**Michigan Urological Surgery Improvement Collaborative (MUSIC)**

**Program Overview**

The Michigan Urological Surgery Improvement Collaborative (MUSIC), established in 2011, is a physician-led quality improvement collaborative comprised of 42 urology practices and 225 urologists. The collaborative is designed to evaluate and improve the quality and cost efficiency of prostate cancer care for men in Michigan.

The vision of MUSIC is to be an innovator in physician-led quality improvement activities related to prostate cancer care in Michigan. By collecting clinically-credible data, comparing performance among our peers, sharing best practices, and implementing changes in clinical behavior, we are achieving more efficient utilization of healthcare resources, improving care delivery in our own environments, and enhancing the quality, value, and outcomes of treatment provided to men in Michigan with prostate cancer.

The initial aims of MUSIC include, among others, evaluating and improving patterns of care in the radiographic staging of men with newly diagnosed prostate cancer, reducing biopsy-related complications and assessing repeat biopsy patterns, and improving patient outcomes after radical prostatectomy through patient surveys and video-based assessment of technical quality. Participating practices submit data to a clinical registry and tri-annual consortium-wide meetings are held each year to discuss data, review risk-adjusted measures of processes of care and patient outcomes, and identify strategies and best practices for quality improvement. MUSIC is managed by the Coordinating Center, which is housed at the University of Michigan, and funding is provided by Blue Cross Blue Shield of Michigan (BCBSM).

The following pages include details relative to the web-based clinical registry, information pertaining to each of our initial QI priorities, and a few health policy and administrative items of interest.
MUSIC Clinical Registry

At the heart of MUSIC is a secure, web-based, clinical registry managed by the MUSIC Coordinating Center and supported by ArborMetrix, a third party healthcare analytics and software company. Participating practices enlist the support of a data abstractor that screens case encounters at his/her practice to identify patients that may be eligible for the MUSIC registry. Eligible enrollments include prostate biopsy patients, as well as those being seen as new prostate cancer patients whom have not had prior treatment for the disease, including active surveillance.

Upon identifying an appropriate patient for the MUSIC registry, the data abstractor completes a thorough medical record review and enters the pertinent information into the MUSIC registry. MUSIC collects information on patient demographics, cancer severity (including pathological details from needle biopsies), utilization and outcomes for radiographic staging studies, comorbidities, and patterns of care for both local therapies (e.g., radical prostatectomy, radiation therapy) and systemic androgen deprivation therapy. MUSIC patients are followed longitudinally through the use of automatic reminders generated by the registry. The data collected is routinely analyzed to identify opportunities for improving processes of care and patient outcomes, develop strategies for quality improvement, and monitor the success of the implementation of prior QI initiatives.

In terms of ensuring the integrity of the data in the registry, MUSIC uses multiple quality assurance techniques. The Coordinating Center conducts formal registry training for all individuals involved in the data abstraction, hosts quarterly webinars and breakout sessions to provide updates to all participants on registry changes and enhancements, and maintains a detailed Operations Manual that guides the local data collection activities. Further, MUSIC validates the data in the registry via annual on-site quality audits involving the direct review of a random sample of 5 – 10% of cases from each participating practice and reconciles missing and/or erroneous data, if necessary.

While the MUSIC registry serves as a data collection platform, it also provides real-time, dynamic reporting. The MUSIC registry offers timely performance feedback to participants with objective, clinical measures of variation that include benchmarks and peer comparisons. The reports are available at both the practice and urologist level and pertinent information is available for export in the event that users wish to present or conduct a deeper investigation of their own data.

Visit the MUSIC registry at: www.musicurology.com
# 1: Radiographic Staging of Men with Newly Diagnosed Prostate Cancer

The first MUSIC initiative focused on the utilization of imaging for staging of men with low risk prostate cancer (T1c, GS 6, PSA<10). The goals of this initiative included better understanding the rates of utilization among urologists in the state of Michigan, identifying the indications for physicians ordering the tests, and recognizing the consequences that may ensue if a patient receives unnecessary imaging (e.g., uncovering of incidental findings that are of no harm to the patient and lead to additional diagnostic tests, biopsies, etc. that are dangerous to the patient) or is not imaged when necessary (e.g., risk of missing metastases).

