HIGHLIGHTS OF PRESCRIBING INFORMATION These highlights do not include all the information needed to use DAPTOMYCIN FOR INJECTION safely and effectively. See full escribing information for DAPTOMYCIN For Injection: 500 mg lyophilized powder for

FOR INJECTION. DAPTOMYCIN for injection, for Intravenous Use

Initial U.S. Approval: 2003 -----RECENT MAJOR CHANGES -Indications and Usage (1)

9/2017

-----INDICATIONS AND USAGE Daptomycin for injection is a lipopeptide antibacterial indicated for the treatment of

 Complicated skin and skin structure infections cSSSI) in adult patients (1.1) and, Staphylococcus aureus bloodstream infections (bacteremia), in adult patients including those

with right-sided infective endocarditis (1.2) <u>Limitations of Use:</u> Daptomycin for injection is not indicated for the treatment of pneumonia. (1.4)

Dosage and Administration (2)

 Daptomycin for injection is not indicated for the treatment of left-sided infective endocarditis due to *S. aureus*. (1.4) Daptomycin for injection is not recommended in pediatric patients younger than one year of age due to the risk of potential effects on muscular neuromuscular, and/or nervous systems (either

peripheral and/or central) observed in neonatal To reduce the development of drug-resistant bacteria and maintain the effectiveness of Daptomycin for injection and other antibacterial drugs, Daptomycin for injection should be used to treat infections that are proven or strongly suspected to be caused by bacteria. (1.5)

— DOSAGE AND ADMINISTRATION —

Adult Patients • Administer to adult patients intravenously in

0.9% sodium chloride, either by injection over a 2-minute period or by infusion over a 30-minute period. (2.1, 2.7) Recommended dosage regimen for adult

patients (2.2, 2.4, 2.6):

		Dosage Regimen		
	Creatinine Clearance (CL _{CR})	cSSSI For 7 to 14 days	<u>S. aureus</u> <u>Bacteremia</u> For 2 to 6 weeks	
i	≥30 mL/min	4 mg/kg once every 24 hours	6 mg/kg once every 24 hours	
	<30 mL/min, including hemo- dialysis and CAPD	4 mg/kg once every 48 hours*	6 mg/kg once every 48 hours*	
	* A -lu-sin-it			

 There are two formulations of daptomycin that have differences concerning storage and reconstitution. Carefully follow the reconstitution and storage procedures in labeling. (2.7)

tomeric infusion pumps in adult patients. (2.9) — DOSAGE FORMS AND STRENGTHS ——

systemic steroids. (5.3)

reconstitution in a single-dose vial (3) — CONTRAINDICATIONS —

Known hypersensitivity to daptomycin (4)

Do not use in conjunction with ReadyMED® elas-

----- WARNINGS AND PRECAUTIONS ------

mycin for injection and consider treatment with

Peripheral neuropathy: Monitor for neuropathy

Potential nervous system and/or muscula

system effects in pediatric patients younger

Persisting or relapsing S. aureus bacteremia

endocarditis: Perform susceptibility testing and

and consider discontinuation. (5.4)

injection in this age group. (5.5)

uate patients if diarrhea occurs. (5.6)

 Anaphylaxis/hypersensitivity reactions (including life-threatening): Discontinue Daptomycin for injection and treat signs/symptoms. (5.1) Myopathy and rhabdomyolysis: Monitor CPK

S. aureus. The clinical trial of Daptomycin for injection in adult patients with S. aureus bloodstream infections included limited data from patients with left-sided infective endocarditis; outcomes in these patients were poor [see Clinical Studies (14.2)]. Daptomycin for injection has not been levels and follow muscle pain or weakness; if studied in patients with prosthetic valve endocarditis. elevated CPK or myopathy occurs, consider Daptomycin for injection is not recommended in pediatric patients younger than 1 year of age due to discontinuation of Daptomycin for injection. (5.2) the risk of potential effects on muscular, neuromuscular, and/or nervous systems (either peripheral Eosinophilic pneumonia: Discontinue Daptoand/or central) observed in neonatal dogs [see Warnings and Precautions (5.5) and Nonclinical

oxicology (13.2)1

Appropriate specimens for microbiological examination should be obtained in order to isolate and identify the causative pathogens and to determine their susceptibility to daptomycin. To reduce the development of drug-resistant bacteria and maintain the effectiveness of Daptomycin for injection and other antibacterial drugs, Daptomycin for injection should be used 4 only to treat infections that are proven or strongly suspected to be caused by susceptible

Staphylococcus aureus Bloodstream Infections (Bacteremia) in Adult Patients,

Including Those with Right-Sided Infective Endocarditis, Caused by Methicillin-Susceptible and Methicillin-Resistant Isolates

Daptomycin for injection is indicated for the treatment of adult patients with Staphylococcus

carditis, caused by methicillin-susceptible and methicillin-resistant isolates.

Daptomycin for injection is not indicated for the treatment of pneumonia.

aureus bloodstream infections (bacteremia), including adult patients with right-sided infective endo-

However, due to Merck & Co., Inc.'s marketing exclusivity rights, this drug product is not labeled

Daptomycin for injection is not indicated for the treatment of left-sided infective endocarditis due to

When culture and susceptibility information is available, it should be considered in selecting or modifying antibacterial therapy. In the absence of such data, local epidemiology and susceptibility 5.1 patterns may contribute to the empiric selection of therapy. Empiric therapy may be initiated while awaiting test results.

DOSAGE AND ADMINISTRATION

Important Administration Duration Instructions

Administer the appropriate volume of the reconstituted Daptomycin for injection (concentration of 50 mg/mL) to adult patients intravenously either by injection over a two (2) minute period or by intravenous infusion over a thirty (30) minute period [see Dosage and Administration (2.2, 2.4, 2.7)] Pediatric use information is approved for Merck & Co., Inc.'s Cubicin (daptomycin for injection). However, due to Merck & Co., Inc.'s marketing exclusivity rights, this drug product is not labeled with that pediatric information.

Dosage in Adults for cSSSI Administer Daptomycin for injection 4 mg/kg to adult patients intravenously in 0.9% sodium chloride injection once every 24 hours for 7 to 14 days Pediatric use information is approved for Merck & Co., Inc.'s Cubicin (daptomycin for injection).

However, due to Merck & Co., Inc.'s marketing exclusivity rights, this drug product is not labeled with that pediatric information. Dosage in Adult Patients with Staphylococcus aureus Bloodstream Infections (Bacteremia), Including Those with Right-Sided Infective Endocarditis, Caused by Methicillin-Susceptible and Methicillin-Resistant Isolates

Administer Daptomycin for injection 6 mg/kg to adult patients intravenously in 0.9% sodium chloride injection once every 24 hours for 2 to 6 weeks. There are limited safety data for the use of Daptomycin for injection for more than 28 days of therapy. In the Phase 3 trial, there were a total of 14 adult patients who were treated with Daptomycin for injection for more than 28 days. Pediatric use information is approved for Merck & Co., Inc.'s Cubicin (daptomycin for injection). However, due to Merck & Co., Inc.'s marketing exclusivity rights, this drug product is not labeled

Dosage in Patients with Renal Impairment

with that pediatric information.

Adult Patients: No dosage adjustment is required in adult patients with creatinine clearance (CL_{CR}) greater than or equal to 30 mL/min. The recommended dosage regimen for Daptomycin for injection in adult patients with CL_{CR} less than 30 mL/min, including adult patients on hemodialysis or continuous ambulatory peritoneal dialysis (CAPD), is 4 mg/kg (cSSSI) or 6 mg/kg (S. aureus bloodstream infections) once every 48 hours (Table 3). When possible. Daptomycin for injection should be administered following the completion of hemodialysis on hemodialysis days [see Warnings and Precautions (5.2, 5.8), Use in Specific Populations (8.6), and Clinical Pharmacology (12.3)].

FULL PRESCRIBING INFORMATION: CONTENTS* 1 INDICATIONS AND USAGE

1.1 Complicated Skin and Skin Structure Infections (cSSSI) 1.2 Staphylococcus aureus Bloodstream Infections (Bacteremia) in Adult Patients, Including Those with Right-Sided Infective Endocarditis, Caused by Methicillin-

Susceptible and Methicillin-Resistan 1.4 Limitations of Use

4 CONTRAINDICATIONS

1.5 Usage 2 DOSAGE AND ADMINISTRATION 2.1 Important Administration Duration

Dosage in Adults for cSSSI Dosage in Adult Patients with Staphylococcus aureus Bloodstream 11 DESCRIPTION Infections (Bacteremia), Including Those with Right-Sided Infective Endocarditis, 12 CLINICAL PHARMACOLOGY Caused by Methicillin-Susceptible and Methicillin-Resistant Isolates

2.6 Dosage in Patients with Renal Impairment Preparation and Administration of Daptomycin for Injection

5 WARNINGS AND PRECAUTIONS

Eosinophilic Pneumonia

5.4 Peripheral Neuropathy

than 12 Months

5.2 Myopathy and Rhabdomyolysis

2.8 Compatible Intravenous Solutions

2.9 Incompatibilities 3 DOSAGE FORMS AND STRENGTHS

14 CLINICAL STUDIES 14.1 Complicated Skin and Skin Structure 5.1 Anaphylaxis/Hypersensitivity Reactions

14.2 S. aureus Bacteremia/Endocarditis

5.5 Potential Nervous System and/or Muscular System Effects in Pediatric Patients Younger HANDLING

Clostridium difficile-Associated Diarrhea Persisting or Relapsing S. aureus 17 PATIENT COUNSELING INFORMATION

Bacteremia/Endocarditis 5.8 Decreased Efficacy in Patients with Moderate Baseline Renal Impairment

DRUG INTERACTIONS HMG-CoA Reductase Inhibitors 7.2 Drug-Laboratory Test Interactions

5.9 Drug-Laboratory Test Interactions

5.10 Non-Susceptible Microorganisms

Clinical Trials Experience

6.2 Post-Marketing Experience

B USE IN SPECIFIC POPULATIONS

Pregnancy Lactation

8.4 Pediatric Use 8.5 Geriatric Use 8.6 Patients with Renal Impairment

10 OVERDOSAGE

6 ADVERSE REACTIONS

Mechanism of Action 12.2 Pharmacodynamics 12.3 Pharmacokinetics

12.4 Microbiology 13 NONCLINICAL TOXICOLOGY

13.1 Carcinogenesis, Mutagenesis, Impairment 13.2 Animal Toxicology and/or Pharmacology

15 REFERENCES

16 HOW SUPPLIED/STORAGE AND

* Sections or subsections omitted from the full prescribing information are not listed.

FULL PRESCRIBING INFORMATION

INDICATIONS AND USAGE 1.1 Complicated Skin and Skin Structure Infections (cSSSI)

with that pediatric information.

