MUSIC: Patterns of Care in the Radiographic Staging of Men with Newly Diagnosed Low Risk Prostate Cancer

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Purpose: MUSIC is a statewide consortium of 42 urology practices that aims to improve the quality of prostate cancer care in Michigan. As an initial priority, we examined patterns of care in the radiographic staging of men with newly diagnosed prostate cancer. We determined whether collaborative-wide data review and performance feedback would decrease the imaging rate in men with low risk prostate cancer.

Materials and Methods: Practices submitted standardized data, including the use and results of staging computerized tomography and bone scan, to a web based clinical registry of all men with newly diagnosed prostate cancer. We identified all patients with low risk prostate cancer and compared imaging use patterns before and after practice level performance feedback and guideline review, which were provided at collaborative-wide meetings.

Results: In MUSIC 813 patients were newly diagnosed with low risk prostate cancer during the 19-month study period. Of 410 patients diagnosed in the prefeedback period (phase I) 15 (3.7%) and 21 (5.2%) underwent bone scan and computerized tomography, respectively. Of 403 patients diagnosed after feedback (phase II) radiographic staging was done in 5 men (1.3%) with bone scan and in 13 (3.2%) with computerized tomography (p = 0.03 and 0.17, respectively).

Conclusions: The overall rate of radiographic staging in men with newly diagnosed low risk prostate cancer was appropriately low. The imaging rate decreased even further after collaborative education and performance feedback. MUSIC appears to be a successful tool for quality improvement, affecting practice patterns and increasing efficiency of care.

Key Words: prostatic neoplasms, diagnostic imaging, physician's practice patterns, quality improvement, feedback

THE cost of all prostate cancer care in the United States was estimated at almost $12 billion in 2010 and by 2020 it is projected to grow to more than $16 billion.[1] Appropriate ordering of imaging could have an important role in curtailing this spending growth. For men with prostate cancer most guidelines agree that those with low risk tumors do not need radiographic staging with CT or bone scan to screen for metastatic disease before definitive local therapy due to the extremely low chance of a positive study.[2–5] This holds true whether the D'Amico,[6] the UCSF-CAPRA (University of California-San Francisco Cancer of

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the Prostate Risk Assessment)[7] or another classification system is used. There is also the risk that false-positive diagnoses and red herrings could lead to unnecessary further testing, procedures and patient morbidity. Radiation exposure is another concern due to the risk of secondary cancer.

Given these concerns, the first recommendation from the AUA (American Urological Association) in the Choosing Wisely® campaign is the avoidance of bone scans in patients with low risk prostate cancer.[8] Omitting imaging in patients at low risk is also an endorsed quality measure of the Medicare PQRS (Physician Quality Reporting System) program.[9]

Despite these recommendations, many patients at low risk are still imaged at diagnosis.[10–14] As such, we have made decreasing the use of radiographic staging in men with newly diagnosed low risk prostate cancer an initial priority of MUSIC. To this end we compared baseline rates of imaging among MUSIC practices and determined whether the performance feedback and guideline review provided at our collaborative-wide meetings altered imaging rates in men with low risk tumors.

MATERIALS AND METHODS

MUSIC
MUSIC is a physician led, quality improvement collaborative that aims to assess and improve the quality and efficiency of urological care in Michigan. MUSIC comprises a consortium of urology practices located throughout the state. Program activities are administered by the MUSIC Coordinating Center at University of Michigan. The initial focus of MUSIC has been on men with prostate cancer and men undergoing prostate biopsy. To join MUSIC a urology practice must enter a minimum of 50 prostate biopsy or prostate cancer cases per year, be affiliated with a physician organization recognized by BCBSM and participate in the BCBSM Physician Group Incentive Program.

Practices joined MUSIC in several waves starting with the first 12 practices in March 2012 (wave 1), followed by 7 more in October 2012 (wave 2). All current analyses relate to data from wave 1 and wave 2 practices. MUSIC currently includes 42 practices and more than 200 urologists.

Data
Collection infrastructure. Institutional review board approval was obtained at each site. Most applications were deemed nonregulated and some were exempt due to the quality improvement nature of the study. Each practice site has a physician clinical champion and a data abstractor. De-identified patient data, including detailed clinical and demographic information such as patient age, race, serum PSA at diagnosis, clinical T stage, biopsy Gleason score, total number of biopsy cores and number of positive cores, are submitted electronically to the MUSIC clinical registry. Quality control visits are performed at each site to ensure accurate and complete data collection. Triannual consortium-wide meetings are held at a central location to compare practice performance, discuss quality initiatives and implement changes in clinical behavior. Although detailed data are collected on individual patients, practice level data are presented at MUSIC meetings in a comparative and de-identified manner.

Imaging. Data abstractors at each practice entered into the registry whether bone scan or CT was performed and the imaging results. For study purposes scans ordered by nonurologists were not counted as having been ordered by the urologist or the urology practice. Although radiological reports were available, the treating urologist and/or clinical champion was responsible for the final interpretation of scan results. During on-site data audits a random sample of imaging results was validated by the MUSIC coordinating center.

Imaging Intervention
A multistep intervention was performed at our collaborative-wide meetings starting with a review of baseline practice level data and the various imaging guidelines, such as the NCCN (National Comprehensive Cancer Network) and AUA Best Practice Statements, for patients with newly diagnosed prostate cancer. After presenting practice level baseline use and guidelines at a second meeting the clinical champion at each practice reviewed the performance data and the relevant guideline recommendations at the practice site with colleagues. Although data were presented in de-identified fashion at the meetings, the clinical champion at each site had access to practice level data at the practice as well as to individualized physician level data on physicians in the practice. The date of local review by each practice was documented and defined as the transition point for the pre-intervention (phase 1) and postintervention (phase 2) analyses presented.

Statistical Analysis
Based on the D'Amico risk classification system[6] we identified patients at low risk in wave 1 and wave 2 practices. Demographic characteristics and rates of imaging in phase 1 and phase 2 were tabulated. The chi-square test was used to analyze differences in imaging use between practices and from before to after the multistep intervention. Statistical testing was 2-sided and performed at the 5% significance level using software.

RESULTS
Of 2,869 patients with newly diagnosed prostate cancer 813 (28.3%) were at low risk by the D'Amico criteria.[6] Approximately equal numbers of patients in each risk group were diagnosed during phases 1 and 2. Demographic and clinical characteristics were similar in the 2 groups (supplementary table, http://jurology.com/1). There was a significant difference in practice size (p <0.0001) with more patients from practices with more than 10 urologists in phase 2.