

Advances in Total Knee Arthroplasty: From Surgery to One Year Later

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Preview of Topics

- Prevalence of Knee Replacement
- Basic Knee Anatomy & Signs and Symptoms of Arthritis
- Assessing Pain and Conservative Treatment Options
- Knee Surgery Indications and Patient Eligibility
- Pain Protocol and Surgical Technique
- Patient Outcome Quality Metrics





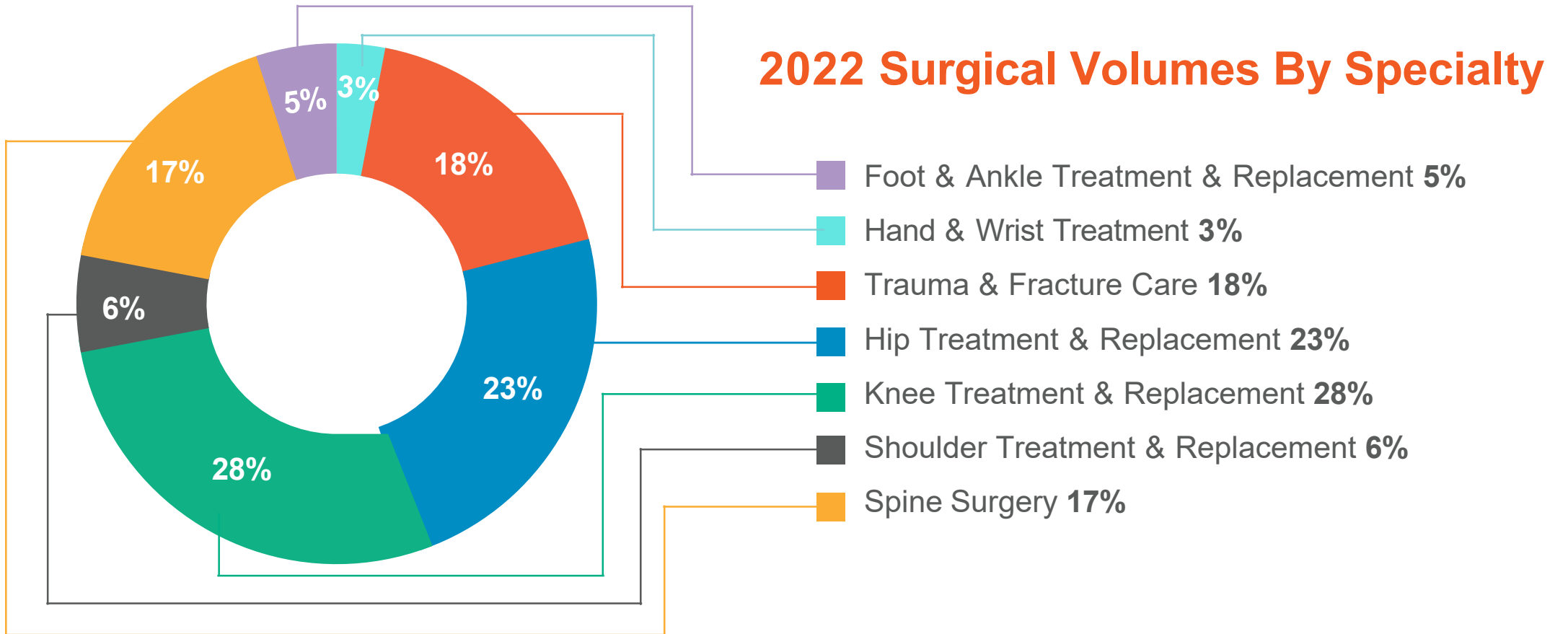
Knee Replacements in the US

- 800,000 knee replacements done in US each year
- That number expected to grow by 673% to 3.5 million by 2030, according to AAOS (2023)



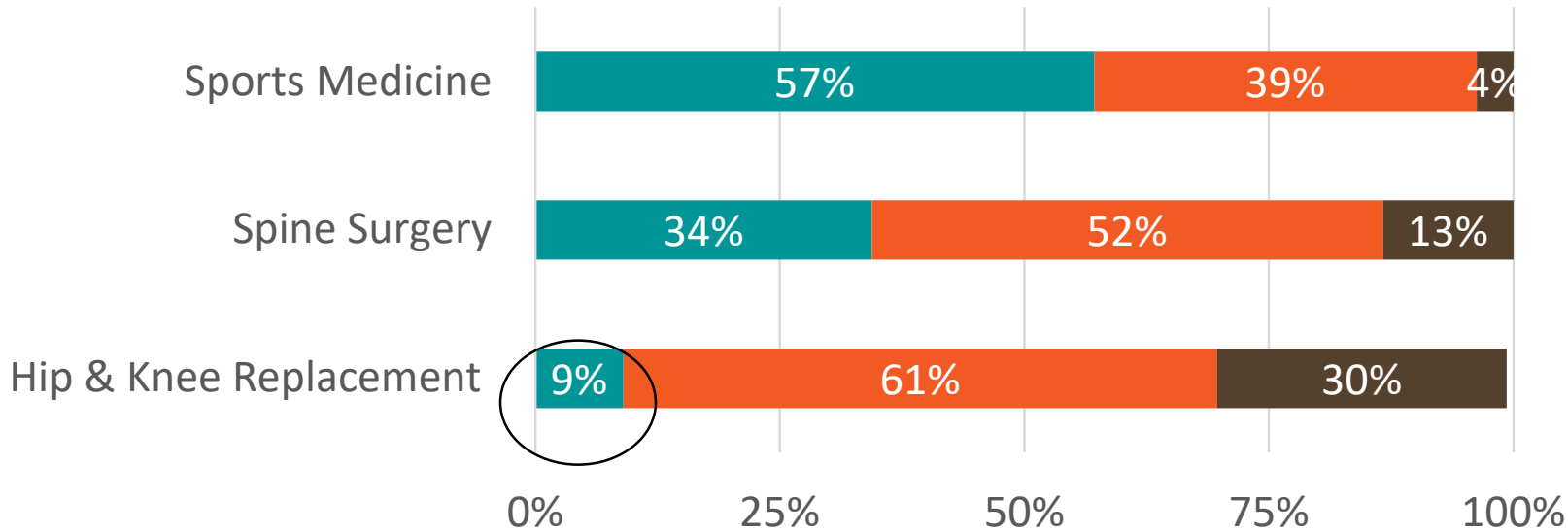





Orthopedic Surgical Volume by Specialty





Clinical Advances Driving Demand Across Generations



 Gen X or Younger (Under Age 57)  Baby Boomers (Age 57-76)  Silent Generation (Age 77+)