Daptomycin for injection is indicated for the treatment of adult patients with complicated skin and skin structure infections (cSSSI) caused by susceptible isolates of the following Grampositive bacteria: Staphylococcus aureus (including methicillin-resistant isolates), Streptococcus pyogenes, Streptococcus agalactiae, Streptococcus dysgalactiae subsp. equisimilis, and Entero-

coccus faecalis (vancomycin-susceptible isolates only). Pediatric use information is approved for Merck & Co., Inc.'s Cubicin (daptomycin for injection). However, due to Merck & Co., Inc.'s marketing exclusivity rights, this drug product is not labeled

than 12 months: Avoid use of Daptomycin for Clostridium difficile-associated diarrhea: Eval-

rule out sequestered foci of infection. (5.7) Decreased efficacy was observed in adult patients with moderate baseline renal impair- 12

— ADVERSE REACTIONS ——

 Adult cSSSI Patients: The most common adverse reactions that occurred in ≥ 2% of adult cSSSI patients receiving Daptomycin for injection 4 mg/kg were diarrhea, headache, dizziness, rash, abnormal liver function tests. elevated creatinine phosphokinase (CPK) urinary tract infections hypotension, and dyspnea. (6.1)

Adult S. aureus bacteremia/endocarditis Patients: The most common adverse reactions that occurred in ≥5% of S. aureus bacteremia/ endocarditis patients receiving Daptomycir for injection 6 mg/kg were sepsis, bacteremia, abdominal pain, chest pain, edema, pharyngolaryngeal pain, pruritus, increased sweating insomnia, elevated CPK, and hypertension. (6.1)

TIONS, contact Fresenius Kabi USA, LLC at 1-800-551-7176 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch

To report SUSPECTED ADVERSE REAC-

See 17 for PATIENT COUNSELING INFORMA-

Pediatric use information is approved for Merck & Co., Inc.'s Cubicin (daptomycin for injection). However, due to Merck & Co., Inc.'s marketing exclusivity rights, this drug product is not labeled with that pediatric information.

Revised: 4/2018

Table 3: Recommended Dosage of Daptomycin for Injection in Adult Patients						
Creatinine Clearance	Dosage Reg	imen in Adults				
(CL _{CR})	cSSSI	S. aureus Bloodstream Infections				
Greater than or equal to 30 mL/min	4 mg/kg once every 24 hours	6 mg/kg once every 24 hours				
Less than 30 mL/min, including	4 mg/kg once every 48 hours*	6 mg/kg once every 48 hours*				

* When possible, administer Daptomycin for injection following the completion of hemodialysis on

hemodialysis days. The dosage regimen for Daptomycin for injection in pediatric patients with renal impairment has not

2.7 Preparation and Administration of Daptomycin for Injection

There are two formulations of daptomycin that have differences concerning storage and reconstitution. Carefully follow the reconstitution and storage procedures in labeling. Reconstitution of Daptomycin for Injection Vial Daptomycin for injection is supplied in single-dose vials, each containing 500 mg daptomycin as

a sterile, lyophilized powder. The contents of a Daptomycin for injection vial should be reconstituted, using aseptic technique, to 50 mg/mL as follows To minimize foaming, AVOID vigorous agitation or shaking of the vial during or after reconstitution. 2. Remove the polypropylene flip-off cap from the Daptomycin for injection vial to expose the central

portion of the rubber stopper. Wipe the top of the rubber stopper with an alcohol swab or other antiseptic solution and allow to dry. After cleaning, do not touch the rubber stopper or allow it to touch any other surface.

4. Slowly transfer 10 mL of 0.9% sodium chloride injection through the center of the rubber stopper into the Daptomycin for injection vial, pointing the transfer needle toward the wall of the vial. It is recommended that a beveled sterile transfer needle that is 21 gauge or smaller in

diameter, or a needleless device is used, pointing the transfer needle toward the wall of the vial. 5. Ensure that all of the Daptomycin for injection powder is wetted by gently rotating the vial. 1. Allow the wetted product to stand undisturbed for 10 minutes. 2. Gently rotate or swirl the vial contents for a few minutes, as needed, to obtain a completely

reconstituted solution. Parenteral drug products should be inspected visually for particulate matter prior to administration. Slowly remove reconstituted liquid (50 mg daptomycin/mL) from the vial using a beveled sterile needle

5.8 Decreased Efficacy in Patients with Moderate that is 21 gauge or smaller in diameter. Administer as an intravenous injection or infusion as

described below Intravenous Injection over a period of 2 minutes • For intravenous (IV) injection over a period of 2 minutes in adult patients only: Administer the appropriate volume of the reconstituted Daptomycin for injection (concentration of 50 mg/mL).

• For IV infusion over a period of 30 minutes in adult patients: The appropriate volume of the reconstituted Daptomycin for injection (concentration of 50 mg/mL) should be further diluted, using aseptic technique, into a 50 mL IV infusion bag containing 0.9% sodium chloride injection. No preservative or bacteriostatic agent is present in this product. Aseptic technique must be used in the preparation of final IV solution. Do not exceed the In-Use storage conditions of the reconstituted and diluted solutions of Daptomycin for injection described below. Discard unused portions

In-Use Storage Conditions for Daptomycin for Injection Once Reconstituted in Acceptable | 50-70 mL Intravenous Diluents Stability studies have shown that the reconstituted solution is stable in the vial for 12 hours at room temperature and up to 48 hours if stored under refrigeration at 2 to 8°C (36 to 46°F).

Intravenous Infusion over a period of 30 minutes

The diluted solution is stable in the infusion bag for 12 hours at room temperature and 48 hours if stored under refrigeration. The combined storage time (reconstituted solution in vial and diluted solution in infusion bag) should not exceed 12 hours at room temperature or 48 hours under refrigeration Pediatric use information is approved for Merck & Co., Inc.'s Cubicin (daptomycin for injection). However, due to Merck & Co., Inc.'s marketing exclusivity rights, this drug product is not labeled with that pediatric information

Pediatric use information is approved for Merck & Co., Inc.'s Cubicin (daptomycin for injection).

2.8 Compatible Intravenous Solutions Daptomycin for injection is compatible with 0.9% sodium chloride injection and lactated Ringer's

> 2.9 Incompatibilities Daptomycin for injection is not compatible with dextrose-containing diluents.

Daptomycin for injection should not be used in conjunction with ReadyMED® elastomeric infusion pumps. Stability studies of Daptomycin for injection solutions stored in ReadyMED® elastomeric nfusion pumps identified an impurity (2-mercaptobenzothiazole) leaching from this pump system into the Daptomycin for injection solution.

Because only limited data are available on the compatibility of Daptomycin for injection with other IV substances, additives and other medications should not be added to Daptomycin 50-80 m for injection single-dose vials or infusion bags, or infused simultaneously with Daptomycin for injection through the same IV line. If the same IV line is used for sequential infusion of different 30-<50 drugs, the line should be flushed with a compatible intravenous solution before and after infusion with Daptomycin for injection

DOSAGE FORMS AND STRENGTHS For Injection: 500 mg daptomycin as a sterile, pale yellow to light brown lyophilized powder for 5.9 reconstitution in a single-dose vial.

CONTRAINDICATIONS Daptomycin for injection is contraindicated in patients with known hypersensitivity to daptomycin.

WARNINGS AND PRECAUTIONS Anaphylaxis/Hypersensitivity Reactions

Anaphylaxis/hypersensitivity reactions have been reported with the use of antibacterial agents including Daptomycin for injection, and may be life-threatening. If an allergic reaction to Daptomycin for injection occurs, discontinue the drug and institute appropriate therapy [see Adverse Reactions

5.2 Myopathy and Rhabdomyolysis Myopathy, defined as muscle aching or muscle weakness in conjunction with increases in creatine phosphokinase (CPK) values to greater than 10 times the upper limit of normal (ULN), has been reported with the use of Daptomycin for injection. Rhabdomyolysis, with or without acute renal failure, has been reported [see Adverse Reactions (6.2)]

Patients receiving Daptomycin for injection should be monitored for the development of muscle pain or weakness, particularly of the distal extremities. In patients who receive Daptomycin for injection. CPK levels should be monitored weekly, and more frequently in patients who received recent prior or concomitant therapy with an HMG-CoA reductase inhibitor or in whom elevations in CPK occur during treatment with Daptomycin for

In adult patients with renal impairment, both renal function and CPK should be monitored more frequently than once weekly [see Use in Specific Populations (8.6) and Clinical Pharmacology

when Daptomycin for injection was dosed more than once daily. Therefore, Daptomycin for injection should not be dosed more frequently than once a day. Daptomycin for injection should be discontinued in patients with unexplained signs and symptoms of

In Phase 1 studies and Phase 2 clinical trials in adults, CPK elevations appeared to be more frequent

myopathy in conjunction with CPK elevations to levels >1,000 U/L (~5× ULN), and in patients without reported symptoms who have marked elevations in CPK, with levels >2.000 U/L (≥10× ULN). In addition, consideration should be given to suspending agents associated with rhabdomyolysis such as HMG-CoA reductase inhibitors, temporarily in patients receiving Daptomycin for injection [see Drug Interactions (7.1)].

5.3 Eosinophilic Pneumonia osinophilic pneumonia has been reported in patients receiving Daptomycin for injection /see Adverse Reactions (6.2)]. In reported cases associated with Daptomycin for injection, patients developed fever, dyspnea with hypoxic respiratory insufficiency, and diffuse pulmonary infi trates or organizing pneumonia. In general, patients developed eosinophilic pneumonia 2 to 4 weeks after starting Daptomycin for injection and improved when Daptomycin for injection was discontinued and steroid therapy was initiated. Recurrence of eosinophilic pneumonia upon re-exposure has been reported. Patients who develop these signs and symptoms while receiving Daptomycin for injection should undergo prompt medical evaluation, and Daptomycin for injection should be discontinued immediately. Treatment with systemic steroids is recom-

5.4 Peripheral Neuropathy Cases of peripheral neuropathy have been reported during the Daptomycin for injection postmarketing experience [see Adverse Reactions (6.2)]. Therefore, physicians should be alert to signs and symptoms of peripheral neuropathy in patients receiving Daptomycin for injection. Monitor for neuropathy and consider discontinuation

5.5 Potential Nervous System and/or Muscular System Effects in Pediatric Patients Younger than 12 Months Avoid use of Daptomycin for injection in pediatric patients younger than 12 months due to the risk of potential effects on muscular, neuromuscular, and/or nervous systems (either peripheral and/or central) observed in neonatal dogs with intravenous daptomycin [see Nonclinical Toxicology (13.2)].

5.6 Clostridium difficile-Associated Diarrhea Clostridium difficile-associated diarrhea (CDAD) has been reported with the use of nearly all systemic antibacterial agents, including Daptomycin for injection, and may range in severity from mild diarrhea to fatal colitis [see Adverse Reactions (6.2)]. Treatment with antibacterial agents alters the normal flora of the colon, leading to overgrowth of *C. difficile*.

