INFECTION CONTROL®

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March/April 1980 Volume 1/Number 2

Methicillin-Resistant Staphylococcus Aureus: Interstate Spread of Nosocomial Infections with Emergence of Gentamicin-Methicillin Resistant Strains

George Saroglou, M.D.; Margaret Cromer, B.S.N.; and Alan L. Bisno, M.D.

Comparison of the Activities and Stabilities of Alkaline Glutaradehyde Sterilizing Solutions

Rollin E. Pepper, Ph.D.

Prophylactic Antibiotic Therapy with Cefamandole and Tobramycin for Patients Undergoing Renal Transplantation

Timothy R. Townsend, M.D.; Leslie E. Rudolf, M.D.; Frederick B. Westervelt, Jr., M.D.; Gerald L. Mandell, M.D.; and Richard P. Wenzel, M.D.

Pseudoepidemic of Endocarditis in Patients Undergoing Open Heart Surgery

Robert C. Aber, M.D. and Peter C. Appelbaum, M.D., Ph.D.

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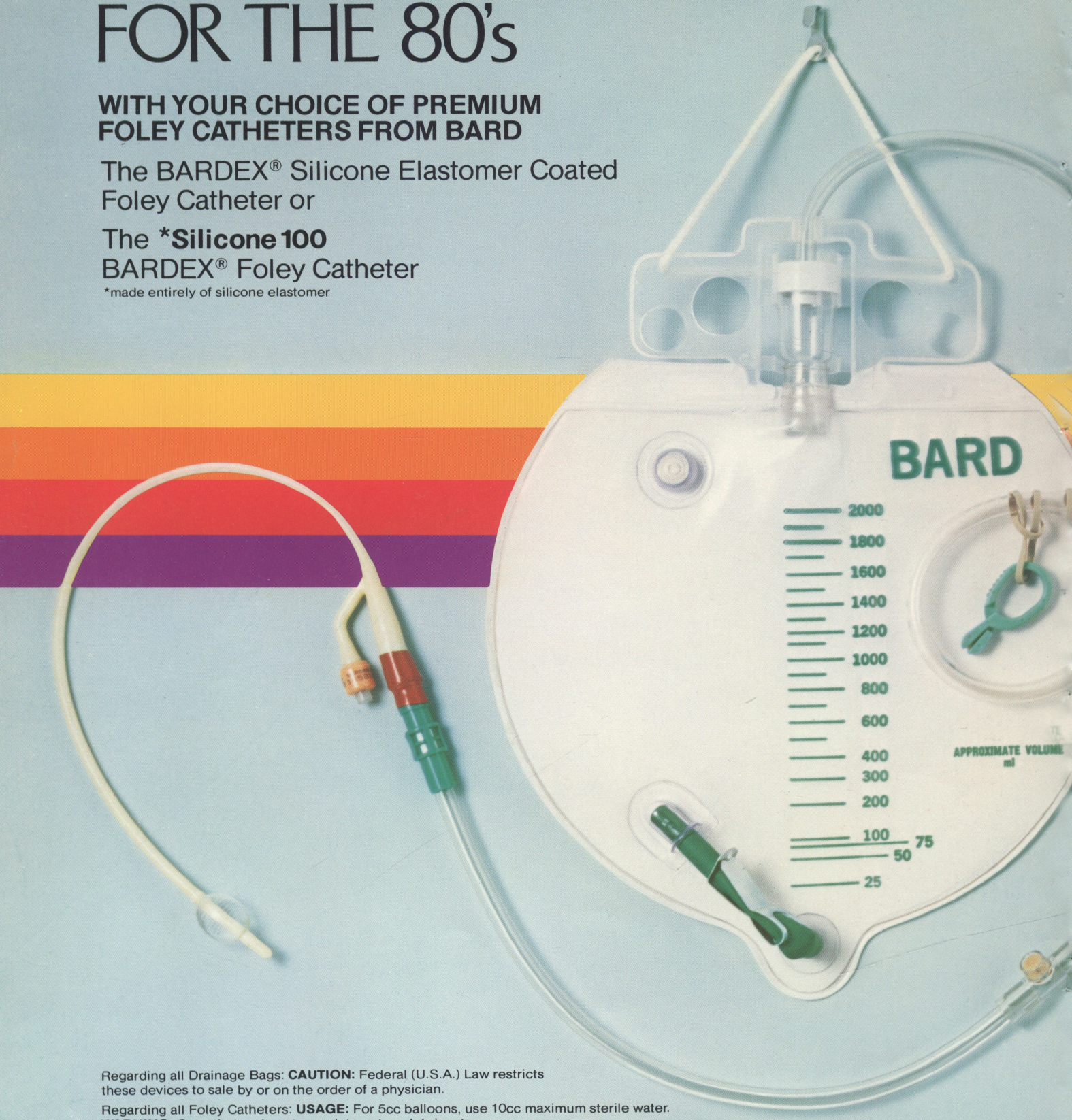

