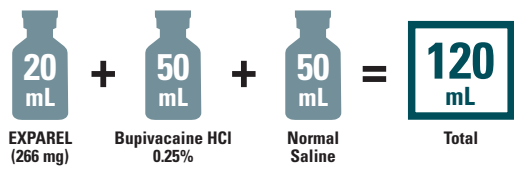


# Administration Case Report: Total Knee Arthroplasty

This case report represents the individual experience of Dr Stan Dysart and is intended to demonstrate his methodology for using EXPAREL in patients undergoing total knee arthroplasty (TKA).

Pacira BioSciences, Inc. recognizes that there are alternative methodologies for administering local anesthetics, as well as individual patient considerations, when selecting the dose for a specific procedure.

EXPAREL is a local anesthetic that produces postsurgical analgesia in patients aged 6 years and older. It is administered via single-dose infiltration. When infiltrated into the surgical site, it produces local analgesia. It may also be infiltrated in the fascial plane to produce regional analgesia as a regional field block. Regional anesthetic techniques to produce regional analgesia include, but are not limited to, transversus abdominis plane (TAP) block, pectoralis (PEC) and serratus anterior plane (SAP) blocks, erector spinae plane (ESP) block, and quadratus lumborum (QL) block. EXPAREL may also be administered as an interscalene brachial plexus nerve block in adults to produce postsurgical regional analgesia in total shoulder arthroplasty (TSA) and rotator cuff repair (RCR) procedures.

CASE INFORMATION	
Physician Name	Stan Dysart, MD
Affiliation	Pinnacle Orthopaedics/Wellstar Health System
Surgical Case Performed	Total knee arthroplasty
Inpatient or Outpatient Procedure	Inpatient
PATIENT CHARACTERISTICS	
Gender	Male
Age	81 years
Patient History and Characteristics	Patient previously underwent a successful left TKA
Pathology	Patient has right knee osteoarthritis and is now undergoing a right TKA with an ERAS protocol
PROCEDURAL DETAILS	
Incision Size	15 cm
Preoperative Analgesics Used	AC block—20 mL of 0.25% bupivacaine with epinephrine
Intraoperative Analgesics Used	TIVA general—150 to 200 mcg/kg/min propofol titrated based on surgical needs; 50 to 100 mcg fentanyl as needed  Periarticular injection with 20 mL EXPAREL and 50 mL 0.25% bupivacaine
Dose of EXPAREL and Total Volume Used	 <p>20 mL EXPAREL (266 mg) + 50 mL Bupivacaine HCl 0.25% + 50 mL Normal Saline = 120 mL Total</p>

AC=adductor canal; ERAS=enhanced recovery after surgery; TIVA=total intravenous anesthesia.

The recommended dose of EXPAREL for adults is based on the size of the surgical site, the volume required to cover the area, and individual patient factors that may impact the safety of an amide local anesthetic. The maximum dose of EXPAREL should not exceed 266 mg. The recommended dose of EXPAREL for patients aged 6 to <17 years old is 4 mg/kg, up to a maximum of 266 mg. The maximum dose of EXPAREL for interscalene brachial plexus nerve block in adults should not exceed 133 mg.

EXPAREL can be administered unexpanded (20 mL) or expanded to increase volume up to a total of 300 mL (final concentration of 0.89 mg/mL [ie, 1:14 dilution by volume]) with normal (0.9%) saline or lactated Ringer's solution.

Bupivacaine HCl (which is approved for use in patients aged 12 and older) may be administered immediately before EXPAREL or admixed in the same syringe, as long as the ratio of the milligram dose of bupivacaine HCl to EXPAREL does not exceed 1:2. Admixing may impact the pharmacokinetic and/or physicochemical properties of EXPAREL, and this effect is concentration dependent. The toxic effects of these drugs are additive and their administration should be used with caution, including monitoring for neurological and cardiovascular effects related to local anesthetic systemic toxicity. Other than with bupivacaine, EXPAREL should not be admixed with other drugs prior to administration.

Please see Important Safety Information on the last page and refer to accompanying full Prescribing Information, which is also available at [www.EXPAREL.com](http://www.EXPAREL.com).