C. difficile produces toxins A and B. which contribute to the development of CDAD. Hypertoxinproducing strains of *C. difficile* cause increased morbidity and mortality, since these infections can be refractory to antimicrobial therapy and may require colectomy. CDAD must be considered in all patients who present with diarrhea following antibacterial use. Careful medical history is necessary because CDAD has been reported to occur more than 2 months after the administration of antibacterial agents.

If CDAD is suspected or confirmed, ongoing antibacterial use not directed against C. difficile may need to be discontinued. Appropriate fluid and electrolyte management, protein supplementation antibacterial treatment of C. difficile, and surgical evaluation should be instituted as clinically

Persisting or Relapsing S. aureus Bacteremia/Endocarditis Patients with persisting or relapsing S. aureus bacteremia/endocarditis or poor clinical response should have repeat blood cultures. If a blood culture is positive for S. aureus, minimum nhibitory concentration (MIC) susceptibility testing of the isolate should be performed using a standardized procedure, and diagnostic evaluation of the patient should be performed to rule out sequestered foci of infection. Appropriate surgical intervention (e.g., debridement, removal of

regimen may be required. Failure of treatment due to persisting or relapsing S. aureus bacteremia/endocarditis may be due to reduced daptomycin susceptibility (as evidenced by increasing MIC of the S. aureus isolate) [see Clinical Studies (14.2)1.

prosthetic devices, valve replacement surgery) and/or consideration of a change in antibacterial

Baseline Renal Impairment

imited data are available from the two Phase 3 complicated skin and skin structure infection (cSSSI) trials regarding clinical efficacy of Daptomycin for injection treatment in adult patients with creatinine clearance (CL_{CR}) < 50 mL/min; only 31/534 (6%) patients treated with Daptomycin for injection in the intent-to-treat (ITT) population had a baseline CL_{CR} <50 mL/min. Table 4 shows the number of adult patients by renal function and treatment group who were clinical successes in the Phase 3 cSSSI trials.

Table 4: Clinical Success Rates by Renal Function and Treatment Group in Phase 3 cSSSI Trials in Adult Patients (Population: ITT)

	Success Rate n/N (%)			
	Daptomycin for Injection 4 mg/kg q24h	Comparator		
L/min	25/38 (66%)	30/48 (63%)		
mL/min	7/15 (47%)	20/35 (57%)		

In a subgroup analysis of the ITT population in the Phase 3 S. aureus bacteremia/endocarditis trial. clinical success rates. as determined by a treatment-blinded Adiudication Committee *[see Clinical* Studies (14.2)1, in the Daptomycin for injection-treated adult patients were lower in patients with baseline ${
m CL_{CR}}$ <50 mL/min (see Table 5). A decrease of the magnitude shown in Table 5 was not Table 7: Incidence of Adverse Reactions that Occurred in ≥ 5% of Adult Patients in the

Table 5: Adjudication Committee Clinical Success Rates at Test of Cure by Baseline Creatinine Clearance and Treatment Subgroup in the *S. aureus* Bacteremia/Endocarditis Trial

The following adverse reactions are described, or described in greater detail, in other sections:

Because clinical trials are conducted under widely varying conditions, adverse reaction rates

observed in the clinical trials of a drug cannot be directly compared with rates in the clinical trials

Phase 3 complicated skin and skin structure infection (cSSSI) trials in adult patients, Daptomycin

for injection was discontinued in 15/534 (2.8%) patients due to an adverse reaction, while compar-

The rates of the most common adverse reactions, organized by body system, observed in adult

Daptomycin for Injection

4 mg/kg (N=534)

5.2

5.4

2.2

4.3

3.0

2.8

n the *S. aureus* bacteremia/endocarditis trial involving adult patients, Daptomycin for injection

Serious Gram-negative infections (including bloodstream infections) were reported in 10/120

were reported during treatment and during early and late follow-up. Gram-negative infections

recurrent Crohn's disease, recurrent line sepsis, and recurrent urosepsis caused by a number of

(8.3%) Daptomycin for injection-treated patients and 0/115 comparator-treated patients. Compar-

included cholangitis, alcoholic pancreatitis, sternal osteomyelitis/mediastinitis, bowel infarction.

was discontinued in 20/120 (16.7%) patients due to an adverse reaction, while comparator was

Cardiovascular System: supraventricular arrhythmia

Special Senses: taste disturbance, eye irritation

S. aureus Bacteremia/Endocarditis Trial in Adults

discontinued in 21/116 (18.1%) patients.

different Gram-negative bacteria.

Nervous System: vertigo, mental status change, paresthesia

Dermatologic System: eczema

Musculoskeletal System: myalgia, muscle cramps, muscle weakness, arthralgia

Adult Patients (%)

Comparator³

n (%)

(N = 558)

4.3

5.4

2.0

3.8

1.6

1.8

patients with cSSSI (receiving 4 mg/kg Daptomycin for injection) are displayed in Table 6.

Table 6: Incidence of Adverse Reactions that Occurred in ≥ 2% of Adult Patients in the

Daptomycin for injection Treatment Group and ≥ the Comparator Treatment Group in Phase 3 cSSSI Trials

Anaphylaxis/hypersensitivity reactions [see Warnings and Precautions (5.1)]

• Myopathy and rhabdomyolysis [see Warnings and Precautions (5.2)]

• Eosinophilic pneumonia [see Warnings and Precautions (5.3)]

• Peripheral neuropathy [see Warnings and Precautions (5.4)]

of another drug and may not reflect the rates observed in practice.

Complicated Skin and Skin Structure Infection Trials in Adults

Precautions (5.9) and Drug Interactions (7.2)]

Clinical Trial Experience in Adult Patients

ator was discontinued in 17/558 (3.0%) patients

observed in comparator-treated patients.

ADVERSE REACTIONS

Clinical Trials Experience

with comparator.

Gastrointestinal disorders

Skin/subcutaneous disorders

Diagnostic investigations

Abnormal liver function tests

unine Olean		dult Patients (Population		ma, Endocardino mai		
		Success Ra	te n/N (%)		Adverse Reaction*	
ne CL _{CR}	Daptomycin for	r injection 6 mg/kg q24h	C	omparator		
		Dight Cided		Dight Cided	Infections and infestations	
	Bacteremia	Right-Sided Infective Endocarditis	Bacteremia	Right-Sided Infective Endocarditis	Sepsis NOS	
l /min					Bacteremia	
ıL/min	30/50 (60%)	7/14 (50%)	19/42 (45%)	5/11 (46%)	Gastrointestinal disorders	
mL/min	12/26 (46%)	1/4 (25%)	13/31 (42%)	1/2 (50%)	Abdominal pain NOS	
0 mL/min	2/14 (14%)	0/1 (0%)	7/17 (41%)	1/1 (100%)	General disorders and administration site conditions	
			py for use in adu	ult patients with baseline	Chest pain	
	severe renal impai				Edema NOS	
Clinically rele	atory Test Interact evant plasma conce	entrations of daptomycin h	nave been obser	ved to cause a significant	Respiratory, thoracic and mediastinal disorders	
Normalized F	Ratio (INR) when ce	rtain recombinant thromb	oplastin reagents	elevation of International s are utilized for the assay	Pharyngolaryngeal pain	
	teractions (7.2)].			ŕ	Skin and subcutaneous tissue disorders	
	otible Microorgani				Pruritus	
		omote the overgrowth of appropriate measures s		microorganisms. If these	Sweating increased	
				ngly suspected bacterial	Psychiatric disorders	
nfection is u	nlikely to provide k			sk of the development of	Insomnia	
drug-resistar	nt bacteria.				Investigations	

Hypertension NOS * NOS, not otherwise specified Comparator: vancomycin (1 g IV q12h) or an anti-staphylococcal semi-synthetic penicillin (i.e., nafcillin, • Increased International Normalized Ratio (INR)/prolonged prothrombin time [see Warnings and oxacillin, cloxacillin, or flucioxacillin; 2 g IV q4h), each with initial low-dose gentamicin

> Daptomycin for injection-treated group: Blood and Lymphatic System Disorders: eosinophilia, lymphadenopathy, thrombocythemia, thrombocytopenia

The following reactions, not included above, were reported as possibly or probably drug-related in the

The rates of the most common adverse reactions, organized by System Organ Class (SOC), observed in

Daptomycin for Injection Treatment Group and ≥ the Comparator Treatment Group

Daptomycin for Injection

6 (5%)

6 (5%)

7 (6%)

8 (7%)

10 (8%)

7 (6%)

6 (5%)

11 (9%)

(N=116)

3 (3%)

0 (0%)

4 (3%)

5 (4%)

2 (2%)

6 (5%)

0 (0%)

8 (7%)

in the S. aureus Bacteremia/Endocarditis Trial

Cardiac Disorders: atrial fibrillation, atrial flutter, cardiac arrest Ear and Labyrinth Disorders: tinnitus

Clinical trials enrolled 1,864 adult patients treated with Daptomycin for injection and 1,416 treated Eve Disorders: vision blurred

Blood creatine phosphokinase

increased

Vascular disorders

Gastrointestinal Disorders: dry mouth, epigastric discomfort, gingival pain, hypoesthesia

Infections and Infestations: candidal infection NOS, vaginal candidiasis, fungemia, oral candidiasis, urinary tract infection fungal Investigations: blood phosphorous increased, blood alkaline phosphatase increased, INR

increased, liver function test abnormal, alanine aminotransferase increased, aspartate aminotransferase increased, prothrombin time prolonged

Metabolism and Nutrition Disorders: appetite decreased NOS Musculoskeletal and Connective Tissue Disorders: myalgia

Nervous System Disorders: dyskinesia, paresthesia Psychiatric Disorders: hallucination NOS

Renal and Urinary Disorders: proteinuria, renal impairment NOS Skin and Subcutaneous Tissue Disorders: pruritus generalized, rash vesicular

Other Trials in Adults

In Phase 3 trials of community-acquired pneumonia (CAP) in adult patients, the death rate and rates of serious cardiorespiratory adverse events were higher in Daptomycin for injection-treated patients than in comparator-treated patients. These differences were due to lack of therapeutic effectiveness of Daptomycin for injection in the treatment of CAP in patients experiencing these adverse events [see Indications and Usage (1.4)]. Laboratory Changes in Adults

Complicated Skin and Skin Structure Infection Trials in Adults

In Phase 3 cSSSI trials of adult patients receiving Daptomycin for injection at a dose of 4 mg/kg, elevations in CPK were reported as clinical adverse events in 15/534 (2.8%) Daptomycin for injection-treated patients, compared with 10/558 (1.8%) comparator-treated patients. Of the 534 patients treated with Daptomycin for injection, 1 (0.2%) had symptoms of muscle pain or weakness associated with CPK elevations to greater than 4 times the upper limit of normal (ULN). The symptoms resolved within 3 days and CPK returned to normal within 7 to 10 days after treatment was discontinued [see Warnings and Precautions (5.2)] Table 8 summarizes the CPK shifts from Baseline through End of Therapy in the cSSSI adult trials.