31-98

Age Range of Palomar Health's elective Total Joint Patients in 2022

7 Millennials

Had a Joint Replacement with Palomar Health in 2022

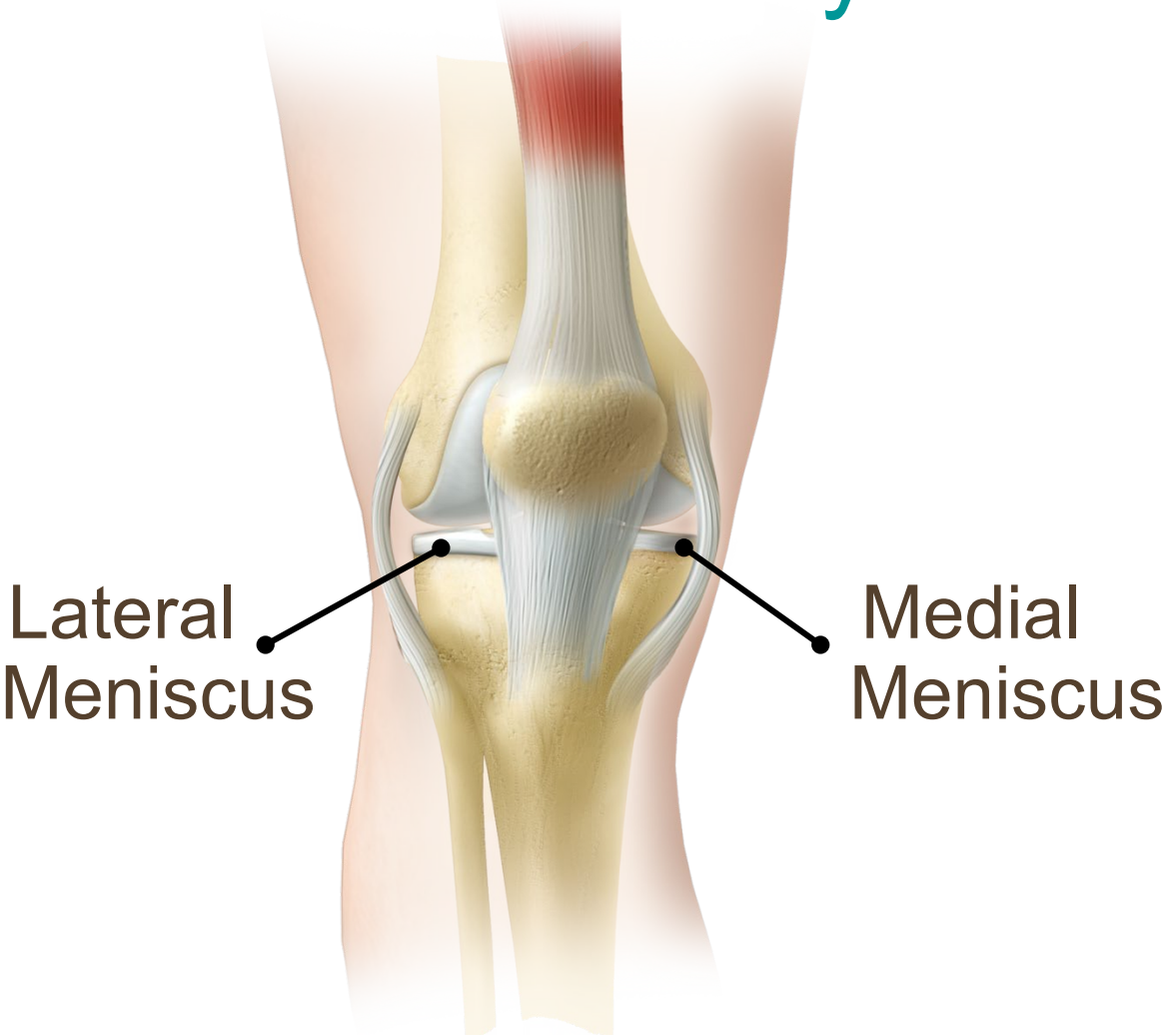




Basic Knee Anatomy and Signs and Symptoms of Arthritis

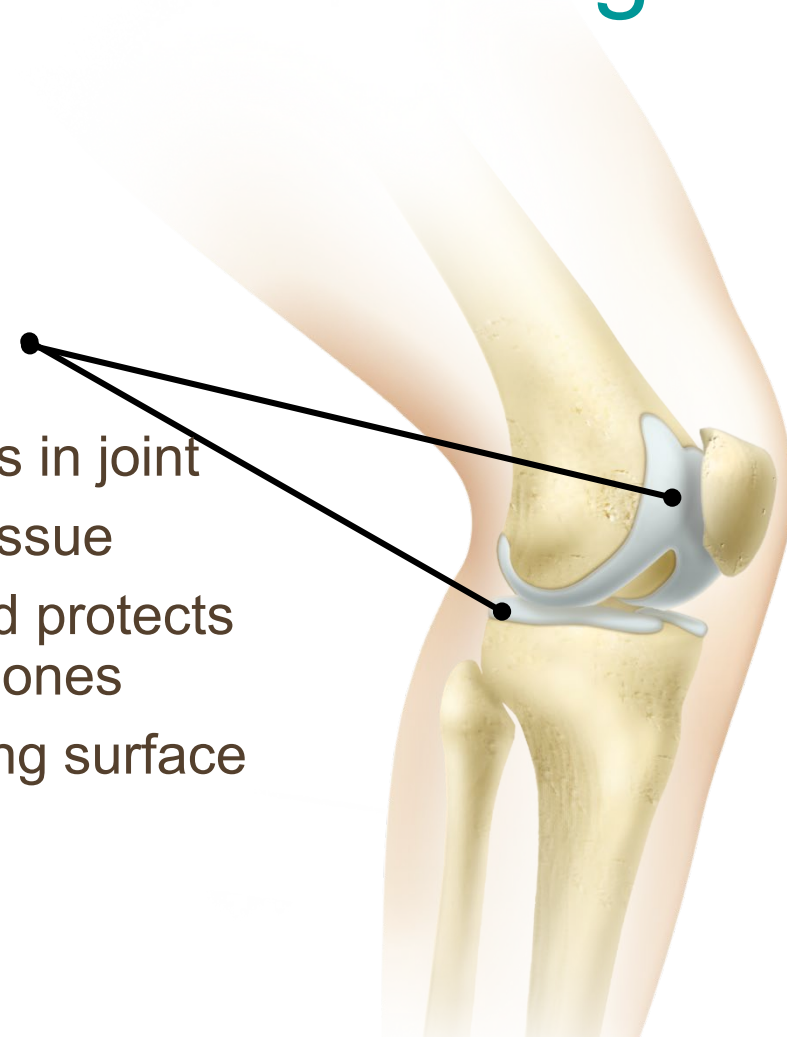


Basic Anatomy of Knee: Meniscus & Cartilage



Cartilage

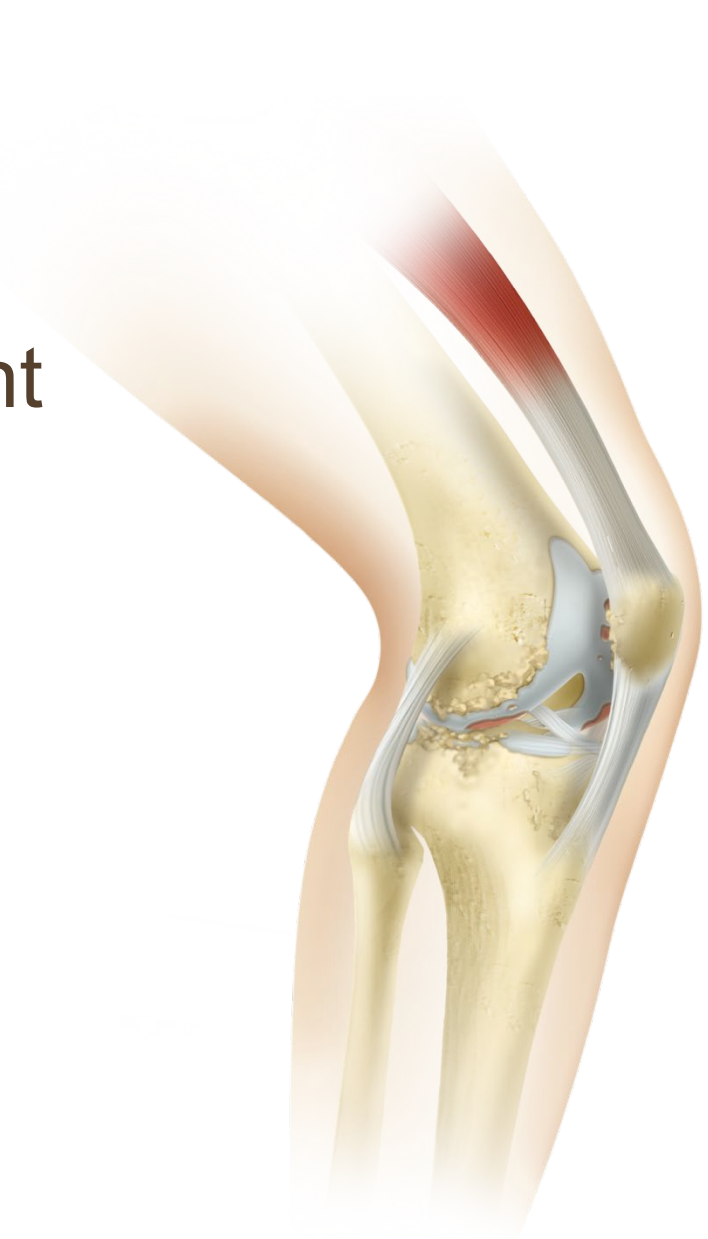
- Covers bones in joint
- Lubricating tissue
- Cushions and protects the ends of bones
- Smooth gliding surface for bones





Arthritis

- Defined as inflammation of the joint
- More than 100 different types
- Two primary types
 - Rheumatoid: younger age, multiple joints involved
 - Osteoarthritis: most common, wear and tear