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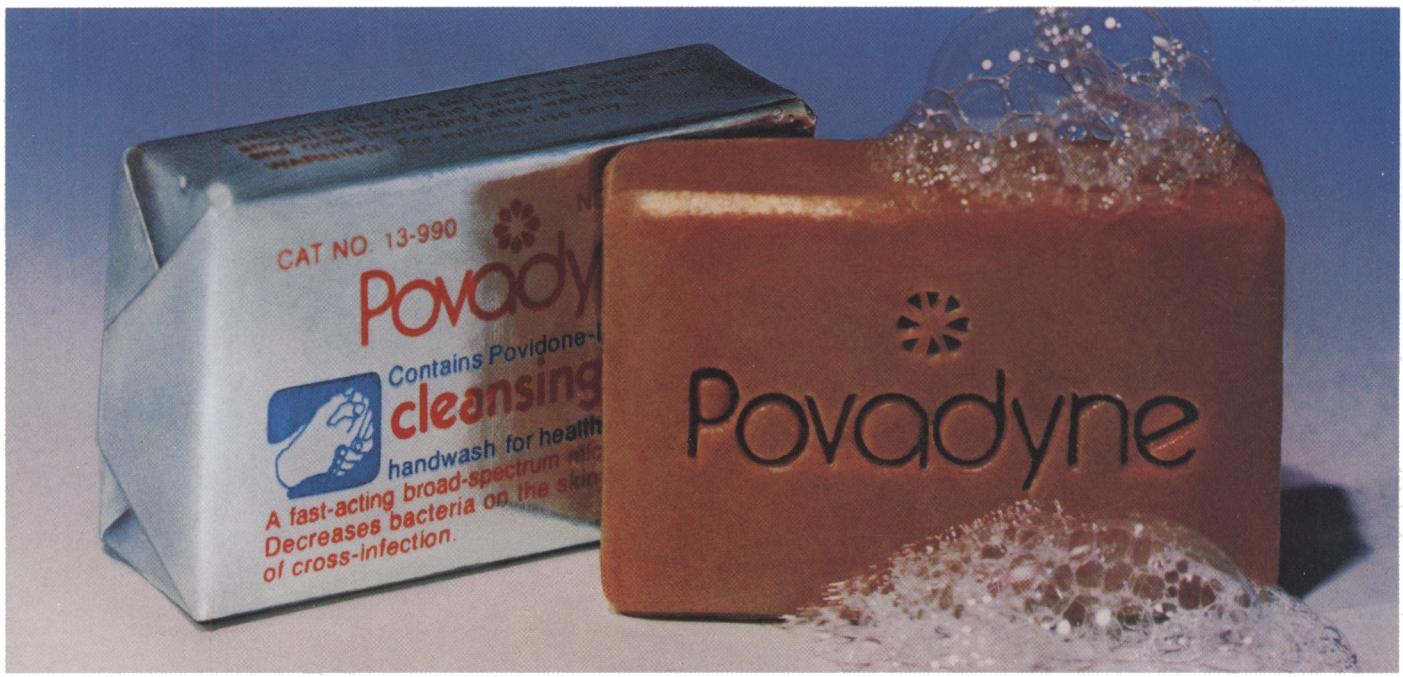

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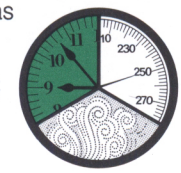

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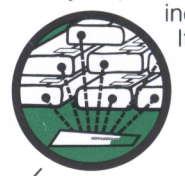
The SteriGage Indicator can be used in every steam sterilizer in your hospital, including flash sterilizers. It also works at all normal sterilization temperatures, eliminating multiple inventories.