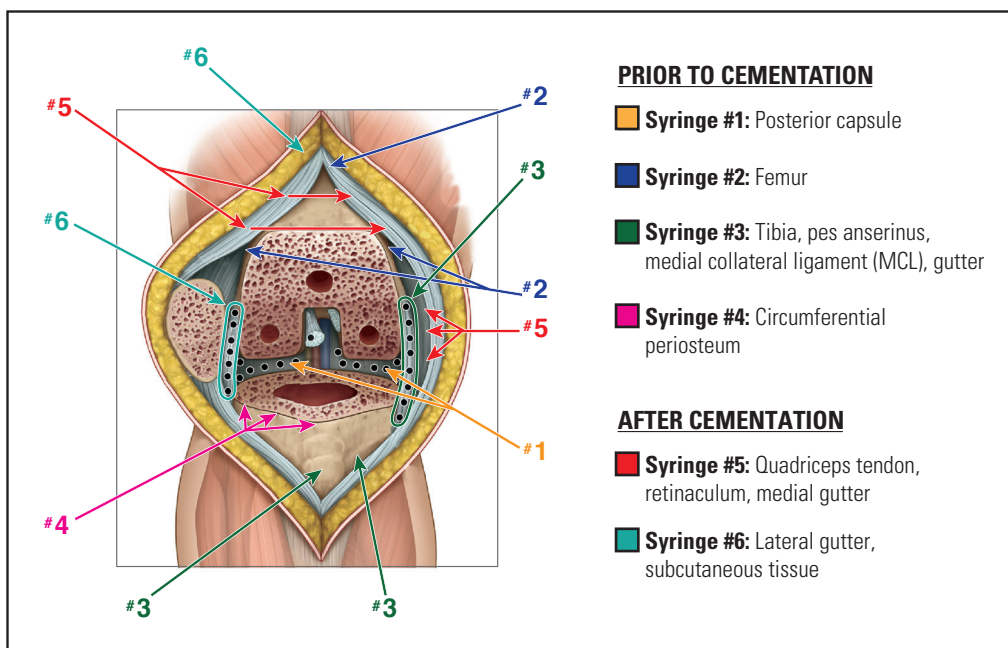
## INFILTRATION NOTES

### ASSESSED THE SIZE OF THE SURGICAL SITE AND DEPTH OF TISSUE, THEN PREPARED INJECTION MATERIALS ACCORDINGLY

In this procedure, Dr Dysart determined that a total volume of approximately 120 mL would be needed to cover the surgical site. He expanded 20 mL of EXPAREL® (bupivacaine liposome injectable suspension) with 50 mL of normal saline and admixed this solution with 50 mL of 0.25% bupivacaine. Dr Dysart added bupivacaine to provide short-term local analgesia in the postanesthesia care unit that overlapped with the long-term local analgesia provided by EXPAREL.

### DIVIDED INJECTATE INTO SYRINGES WITH NEEDLE GAUGES APPROPRIATE FOR INFILTRATION (20- TO 25-GAUGE) AND PLANNED WHICH AREAS TO INFILTRATE WITH EACH INJECTION

For this procedure, Dr Dysart divided the injectate evenly into six 20-mL syringes using a 21-gauge needle and infiltrated as follows:



Adapted with permission; International Guidelines Center (guidelinecentral.com)—Erin Daniel, illustrator.

### INFILTRATED AFTER THE BONY CUTS WERE PERFORMED

After completing the bony cuts, Dr Dysart inserted a laminar spreader between the cut femur and tibia, exposing the posterior capsule of the knee. He then proceeded with infiltrating the injectate as follows:

#### ■ Syringe #1:

Medial and lateral infiltration of the posterior capsule

- Medial infiltration of posterior capsule with approximately 10 needle sticks to create a field block
- Lateral infiltration of posterior capsule with approximately 10 needle sticks



**FIGURE 1.** Posterior capsule



Before each injection, be sure to aspirate to minimize the risk of intravascular injection. Be sure not to inject too far laterally, and monitor the volume injected because of the proximity of the peroneal nerve.

## INFILTRATION NOTES (cont)

### ■ Syringe #2:

Medial and lateral infiltration of femoral periosteal/synovial tissues and of suprapatellar tissue with 20 needle sticks of 1 mL to 1.5 mL per injection



Inject until a noticeable bubble forms. It is normal for there to be more dramatic swelling in this thick, fibrous layer than when soft tissue is infiltrated.



**FIGURE 2.** Femoral periosteal/synovial and suprapatellar tissues

### ■ Syringe #3:

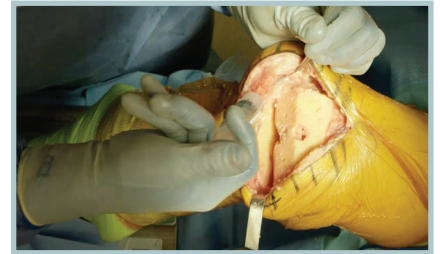
Injection of fat pad, pes anserinus, MCL, and medial gutter, saturating the area



**FIGURE 3.** Fat pad, pes anserinus, MCL, and medial gutter

### ■ Syringe #4:

Medial and lateral infiltration of the circumferential periosteum of the tibia using 15 to 20 needle sticks



**FIGURE 4.** Circumferential periosteum of tibia

### ■ Syringe #5:

Injection of the synovial tissue beneath the quadriceps tendon and the retinacular tissue medially from the femur to the tibia



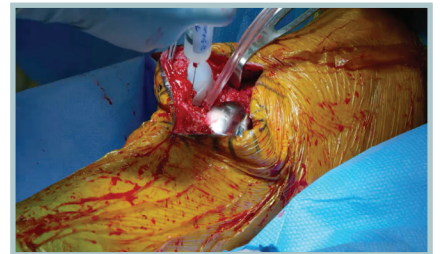
**FIGURE 5.** Synovial tissue (quadriceps) and medial retinacular tissue (femur to tibia)

### ■ Syringe #6:

Injection of the lateral gutter and the lateral retinacular tissue from the femur to the tibia. Residual volume is used in the subcutaneous tissue medially and laterally. There will likely be swelling of the tissue from fluid volume



When infiltrating, stay in the tissue to reduce the amount of extravasation.