Through the use of comparative performance feedback, review of current guidelines, and dissemination of best practices, MUSIC was able to achieve a statewide decrease in the utilization of both bone scans and CT scans. This decrease in imaging utilization represented an early accomplishment for the collaborative, particularly given the selection of avoidance of bone scans for men with low-risk prostate cancer as the number one item on the American Urological Association’s priorities for the Choosing Wisely® campaign.

After focusing on patients with low risk disease, MUSIC moved to assessing the utilization rates for patients with intermediate and high risk cancers. MUSIC collaborated with the School of Engineering at the University of Michigan to perform multi-variable analyses based on collaborative data that would facilitate a transition from making decisions about imaging based on the probability of cancer relapse to making decisions based on the probability of a positive study that would influence clinical decision-making. As a result of these analyses and discussions at the collaborative-wide meetings, MUSIC reached a consensus to begin implementing statewide specific, evidence-based criteria for recommending staging bone scan and/or CT scan. Additionally, MUSIC developed an imaging appropriateness score to quantify changes in practice patterns based on the collaborative recommendations. The following table presents the imaging appropriateness criterion that we are implementing in MUSIC practices:

<table>
<thead>
<tr>
<th>Order a Bone Scan if:</th>
<th>Order a CT Scan if:</th>
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<tbody>
<tr>
<td>Gleason Score ≥ 8</td>
<td>Gleason Score ≥ 8</td>
</tr>
<tr>
<td>OR</td>
<td>OR</td>
</tr>
<tr>
<td>PSA &gt; 20</td>
<td>PSA &gt; 20</td>
</tr>
<tr>
<td>OR</td>
<td>Clinical T Stage ≥ T3</td>
</tr>
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In terms of metrics for success, benchmarks are 95% when indicated and 10% when not indicated (allows some room for patients who present with bone pain, elevated patient anxiety, or other medical conditions). The goal of these criteria is to provide guidance for the ordering of imaging for prostate cancer patients with the mantra of, “do when you should, don’t when you shouldn’t.”
# 2: Enhancing the Safety of Prostate Biopsy

Another early initiative in MUSIC focused on reducing the frequency of adverse events after transrectal ultrasound guided prostate biopsy as a diagnostic tool for prostate cancer. A key concern identified by MUSIC urologists is the rising frequency of post-prostate biopsy hospitalizations due to severe infections. In order to improve care around this issue, one of our first steps in MUSIC was to determine the baseline rate of post-biopsy hospitalizations in the state of Michigan. After an initial period of data collection, we determined that approximately 1.3 percent of men in the state were admitted to the hospital following prostate biopsy, and that the vast majority of these admissions were due to infectious causes. Capitalizing on expertise and efforts of our data abstractors to obtain culture data from these hospitalizations, we then demonstrated that nearly 80 percent of infection-related hospitalizations were associated with fluoroquinolone resistant bacteria. As such, the pathway forward for reducing prostate biopsy related hospitalizations was to implement quality improvement activities aimed at addressing fluoroquinolone resistance.

To achieve this, the prostate biopsy working group, in conjunction with the Coordinating Center and other MUSIC urologists, developed two separate, but complementary, clinical pathways for addressing fluoroquinolone resistance. The first pathway involves the use of rectal swab cultures prior to prostate biopsy to identify the presence of any fluoroquinolone-resistant organisms, and to allow the subsequent tailoring of antibiotic prophylaxis with culture-directed agents. The second pathway does not use rectal swabs, but rather assumes that fluoroquinolone-resistant organisms are present and adds a second antimicrobial to standard fluoroquinolone prophylaxis (often Gentamicin). The rationale for, and details of, these two pathways have been disseminated to all MUSIC practices, with specific recommendations for antibiotic prophylaxis across a number of different scenarios.

Our early work in this area has been quite successful, with the most recent analysis of the data suggesting a nearly fifty percent relative reduction in prostate biopsy-related hospitalizations since the initiation of MUSIC’s quality improvement activities in this area.
# 3: Improving Patient Outcomes after Radical Prostatectomy

One of MUSIC’s early priorities focuses on improving patient outcomes after radical prostatectomy. In an effort to achieve this goal, MUSIC developed MUSIC Patient Reported Outcomes (MUSIC-PRO), a statewide infrastructure for measuring and improving functional outcomes after radical prostatectomy.