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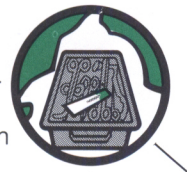

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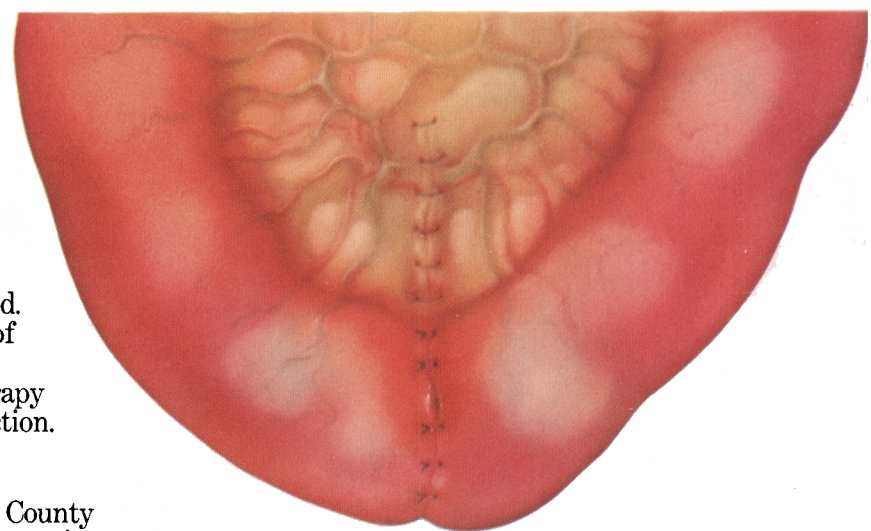
In serious intra-abdominal and pelvic infections...

The clinical importance and virulence of *Bacteroides fragilis*

Clinical importance of *B. fragilis*

Bacteroides fragilis is a major anaerobic pathogen in abdominal and pelvic infections. Both aerobes and anaerobes are involved in the majority of serious intra-abdominal and female pelvic infections. Therefore, early antimicrobial therapy against both pathogens should be considered.

Two studies have confirmed the value of including *Cleocin Phosphate*™ (clindamycin phosphate injection, NF) as part of the therapy for serious intra-abdominal and pelvic infection.



Penetrating abdominal wounds

In a prospective, randomized study at Cook County Hospital, Chicago, 100 patients who had penetrating abdominal wounds, with spillage of bowel contents, were given kanamycin (0.5 gram q12h) and either clindamycin (600 mg q6h) or cephalothin (3 grams q6h).[1] The clindamycin/kanamycin-treated group showed significantly fewer episodes of septicemia or intra-abdominal sepsis. The higher complication rate in the cephalothin/kanamycin group was the result of infections due to anaerobic bacteria alone or a mixture of aerobes and anaerobes (see Table 1).

Table 1	Cephalothin/ Kanamycin	Clindamycin/ Kanamycin
Number of patients	52	48
Septic complications		
Septicemia	7	2
Intra-abdominal abscesses	7	3
Total complications	14	5

Postcesarean endomyometritis

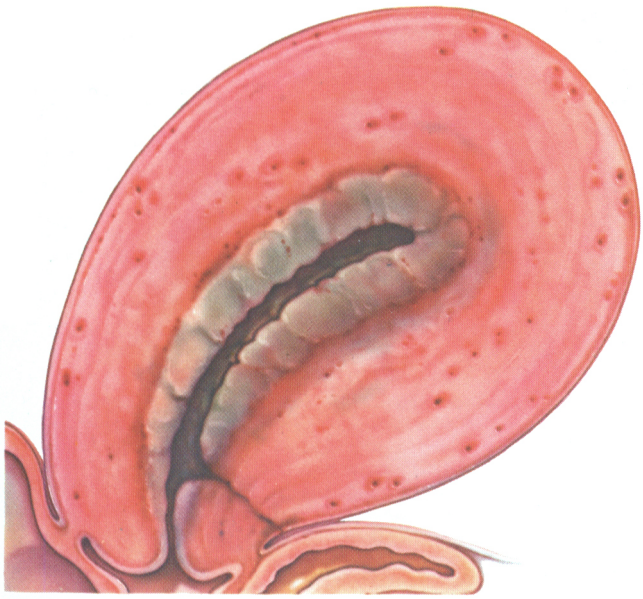
In a prospective, randomized study at the University of Southern California Medical Center among 200 women who developed endomyometritis following cesarean section, the clinical response was more favorable in those receiving clindamycin (600 mg q6h) and gentamicin (60-80 mg q8h) than in those receiving penicillin (5 million units q6h) and gentamicin (60-80 mg q8h) (see Table 2).[2]

Table 2	Penicillin/ Gentamicin	Clindamycin/ Gentamicin
Number of patients	100	100
No response—third antibiotic required	29	5
Serious complications*	4	0
Mean duration of hospital stay (days)	8.7	7.4
Mean febrile degree hours	110	81
Mean febrile degree hours in eight patients who developed *Bacteroides* bacteremia	256.4 (n = 6)	73.4 (n = 2)

*1 patient with pelvic abscess, 1 with wound evisceration, and 2 with septic thrombophlebitis.

