2015 Quality Outcomes Report
Our Reach & Our Roots

Patients by State 2014

Patients by Maine County 2014
Joint Commission Gold Seal of Approval for both Hip and Knee Joint Replacement

TABLE OF CONTENTS
Introduction ........................................... 2
Surgical Case Volume .............................. 4
Surgical Statistics ................................. 6
Length of Stay ...................................... 8
Discharge Disposition ........................... 10
Patient Education Experience ................. 12
Pain Management ................................. 13
Excellence, Patient Outcomes, and Research ...... 14
Outcomes from the Patient Perspective .......... 16
Publications ....................................... 18
Providers .......................................... 19
Recognition ........................................ 20
Over the last year we have seen the continued growth of our orthopedic offerings at Maine Medical Partners and Maine Medical Center (MMC), as joint replacement and fracture and trauma care were joined by sports medicine. All along, the teams of dedicated people that deliver joint replacement care at MMC have remained justifiably proud of the objective excellence of care each and every one of our patient’s receive. Our true focus is to perform the best, most atraumatic hip, knee, and shoulder replacements possible. The program’s success is seen through transparent quality data, honestly reported in the following pages. Maine Medical Partners – Orthopedics & Sports Medicine doesn’t simply rest on these laurels, visiting peer joint replacement practices around the country to glean insights into the latest techniques and technologies, ultimately benefitting our patients with developments to come, right here in Maine. Our goal will always be to constantly refine the details of the entire process, measuring our performance through rigorous data collection. This is the foundation that must be laid, in order to realize the true joy of seeing each patient once more down the road, enjoying activities – and living full lives – that they weren’t sure would ever be a reality again.

George Babikian, M.D.
Chief of Orthopedics, Maine Medical Center

Providers

GEORGE M. BABIKIAN, M.D.
Fellowship: AO Trauma, Chur, Switzerland
Fellowship: Trauma and Critical Care, Buffalo
Medical School: State University of New York at Buffalo School of Medicine
Residency: State University of New York at Buffalo Consortium

MICHAEL W. BECKER, M.D.
Fellowship: Hospital for Special Surgery
Medical School: State University of New York at Buffalo School of Medicine
Residency: Columbia Presbyterian Medical Center

DONALD P. ENDRIZZI, M.D.
Fellowship: A.S.L.F. Foundation, Regional Kantonsepital, Chur, Switzerland
Medical School: Columbia College of Physicians and Surgeons
Residency: Columbia Presbyterian Medical Center

PETER E. GUAY, D.O.
Medical School: University of New England College of Osteopathic Medicine
Residency: Brighton Medical Center

BRIAN J. MCGORRY, M.D.
Fellowship: Massachusetts General Hospital
Medical School: Columbia College of Physicians and Surgeons
Residency: Mayo Clinic

ADAM J. RANA, M.D.
Fellowship: Hospital for Special Surgery
Medical School: State University of New York Downstate Medical Center
Residency: Boston Medical Center

PAUL J. EVANS, PA-C

RUPI S. GILL, PA-C

ANGELA M. JAGOUTZ, FNP

AMELIA KNOWLES, PA-C

BRIGHAM R. MCKENNEY, MPAS, PA-C

MICHELLE B. STIRLING, FNP
Maine Medical Partners — Orthopedics & Sports Medicine
Joint Replacement

Publications

Our surgeons are heavily involved in research on both a local, and national scale.

Abstracts  • 2012-present
Durale XD, Endrizzi DP. Humeral Resurfacing for Compromised Cuff Tear Arthroplasty.

Publications  • 2012-present
Craggins-Smith M, McGrory BJ, Tolosio I. Permanent Tattooing as a Manifestation of Metallosis in Acetabular Wear-through in THA. Accepted Current Orthop Practice.

2014 JOINT REPLACEMENTS AT A GLANCE

1,704 Joint replacement procedures performed
100% Board Certified Orthopedic Surgeons
87% Discharged home
67 years Average age of our joint replacement patients
53% Female
3 Operating rooms dedicated to orthopedics
In 2014, Maine Medical Partners – Orthopedics & Sports Medicine performed 1,704 joint replacements, a 5% increase over 2013, and a 20% increase from 2012.