Table 8: Incidence of CPK Elevations from Baseline during Therapy in Either the Daptomycin

Elevated CPK	2.8	1.8	for Injection Treatment Group or the Comparator Treatment Group in Phase 3 cSSSI Adult Trials									
Urinary tract infections	2.4	0.5			All Adult	Patients				atients with PK at Baselin	ie	
Vascular disorders					Daptomycin for Injection 4 mg/kg Comparator* (N=459)		Daptomycin for					
Hypotension	2.4	1.4	Change in CPK	4 m			mg/kg Comparator*		Injection 4 mg/kg (N=374)		Comparator* (N=392)	
Respiratory disorders				(N=	430)	(N=	409)	(N=	3/4)	(N=	-392)	-
Dyspnea	2.1	1.6	No Increase	90.7	390	91.1	418	91.2	341	91.1	357	-
*Comparator: vancomycin (1 g IV q12h oxacillin, cloxacillin, or flucloxacillin; 4			Maximum Value >1 × ULN†	9.3	40	8.9	41	8.8	33	8.9	35	-
Drug-related adverse reactions (patients receiving Daptomycin fo	possibly or probably drug-relat or injection in the cSSSI trials a	ed) that occurred in <1% of adult re as follows:	>2× ULN	4.9	21	4.8	22	3.7	14	3.1	12	
Body as a Whole: fatigue, weakn			>4× ULN	1.4	6	1.5	7	1.1	4	1.0	4	
Blood/Lymphatic System: leukocyt	osis, thrombocytopenia, thromb	ocytosis, eosinophilia, increased	>5× ULN	1.4	6	0.4	2	1.1	4	0.0	0	
International Normalized Ratio (INR)		>10×ULN	0.5	2	0.2	1	0.2	1	0.0	0	8.
Cardiovascular System: supraver	ntricular arrhythmia											_ 0

Note: Elevations in CPK observed in adult patients treated with Daptomycin for injection or comparator were not clinically or statistically significantly different.

* Comparator: vancomycin (1 g IV q12h) or an anti-staphylococcal semi-synthetic penicillin (i.e., nafcillin, oxacillin, cloxacillin, or flucloxacillin; 4 to 12 g/day IV in divided doses). Digestive System: abdominal distension, stomatitis, jaundice, increased serum lactate dehydrogenase † ULN (Upper Limit of Normal) is defined as 200 U/I Metabolic/Nutritional System: hypomagnesemia, increased serum bicarbonate, electrolyte disturbance

> S. aureus Bacteremia/Endocarditis Trial in Adults In the S. aureus bacteremia/endocarditis trial in adult patients, at a dose of 6 mg/kg, 11/120

> (9.2%) Daptomycin for injection-treated patients, including two patients with baseline CPK levels >500 U/L, had CPK elevations to levels >500 U/L, compared with 1/116 (0.9%) comparatortreated patients. Of the 11 Daptomycin for injection-treated patients, 4 had prior or concomitant treatment with an HMG-CoA reductase inhibitor. Three of these 11 Daptomycin for injectiontreated patients discontinued therapy due to CPK elevation, while the one comparator-treated patient did not discontinue therapy [see Warnings and Precautions (5.2)]. Pediatric use information is approved for Merck & Co., Inc.'s Cubicin (daptomycin for injection).

However, due to Merck & Co., Inc.'s marketing exclusivity rights, this drug product is not labeled with that pediatric information.

Post-Marketing Experience ator-treated patients received dual therapy that included initial gentamicin for 4 days. Infections 6.2

The following adverse reactions have been identified during post-approval use of Daptomycin for injection. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to Blood and lymphatic system disorders: anemia

pneumonia [see Warnings and Precautions (5.3)]

adult patients with S. aureus bacteremia/endocarditis (receiving 6 mg/kg Daptomycin for injection) are General and administration site conditions: pyrexia

Immune System Disorders: anaphylaxis; hypersensitivity reactions, including angioedema, drug rash with eosinophilia and systemic symptoms (DRESS), pruritus, hives, shortness of breath, difficulty swallowing, truncal erythema, and pulmonary eosinophilia [see Contraindications (4), Warnings and Precautions (5.1)]

Infections and Infestations: Clostridium difficile—associated diarrhea [see Warnings and Precautions

Musculoskeletal Disorders: myoglobin increased; rhabdomyolysis (some reports involved patients treated concurrently with Daptomycin for injection and HMG-CoA reductase inhibitors) [see Warnings and Precautions (5.2), Drug Interactions (7.1), and Clinical Pharmacology (12.3)]

Respiratory, Thoracic, and Mediastinal Disorders: cough, eosinophilic pneumonia, organizing

syndrome and vesiculobullous rash (with or without mucous membrane involvement), acute

Nervous System Disorders: peripheral neuropathy [see Warnings and Precautions (5.4)] Skin and Subcutaneous Tissue Disorders: serious skin reactions, including Stevens-Johnson

generalized exanthematous pustulosis Gastrointestinal Disorders: nausea, vomiting Renal and urinary disorders: acute kidney injury, renal insufficiency, and renal failure

DRUG INTERACTIONS

Special Senses: visual disturbances

7.1 HMG-CoA Reductase Inhibitors In healthy adult subjects, concomitant administration of Daptomycin for injection and simvastatin had no effect on plasma trough concentrations of simvastatin, and there were no reports of skeletal myopathy [see Clinical Pharmacology (12.3)]

However, inhibitors of HMG-CoA reductase may cause myopathy, which is manifested as muscle pain or weakness associated with elevated levels of creatine phosphokinase (CPK) In the adult Phase 3 S. aureus bacteremia/endocarditis trial, some patients who received prior or concomitant treatment with an HMG-CoA reductase inhibitor developed elevated CPK [see Adverse Reactions (6.1)]. Experience with the coadministration of HMG-CoA reductase inhibitors and Daptomycin for injection in patients is limited; therefore, consideration should be given to suspending use of HMG-CoA reductase inhibitors temporarily in patients receiving Daptomycin for

7.2 Drug-Laboratory Test Interactions Clinically relevant plasma concentrations of daptomycin have been observed to cause a significant

concentration-dependent false prolongation of prothrombin time (PT) and elevation of International Normalized Ratio (INR) when certain recombinant thromboplastin reagents are utilized for the assay. The possibility of an erroneously elevated PT/INR result due to interaction with a recombinant thromboplastin reagent may be minimized by drawing specimens for PT or INR testing near the time of trough plasma concentrations of daptomycin. However, sufficient daptomycin concentrations may be present at trough to cause interaction. If confronted with an abnormally high PT/INR result in a patient being treated with Daptomycin

for injection, it is recommended that clinicians: 1. Repeat the assessment of PT/INR, requesting that the specimen be drawn just prior to the

next Daptomycin for injection dose (i.e., at trough concentration). If the PT/INR value obtained at trough remains substantially elevated above what would otherwise be expected, consider evaluating PT/INR utilizing an alternative method.

2. Evaluate for other causes of abnormally elevated PT/INR results. **USE IN SPECIFIC POPULATIONS**

Limited published data on use of Daptomycin for injection in pregnant women are insufficient to inform a drug-associated risk for major birth defects and miscarriage. In animal reproduction studies performed in rats and rabbits daptomycin was administered intravenously during organogenesis at doses 2 and 4-times, respectively, the recommended 6 mg/kg human dose (on a body surface area basis). No evidence of adverse developmental outcomes was observed. The background risk of major birth defects and miscarriage for the indicated population is unknown. All pregnancies have a background risk of birth defect, loss, or other adverse outcomes. In the U.S. general population, the estimated background risk of major birth defects and miscar-

In pregnant rats, daptomycin was administered intravenously at doses of 5, 20, or 75 mg/kg/day during the gestation days 6 to 18. Maternal body weight gain was decreased at 75 mg/kg/day No embryo/fetal effects were noted at the highest dose of 75 mg/kg/day, a dose approximately 2-fold higher than in humans at the recommended maximum dose of 6 mg/kg (based on body

In pregnant rabbits, daptomycin was administered intravenously at doses of 5, 20, or 75 mg/kg/day during the gestation days 6 to 15. Maternal body weight gain and food consumption were decreased at 75 mg/kg/day. No embryo/fetal effects were noted at the highest dose of 75 mg/kg/day, a dose approximately 4-fold higher than in humans at the maximum recommended

venously to female rats at doses of 2, 25, 75 mg/kg/day from 14-days pre-mating through lactation/ postpartum day 20). No effects on pre/postnatal development were observed up to the highest dose of 75 mg/kg/day, a dose approximately 2-fold higher than the maximum recommended human dose of 6 mg/kg (based on body surface area)1

health benefits of breastfeeding should be considered along with the mother's clinical need for Daptomycin for injection and any potential adverse effects on the breastfed infant from Daptomycin for injection or from the underlying maternal condition.

Nonclinical Toxicology (13.2)]. Daptomycin for injection is not indicated in pediatric patients with renal impairment because

Daptomycin for injection has not been studied in pediatric patients with other bacterial infections.

dosage has not been established in these patients.

in the Phase 3 controlled clinical trial of S. aureus bacteremia/endocarditis, 25% were 65 years of age or older and 16% were 75 years of age or older. In Phase 3 adult clinical trials of cSSSI and S. aureus bacteremia/endocarditis, clinical success rates were lower in patients ≥65 years of age than in patients <65 years of age. In addition, treatment-emergent adverse events were more common in patients ≥65 years of age than in patients <65 years of age. The exposure of daptomycin was higher in healthy elderly subjects than in healthy young adult subjects.

12% were 75 years of age or older. Of the 120 adult patients treated with Daptomycin for injection

with creatinine clearance (CL_{CR}) ≥30 mL/min [see Dosage and Administration (2.4) and Clinical Patients with Renal Impairment

dosage interval is recommended for adult patients with CL_{CR} <30 mL/min, including patients receiving hemodialysis or continuous ambulatory peritoneal dialysis (CAPD). In adult patients with renal impairment, both renal function and creatine phosphokinase (CPK) should be monitored more uently than once weekly [see Dosage and Administration (2.6), Warnings and Precautions (5.2, 5.8), and Clinical Pharmacology (12.3)

The dosage regimen for Daptomycin for injection in pediatric patients with renal impairment has not been established

riage in clinically recognized pregnancies is 2-4% and 15-20%, respectively.

dose of 6 mg/kg (based on body surface area). In a combined fertility and pre/postnatal development study, daptomycin was administered intra-

Limited published data report that daptomycin is present in human milk at infant doses of 0.1%

of the maternal dose [see Data]^{2,3,4}. There is no information on the effects of daptomycin on the breastfed infant or the effects of daptomycin on milk production. The developmental and 8.4 Pediatric Use

Safety and effectiveness in pediatric patients below the age of one year have not been established. Avoid use of Daptomycin for injection in pediatric patients younger than one year of age due to the risk of potential effects on muscular, neuromuscular, and/or nervous systems (either peripheral and/or central) observed in neonatal dogs [see Warnings and Precautions (5.5) and

Pediatric use information is approved for Merck & Co., Inc.'s Cubicin (daptomycin for injection). However, due to Merck & Co., Inc.'s marketing exclusivity rights, this drug product is not labeled with that pediatric information.