Rheumatoid Arthritis

- Diagnosed at younger ages than osteoarthritis
- Can affect multiple joints at one time
- Excess synovial fluid
- Building pressure leads to erosion
- Results in painful, swollen joints





Osteoarthritis

- Degenerative joint disease
- Most common form of arthritis
- Leading cause of work disability
- Projected to affect 60 million Americans in 2020*
- Wear and tear condition
- Develops over time
 - Overuse, injury or repetitive movement
 - Developmental disorders

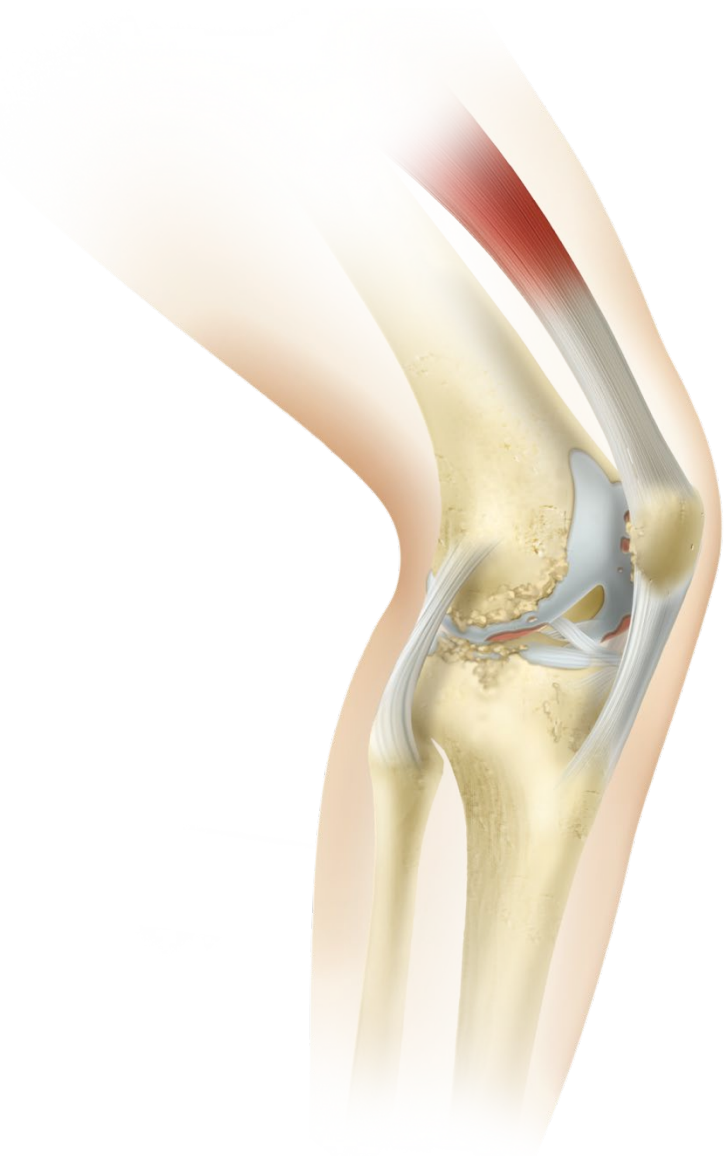


* Source: The Centers for Disease Control



Symptoms of Arthritis

- Joints warm to the touch
- Joint swelling
- Joint stiffness
- Decreased activity
- Impaired lifestyle
- Joint deformities





