

Administration of Antibiotic Using Temporary Joint Spacer System

VT-X7

(Tobramycin Sulfate and Vancomycin Hydrochloride for Irrigation/Irrigation System)

Center for Medicare & Medicaid Services
ICD-10 Coordination and Maintenance Committee Meeting

Periprosthetic Joint Infection (PJI)


40,000

Estimates are 40,000 people in the US develop PJI each year

- PJI is a rare but devastating complication of joint replacement surgery, also called arthroplasty
- It occurs in 1-2% of hip and knee replacements
- Infection is the #1 cause of failed joint replacement

Mortality is High and Outcomes are Poor

Mortality significantly greater in PJI patients compared to aseptic revision arthroplasty¹

- 10.6% at one year
- 25.9% at 5 years

Two-Stage Exchange Arthroplasty is the gold standard for treatment in the US and fewer than 50% of patients will complete treatment within 12 months.^{2,3}

Standard of Care: Two-Stage Exchange Arthroplasty

Long, Painful and Unreliable

Stage 1

Inter-Stage

Stage 2



Patient admitted to hospital, infected tissues and old implant are removed and replaced with a temporary spacer

Mean LOS: ~5-6 days



Patient admitted to hospital and second surgery performed to remove spacer and replace with a permanent joint

Mean LOS: ~3 days

16 Week Median Time to Reimplantation

~50% of Patients Fail to Re-Implant



Patient discharged and treated with 4-6 weeks of systemic antibiotics

Monitored for 2-4 weeks after antibiotics to ensure infection has cleared

Re-treat if infection detected

OSTEAL
THERAPEUTICS

LOS = length of stay

Inpatient

Outpatient

VT-X7 Product Overview

- VT-X7 is a drug/device combination that treats PJI by locally irrigating the infected joint space with 2 drug components, vancomycin hydrochloride and tobramycin sulfate. Local irrigation involves instillation of antibiotic solution, soaking of the antibiotic solution at the infection site followed by vacuum removal. The antibiotics are delivered and removed separately in a cyclical fashion.
- The proposed indication for VT-X7 is for the treatment of periprosthetic joint infection in skeletally mature patients undergoing an exchange arthroplasty procedure, where vancomycin hydrochloride and tobramycin sulfate are appropriate antibiotics for treatment of the infection.

A Novel Route of Administration

Cyclic Local Antibiotic Irrigation

- ▶ Maintains high concentrations at the site of infection
- ▶ Minimizes systemic exposure
- ▶ Improves effectiveness of first-line, broad-spectrum antibiotics for localized infections



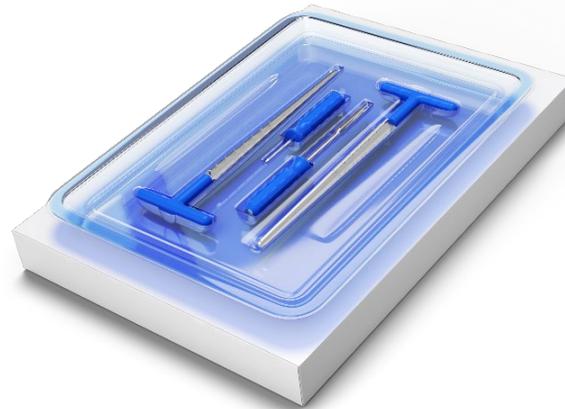
VT-X7 Kit Components



Drug Pack
(Vancomycin and Tobramycin
for Irrigation)



Spacer Device
(Hip or Knee)



Surgical Instruments



**Control
Unit**

**Instillation
&
Vacuum
Line**

Irrigation System



Dressing

VT-X7 Compared to Standard of Care

Current Two-Stage Exchange Arthroplasty

50% of Patients Fail to Re-Implant



Two-Stage Exchange Arthroplasty with VT-X7



In prospective clinical trials

- ❖ 100% of patients completed Stage 2 by Day 9
- ❖ 90.3% of patients remain infection free at one year

- ❖ implant removed and replaced with a device that delivers locally high-dose antibiotics that are bactericidal to biofilms with low systemic exposure
- ❖ 150+ local flushes of antibiotics over 7 days
- ❖ Patients directly proceed to Stage 2 within the same hospital stay

LOS = Length of Stay

VT-X7 Trial Results

Indication		Indicated to treat adults with non-fungal hip or knee periprosthetic joint infection	
Trial Protocols and Patient Population		<ul style="list-style-type: none"> • N=76 patients randomized 1:1 to VT-X7 or traditional two-stage exchange arthroplasty per current local protocols • Adults aged 22-84 with PJI • Trial excludes patients with: Bacteremia, multiple concurrent infected joints, immunodeficiency, and 2+ prior exchange arthroplasties of the infected joint 	
Clinical Outcomes		Two-stage Exchange with VT-X-7	Current Two-stage Exchange
Efficacy	% Patients Reimplanted at 365 Days	100% by Days 7-9	87.2%
	Reinfection Rate at 365 Days	10.8%	10.3%
	Mortality at 365 Days	5.4%	10.3%
	Time to Reimplantation	7 Days	119 Days
Safety		Safety profile similar to the SOC two-stage exchange. No experimental drug-related serious adverse events	

VT-X7 Trial Safety Conclusions

- The incidence of AEs are similar between the Experimental and Control Arm and in line with current therapy
- Low number of device and procedure related events in the Experimental Arm (2 events in 2 Experimental Arm subjects)
- Interstage vancomycin and tobramycin levels demonstrate local antibiotic concentrations associated with the VT-X7 dosing regimen produced serum antibiotic levels below the established safety threshold
- Total Stage 1 and Stage 2 operating time and time to Stage 2 surgery significantly lower in the Experimental Arm compared to the Control Arm.

Documentation of Administration

- VT-X7 administration should be documented upon therapy initiation in the operating room at the conclusion of the Stage 1 surgery
- Documentation of administration within the medical record would most commonly be found in the Medication Administration Record (MAR), operating room notes, physician orders and progress notes
- Terms that may be used:
 - VT-X7
 - VT-X7 Spacer
 - VT-X7 Irrigation System
 - Vancomycin Hydrochloride and Tobramycin Sulfate
 - Vancomycin Hydrochloride and Tobramycin Sulfate for Irrigation

Sources

¹Zmistowski B, Karam J, Durinka J, Casper D, Parvizi J. Periprosthetic Joint Infection Increases the Risk of One-Year Mortality. JBJS, 2013

²Cancienne JM, Werner BC, Bolarinwa SA, Browne JA. Removal of an Infected Total Hip Arthroplasty: Risk Factors for Repeat Debridement, Long-term Spacer Retention, and Mortality. J Arthroplasty. 2017;

³Cancienne JM, Granadillo VA, Patel, KJ, Werner BC, Browne JA. Risk factors for Repeat Debridement, Spacer Retention, Amputation, Arthrodesis, and Mortality After Removal of an Infected Total Knee Arthroplasty With Spacer Placement. J Arthroplasty. 2018