Of the 534 adult patients treated with Daptomycin for injection in Phase 3 controlled clinical trials f complicated skin and skin structure infections (cSSSI), 27% were 65 years of age or older and

However, no adjustment of Daptomycin for injection dosage is warranted for elderly patients

Daptomycin is eliminated primarily by the kidneys; therefore, a modification of Daptomycin for injection

10 OVERDOSAGE

In the event of overdosage, supportive care is advised with maintenance of glomerular filtration. Daptomycin is cleared slowly from the body by hemodialysis (approximately 15% of the administered dose is removed over 4 hours) and by peritoneal dialysis (approximately 11% of the administered dose is removed over 48 hours). The use of high-flux dialysis membranes during 4 hours of hemodialysis may increase the percentage of dose removed compared with that removed by low-flux membranes.

Daptomycin for injection contains daptomycin, a cyclic lipopeptide antibacterial agent derived from the fermentation of *Streptomyces roseosporus*. The chemical name is *N*-decanoyl-L-tryptophyl-D-asparaginyl-L-aspartyl-L-threonylglycyl-L-ornithyl-L-aspartyl-D-alanyl-L-aspartylglycyl-D-seryl-threo-3-methyl-L-glutamyl-3-anthraniloyl-L-alanine ε₁-lactone. The chemical structure is:

The empirical formula is $C_{79}H_{101}N_{17}O_{26}$; the molecular weight is 1620.67. Daptomycin for injection is supplied in a single-dose vial as a sterile, preservative-free, pale yellow to light brown, lyophilized cake containing approximately 500 mg of daptomycin for intravenous (IV) use following reconstitution with 0.9% sodium chloride injection [see Dosage and Administration (2.7)]. The only inactive ingredient is sodium hydroxide, which is used for pH adjustment. Freshly reconstituted solutions of Daptomycin for injection range in color from pale yellow to light brown.

12 CLINICAL PHARMACOLOGY

12.1 Mechanism of Action

Daptomycin is an antibacterial drug [see Clinical Pharmacology (12.4)]. 12.2 Pharmacodynamics

Based on animal models of infection, the antimicrobial activity of daptomycin appears to correlate with the AUC/MIC (area under the concentration-time curve/minimum inhibitory concentration) ratio for certain pathogens, including S. aureus. The principal pharmacokinetic/pharmacodynamic parameter best associated with clinical and microbiological cure has not been elucidated in clinical trials with Daptomycin for injection.

12.3 Pharmacokinetics

aptomycin for Injection Administered over a 30-Minute Period in Adults

The mean and standard deviation (SD) pharmacokinetic parameters of daptomycin at steady-state following intravenous (IV) administration of Daptomycin for injection over a 30-minute period at 4 to 12 mg/kg q24h to healthy young adults are summarized in Table 11.

Table 11: Mean (SD) Daptomycin Pharmacokinetic Parameters in Healthy Adult Volunteers at Steady-State

t di dinicito di l'italiani, i talani totalino di citolani, ciano									
Door**	Pharmacokinetic Parameters [‡]								
Dose*† (mg/kg)	AUC ₀₋₂₄ (mcg•h/mL)	t _{1/2} (h)	V _{ss} (L/kg)	CL _T (mL/h/kg)	C _{max} (mcg/mL)				
4 (N=6)	494 (75)	8.1 (1.0)	0.096 (0.009)	8.3 (1.3)	57.8 (3.0)				
6 (N=6)	632 (78)	7.9 (1.0)	0.101 (0.007)	9.1 (1.5)	93.9 (6.0)				
8 (N=6)	858 (213)	8.3 (2.2)	0.101 (0.013)	9.0 (3.0)	123.3 (16.0)				
10 (N=9)	1039 (178)	7.9 (0.6)	0.098 (0.017)	8.8 (2.2)	141.1 (24.0)				
12 (N=9)	1277 (253)	7.7 (1.1)	0.097 (0.018)	9.0 (2.8)	183.7 (25.0)				
* Dantamusin fo	r injection was ada	sinistered by IV i	ofucion over a 20 m	sinute period					

Daptomycin for injection was administered by IV infusion over a 30-minute period Doses of Daptomycin for injection in excess of 6 mg/kg have not been approved.

[‡] AUC_{0.24}, area under the concentration-time curve from 0 to 24 hours; t_{1/2}, elimination half-life; V_{ss}, volume of distribution at steady-state; CL_{τ} , total plasma clearance; C_{max} , maximum plasma concentration.

Daptomycin pharmacokinetics were generally linear and time-independent at Daptomycin for injection doses of 4 to 12 mg/kg q24h administered by IV infusion over a 30-minute period for up to 14 days. Steady-state trough concentrations were achieved by the third daily dose. The mean (SD) steady-state trough concentrations attained following the administration of 4, 6, 8, 10, and 12 mg/kg q24h were 5.9 (1.6), 6.7 (1.6), 10.3 (5.5), 12.9 (2.9), and 13.7 (5.2) mcg/mL, respectively.

Daptomycin for injection Administered over a 2-Minute Period in Adults

Following IV administration of Daptomycin for injection over a 2-minute period to healthy adult volunteers at doses of 4 mg/kg (N=8) and 6 mg/kg (N=12), the mean (SD) steady-state systemic exposure (AUC) values were 475 (71) and 701 (82) mcg•h/mL, respectively. Values for maximum plasma concentration (C_{max}) at the end of the 2-minute period could not be determined adequately in this study. However, using pharmacokinetic parameters from 14 healthy adult volunteers who received a single dose of Daptomycin for injection 6 mg/kg IV administered over a 30-minute period in a separate study, steady-state C_{max} values were simulated for Daptomycin for injection 4 and 6 mg/kg IV administered over a 2-minute period. The simulated mean (SD) steady-state C_{max} values were 77.7 (8.1) and 116.6 (12.2) mcg/mL, respectively.

Daptomycin is reversibly bound to human plasma proteins, primarily to serum albumin, in a concentration-independent manner. The overall mean binding ranges from 90 to 93%.

In clinical studies, mean serum protein binding in adult subjects with creatinine clearance (CL_{CR}) ≥30 mL/min was comparable to that observed in healthy adult subjects with normal renal function However, there was a trend toward decreasing serum protein binding among subjects with CL_{CR} <30 mL/min (88%), including those receiving hemodialysis (86%) and continuous ambulatory peri toneal dialysis (CAPD) (84%). The protein binding of daptomycin in adult subjects with moderate hepatic impairment (Child-Pugh Class B) was similar to that in healthy adult subjects.

The volume of distribution at steady-state (V_{ss}) of daptomycin in healthy adult subjects was approximately 0.1 L/kg and was independent of dose.

In *in vitro* studies, daptomycin was not metabolized by human liver microsomes.

In 5 healthy adults after infusion of radiolabeled ¹⁴C-daptomycin, the plasma total radioactivity was similar to the concentration determined by microbiological assay. Inactive metabolites were detected in urine. as determined by the difference between total radioactive concentrations and microbiologically active concentrations. In a separate study, no metabolites were observed in plasma on Day 1 following the administration of Daptomycin for injection at 6 mg/kg to adult subjects. Minor amounts of three oxidative metabolites and one unidentified compound were detected in urine. The site of metabolism has not been identified.

Daptomycin is excreted primarily by the kidneys. In a mass balance study of 5 healthy adult subjects using radiolabeled daptomycin, approximately 78% of the administered dose was recovered from urine based on total radioactivity (approximately 52% of the dose based on microbiologically active concentrations), and 5.7% of the administered dose was recovered from feces (collected for up to 9 days) based on total radioactivity.

Specific Populations Renal Impairment

Population-derived pharmacokinetic parameters were determined for infected adult patients (complicated skin and skin structure infections [cSSSI] and S. aureus bacteremia) and noninfected adult subjects with various degrees of renal function (Table 12). Total plasma clearance (CL_T), elimination half-life (t_{1/2}), and volume of distribution at steady-state $(\mathsf{V}_{\mathsf{ss}})$ in patients with cSSSI were similar to those in patients with S. aureus bacteremia. Following administration of Daptomycin for injection 4 mg/kg q24h by IV infusion over a 30-minute period, the mean CL_T was 9%, 22%, and 46% lower among subjects and patients with mild (CL_{CR} 50-80 mL/min), moderate (CL_{CR} 30-<50 mL/min), and severe (CL_{CR} <30 mL/min) renal impairment, respectively, than in those with normal renal function (CL_{CR} >80 mL/min). The mean steady-state systemic exposure (AUC), $t_{1/2}$, and V_{ss} increased with decreasing renal function, although the mean AUC for patients with CL_{CF} 30-80 mL/min was not markedly different from the mean AUC for patients with normal renal function. The mean AUC for patients with CL_{CR} <30 mL/min and for patients on dialysis (CAPD and hemodialysis dosed post-dialysis) was approximately 2 and 3 times higher, respectively, than for patients with normal renal function. The mean $C_{ ext{max}}$ ranged from 60 to 70 mcg/mL in patients with $CL_{CR} \ge 30$ mL/min, while the mean C_{max} for patients with $CL_{CR} < 30$ mL/min ranged from 41 to 58 mcg/mL. After administration of Daptomycin for injection 6 mg/kg q24h by IV infusion over a 30-minute period, the mean C_{max} ranged from 80 to 114 mcg/mL in patients with mild to moderate renal impairment and was similar to that of patients with normal renal function.