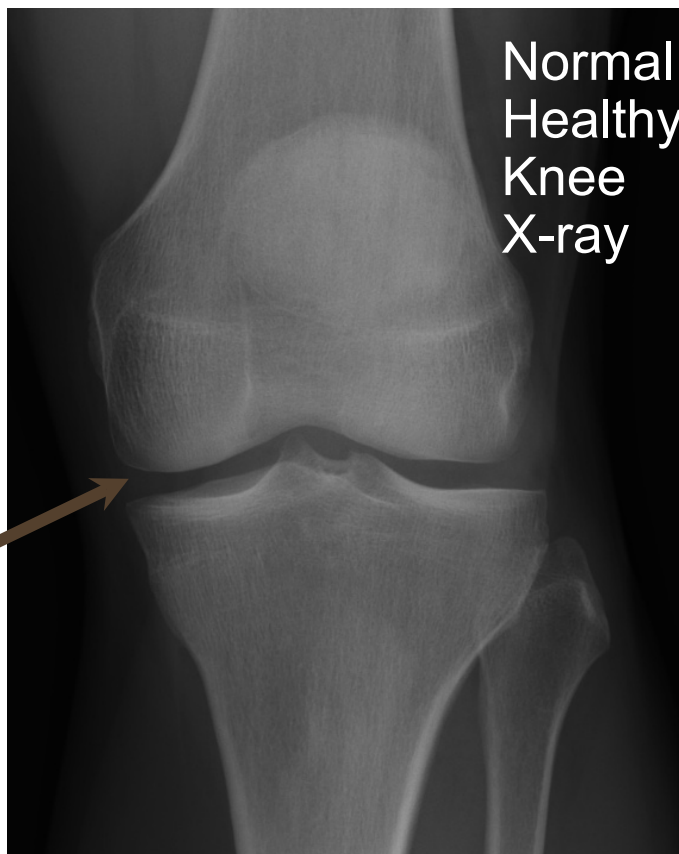
Getting a Proper Diagnosis

- Medical history
 - Symptoms
 - Health
 - Activity
- Exam affected joint
 - Range of motion tests
 - Joint-line tenderness
 - Joint deformities
- X-rays





Knee X-rays: Normal vs Arthritic





Assessing Pain and Conservative Treatment



Assessing the Patient's Pain

- Does your knee hurt one or more days per week?
- Does the pain interfere with your sleep?
- Is it painful for you to walk more than a block?
- Are pain medications no longer working?
- Is knee pain limiting your participation in activities (e.g. family vacations or other functions)?
- Has inactivity from knee pain caused you to gain weight?





Conservative Treatment Options

- Water therapy
 - Soaking, ice packs, hot packs
- Exercise & physical therapy
 - Also good for weight loss
- Medications
 - Analgesics (NSAIDS)
 - Corticosteroids
- Injections
 - Corticosteroids, hyaluronic acid, biologics (PRP, stem cells)
- Braces
 - Hinged, unloader






Indications and Eligibility Requirements





| Your Best Health Before Surgery | Patient Education | Enhanced Recovery and Pain Control | Advanced Surgical Techniques | Early Mobilization | Care Transitions and Hand-Offs |
|--|--|---|--|--|---|
| <p>Avoid surgery until all other conservative treatments have been exhausted.</p> <p>Minimize health factors that increase your risk for potential problems after surgery.</p> | <p>Attend a Pre-Operative Class taught by our specialized nurses.</p> <p>Engage with your personalized Online CarePath.</p> <p>A nurse is available to assist you with any questions or concerns.</p> | <p>Our multi-modal pain control reduces reliance on opioids.</p> <p>Anesthesia protocols reduce medication side effects including nausea.</p> <p>Pre-surgery hydration helps you feel better after surgery.</p>  | <p>Minimally invasive surgical techniques allow for faster recovery, a shorter hospital stay and fewer complications.</p> <p>Shorter surgical times reduce blood loss and risk of infection.</p> | <p>You'll often walk the same day as surgery to speed up recovery and improve range of motion.</p> <p>Our physical and occupational therapy team will guide you at every stage, from hospital to home, to one of our outpatient clinics.</p> | <p>Coordinated care is the key to getting you home faster.</p> <p>We work to engage you and your caregiver so you feel supported at home.</p> <p>Home wellness programs, home visits, nurse check-ins, online surveys and follow-up visits are all designed to keep you on track.</p> |





Managing a Patient's Risk

PALOMAR HEALTH
Orthopedic & Spine Center

WHEN IS JOINT SURGERY RIGHT FOR YOU?

To make sure your joint replacement surgery goes well and you are able to recover quickly, it is important to be at your best health before surgery. Palomar Health recommends that patients meet the following health standards before having surgery.

Have you tried other traditional treatment options for at least 3 months (such as physical therapy) that did not help?
 Yes If no, suggested treatment options: _____

| | Ideal Numbers | Your Number | Comments |
|--|---|-------------|----------|
| Body Mass Index (BMI) | 20 – 35 | | |
| Hemoglobin (red blood cell level/anemia) | Greater than 12.5 | | |
| Hemoglobin A1c (blood sugar level) | Less than 8.0 (less than 7.5 preferred) | | |
| Albumin (blood protein level) | Greater than 3 | | |
| Prealbumin (blood protein level) | Greater than 18 | | |

| Other things to consider before surgery. | Yes | No | Comments |
|--|-----|----|----------|
| Has your primary doctor or specialist (lung doctor, heart doctor, etc.) cleared you for surgery? | | | |
| Have you had gastric bypass within the past year? | | | |
| Are you a smoker? | | | |
| Do you drink alcohol on a daily basis? | | | |
| Do you take drugs or medications not prescribed to you? | | | |

(Continued on next page.)

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PALOMAR HEALTH
A California Public Healthcare District

MAYO CLINIC CareNetwork Member

For more information, visit PalomarHealth.org/Ortho

Did You Know?