"Patients managed at hospitals, and by surgeons, with greater volumes of total knee replacement have lower risks of perioperative adverse events following primary total knee replacement" (Katz et al. 2004).

"Patients treated at hospitals, and by surgeons, with higher annual caseloads of primary and revision total hip replacement had lower rates of mortality and of selected complications" (Katz et al. 2001).

### 2014 PROCEDURAL VOLUME

<table>
<thead>
<tr>
<th>Joint Replacement Procedures</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Joint Replacement</td>
<td>1704</td>
</tr>
<tr>
<td>Hip Replacement</td>
<td>930</td>
</tr>
<tr>
<td>Primary</td>
<td>821</td>
</tr>
<tr>
<td>Anterolateral Minimally Invasive</td>
<td>744</td>
</tr>
<tr>
<td>Posterior</td>
<td>43</td>
</tr>
<tr>
<td>Bilateral</td>
<td>17</td>
</tr>
<tr>
<td>Revision</td>
<td>78</td>
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<tr>
<td>Hip Fracture</td>
<td>31</td>
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<tr>
<td>Total Hip</td>
<td>26</td>
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<tr>
<td>Partial Hip Replacement</td>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>Knee Replacement</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>594</td>
</tr>
<tr>
<td>Partial Knee Replacement</td>
<td>15</td>
</tr>
<tr>
<td>Revision</td>
<td>31</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Shoulder Replacement</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomic</td>
<td>56</td>
</tr>
<tr>
<td>Primary Reverse</td>
<td>75</td>
</tr>
<tr>
<td>Partial</td>
<td>3</td>
</tr>
</tbody>
</table>

### ASES Score (Shoulder Function Score) by Follow-up Time

- **Pre-op**
- **3 Months**
- **6 Months**
- **1 Year**

### UCLA (Activity) Score by Follow-up Time

- **Pre-op**
- **6 Weeks**
- **3 Months**
- **6 Months**
- **1 Year**

### Oxford Score by Follow-up Time

- **Pre-op**
- **6 Weeks**
- **3 Months**
- **6 Months**
- **1 Year**

### Percent of Patients Unable (from the Simple Shoulder Test)

- **Shoulder comfortable at rest by your side**
- **Shoulder allows you to sleep comfortably**
- **Place a coin on the level of your shoulder**
- **Lift one pound to the level of your shoulder**
- **Lift 8 pounds to the level of your shoulder**
- **Carry 20 pounds at your side**
- **Work full time at your regular job**

- **Pre-op**
- **One Year**

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Maine Medical Partners — Orthopedics & Sports Medicine
Joint Replacement

Outcomes from the Patient Perspective

By continually monitoring patient reported outcomes we're ensuring the best care for our patients.

The following graphs represent the results of our joint replacement registry — from implementation in October 2013 to May 2015. This data is made available publicly to our patients, and internally reviewed to evaluate the surgeries.
The public now has access to unprecedented data around the quality of joint replacement procedures.

The Hospital Outcome of Care measures, which are readily available on the Medicare website, are significant because people who elect to have these surgeries typically research the hospital and physician to learn who has the best outcomes. Also, Medicare has recently begun to adjust hospital reimbursement rates for hip and knee replacement surgeries based on these measures, as it currently does for a number of other procedures.

HIP AND KNEE REPLACEMENT PATIENTS

30-Day Surgical Complications

<table>
<thead>
<tr>
<th>Hospital</th>
<th>MMC 30-day Rate</th>
<th>30-day Rate</th>
<th>U.S. National Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maine Medical Center</td>
<td>0%</td>
<td>0.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Mercy Hospital</td>
<td>0%</td>
<td>0.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Central Maine Medical Center</td>
<td>0%</td>
<td>0.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Eastern Maine Medical Center</td>
<td>0%</td>
<td>0.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Mass. General Hospital</td>
<td>0%</td>
<td>0.0%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

30-Day Readmission Rates

<table>
<thead>
<tr>
<th>Hospital</th>
<th>MMC 30-day Rate</th>
<th>30-day Rate</th>
<th>U.S. National Average</th>
</tr>
</thead>
<tbody>
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<td>0%</td>
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<td>Mercy Hospital</td>
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<tr>
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<td>0%</td>
<td>0.0%</td>
<td>2.0%</td>
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<tr>
<td>Eastern Maine Medical Center</td>
<td>0%</td>
<td>0.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Mass. General Hospital</td>
<td>0%</td>
<td>0.0%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>