Table 12: Mean (SD) Daptomycin Population Pharmacokinetic Parameters Following Infusion of Daptomyćin for Injection 4 mg/kg or 6 mg/kg to Infected Adult Patients and Noninfected Adult Subjects with Various Degrees of Renal Function

Pharmacokinetic Parameters*						
Renal Function	t _{1/2} †	V _{ss} †	CL _T †	AUC _{0-∞} †	AUC _{ss} ‡	C _{min,ss} ‡
	(h)	(L/kg)	(mL/h/kg)	(mcg•h/mL)	(mcg•h/mL)	(mcg/mL)
	4 mg/kg	4 mg/kg	4 mg/kg	4 mg/kg	6 mg/kg	6 mg/kg
Normal	9.39 (4.74)	0.13 (0.05)	10.9 (4.0)	417 (155)	545 (296)	6.9 (3.5)
(CL _{CR} >80 mL/min)	N=165	N=165	N=165	N=165	N=62	N=61
Mild Renal Impairment (CL _{CR} 50-80 mL/min)	10.75 (8.36)	0.12 (0.05)	9.9 (4.0)	466 (177)	637 (215)	12.4 (5.6)
	N=64	N=64	N=64	N=64	N=29	N=29
Moderate Renal Impairment (CL _{CR} 30-<50 mL/min)	14.70 (10.50)	0.15 (0.06)	8.5 (3.4)	560 (258)	868 (349)	19.0 (9.0)
	N=24	N=24	N=24	N=24	N=15	N=14
Severe Renal Impairment (CL _{CR} <30 mL/min)	27.83 (14.85)	0.20 (0.15)	5.9 (3.9)	925 (467)	1050 (892)	24.4 (21.4)
	N=8	N=8	N=8	N=8	N=2	N=2
Hemodialysis	30.51 (6.51) N=16	0.16 (0.04) N=16	3.9 (2.1) N=16	1193 (399) N=16	NA	NA
CAPD	27.56 (4.53) N=5	0.11 (0.02) N=5	2.9 (0.4) N=5	1409 (238) N=5	NA	NA

Note: Daptomycin for injection was administered over a 30-minute period.

* CLCB, creatinine clearance estimated using the Cockcroft-Gault equation with actual body weight; CAPD, continuous ambulatory peritoneal dialysis; AUC_{0-∞}, area under the concentration-time curve extrapolated to infinity; AUCss, area under the concentration-time curve calculated over the 24-hour dosing interval at steady-state; C_{min,ss}, trough concentration at steady-state; NA, not applicable. Parameters obtained following a single dose from patients with complicated skin and skin structure infections and healthy subjects.

Parameters obtained at steady-state from patients with S. aureus bacteremia.

Because renal excretion is the primary route of elimination, adjustment of Daptomycin for injection dosage interval is necessary in adult patients with severe renal impairment (CL_{CR} <30 mL/min) Isee Dosage and Administration (2.4)1.

Hepatic Impairment

The pharmacokinetics of daptomycin were evaluated in 10 adult subjects with moderate hepatic impairment (Child-Pugh Class B) and compared with those in healthy adult volunteers (N=9) matched for gender, age, and weight. The pharmacokinetics of daptomycin were not altered in subjects with moderate hepatic impairment. No dosage adjustment is warranted when Daptomycin for injection is administered to patients with mild to moderate hepatic impairment. The pharmacokinetics of daptomycin in patients with severe hepatic impairment (Child-Pugh Class C) have not been evaluated.

No clinically significant gender-related differences in daptomycin pharmacokinetics have been observed. No dosage adjustment is warranted based on gender when Daptomycin for injection

The pharmacokinetics of daptomycin were evaluated in 12 healthy elderly subjects (≥75 years of age) and 11 healthy young adult controls (18 to 30 years of age). Following administration of a single 4 mg/kg dose of Daptomycin for injection by IV infusion over a 30-minute period, the mean total clearance of daptomycin was approximately 35% lower and the mean $\mathsf{AUC}_{\scriptscriptstyle{0-\infty}}$ was approximately 58% higher in elderly subjects than in healthy young adult subjects. There were no differences in C_{max} [see Use in Specific Populations (8.5)]

The pharmacokinetics of daptomycin were evaluated in 6 moderately obese (Body Mass Index [BMI] 25 to 39.9 kg/m²) and 6 extremely obese (BMI ≥40 kg/m²) adult subjects and controls matched for age, gender, and renal function. Following administration of Daptomycin for injection by IV infusion over a 30-minute period as a single 4 mg/kg dose based on total body weight, the total plasma clearance of daptomycin normalized to total body weight was approximately 15% lower in noderately obese subjects and 23% lower in extremely obese subjects than in nonobese controls. The AUC_{0...} of daptomycin was approximately 30% higher in moderately obese subjects and 31% higher in extremely obese subjects than in nonobese controls. The differences were most likely due to differences in the renal clearance of daptomycin. No adjustment of Daptomycin for injection dosage is warranted in obese patients.

Pediatric use information is approved for Merck & Co., Inc.'s Cubicin (daptomycin for injection). However, due to Merck & Co., Inc.'s marketing exclusivity rights, this drug product is not labeled with that pediatric information

In vitro studies with human hepatocytes indicate that daptomycin does not inhibit or induce the activities of the following human cytochrome P450 isoforms: 1A2, 2A6, 2C9, 2C19, 2D6, 2E1, and 3A4. It is unlikely that daptomycin will inhibit or induce the metabolism of drugs metabolized by the P450 system

In a study in which 15 healthy adult subjects received a single dose of Daptomycin for injection 6 mg/kg IV and a combination dose of Daptomycin for injection 6 mg/kg IV and aztreonam 1 g IV, administered over a 30-minute period, the C_{max} and $AUC_{0-\infty}$ of daptomycin were not significantly altered by aztreonam.

Tobramycin

n a study in which 6 healthy adult males received a single dose of Daptomycin for injection 2 mg/kg IV, tobramycin 1 mg/kg IV, and both in combination, administered over a 30-minute period, the mean C_{max} and $AUC_{0-\infty}$ of daptomycin were 12.7% and 8.7% higher, respectively, when Daptomycin for injection was coadministered with tobramycin. The mean C_{max} and AUC₀of tobramycin were 10.7% and 6.6% lower, respectively, when tobramycin was coadministered with Daptomycin for injection. These differences were not statistically significant. The interaction between daptomycin and tobramycin with a clinical dose of Daptomycin for injection is unknown.

In 16 healthy adult subjects, administration of Daptomycin for injection 6 mg/kg q24h by IV infusion over a 30-minute period for 5 days, with coadministration of a single oral dose of warfarin (25 mg) on the 5th day, had no significant effect on the pharmacokinetics of either drug and did not significantly alter the INR (International Normalized Ratio).

In 20 healthy adult subjects on a stable daily dose of simvastatin 40 mg, administration of Daptomycin for injection 4 mg/kg q24h by IV infusion over a 30-minute period for 14 days (N=10) had no effect on plasma trough concentrations of simvastatin and was not associated with a higher incidence of adverse events, including skeletal myopathy, than in subjects receiving placebo once daily (N=10)[see Warnings and Precautions (5.2) and Drug Interactions (7.1)].

Concomitant administration of probenecid (500 mg 4 times daily) and a single dose of Daptomycin for injection 4 mg/kg by IV infusion over a 30-minute period in adults did not significantly alter the C_{max} or $AUC_{0-\infty}$ of daptomycin.

Daptomycin belongs to the cyclic lipopeptide class of antibacterials. Daptomycin has clinical utility in the treatment of infections caused by aerobic, Gram-positive bacteria. The in vitro spectrum of activity of daptomycin encompasses most clinically relevant Gram-positive pathogenic bacteria. Daptomycin exhibits rapid, concentration-dependent bactericidal activity against Gram-positive bacteria in vitro. This has been demonstrated both by time-kill curves and by MBC/MIC (minimum bactericidal concentration/minimum inhibitory concentration) ratios using broth dilution method ology. Daptomycin maintained bactericidal activity in vitro against stationary phase S. aureus in simulated endocardial vegetations. The clinical significance of this is not known. Mechanism of Action

Daptomycin binds to bacterial cell membranes and causes a rapid depolarization of membrane potential. This loss of membrane potential causes inhibition of DNA, RNA, and protein synthesis, which results in bacterial cell death.

The mechanism(s) of daptomycin resistance is not fully understood. Currently, there are no known transferable elements that confer resistance to daptomycin Interactions with Other Antibacterials In vitro studies have investigated daptomycin interactions with other antibacterials. Antagonism. as determined by kill curve studies, has not been observed. In vitro synergistic interactions of

daptomycin with aminoglycosides, B-lactam antibacterials, and rifampin have been shown against

some isolates of staphylococci (including some methicillin-resistant isolates) and enterococci

(including some vancomycin-resistant isolates). Complicated Skin and Skin Structure Infection (cSSSI) Trials in Adults across the set of Phase 2 and pivotal Phase 3 clinical trials of cSSSI in adult patients In one case, a non-susceptible S. aureus was isolated from a patient in a Phase 2 trial who

he emergence of daptomycin non-susceptible isolates occurred in 2 infected patients received Daptomycin for injection at less than the protocol-specified dose for the initial 5 days of therapy. In the second case, a non-susceptible Enterococcus faecalis was isolated from a patient with an infected chronic decubitus ulcer who was enrolled in a salvage trial.

S. aureus Bacteremia/Endocarditis and Other

Post-Approval Trials in Adults In subsequent clinical trials in adult patients, non-susceptible isolates were recovered. S. aureus was isolated from a patient in a compassionate-use trial and from 7 patients in the *S. aureus* bacteremia/endocarditis trial [see Clinical Studies (14.2)]. An E. faecium was isolated from a patient in a vancomycin-resistant enterococci trial.

Antimicrobial Activity Daptomycin has been shown to be active against most isolates of the following microorganisms both in vitro and in clinical infections [see Indications and Usage (1)].

Gram-Positive Bacteria Enterococcus faecalis (vancomycin-susceptible isolates only)

Staphylococcus aureus (including methicillin-resistant isolates)

Streptococcus agalactiae

Streptococcus dysgalactiae subsp. equisimilis

Streptococcus pyogenes

The following in vitro data are available, but their clinical significance is unknown. At least 90 percent of the following bacteria exhibit an in vitro minimum inhibitory concentration (MIC) less than or equal to the susceptible breakpoint for daptomycin against isolates of genus or organism group. However, the efficacy of daptomycin in treating clinical infections due to these acteria has not been established in adequate and well-controlled clinical trials.

Gram-Positive Bacteria Corynebacterium jeikeium

Enterococcus faecalis (vancomycin-resistant isolates)

Enterococcus faecium (including vancomycin-resistant isolates)

Staphylococcus epidermidis (including methicillin-resistant isolates)

Staphylococcus haemolyticus

For specific information regarding susceptibility test interpretive criteria and associated test methods and quality control standards recognized by FDA for this drug, please see: https://www.fda.gov/STIC

13 NONCLINICAL TOXICOLOGY

13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

Long-term carcinogenicity studies in animals have not been conducted to evaluate the carcinogenic potential of Daptomycin for injection. However, neither mutagenic nor clastogenic potential was found in a battery of genotoxicity tests, including the Ames assay, a mammalian cell gene mutation assay, a test for chromosomal aberrations in Chinese hamster ovary cells, an in vivo micronucleus assay, an in vitro DNA repair assay, and an in vivo sister chromatid exchange assay in Chinese hamsters

Daptomycin did not affect the fertility or reproductive performance of male and female rats when administered intravenously at doses of 25, 75, or 150 mg/kg/day, which is approximately up to 9 times the estimated human exposure level based upon AUCs (or approximately up to 4 times he recommended human dose of 6 mg/kg based on body surface area comparison)

13.2 Animal Toxicology and/or Pharmacology <u>Adult Animals</u>

In animals, daptomycin administration has been associated with effects on skeletal muscle. However there were no changes in cardiac or smooth muscle. Skeletal muscle effects were characterized croscopic degenerative/regenerative changes and variable elevations in creatine phosphoki nase (CPK). No fibrosis or rhabdomyolysis was evident in repeat-dose studies up to the highest doses tested in rats (150 mg/kg/day) and dogs (100 mg/kg/day). The degree of skeletal myopathy showed no increase when treatment was extended from 1 month to up to 6 months. Severity was dose-dependent. All muscle effects, including microscopic changes, were fully reversible within 30 days following the cessation of dosing.