Modifiable risk factors such as obesity, MRSA colonization, vitamin D deficiency, smoking, diabetes mellitus and malnutrition, can **lead to longer hospital stays and increased risks of cardiovascular complications, re-operations and infections.**

When Is Surgery Right For You?

Minimize health factors that increase risk for potential problems after surgery



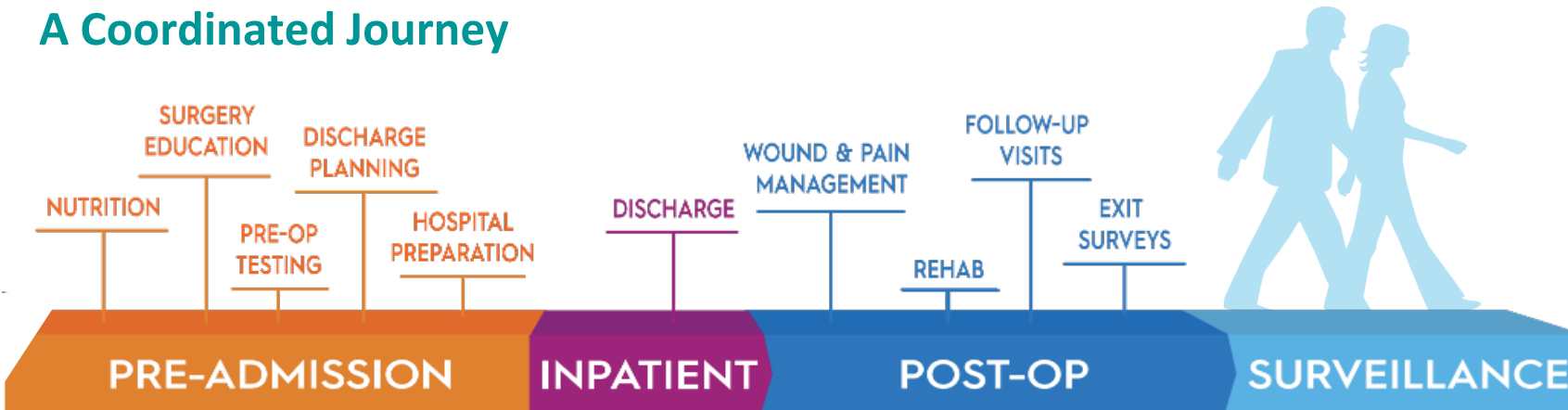


Engaging Patients in their Outcome

Online CarePath

To prepare for surgery, Palomar offers Online CarePath, a custom roadmap to get patients prepared and organized for surgery and recovery. Patients can interact with their care team about their health, from sleeping and eating, to pain control. Palomar specialists can reply with recommendations.

A Coordinated Journey



Available in Spanish





Engaging Patients During COVID-19 Pandemic

1,205

patient participants registered
(pre-pandemic)

82% patients actively engaged
with the online platform

98% patients felt **prepared** for
surgery

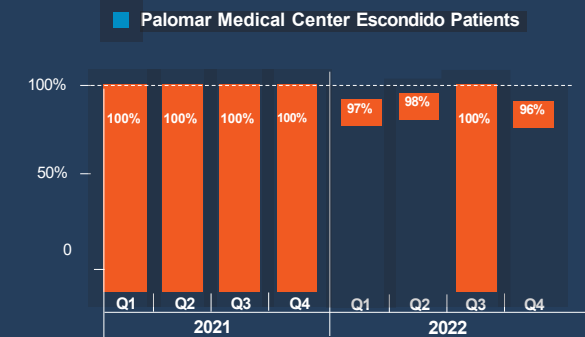
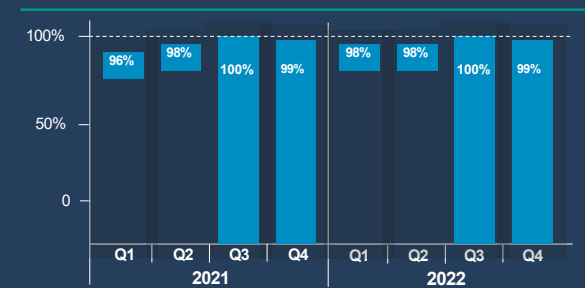
1,427

patient participants registered
(during the pandemic)

↑ 83% patients actively engaged
with the online platform

98% patients felt **prepared** for
surgery

Percentage of Total Joint and Spine Patients That Felt Prepared for Surgery



Palomar Medical Center Poway Patients

Higher is Better! (Goal: >95%)





Pain Protocol and Surgical Technique





The Palomar Health Pain Protocol

In 2017, a multi-disciplinary team convened by orthopedic surgeons, and included; anesthesiologists, pharmacists, Clinical Nurse Specialists, physical therapists, and bedside orthopedic RNs.

Goals:

- Decrease post-operative pain
- Reduce physician variation
- Improve patient compliance with ambulation and exercises
- Increase patient satisfaction
- Reduce patient falls.

Outcomes

- Eliminated the need for Patient Controlled Analgesia
- Time patients spend in severe pain was dramatically reduced

“I had surgery before and this is a totally different and better experience!”

- A Grateful Total Knee Patient





The Palomar Health Pain Protocol

- Pre-op meds
- Intra-op methods
- Peri-op methods
- Post-op protocols
- Pre-op cocktail
- Local anesthesia
- Adductor canal block
- Post-op regimen that minimizes use of narcotic/opioid meds





