### How Mako robotic-arm–assisted surgery works

### Your personalized plan

It all begins with a CT scan of your joint that is used to generate a 3-D virtual model of your unique anatomy. This virtual model is loaded into the Mako<sup>™</sup> system software and is used to create your personalized preoperative plan.

### In the operating room

During surgery, your surgeon will use the Mako system to assist based on your personalized preoperative plan. When the surgeon prepares the bone for the implant, the Mako system guides him or her within the predefined area and helps prevent the surgeon from moving outside the planned boundaries. This helps provide more accurate placement and alignment of your implant.

#### After surgery

After surgery, your surgeon, nurses and physical therapists will set goals with you to get you back on the move. They will closely monitor your condition and progress. Your surgeon may review an X-ray of your new total knee with you.

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Patient guide to robotic-arm–assisted total knee replacement



### Causes of your knee pain



Your joints are involved in almost every activity you do. Movements such as walking, bending and turning require the use of your hip and knee joints. When your knee becomes diseased or injured, the resulting pain can severely limit your ability to move and work.

Each patient is unique, and you can experience knee pain for different reasons. One common cause of knee pain is osteoarthritis (OA). OA is sometimes called *degenerative arthritis* because it is a "wearing out" condition that involves the breakdown of cartilage in the joints. When cartilage wears away, the bones rub again each other, causing pain and stiffness.

Another common cause of knee pain is rheumatoid arthritis (RA). RA produces chemical changes in the lining of the joints, or *synovium*, causing it to become thickened and inflamed. In turn, the synovial fluid destroys cartilage. This results in cartilage loss, pain and stiffness.

If you haven't experienced adequate relief with conservative treatment options, like bracing, medication or joint fluid supplements, your doctor may recommend total knee replacement.

### Total knee replacement surgery

Total knee replacement surgery (TKR) is a surgical procedure in which a diseased or damaged joint is replaced with an artificial joint called an implant. The implant is made of metal alloys and high-grade plastics to better match bone and cartilage function, and is designed to move much like a healthy human joint.

Over the years, knee replacement techniques and instrumentation have undergone countless improvements. Mako<sup>™</sup> robotic-arm–assisted technology with Triathlon total knee implants is an example of how technology is transforming the way joint replacement surgeries are performed.

*Robotic-arm–assisted technology* doesn't mean that a robotic arm performs your surgery. A Geisinger orthopaedic surgeon uses the Mako system software to pre-plan your surgery. He or she will guide the robotic arm to remove diseased bone and cartilage. Then your surgeon will insert a total knee implant.

## What to expect in the weeks before surgery

Preparing for TKR begins weeks before the actual surgery. The checklist below outlines some tasks that your surgeon may ask you to complete in the weeks before your surgery date.

- Exercise under your doctor's supervision
- Have a general physical examination
- Have a dental examination
- Review medications
- Stop smoking
- Lose weight
- Arrange a preoperative visit
- Get laboratory tests
- Complete forms
- Prepare meals
- Confer with a physical therapist
- Plan for post-surgery rehabilitative care
- Fast the night before
- Bathe surgical area with antiseptic solution

## Questions to ask your doctor at your next appointment

- 1. What are the benefits and potential risks involved with TKR?
- 2. How long does it typically take to recover from surgery?
- 3. Is osteoarthritis a factor in my knee pain?
- 4. Will reducing activity, taking pain or prescription medication, getting injections or doing physical therapy ease my pain?
- 5. Could TKR help provide me with relief from my knee pain?
- 6. Am I a candidate for Mako robotic-armassisted surgery?

