 patient advocates were added to MUSIC to provide the patient and family perspective on all collaborative activities.

Prostate cancer, a common and expensive condition treated by almost all urologists, was identified as the initial focus of MUSIC. The specific areas targeted for improvement in prostate cancer were proposed and selected by the MUSIC leadership and clinical champions. The 5 current priority areas for MUSIC include 1) imaging appropriately, 2) making TRUS guided prostate biopsy safer and more efficient, 3) improving outcomes after radical prostatectomy, including collection of patient reported outcomes and use of video based technical coaching, 4) integrating shared decision making about therapy for localized prostate cancer into standard clinical practice and 5) appropriately using new oral androgen deprivations therapies as systemic treatment of prostate cancer.

Progress in imaging use has been the easiest area to tackle. The concept brought forth was that MUSIC urologists should not order imaging when the yield was extremely low but rather order imaging when the test had a reasonable likelihood of being positive and therapy would be changed (“do when we should, don’t when we shouldn’t”). Intervention was based on feedback of data on the performance of an individual practice compared with that of other MUSIC practices and a discussion of national guidelines as well as MUSIC data. This information was relayed to all practice members by the clinical champion. An imaging appropriateness score applicable at the practice and provider levels provides information on adherence to MUSIC imaging recommendations, consistent with AUA best practices, for when to do or not do bone scan or computerized tomography. The science of optimal interventions for changing physician behavior is complex and MUSIC hopes to gradually become more sophisticated in our approach.

Another topic of interest was the increasing rate of serious infection after TRUS prostate biopsy. By tracking all hospital admissions MUSIC found that approximately 75% of admissions after TRUS biopsy were related to infectious complications, of which 90% were due to fluoroquinolone resistant bacteria not covered by the usual prophylactic antibiotic regimens. In an effort to decrease the infection rate practices selected an augmented/broader spectrum antibiotic approach or a culture driven antibiotic selection based on the results of a rectal swab culture. A checklist (to be completed immediately before TRUS guided biopsy) is being implemented along with the mentioned pathways to prevent biopsy from being performed if there is

a lack of appropriate antibiotic coverage and as a means of identifying patient factors that may contribute to a greater risk of post-biopsy infection.

Radical prostatectomy is arguably the signature operation in urology. MUSIC hopes to improve outcomes by standardizing postoperative pathways, identifying outlier patients, assessing patient reported outcomes and coaching surgical technique using representative videos of surgery. Recent findings from another Michigan CQI indicate that objective, reproducible assessment of surgical technical skill using surgical videos is feasible and more technically proficient surgeons had cases with fewer complications and better outcomes.[14] Robotic assisted radical prostatectomy is a complex procedure appropriate for assessing skill level that can be correlated with outcomes through the MUSIC infrastructure. Fostering a learning culture in the collaborative will provide an environment for surgeons to refine surgical technique. Adoption of the robotic platform into prostate cancer surgery has been extremely rapid and widespread but understanding of the surgeon proficiency needed to safely implement such technology is limited.

The controversy regarding prostate specific antigen testing, and over diagnosis and overtreatment of prostate cancer is far reaching. MUSIC adopts the concept that patient therapy for prostate cancer should be governed by disease severity, patient health and patient preferences, and not by the provider with whom a patient happens to come into contact. Active surveillance for low risk prostate cancer is used increasingly but there is substantial variability in use among practices, and surveillance strategies and triggers for treatment are poorly defined. MUSIC hopes to use shared decision making tools with the patient and provider to not only increase patient knowledge about the multitude of treatment options but also enhance congruity between patient values and preferences, and treatment choices.

The final priority that MUSIC hopes to address is the uncertain role of new oral antiandrogenic agents such as abiraterone or enzalutamide in the treatment of castrate resistant prostate cancer. Whether these agents come under the supervision of urologists, who typically manage initial androgen deprivation therapy, or become part of the initial strategy of medical oncologists for systemic therapy is uncertain. The new medications for prostate cancer are expensive and inappropriate use can place additional pressure on our already stressed health care system without providing a meaningful benefit.

Future of Surgical Collaboratives and Registries

An enormous effort in health care in the United States focuses on improving value for the patient and systems. Pay for performance strategies show at best modest success in improving quality or decreasing costs.[15] A pay for participation strategy in a learning oriented, regional surgical collaborative demonstrated initial success in improving quality and decreasing costs.[6,9] Whether regional surgical collaboratives can or should be scaled to the national level is uncertain. The business case for the approach used in Michigan is still viewed skeptically by many around the country because of infrastructure costs. However, our view is that the CQI/BCBSM partnership shows a strong benefit from a quality/cost/relationship perspective. The current widespread adoption of EMRs (electronic medical records) brings at least the potential to automate data collection into a registry, which if successful could drastically change infrastructure costs. For example, the AUA is introducing the national prostate cancer AQUA (AUA Quality) Registry, which will rely on data abstraction from an EMR.