MUSIC-PRO provides a novel and innovative infrastructure for assessing functional status and health-related quality of life before and after radical prostatectomy. Men with prostate cancer who are scheduled to have a radical prostatectomy are asked to complete the survey before surgery and 3, 6, 12, and 24 months afterwards. Collection of the survey is completed using the MUSIC registry using the following steps:

- MUSIC-PRO discussed with patients and brochure provided in clinic
- Surgery is scheduled and the patient is entered into the MUSIC registry
- Automatic e-mails are sent to patients on behalf of their surgeons
- Reminder emails are sent to patients automatically (if not completed)
- Surveys are sent at baseline and 3, 6, 12, and 24 month follow-up time points

The results of surveys are delivered to providers through the registry, including patient specific reports. Reports show patient responses as well as trends in their recovery of function over time. Patient level information may be used to help improve care and recovery after surgery. De-identified MUSIC-PRO information also helps drive quality improvement efforts to improve the care of men with prostate cancer throughout the state of Michigan.

MUSIC-PRO was initially launched in May 2014 with the inclusion of 5 MUSIC practices and has since grown to include a total of 13 practices across the state, with an additional 8 slated to enroll by the end of 2015.
# 4: Improving the Technical Quality of Radical Prostatectomy

Another ongoing MUSIC initiative aims to improve radical prostatectomy outcomes for men in Michigan through the use of video-based assessment of surgical technique. MUSIC initiated a pilot project in the Fall of 2014 with the following goals: 1) to understand whether peer assessment of technical skill is feasible for robotic prostatectomy; 2) to determine whether measurable differences in technical performance exists among fully trained urologists; and 3) to examine relationships between technical skill, complications, and patient reported outcomes after robotic prostatectomy.

In general terms, this project involves asking all MUSIC surgeons that perform robotic prostatectomies to voluntarily submit to the MUSIC Coordinating Center a single representative video of one of their robotic-assisted radical prostatectomy cases. The videos are then stripped of all identifiers and edited to include only key components of the case. The edited videos are then used by peer urologists to rate a surgeon’s technical skill using validated measurement instruments. Ultimately, by linking such assessments with patient-reported outcomes data, this project will allow urologists in Michigan to be at the vanguard of examining the extent to which differences in technical proficiency can be distinguished, and whether they matter, for patients undergoing robotic prostatectomy. Findings from this work will be shared at our tri-annual collaborative wide meetings with a goal of facilitating mentorship and coaching activities that raise the technical quality of radical prostatectomy, and consequently improve patient outcomes across the state of Michigan.

It is important to emphasize that this work is not intended to identify “winners and losers” with respect to robotic prostatectomy. Rather, our efforts are aimed squarely at improving quality across the board, recognizing that what happens in the operating room most likely has implications for patients longer term outcomes. As such, we believe this work will be a pivotal step toward improving patients’ functional outcomes after surgery and providing men throughout Michigan with the best post-prostatectomy outcomes in the world.

MUSIC is now planning to expand on the initial pilot and after developing and validating a global assessment specific for robotic prostatectomy, launch the full project for video-based assessment of technical skill utilizing more than 30 videos submitted by MUSIC surgeons in the Fall of 2015.
Another ongoing MUSIC initiative aims to improve short term recovery outcomes of radical prostatectomy for men in Michigan through a novel, peri-operative assessment tool called Notable Outcomes and Trackable Events after Surgery (NOTES). NOTES is supported by three fundamental concepts: (1) reliable collection of meaningful and actionable data; (2) provision of peri-operative event feedback to providers; and (3) development of targeted interventions for local quality improvement.

In an effort to better support the identification of high-value quality improvement opportunities, and measure the success of subsequent interventions, MUSIC convened an expert panel of statewide urologists to establish a more reliable tracking system for peri-operative outcomes. Using a consensus approach, the MUSIC panel defined new peri-operative measures around meaningful, actionable, and unambiguous clinical data points that could be accurately and consistently collected by data abstractors. Ultimately, eight criteria were selected that represent an uncomplicated recovery pathway, and collectively reflect practice patterns, resource utilization, technical complications, and coordination of care. These eight NOTES measures are: (1) no rectal injury; (2) estimated blood loss (EBL) ≤ 400mL; (3) length of stay (LOS) ≤ 2 days; (4) drain placement ≤ 2 days; (5) catheter placement ≤ 16 days; (6) no 30-day indwelling catheter replacement; (7) no 30-day readmission; and (8) no 30-day mortality. Events occurring outside any of these criteria are considered to be deviations from the uncomplicated pathway, and signal adverse recovery events.