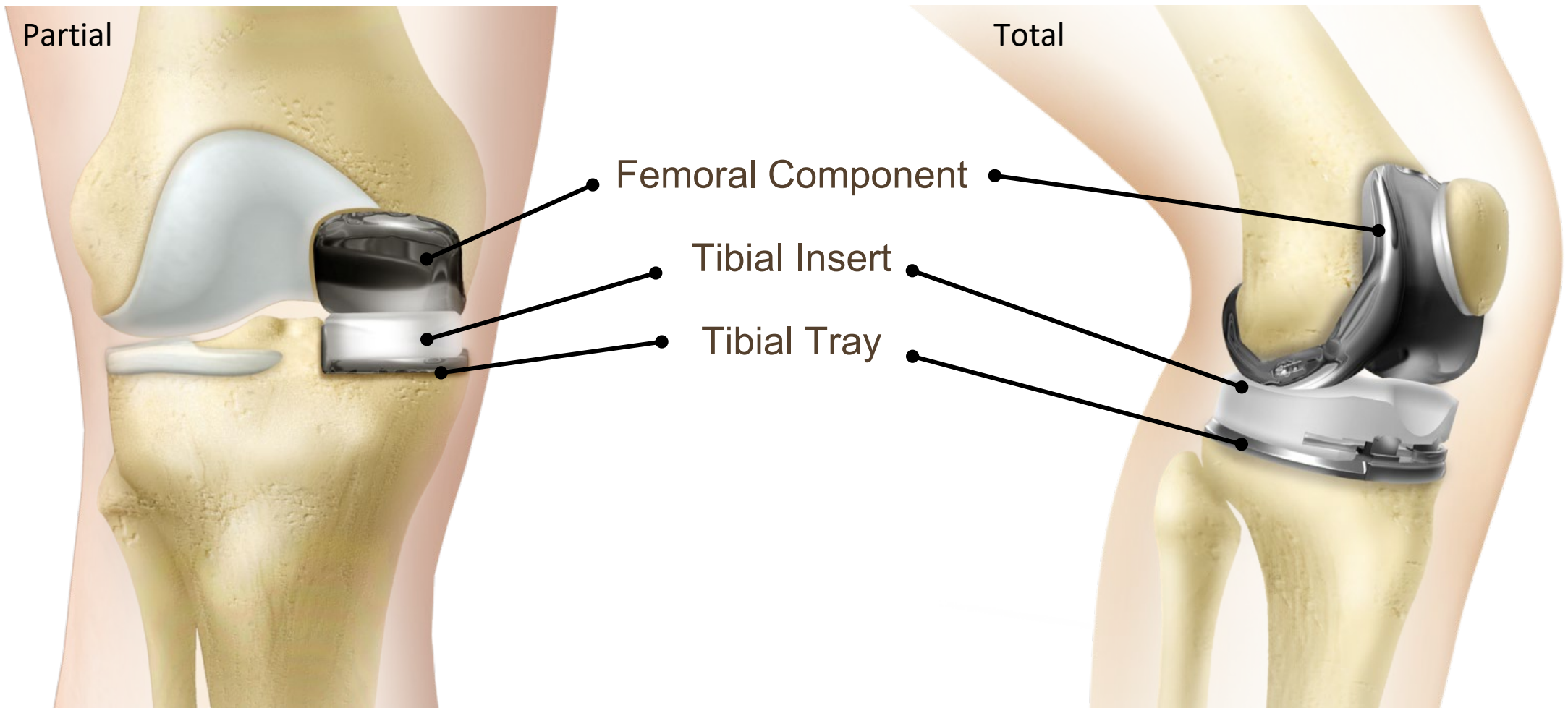
Advances in Knee Arthroplasty

| Traditional | Recent Advances |
|--|---|
| 5-day hospital stay | Typically go home same day, or next day |
| Use of CPM machines | Walking day of surgery |
| Large scar | Smaller and less noticeable scars |
| Occasional need for blood transfusion | TXA leading to less blood loss |
| Severe disruption of muscles and tissue | Less disruption of muscles and tissue |
| Bearing materials prone to quicker breakdown | Advances in materials allow for increased longevity |



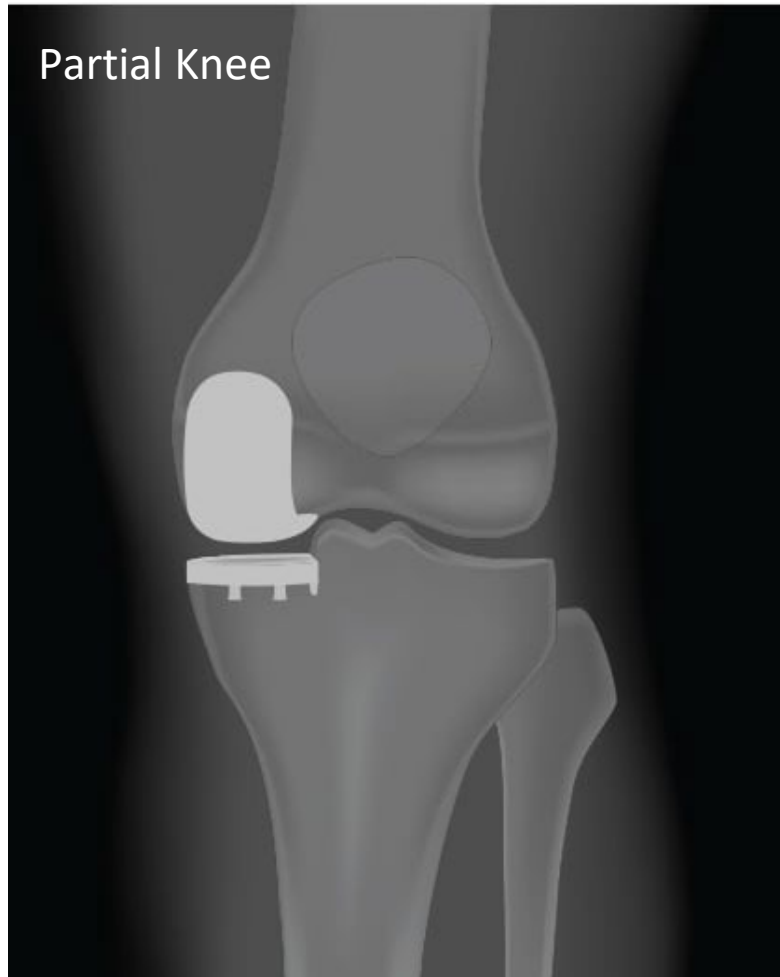


Partial vs Total Knee Replacement





Xray View: Total and Partial Knee Replacement





Patient Outcome Quality Metrics





Early Mobilization: Ready to Go Home Faster

- Early mobilization key in expedited patient recovery and better range of motion
- Year on year improvements in getting patients ready for discharge
- Insurance only authorizes outpatient/23 hour hold



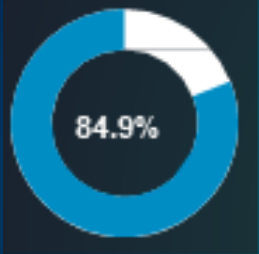
Physical Therapist Bob Fleming tries to keep up with “Jammin’ Jimmy”



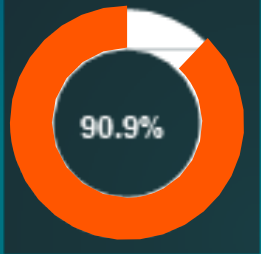


Ready to Walk and Go Home Faster

Percent of Patients Who Walked on Day of Surgery



Escondido



Poway



Other Hospitals

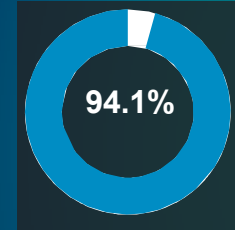
Nationally, 83% of knee replacement patients walk on the day of surgery.*

Why Is This Important?