In adult animals, effects on peripheral nerve (characterized by axonal degeneration and frequently accompanied by significant losses of patellar reflex, gag reflex, and pain perception) were observed at daptomycin doses higher than those associated with skeletal myopathy Deficits in the dogs' patellar reflexes were seen within 2 weeks after the start of treatment at 40 mg/kg/day (9 times the human C_{max} at the 6 mg/kg/day dose), with some clinical improvement noted within 2 weeks after the cessation of dosing. However, at 75 mg/kg/day for 1 month, 7 of 8 dogs failed to regain full patellar reflex responses within a 3-month recovery period. In a separate study in dogs receiving doses of 75 and 100 mg/kg/day for 2 weeks, minimal residual histological changes were noted at 6 months after the cessation of dosing. However, recovery of peripheral nerve function was evident.

Tissue distribution studies in rats showed that daptomycin is retained in the kidney but appears to penetrate the blood-brain barrier only minimally following single and multiple doses.

arget organs of daptomycin-related effects in 7-week-old juvenile dogs were skeletal muscle and nerve, the same target organs as in adult dogs. In juvenile dogs, nerve effects were noted at lower cin biood concentrations than in adult do adult dogs, juvenile dogs also showed evidence of effects in nerves of the spinal cord as well as peripheral nerves after 28 days of dosing. No nerve effects were noted in juvenile dogs following 14 days of dosing at doses up to 75 mg/kg/day.

Administration of daptomycin to 7-week-old juvenile dogs for 28 days at doses of 50 mg/kg/day produced minimal degenerative effects on the peripheral nerve and spinal cord in several animals, with no corresponding clinical signs. A dose of 150 mg/kg/day for 28 days produced minimal degeneration in the peripheral nerve and spinal cord as well as minimal to mild degeneration of the skeletal muscle in a majority of animals, accompanied by slight to severe muscle weakness evident in most dogs. Following a 28-day recovery phase, microscopic examination revealed recovery of the skeletal muscle and the ulnar nerve effects, but nerve degeneration in the sciatic nerve and spinal cord was still observed in all 150 mg/kg/day dogs.

Following once-daily administration of daptomycin to juvenile dogs for 28 days, microscopic effects in nerve tissue were noted at a C_{max} value of 417 mcg/mL, which is approximately 3-fold less than the C_{max} value associated with nerve effects in adult dogs treated once daily with daptomycin for 28 days (1308 mcg/mL).

Neonatal Animals

Neonatal dogs (4 to 31 days old) were more sensitive to daptomycin-related adverse nervous system and/or muscular system effects than either juvenile or adult dogs. In neonatal dogs. adverse nervous system and/or muscular system effects were associated with a Cmax value approximately 3-fold less than the C_{max} in juvenile dogs, and 9-fold less than the C_{max} in adult dogs following 28 days of dosing. At a dose of 25 mg/kg/day with associated C_{max} and AUC_{inf} values o 147 mcg/mL and 717 mcg•h/mL, respectively (1.6 and 1.0-fold the adult human C_{max} and AUC. respectively, at the 6 mg/kg/day dose), mild clinical signs of twitching and one incidence of muscle rigidity were observed with no corresponding effect on body weight. These effects were found to be reversible within 28 days after treatment had stopped.

At higher dose levels of 50 and 75 mg/kg/day with associated C_{max} and AUC_{inf} values of ≥321 mcg/mL and ≥1470 mcg • h/mL, respectively, marked clinical signs of twitching, muscle rigidity in the limbs, and impaired use of limbs were observed. Resulting decreases in body weights and overall body condition at doses ≥50 mg/kg/day necessitated early discontinuation by PND19. Histopathological assessment did not reveal any daptomycin-related changes in the peripheral

and central nervous system tissue, as well as in the skeletal muscle or other tissues assessed, at any dose level. No adverse effects were observed in the dogs that received daptomycin at 10 mg/kg/day, the NOAEL, with associated C_{max} and AUC_{inf} values of 62 mcg/mL and 247 mcg • h/mL, respectively

(or 0.6 and 0.4-fold the adult human C_{max} and AUC, respectively at the 6 mg/kg dose).

14 CLINICAL STUDIES

Adults with cSSSI

14.1 Complicated Skin and Skin Structure Infections

Adult patients with clinically documented complicated skin and skin structure infections (cSSSI) (Table 17) were enrolled in two randomized, multinational. multicenter. investidatorblinded trials comparing Daptomycin for injection (4 mg/kg IV q24h) with either vancomycin (1 g IV q12h) or an anti-staphylococcal semi-synthetic penicillin (i.e., nafcillin, oxacillin, cloxacillin, or flucloxacillin; 4 to 12 g IV per day). Patients could switch to oral therapy after a minimum of 4 days of IV treatment if clinical improvement was demonstrated. Patients known to have bacteremia at baseline were excluded. Patients with creatinine clearance (Cl co) between 30 and 70 mL/min were to receive a lower dose of Daptomycin for injection as specified in the protocol; however, the majority of patients in this subpopulation did not have the dose of Daptomycin for injection adjusted.

Table 17: Investigator's Primary Diagnosis in the cSSSI Trials in Adult Patients Population: ITT)

		Adult Patients (Daptomycin for Injection / Compar	rator*)	
Primary Diagnosis	Study 9801 N=264 / N=266	Study 9901 N=270 / N=292	Pooled N=534/N=558	Pop
Wound Infection	99 (38%) / 116 (44%)	102 (38%) / 108 (37%)	201 (38%) / 224 (40%)	1 '
Major Abscess	55 (21%) / 43 (16%)	59 (22%) / 65 (22%)	114 (21%) / 108 (19%)	Ove
Ulcer Infection	71 (27%) / 75 (28%)	53 (20%) / 68 (23%)	124 (23%) / 143 (26%)	Bas
Other Infection [†]	39 (15%) / 32 (12%)	56 (21%) / 51 (18%)	95 (18%) / 83 (15%)	Me
* Comparator: vanco	omycin (1 g IV q12h) or an a	nti-staphylococcal semi-sy	nthetic penicillin (i.e., nafcillin	Me

oxacillin, cloxacillin, or flucloxacillin; 4 to 12 g/day IV in divided doses) The majority of cases were subsequently categorized as complicated cellulitis, major abscesses, or traumatic wound infections.

One trial was conducted primarily in the United States and South Africa (study 9801), and the second was conducted at non-US sites only (study 9901). The two trials were similar in design but liffered in patient characteristics, including history of diabetes and peripheral vascular disease. There were a total of 534 adult patients treated with Daptomycin for injection and 558 treated with comparator in the two trials. The majority (89.7%) of patients received IV medication exclusively.

The efficacy endpoints in both trials were the clinical success rates in the intent-to-treat (ITT) population and in the clinically evaluable (CE) population. In study 9801, clinical success rates in the ITT population were 62.5% (165/264) in patients treated with Daptomycin for injection and 60.9% (162/266) in patients treated with comparator drugs. Clinical success rates in the CE population were 76.0% (158/208) in patients treated with Daptomycin for injection and 76.7% 158/206) in patients treated with comparator drugs. In study 9901, clinical success rates in the T population were 80.4% (217/270) in patients treated with Daptomycin for injection and 80.5% (235/292) in patients treated with comparator drugs. Clinical success rates in the CE population were 89.9% (214/238) in patients treated with Daptomycin for injection and 90.4% (226/250) in patients treated with comparator drugs.

The success rates by pathogen for microbiologically evaluable patients are presented in Table 18.

Success Rate

Table 18: Clinical Success Rates by Infecting Pathogen in the cSSSI Trials in Adult Patients (Population: Microbiologically Evaluable)

Pathogen	n/N (%)			
	Daptomycin for Injection	Comparator*		
Methicillin-susceptible <i>Staphylococcus aureus</i> (MSSA) [†]	170/198 (86%)	180/207 (87%)		
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) [†]	21/28 (75%)	25/36 (69%)		
Streptococcus pyogenes	79/84 (94%)	80/88 (91%)		
Streptococcus agalactiae	23/27 (85%)	22/29 (76%)		
Streptococcus dysgalactiae subsp. equisimilis	8/8 (100%)	9/11 (82%)		
Enterococcus faecalis (vancomycin-susceptible only)	27/37 (73%)	40/53 (76%)		

* Comparator: vancomycin (1 g IV q12h) or an anti-staphylococcal semi-synthetic penicillin (i.e., nafcillin, oxacillin, cloxacillin, or flucloxacillin; 4 to 12 g/day IV in divided doses). As determined by the central laboratory.

Pediatric use information is approved for Merck & Co., Inc.'s Cubicin (daptomycin for injection). However, due to Merck & Co., Inc.'s marketing exclusivity rights, this drug product is not labeled with that pediatric information

14.2 S. aureus Bacteremia/Endocarditis Adults with *S. aureu*s Bacteremia/Endocarditis

The efficacy of Daptomycin for injection in the treatment of adult patients with S. aureus bacteremia was demonstrated in a randomized, controlled, multinational, multicenter, open-label trial. In this trial, adult patients with at least one positive blood culture for S. aureus obtained within 2 calendar days prior to the first dose of study drug and irrespective of source were enrolled and randomized to either Daptomycin for injection (6 mg/kg IV q24h) or standard of care [an anti-staphylococcal semi-synthetic penicillin 2 g IV q4h (nafcillin, oxacillin, cloxacillin, or flucloxacillin) or vancomycin g IV q12h, each with initial gentamicin 1 mg/kg IV every 8 hours for first 4 days]. Of the patients in the comparator group, 93% received initial gentamicin for a median of 4 days, compared with 1 patient <1%) in the Daptomycin for injection group. Patients with prosthetic heart valves, intravascular oreign material that was not planned for removal within 4 days after the first dose of study medication, severe neutropenia, known osteomyelitis, polymicrobial bloodstream infections, creatinine clearance <30 mL/min, and pneumonia were excluded.