Lower percentages are better

Long term goals of our surveillance process include identifying variables that are associated with excellent results, assessing changes that we make to improve the patient experience, and offering patients objective measures of outcome to compare to other programs. Clinically relevant and actionable findings are the motivating force for our research program. Our staff members collaborate with researchers, statisticians, clinicians, and students from Maine Medical Center Research Institute, Tufts University School of Medicine, and regional and national research groups. We strongly believe that the combination of objective data about joint replacement surgery outcomes in conjunction with the desire and resources to improve and innovate through research allows us to offer our patients a state-of-the-art, safe, effective and durable joint reconstruction.

Brian McGrory, M.D.
Orthopedic Surgeon, Maine Medical Partners — Orthopedics & Sports Medicine
As performance and patient outcomes are being reported more frequently, patients can see that there is a "bell curve" or distribution of success, with only small numbers of centers consistently offering patients excellent results.

We think that our team’s dedication to the patient, innovative spirit, medical knowledge, technical skill, and above all, desire and ability to improve, allow us to be one of the top joint replacement programs in the country. The desire and ability to change for the better is wholly dependent on understanding and reacting to our results in real time.

For almost 20 years, data has been collected and examined for outcomes evaluation for a large portion of our joint replacement and fracture patients. Maine Medical Partners – Orthopedics & Sports Medicine next initiated the MMC and MaineHealth Joint Replacement Registry, and this registry was then expanded in two very important ways. For a number of years our joint replacement surgeons have collected not only surgical data, but also patient-reported outcomes. Patient-based questionnaires monitor activity, overall health, and joint-specific pain, stiffness, and function. They are collected before surgery and after surgery at appropriate intervals for the patient’s

Transfusion Rates
Blood loss during surgery is expected in patients undergoing major surgery. Our processes attempt to minimize the rate of transfusion, due to potential risks and an increase in postoperative issues related to transfusions. Additionally, transfusions add expense to a procedure. Variations in the delivery of operative blood transfusions depend not only on the patient, but also each surgeon’s specific transfusion practices, and can help explain Maine Medical Partners – Orthopedics & Sports Medicine’s successful quality outcomes when compared to other joint replacement programs. Our transfusion rates are lower than any published rates or available statistics, and speak to the priority our orthopedic surgeons place on minimizing complications, and getting patients back on their feet.

*Source: Vuille-Lessard et al., 2010

<table>
<thead>
<tr>
<th>Procedure</th>
<th>2014 Transfusion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMP Shoulder Replacement</td>
<td>0%</td>
</tr>
<tr>
<td>Other Provider Published</td>
<td>5%</td>
</tr>
<tr>
<td>Average Transfusion Rate</td>
<td></td>
</tr>
<tr>
<td>MMP Knee Replacement</td>
<td>0.5%</td>
</tr>
<tr>
<td>Other Provider Published</td>
<td>10%</td>
</tr>
<tr>
<td>Average Transfusion Rate</td>
<td></td>
</tr>
<tr>
<td>MMP Hip Replacement</td>
<td>0.8%</td>
</tr>
<tr>
<td>Other Provider Published</td>
<td>15%</td>
</tr>
<tr>
<td>Average Transfusion Rate</td>
<td></td>
</tr>
</tbody>
</table>

Lower percentages are better
Maine Medical Center and Maine Medical Partners — Orthopedics & Sports Medicine have worked together to initiate protocols that provide the most efficient and effective care. Reducing patients’ length of stay means they go home faster - allowing patients to recover in a place they’re comfortable, as opposed to a hospital or institutional setting. Patients with shorter lengths of stay recover faster, have better outcomes, reduce their chances of developing a hospital acquired complication and may reduce health care costs associated with their procedure.

