

Quality improvement in hip and knee arthroplasty: Development of a patient registry in Michigan



Richard E. Hughes, PhD

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Total joint replacement (“arthroplasty”) is a common and effective treatment for arthritis of the hip and knee. While the clinical results for most patients are very good, an unacceptable number of poor outcomes occur in these procedures. Most notably, prostheses may need to be “revised,” which means that the surgery must be repeated to replace prosthetic components. One cause of revisions is poor selection of implants. National patient registries that track medical device data are a powerful tool for identifying poorly performing implants, and they have been shown to reduce revision rates in Sweden and Norway. In the last decade the Australian Orthopaedic Association National Joint Replacement Registry identified increased revision rates for Metal-on-Metal hip replacement devices. This presentation will provide an introduction to hip and knee arthroplasty, followed by an update on the status of the Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI). MARCQI started in early 2012 and has registered over 5000 patients. MARCQI organization, data collection, and governance will be described. The presentation will frame MARCQI within the context of both health care quality improvement and national registry efforts, including the American Joint Replacement Registry and the Food and Drug Administration’s MDEpiNet initiative.

Richard Hughes, Ph.D., is an Associate Professor of Orthopaedic Surgery, Biomedical Engineering, and Industrial & Operations Engineering at the University of Michigan. His education includes a B.S.E. in Civil Engineering (Princeton University), M.S.E. and Ph.D. in Industrial and Operations Engineering (University of Michigan), and post-doctoral fellowship in orthopaedic biomechanics (Mayo Clinic). Prior to joining the faculty in 1998, he worked in ergonomics and human factors at the Washington State Department of Labor and Industries and the National Institute for Occupational Safety and Health. He has published over 85 papers in peer-reviewed journals and is the President-elect of the American Society of Biomechanics. His current research focuses on arthroplasty quality improvement and medical device surveillance. He is the Technical Director of the Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI)

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