Jpon entry, patients were classified for likelihood of endocarditis using the modified Duke criteria (Possible, Definite, or Not Endocarditis). Echocardiography, including a transesophageal echocardiogram (TEE), was performed within 5 days following study enrollment. The choice of parator agent was based on the ovacillin suscentibility of tion of study treatment was based on the investigator's clinical diagnosis. Final diagnoses and outcome assessments at Test of Cure (6 weeks after the last treatment dose) were made by a 17 treatment-blinded Adjudication Committee, using protocol-specified clinical definitions and a composite primary efficacy endpoint (clinical and microbiological success) at the Test of Cure

A total of 246 patients ≥18 years of age (124 Daptomycin for injection, 122 comparator) with S. aureus bacteremia were randomized from 48 centers in the US and Europe. In the ITT popuation, 120 patients received Daptomycin for injection and 115 received comparator (62 received an anti-staphylococcal semi-synthetic penicillin and 53 received vancomycin). Thirty-five patients treated with an anti-staphylococcal semi-synthetic penicillin received vancomycin initially for 1 to 3 days, pending final susceptibility results for the *S. aureus* isolates. The median age among the 235 patients in the ITT population was 53 years (range: 21 to 91 years); 30/120 (25%) in the Daptomycin for injection group and 37/115 (32%) in the comparator group were ≥65 years of age. Of the 235 ITT patients, there were 141 (60%) males and 156 (66%) Caucasians across the wo treatment groups. In addition, 176 (75%) of the ITT population had systemic inflammatory response syndrome (SIRS) at baseline and 85 (36%) had surgical procedures within 30 days prior to onset of the S. aureus bacteremia. Eighty-nine patients (38%) had bacteremia caused by nethicillin-resistant *S. aureus* (MRSA). Entry diagnosis was based on the modified Duke criteria and comprised 37 (16%) Definite, 144 (61%) Possible, and 54 (23%) Not Endocarditis. Of the 7 patients with an entry diagnosis of Definite Endocarditis, all (100%) had a final diagnosis of nfective endocarditis, and of the 144 patients with an entry diagnosis of Possible Endocarditis, 5 (10%) had a final diagnosis of infective endocarditis as assessed by the Adjudication Committee. Of the 54 patients with an entry diagnosis of Not Endocarditis, 1 (2%) had a final diagnosis of infective endocarditis as assessed by the Adjudication Committee

In the ITT population, there were 182 patients with bacteremia and 53 patients with infective endocarditis as assessed by the Adjudication Committee, including 35 with right-sided endocarditis and 18 with left-sided endocarditis. The 182 patients with bacteremia comprised 121 with complicated *S. aureus* bacteremia and 61 with uncomplicated *S. aureu*s bacteremia.

Complicated bacteremia was defined as S. aureus isolated from blood cultures obtained on at least 2 different calendar days, and/or metastatic foci of infection (deep tissue involvement), and classification of the patient as not having endocarditis according to the modified Duke criteria. Uncomplicated bacteremia was defined as S. aureus isolated from blood culture(s) obtained on a single calendar day, no metastatic foci of infection, no infection of prosthetic material, and classification of the patient as not having endocarditis according to the modified Duke criteria. The definition of right-sided infective endocarditis (RIE) used in the clinical trial was Definite or Possible Endocarditis according to the modified Duke criteria and no echocardiographic evidence

of predisposing pathology or active involvement of either the mitral or aortic valve. Complicated RIE comprised patients who were not intravenous drug users, had a positive blood culture for MRSA, serum creatinine ≥2.5 mg/dL, or evidence of extrapulmonary sites of infection. Patients who were intravenous drug users, had a positive blood culture for methicillin-susceptible S. aureus (MSSA), had serum creatinine < 2.5 mg/dL, and were without evidence of extrapulmonary sites of infection were considered to have uncomplicated RIE

The coprimary efficacy endpoints in the trial were the Adjudication Committee success rates at the Test of Cure visit (6 weeks after the last treatment dose) in the ITT and Per Protocol (PP) populations. The overall Adjudication Committee success rates in the ITT population were 44.2% (53/120) in patients treated with Daptomycin for injection and 41.7% (48/115) in patients treated with comparator (difference = 2.4% [95% CI –10.2, 15.1]). The success rates in the PP population were 54.4% (43/79) in patients treated with Daptomycin for injection and 53.3% (32/60) in patients treated with comparator (difference = 1.1% [95% CI -15.6, 17.8]).

Adjudication Committee success rates are shown in Table 19.

Table 19: Adjudication Committee Success Rates at Test of Cure in the S. aureus Bacteremia/Endocarditis Trial in Adult Patients (Population: ITT)

	Success Ra		
Population	Daptomycin for Injection 6 mg/kg	Comparator*	Difference: Daptomycin for Injection – Comparator (Confidence Interval)
Overall	53/120 (44%)	48/115 (42%)	2.4% (-10.2, 15.1) [†]
Baseline Pathogen			
Methicillin-susceptible S. aureus	33/74 (45%)	34/70 (49%)	-4.0% (-22.6, 14.6) [‡]
Methicillin-resistant <i>S. aureus</i>	20/45 (44%)	14/44 (32%)	12.6% (-10.2, 35.5)‡
Entry Diagnosis§			
Definite or Possible Infective Endocarditis	41/90 (46%)	37/91 (41%)	4.9% (-11.6, 21.4) [‡]
Not Infective Endocarditis	12/30 (40%)	11/24 (46%)	-5.8% (-36.2, 24.5) [‡]
Final Diagnosis			
Uncomplicated Bacteremia	18/32 (56%)	16/29 (55%)	1.1% (-31.7, 33.9)1
Complicated Bacteremia	26/60 (43%)	23/61 (38%)	5.6% (-17.3, 28.6)1
Right-Sided Infective Endocarditis	8/19 (42%)	7/16 (44%)	-1.6% (-44.9, 41.6) [¶]
Uncomplicated Right-Sided Infective Endocarditis	3/6 (50%)	1/4 (25%)	25.0% (-51.6, 100.0)1
Complicated Right-Sided Infective Endocarditis	5/13 (39%)	6/12 (50%)	-11.5% (-62.4, 39.4) [¶]
Left-Sided Infective Endocarditis	1/9 (11%)	2/9 (22%)	-11.1% (-55.9, 33.6) ¹

oxacillin, cloxacillin, or flucloxacillin; 2 g IV q4h), each with initial low-dose gentamicin †95% Confidence Interval

†97.5% Confidence Interval (adjusted for multiplicity) According to the modified Duke criteria8

199% Confidence Interval (adjusted for multiplicity)

Eighteen (18/120) patients in the Daptomycin for injection arm and 19/116 patients in the comparator arm died during the trial. These comprise 3/28 Daptomycin for injection-treated patients and 8/26 comparator-treated patients with endocarditis, as well as 15/92 Daptomycin for injection-treated patients and 11/90 comparator-treated patients with bacteremia. Among patients with persisting or relapsing S. aureus infections, 8/19 Daptomycin for injection-treated patients and 7/11 comparator-treated patients died.

Overall, there was no difference in time to clearance of S. aureus bacteremia between Daptomycin for injection and comparator. The median time to clearance in patients with MSSA was 4 days and in patients with MRSA was 8 days.

Failure of treatment due to persisting or relapsing S. aureus infections was assessed by the Adjudication Committee in 19/120 (16%) Daptomycin for injection-treated patients (12 with MRSA and 7 with MSSA) and 11/115 (10%) comparator-treated patients (9 with MRSA treated with vancomycin and 2 with MSSA treated with an anti-staphylococcal semi-synthetic penicillin). Among all failures, isolates from 6 Daptomycin for injection-treated patients and 1 vancomycin-treated patient developed increasing MICs (reduced susceptibility) by central laboratory testing during or following therapy. Most patients who failed due to persisting or relapsing S. aureus infection had deep-seated infection and did not receive necessary surgical intervention [see Warnings

Pediatric use information is approved for Merck & Co., Inc.'s Cubicin (daptomycin for injection). However, due to Merck & Co., Inc.'s marketing exclusivity rights, this drug product is not labeled with that pediatric information

15 REFERENCES

1. Liu SL, Howard LC, Van Lier RBL, Markham JK: Teratology studies with daptomycin administered intravenously (iv) to rats and rabbits. Teratology 37(5):475, 1988.

2. Stroup JS, Wagner J, Badzinski T: Use of daptomycin in a pregnant patient with Staphylococcus aureus endocarditis. Ann Pharmacother 44(4):746-749, 2010

3. Buitrago MI, Crompton JA, Bertolami S, North DS, Nathan RA. Extremely low excretion of daptomycin into breast milk of a nursing mother with methicillin-resistant Staphylococcus aureus pelvic inflammatory disease. Pharmacotherapy 2009;29(3):347-351.

4 Klibanov OM Vickery S. Nortey C: Successful treatment of infective panniculitis with daptomycin in a pregnant, morbidly obese patient. Ann Pharmacother 48(5):652-655, 2014.

5. Li JS, Sexton DJ, Mick N, Nettles R, Fowler VG Jr, Ryan T, Bashore T, Corey GR. Proposed modifications to the Duke criteria for the diagnosis of infective endocarditis. Clin Infect Dis

Daptomycin for injection is supplied as a sterile pale yellow to light brown lyophilized cake in a single-dose 15 mL vial containing 500 mg of daptomycin: Package of 1 (NDC 63323-871-15).

HOW SUPPLIED/STORAGE AND HANDLING

Store original packages at refrigerated temperatures, 2 to 8°C (36 to 46°F); avoid excessive heat [see Dosage and Administration (2.7) PATIENT COUNSELING INFORMATION Advise patients that allergic reactions, including serious allergic reactions, could occur and that

tions to daptomycin. [See Warnings and Precautions (5.1)] Advise patients to report muscle pain or weakness, especially in the forearms and lower legs, as

serious reactions require immediate treatment. Patients should report any previous allergic reac-

well as tingling or numbness. [See Warnings and Precautions (5.2, 5.4)]. Advise patients to report any symptoms of cough, breathlessness, or fever. [See Warnings and

Advise patients that diarrhea is a common problem caused by antibacterials that usually ends when the antibacterial is discontinued. Sometimes after starting treatment with antibacterials, patients can develop watery and bloody stools (with or without stomach cramps and fever), even as late as 2 or more months after having received the last dose of the antibacterial. If this occurs, patients should contact their physician as soon as possible. [See Warnings and Precautions

Counsel patients that antibacterial drugs, including Daptomycin for injection, should be used to treat bacterial infections. They do not treat viral infections (e.g., the common cold). When Daptomycin for injection is prescribed to treat a bacterial infection, patients should be told that although it is common to feel better early in the course of therapy, the medication should be administered exactly as directed. Skipping doses or not completing the full course of therapy may (1) decrease the effectiveness of the immediate treatment and (2) increase the likelihood that bacteria will develop resistance and will not be treatable by Daptomycin for injection or other antibacterial drugs in the future.

The brand names mentioned in this document are the trademarks of their respective owners.

lanufactured for FRESENIUS KABI Lake Zurich, IL 60047

www.fresenius-kabi.com/us 451500D LEA-019805-04

Code No: AP/DRUGS/103/97

Made in India