Total joint arthroplasty (TJA) is the ultimate treatment for degenerative joint disease. For the majority of patients, it leads to regained function and improved quality of life. By 2030, the total number of primary total knee arthroplasty (TKA) procedures performed annually in the United States is expected to reach nearly 3.48 million, a 673% increase from the number performed in 2005. Furthermore, the demand for total hip arthroplasty (THA) is expected to grow by 174%, or 572,000 procedures annually, and approximately 4 million TJAs are expected to be performed annually.1

Similar to other medical interventions, TJA is accompanied by some complications. Periprosthetic joint infection (PJI) is a rare but challenging complication after TJA. Periprosthetic joint infection is considered the primary reason for revision in TKA and the tertiary reason for revision in THA.2,3 It can occur any time after the surgery and its diagnosis is challenging.4,5 Periprosthetic joint infection also has a huge financial impact on the health care system. In the United States, revision because of infection cost approximately $320 million in 2001, increased to $566 million in 2009, and is expected to exceed $1.62 billion by 2020.6 Hence, prevention of PJI is mandatory.7

**PREVENTING PERIPROSTHETIC JOINT INFECTION**

Many factors, attributable to both the host and the environment, are involved in the development of PJI. Diabetes, rheumatoid arthritis, renal failure, congestive heart failure, hypercholesterolemia, pulmonary disease, valvular heart disease, preoperative anemia, venous thromboembolism, peripheral vascular disease, metastatic tumor, psychoses, alcohol abuse, and depression can increase the risk of infection.6,8,9 Precautions should be taken preoperatively, intraoperatively, and postoperatively to decrease the risk of PJI. All adjustable health conditions should be optimized prior to elective TJA. It is important to evaluate the general health of all patients and to manage comorbidities, if necessary, before the surgery.10

The Centers for Disease Control and Prevention recommends that patients bathe with an antiseptic agent at least once the night before surgery to reduce bacterial load.11 Several studies support the efficacy of prophylactic antibiotics in preventing PJI.12,13 The American Association of Orthopaedic Surgeons has discussed the choice and dosing of prophylactic antibiotics.14 First-generation cephalosporins are adequate for most patients undergoing elective TJA. In some circumstances, however, vancomycin is indicated in addition to a first-generation cephalosporin.

Removal of hair at the incision site has become part of routine patient preparation for surgery. However, there is no documentation supporting that hair removal reduces the risk of surgical-site infections (SSIs). The most important causes of SSIs are...
Iodine-impregnated skin incise-drapes

The surgeon and the operating room

Recommended for total joint arthroplasty.

There is no superior agent for skin preparation. Combinations of antiseptic agents with alcohol are recommended for skin antisepsis.

If hair removal is to be performed, clippers should be used.

Must be properly sterilized. Single-use equipment should be employed, if possible. Exchangeable devices must be replaced as the duration of surgery increases (eg, suction tips should be changed every 60 minutes).

Native microorganisms of the skin. In a study performed by von Eiff et al., on the basis of genotyping evaluations, it was shown that the source of infection was endogenous for more than 80% of nosocomial infections with *Staphylococcus aureus*. Hence, despite advances in prophylactic antibiotics, skin-decolonizing agents are crucial.

The antiseptic agents for preoperative hand preparation are categorized into 2 main groups: hand scrub solutions and hand rub agents. Most studies report that povidone-iodine and chlorhexidine gluconate are equally effective in terms of reducing bacterial load. No difference in the rate of SSIs has been observed between hand rubs and hand scrubs.

Strong support exists in the literature for using plastic surgical adhesive tapes to drape the surgical site. Numerous studies have shown the rate of SSIs to be significantly increased when traditional cloth drapes are used.

Double gloving reduces the risk of perforation, and in orthopedic surgeries, in which sharp edges are often encountered, it is highly recommended that double gloving protocols be followed. Some studies have shown that in procedures such as implantation, triple gloving is preferred because the inner glove of double gloving could become perforated and contaminated during the course of the procedure.

Operating rooms are designed to diminish patients’ exposure to bacteria throughout procedures. Laminar airflow was introduced in 1964 to accomplish this. However, debate exists over the efficacy of laminar airflow for reducing SSIs. It has even been reported that laminar airflow may increase the risk of SSIs.

The rate of PJII has been reported to have a direct link to the duration of surgery. Furthermore, surgeons’ caseloads potentially affect the rate of PJII; surgeons with lower surgical volumes tend to have higher infection rates. The rate of SSIs also is directly linked to the amount of operating room traffic, which affects the load of airborne microorganisms. In addition, a greater number of door openings due to greater traffic can interfere with laminar airflow, further increasing the rate of SSIs.

The current authors believe that the recommendations they list in Table 1 and Table 2 can reduce the risk of PJII.

**REFERENCES**

2. Bozic KJ, Kurtz SM, Lau E, Ong K, Vail TP, Berry DJ. The epidemiol-