In addition to purely technical considerations of data collection, the ideal means to identify topics for the quality improvement effort as well as interventions to alter physician behavior or skill are uncertain. Quality improvement requires more than disseminating scientific findings and monitoring performance. MUSIC hopes to take advantage of the models provided by other collaboratives in Michigan with the ultimate goal of making Michigan the safest and best place in the country to receive prostate cancer care.

Appendix.
MUSIC Participants

Wave*	Practice	Primary Practice Location	Clinical Champion
1	Affiliates in Urology	Dearborn	Dr. Muzammil Ahmed
1	Bay Area Urology Associates	Traverse City	Dr. Jay Starr
1	Comprehensive	North Rochester Hills	Dr. Sabry Mansour
1	Comprehensive Urology	Royal Oak	Dr. Frank Burks
1	Grosse Pointe Urology	Roseville	Dr. Dinesh Telang
1	Oakland County Urologists	Waterford	Dr. Kenneth Lim
1	Spectrum Health Medical Group-Urology	Grand Rapids	Dr. Brian Lane
1	Urologic Consultants, PC	Grand Rapids	Dr. Jon Curry
1	Urology Associates of Port Huron	Port Huron	Dr. Marshall Kamer
1	Urology Surgeons, PC	Grand Rapids	Dr. David Thompson
1	Department of Urology, University of Michigan	Ann Arbor	Dr. David Miller
1	Wayne State University Physicians Group-Urology	Detroit	Dr. Michael Cher
2	Cadillac Urology Practice	Cadillac	Dr. Brian Drabik
2	Center for Urology	Ypsilanti	Dr. Peter Fischer
2	David L. Harold, MD, PC	Pontiac	Dr. David Harold
2	Huron Valley Urology Associates	Ypsilanti	Dr. Eduardo Kleer

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Appendix. (*continued*)

Wave*	Practice	Primary Practice Location	Clinical Champion
2	Urology Associates of Battle Creek	Battle Creek	Dr. Louis Remnyse
2	Urology Associates of Grand Rapids	Grand Rapids	Dr. Jeff Casamento
2	West Shore Urology	Muskegon	Dr. Joseph Salisz
3	AuSable Urology	Grayling	Dr. Brian Stirling
3	Marc Arnkoff, MD + Gregory Weigler, DO, PC	Garden City	Dr. Gregory Weigler
3	Michigan Urological Institute	Southfield	Drs. Jeffrey O'Connor, Patrick Hurley
3	Vattikuti Urology Institute, Henry Ford Health System	Detroit	Drs. Mani Menon, James Peabody
3	Michigan Institute of Urology, PC	St. Clair Shores	Dr. Edward Schervish
3	Northern Michigan Urology	Petoskey	Dr. Jim Howard
3	Tri City Urology	Saginaw	Dr. Steve Jensen
4	Cascades Urology	Jackson	Dr. Nitin Ambani
4	Lakeside Urology	St. Joseph	Dr. David Kraklau
4	Pinson Urology Center	Jackson	Dr. Tony Pinson
5	Detroit Medical Center-Urology	Detroit	Dr. Ranko Miocinovic
5	Lansing Institute of Urology	Lansing	Dr. Leonard Zuckerman
5	Western Michigan Urological Associates	Holland	Dr. Brad Willoughby
6	Capital Urological Associates	Okemos	Dr. Eric Stockall
6	Michigan Institute of Urology, PC (multiple sites not previously enrolled)	Southeast MI	Drs. Richard Sarle, Gregory McIntosh, Jay Hollander, Robert Dimitriou, Jeffrey Schock, Randy Chudler
6	Michigan State University-Urology	East Lansing	Dr. Damon Davis
6	Michigan Urological Clinic	Grand Rapids	Dr. Thomas Maatman
6	MidMichigan Physicians Group-Urology	Midland	Dr. Anita Tekchandani
7	Edward Barton, MD, PC	Novi	Dr. Edward Barton
7	McLaren Central Michigan-Urology	Mt. Pleasant	Dr. Kent Kirby
7	Lakeshore Urology, PLC	Grand Haven	Dr. Caleb Fleming
7	Marquette General Urology	Marquette	Dr. Jay Lonsway
7	Sherwood Medical Center, PC	Detroit	Dr. Conrad Maitland
7	West Shore Medical Center	Manistee	Dr. Charles Keoleian

*Practices joined MUSIC in waves, including waves 1 and 2—practices joined MUSIC and began collecting data in 2012, waves 3 and 4—sites came on board in 2013, wave 5—practices began contributing cases in February 2014, and waves 6 and 7—practices enrolled in April 2014 and will start collecting data in the summer of 2014 and early 2015.

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