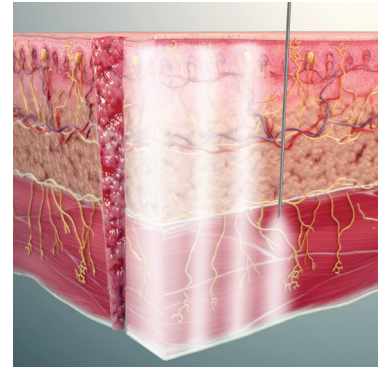


**FIGURE 6.** Lateral gutter and retinacular tissue (femur to tibia)

## INFILTRATION NOTES (cont)

### PROPER TECHNIQUE IS CRUCIAL FOR ANALGESIC COVERAGE

When infiltrating EXPAREL® (bupivacaine liposome injectable suspension), Dr Dysart makes sure to infiltrate below the fascia, above the fascia, and into the subcutaneous tissue using a moving needle technique. With a moving needle technique, the injections are spread in a rapid and precise fan-like pattern to maximize the number of injection areas. The tissues are infiltrated as the needle is advanced and withdrawn to maximize the coverage area. This technique should be systematically and meticulously repeated with each subsequent injection site, and the next site should overlap with the prior infiltrated area to maximize effect.



Watch Dr Dysart infiltrate with **EXPAREL** at [www.EXPAREL.com](http://www.EXPAREL.com)

### Important Safety Information

EXPAREL is contraindicated in obstetrical paracervical block anesthesia.

Adverse reactions reported in adults with an incidence greater than or equal to 10% following EXPAREL administration via infiltration were nausea, constipation, and vomiting; adverse reactions reported in adults with an incidence greater than or equal to 10% following EXPAREL administration via interscalene brachial plexus nerve block were nausea, pyrexia, and constipation.

Adverse reactions with an incidence greater than or equal to 10% following EXPAREL administration via infiltration in pediatric patients six to less than 17 years of age were nausea, vomiting, constipation, hypotension, anemia, muscle twitching, vision blurred, pruritus, and tachycardia.

If EXPAREL and other non-bupivacaine local anesthetics, including lidocaine, are administered at the same site, there may be an immediate release of bupivacaine from EXPAREL. Therefore, EXPAREL may be administered to the same site 20 minutes after injecting lidocaine.

EXPAREL is not recommended to be used in the following patient populations: patients <6 years old for infiltration, patients younger than 18 years old for interscalene brachial plexus nerve block, and/or pregnant patients.

Because amide-type local anesthetics, such as bupivacaine, are metabolized by the liver, EXPAREL should be used cautiously in patients with hepatic disease.

### Warnings and Precautions Specific to EXPAREL

Avoid additional use of local anesthetics within 96 hours following administration of EXPAREL.

EXPAREL is not recommended for the following types or routes of administration: epidural, intrathecal, regional nerve blocks **other than interscalene brachial plexus nerve block**, or intravascular or intra-articular use.

The potential sensory and/or motor loss with EXPAREL is temporary and varies in degree and duration depending on the site of injection and dosage administered and may last for up to 5 days, as seen in clinical trials.

### Warnings and Precautions for Bupivacaine-Containing Products

**Central Nervous System (CNS) Reactions:** There have been reports of adverse neurologic reactions with the use of local anesthetics. These include persistent anesthesia and paresthesia. CNS reactions are characterized by excitation and/or depression.

**Cardiovascular System Reactions:** Toxic blood concentrations depress cardiac conductivity and excitability, which may lead to dysrhythmias, sometimes leading to death.

**Allergic Reactions:** Allergic-type reactions (eg, anaphylaxis and angioedema) are rare and may occur as a result of hypersensitivity to the local anesthetic or to other formulation ingredients.

**Chondrolysis:** There have been reports of chondrolysis (mostly in the shoulder joint) following intra-articular infusion of local anesthetics, which is an unapproved use.

**Methemoglobinemia:** Cases of methemoglobinemia have been reported with local anesthetic use.

**Disclosure:** Dr Dysart is a paid consultant for Pacira BioSciences, Inc.

**Full Prescribing Information is available at [www.EXPAREL.com](http://www.EXPAREL.com).**