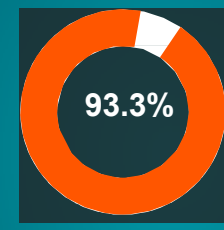
Patients are ready to walk with therapy. Getting out of bed and moving on the day of surgery means our patients had good pain control and minimal negative effects of anesthesia.

Percent of Patients Discharged Straight Home

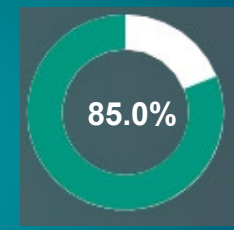
Palomar Health patients are discharged straight home more frequently than the national benchmark (85%).



Escondido



Poway



Other Hospitals

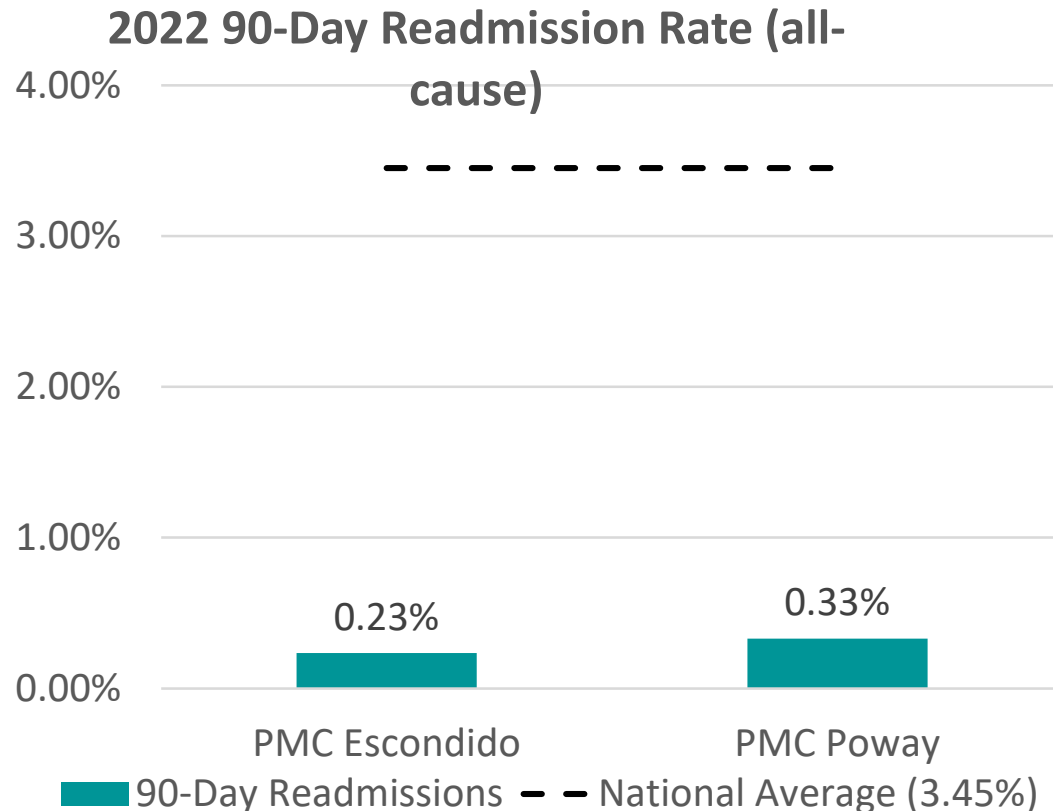
Why Is This Important?

There is no place like home (to recover). Our Home Health team can provide wellness programs, home visits, and nurse check-ins. Plus, our online surveys and follow-up visits are all designed to keep you on track in the comfort of home.

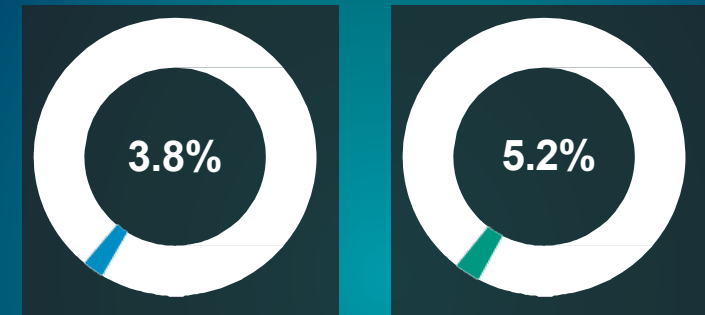




Quality Metrics | 90 Day Readmission & ED Visit Rate



Percent of Patients with an ED Visit within 30 Days



Palomar Health

Other Hospitals

Lower is Better!

Why Is This Important?