### 2014 AVERAGE LENGTH OF STAY

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Joint Replacement</strong></td>
<td></td>
</tr>
<tr>
<td>Hip Replacement</td>
<td></td>
</tr>
<tr>
<td>Anterolateral Minimally Invasive</td>
<td>1.35</td>
</tr>
<tr>
<td>Posterior</td>
<td>2.79</td>
</tr>
<tr>
<td>Revision</td>
<td>3.43</td>
</tr>
<tr>
<td>Knee Replacement</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>2.90</td>
</tr>
<tr>
<td>Revision</td>
<td>3.11</td>
</tr>
<tr>
<td>Shoulder Replacement</td>
<td></td>
</tr>
<tr>
<td>Anatomic</td>
<td>1.39</td>
</tr>
<tr>
<td>Primary Reverse</td>
<td>1.52</td>
</tr>
</tbody>
</table>

Our philosophy regarding pain management is to take a multimodal approach that addresses each step of the pain pathway to minimize every patient’s post-operative pain. To quote the famous French Philosopher Jean Jacques Rousseau, “Happiness is the person who suffers the least pain.” Our dedication to meticulous soft tissue handling at the time of surgery, utilizing less invasive approaches to the hip, knee and shoulder, targeted local anesthetics and appropriate post-operative pain medications have all shown significant benefits with regards to our patient’s post-operative experience.

Studies report that superior post-operative pain management results in decreased length of stay at the hospital, earlier mobility in the post-operative setting, improved recovery of function such as range of motion in total knee replacements, decreased narcotic requirements, decreased gastrointestinal complications such as constipation, decreased genitourinary complications, and decreased cardiopulmonary complications such as pneumonias. Pain is a poorly understood, complex phenomenon most likely controlled by neural, cellular, and humeral mechanisms. The pain pathway is initiated by surgical trauma that sends signals to the peripheral nervous system which are then carried to the central nervous system. Our approach for addressing pain targets each step in this pathway.

Surgical trauma in total hip replacement surgery is minimized by performing a muscle sparing minimally invasive approach. Resultant inflammation is then addressed with anti-inflammatory medications, also known as NSAIDs (e.g. Celebrex). In addition, cryotherapy or ice packs are applied to the operative extremity to reduce swelling. Local anesthetics injected at the time of surgery offer pain relief to the peripheral nervous system, while Tylenol and opiates (which are stronger narcotic pain medications) offer decreased pain by acting at the level of the central nervous system.

Our goal and commitment to our patients is to continually improve our peri-operative pain management techniques by way of reduced trauma at the time of surgery, a multimodal pain control program and pre-operative patient education.

Adam Rana, M.D.
Orthopedic Surgeon, Maine Medical Partners — Orthopedics & Sports Medicine
Patient Education Experience

We continue to grow the breadth of educational services to meet the needs of our population. Joint replacement preparation classes are offered in multiple locations, and via a number of different platforms, to supplement the already successful joint-specific classes that have always been held at the Maine Medical Center (MMC) Joint Replacement Center.

Janet Dyroff, R.N., M.S., CHES
Orthopedics Patient Educator,
Maine Medical Center

“Everyone is very professional and knowledgeable, I thought the class was wonderful and it answered all my questions. I’m feeling confident”
Patient Testimonial, Total Knee Replacement Class

Educational Offerings
- Classes at Maine Medical Center, and Maine Medical Partners offices in Falmouth, Maine
- Webinars
- Online e-learning course
- In-person, or telephone meeting with the Nurse Educator
- Patient Education book / guide

PERCENT OF PATIENTS PARTICIPATING IN PRE-OPERATIVE EDUCATION 2015

2014 LENGTH OF STAY AVERAGES

* includes Posterior and Anterolateral
Discharge Disposition

Discharge disposition is an important factor in joint replacement surgery. Getting patients back to their families and loved ones is a priority for Maine Medical Partners — Orthopedics & Sports Medicine because our team understands that patients recover better in the comfort of their own home. Patients discharged home have the option of visiting nurses, in-home physical therapy and in-home occupational therapy visits. Maine Medical Partners — Orthopedics & Sports Medicine has established this commitment to getting patients home when possible and our commitment shows in the data.

**Discharge Location**

- **Total Hip Replacement**
  - Home: 92.7%
  - Rehab facility: 1.5%
  - Skilled nursing facility: 1.8%

- **Total Shoulder Replacement**
  - Home: 98.2%
  - Rehab facility: 1.8%

- **Total Knee Replacement**
  - Home: 69.4%
  - Rehab facility: 25.1%
  - Skilled nursing facility: 5.6%

Ask our expert providers for up-to-the-minute data and information. They are the best at what they do and are sought-after for their knowledge.