Quarterly feedback is delivered directly to providers via the MUSIC-NOTES reporting program. These automatically generated, one page reports convey confidential, concise, risk-adjusted, and actionable feedback to providers regarding their patients’ perioperative experiences. NOTES reports include an overall summary of total cases experiencing at least one NOTES deviation, a table with a breakdown of deviations for each of the eight NOTES measures, and graphs depicting trend analyses over time. Comparative data between an individual provider, their practice, and the statewide collaborative is featured for each of these components.

The final element of NOTES is a catalogue of interventions to serve as a resource for local improvement activities aimed at decreasing the frequency of NOTES deviations. While this aspect of NOTES is still in development, MUSIC plans to eventually devise several intervention strategies for frequent and high impact NOTES deviation types. Future plans also include correlating NOTES data with MUSIC’s other projects, including patient reported outcomes (PRO), and surgical video review.

By collecting reliable and significant clinical data, providing data-driven feedback to providers about their patient outcomes, and developing a catalogue of quality improvement guidelines that can be realistically implemented at diverse practices, NOTES aims to raise the quality of peri-operative care for men in Michigan, as well as reduce adverse events and their associated costs following radical prostatectomy.
# 6: Improving Treatment Appropriateness

An emerging priority for MUSIC is understanding and improving treatment appropriateness for men in Michigan with prostate cancer. Significant variation exists across the state relative to the use of active surveillance versus local treatment. MUSIC is in the early stages of developing appropriateness criteria for the use of active surveillance within the collaborative. MUSIC has convened a panel of MUSIC experts and is developing the criteria over the course of several months using the well-developed RAND/UCLA method.

More details relative to the status of this initiative will be coming soon!
Additional Activities

While the aforementioned priorities exist as the primary aims for MUSIC, the collaborative is looking at other opportunities, particularly relative to potentially collaborating with biomarker companies as well as in the health policy realm.

In terms of prostate cancer biomarkers, MUSIC hopes to contribute to the understanding of the clinical utility in this rapidly evolving and growing field. The myriad of available tests using blood, urine, or tissue for screening, prognosis, or prediction of response to therapy can inundate a busy clinician. The potential to increasing costs of diagnosis or therapy by adding one or several biomarkers without concomitant value to the patient is real. MUSIC is in discussion with several biotech companies to test products for their clinical utility to alter treatment decisions in a real world setting. Discussion have been most productive for a study to examine a tissue-based genetic assay on the prostate after radical prostatectomy to identify patients who are at greater risk of relapse and who thus may benefit most from adjuvant radiation therapy. MUSIC is also considering evaluation of a tissue-based product that assays in prostate biopsy tissue multiple genes that may allow better selection of patients appropriate for active surveillance.

In considering opportunities within the health policy realm, the Physician Quality Reporting System (PQRS) is a CMS reporting program that uses a combination of incentive and adjustment payments to promote reporting of quality information by eligible professionals (EPs). EPs who satisfactorily participate in PQRS may avoid a payment adjustment (2.0%). In 2014 and 2015, MUSIC was approved as a PQRS qualified clinical data registry (QCDR). A qualified clinical data registry (QCDR) is a new reporting mechanism available beginning in 2014 and as a QCDR, and as mentioned above, enables MUSIC to collect and submit quality measure data on behalf of its participating eligible professionals. If an eligible professional wishes to have MUSIC report to PQRS on his/her behalf (participation is completely voluntary), the following criteria applies: is completely voluntary meaning that each practice and respective urologist can decide whether or not they want MUSIC to report to PQRS on their behalf. If this is something that your practice and respective providers want to pursue, there are a few very important considerations:

- MUSIC can submit to PQRS on behalf of urologists that screen and treat prostate cancer patients
- MUSIC must report on at least nine measures across three domains for all participating eligible professionals (EPs)
- The 2015 data that MUSIC submits on behalf of its eligible professionals will be publically reported on the Physician Compare website per the requirement of CMS

However, please note that this is a CMS requirement regardless if a physician elects to report individually or via a QCDR. Finally, another benefit of participating in MUSIC is that CME credits are provided to clinicians that attend the tri-annual collaborative-wide meetings. Three to four credits are earned for attendance at each meeting.