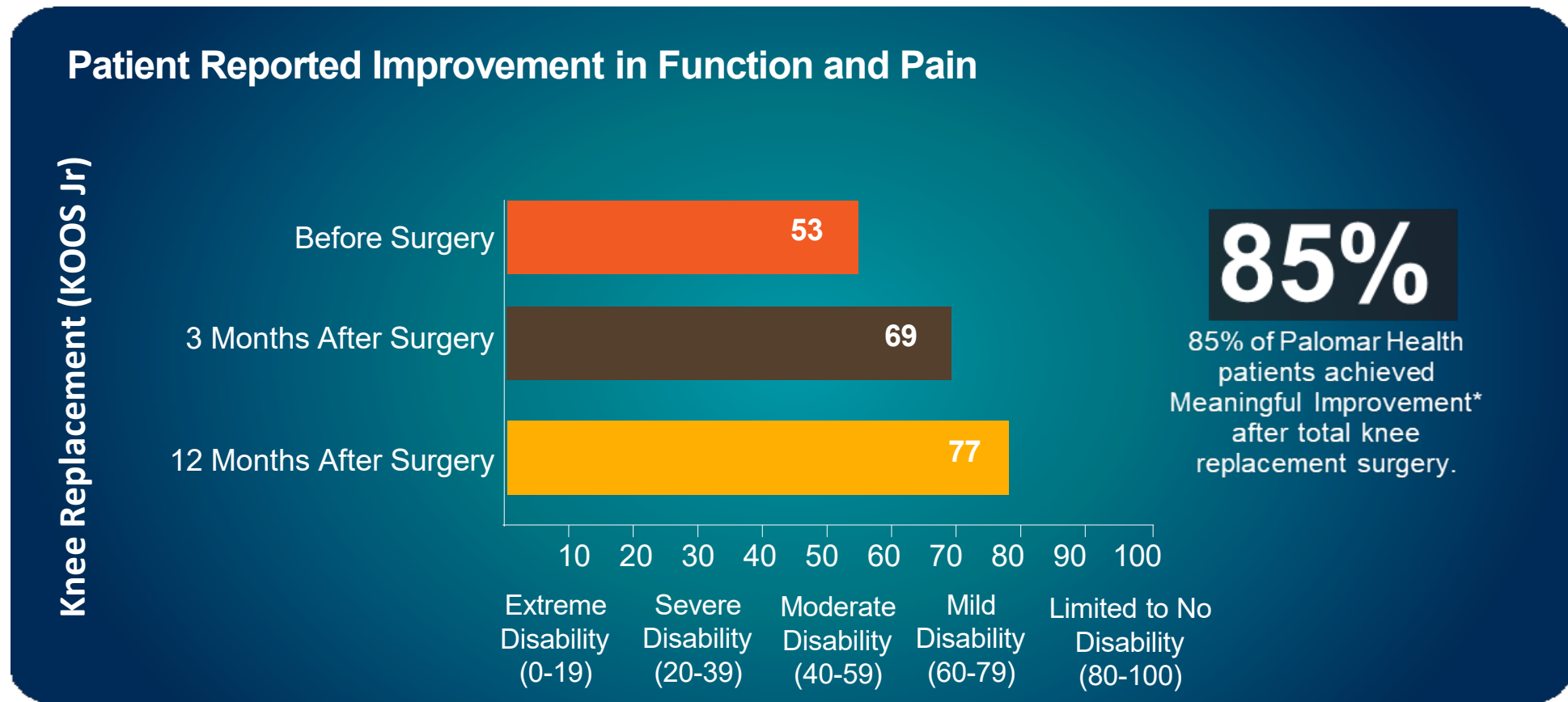
The road to recovery should be free of setbacks. Every member of our team plays a role in reducing the likelihood of a patient needing to return to the hospital. To achieve these low rates, we focused on patient safety after discharge and improved handoffs from the hospital to the home caregivers.





Quality Metrics | Meaningful Outcomes

The Most Important Outcome to the Patient is Whether they Feel Better





Potential Complications

- Infection
- Blood clots
- Implant breakage
- Premature wear
- No implant will last forever
- Other factors can affect longevity



How Soon Can Patient Return to Activity?

Post Op - Week 3

- You can:
- Ride a Stationary Bike
 - Shower
 - Take the Stairs
- Avoid:
- Lifting
 - Vacuuming
 - Tennis

Week 3 - Week 8

- You can:
- Do Light Yardwork
 - Sleep on Surgical Side
 - Air Travel < 1-2 hours
- Avoid:
- Swimming
 - Jogging
 - Golfing

2 Months - 6 Months

- You can:
- Bowl
 - Swim
 - Dance
- Avoid:
- Skiing
 - Jogging
 - Motorcycle Riding

6 Months - 1 Year

You should be able to do any low-impact activities you like!

TOTAL KNEE AND HIP Post Op Activity Chart

Do NOT attempt any activities below without consulting your surgeon.
Please discuss driving with your surgeon.

■ Stop ■ Proceed as directed

| General Activity | Post Op - Week 3 | Week 3 - Week 8 | 2 Months - 6 Months | 6 Months - 1 Year |
|-----------------------------------|------------------|-----------------|---------------------|-------------------|
| Lifting < 5 to 10 lbs | Proceed | Proceed | Proceed | Proceed |
| Lifting > 15 lbs | Stop | Proceed | Proceed | Proceed |
| Sleeping on stomach | Proceed | Proceed | Proceed | Proceed |
| Sleeping on surgical side | Stop | Proceed | Proceed | Proceed |
| Stairs | Proceed | Proceed | Proceed | Proceed |
| Walking outdoors | Proceed | Proceed | Proceed | Proceed |
| Daily Living | | | | |
| Shower | Proceed | Proceed | Proceed | Proceed |
| Light housework | Stop | Proceed | Proceed | Proceed |
| Vacuuming | Stop | Proceed | Proceed | Proceed |
| Laundry | Stop | Proceed | Proceed | Proceed |
| Travel | | | | |
| Short car rides, < 1 hour | Proceed | Proceed | Proceed | Proceed |
| Long car rides, > 1 hour | Stop | Proceed | Proceed | Proceed |
| Driving | Stop | Proceed | Proceed | Proceed |
| Air Travel- short trip, <1-2 hrs | Stop | Proceed | Proceed | Proceed |
| Air Travel- long trip, > 2 hrs | Stop | Stop | Proceed | Proceed |
| Work | | | | |
| Upper extremity repetitive motion | Stop | Proceed | Proceed | Proceed |
| Light yardwork | Stop | Proceed | Proceed | Proceed |
| Sports | | | | |
| Stationary bike | Proceed | Proceed | Proceed | Proceed |
| Dancing | Stop | Stop | Proceed | Proceed |
| Jacuzzi/ Hot Tub | Stop | Stop | Proceed | Proceed |
| Swimming- No diving | Stop | Stop | Proceed | Proceed |
| Low impact aerobics | Stop | Stop | Proceed | Proceed |
| Tennis | Stop | Stop | Stop | Proceed |
| Bowling | Stop | Stop | Proceed | Proceed |
| Jogging | Stop | Stop | Stop | Proceed |
| Golf | Stop | Stop | Stop | Proceed |
| Road bicycling | Stop | Stop | Proceed | Proceed |
| Horseback riding | Stop | Stop | Stop | Proceed |
| Skiing | Stop | Stop | Stop | Proceed |
| Motorcycle riding | Stop | Stop | Stop | Proceed |

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Orthopedic and Total Joint Awards

7 years in a row!



Palomar Medical Center Escondido

ranked among the top 2% of hospitals in the nation for overall orthopedic services by Healthgrades



HIP & KNEE REPLACEMENT

Palomar Medical Center Escondido and Poway

U.S. News & World Report evaluates data on nearly 5,000 hospitals. A hospital must excel in caring for the sickest, most medically complex patients to be nationally ranked in a specialty.



Palomar Medical Center Poway

has earned the Joint Commission's Advanced Accreditation for Total Hip and Knee Replacement