Adapted from Ledger et al.[2]

The foregoing studies suggest that early treatment with *Cleocin Phosphate* in combination with an aminoglycoside is effective therapy in these serious infections and can prevent progression to more complicated and disseminated infection.



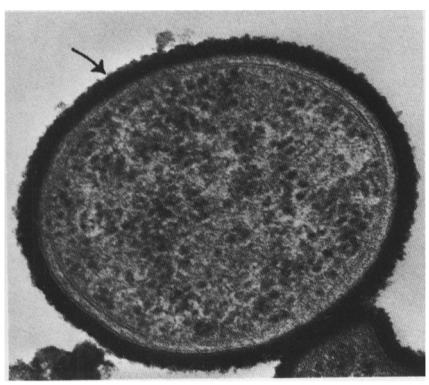
Virulence of B. fragilis

As clinical studies have shown, antibiotics active against *B. fragilis* must be instituted early in the course of therapy for serious pelvic and abdominal infection to prevent complications due to this organism.

Research is currently being conducted to better define the virulence of *B. fragilis*.

Specific antigenic marker

Investigators at the Harvard Medical School have identified a capsular polysaccharide on the outer membrane of *B. fragilis*. In an experimental model, an antibody response to this antigen was associated with *B. fragilis* infection. The clinical significance of this antibody-antigen relationship is unknown.



Electron micrograph of *B. fragilis* stained by standard techniques (×120,000). A capsular polysaccharide has been identified on the outer membrane (arrow).

A subsequent clinical study has shown that in the acute phase of pelvic inflammatory disease, women from whom *B. fragilis* was cultured after culdocentesis had a more significant change in antibody titer to the polysaccharide antigen than did women from whom *B. fragilis* was not isolated.

These data suggest that *B. fragilis* may play a significant role in acute pelvic inflammatory disease and may be involved early in the infectious process.

Antibiotic susceptibility

Cleocin Phosphate *has maintained an excellent record of in vitro activity against* B. fragilis.

If significant diarrhea or colitis occurs during therapy, this antibiotic should be discontinued (see WARNING box). A summary of prescribing information for *Cleocin Phosphate* —used in the treatment of serious infections due to anaerobic pathogens—can be found on the following page.

For serious anaerobic infections...

Cleocin Phosphate™

(clindamycin phosphate injection, NF)

STERILE SOLUTION—FOR INTRAMUSCULAR AND INTRAVENOUS USE

Upjohn

https://doi.org/10.1017/S0195941700052541 Published online by Cambridge University Press

Cleocin Phosphate™

(clindamycin phosphate injection, NF)

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WARNING

Clindamycin therapy has been associated with severe colitis which may end fatally. Therefore, it should be reserved for serious infections where less-toxic antimicrobial agents are inappropriate, as described in the INDICATIONS section. It should not be used in patients with nonbacterial infections, such as most upper respiratory tract infections. Studies indicate a toxin(s) produced by *Clostridia* is one primary cause of antibiotic-associated colitis. Cholestyramine and colestipol resins have been shown to bind the toxin in vitro. See WARNINGS section. The colitis is usually characterized by severe, persistent diarrhea and severe abdominal cramps and may be associated with the passage of blood and mucus. Endoscopic examination may reveal pseudomembranous colitis.

When significant diarrhea occurs, the drug should be discontinued or, if necessary, continued only with close observation of the patient. Large-bowel endoscopy has been recommended.

Antiperistaltic agents such as opiates and diphenoxylate with atropine (Lomotil) may prolong and/or worsen the condition.

Diarrhea, colitis, and pseudomembranous colitis have been observed to begin up to several weeks following cessation of therapy with clindamycin.

Each ml contains:

clindamycin phosphate equivalent to	150 mg clindamycin
benzyl alcohol	5 mg
disodium edetate	0.5 mg
water for injection	qs

When necessary, pH adjusted with NaOH and/or HCl.

Indications: Clindamycin is indicated in the treatment of serious infections caused by susceptible anaerobic bacteria.

Clindamycin is also indicated in the treatment of serious infections due to susceptible strains of streptococci, pneumococci, and staphylococci. Its use should be reserved for penicillin-allergic patients or other patients for whom, in the judgment of the physician, a penicillin is inappropriate. Because of the risk of colitis, as described in the WARNING box, before selecting clindamycin the physician should consider the nature of the infection and the suitability of less-toxic alternatives (eg, erythromycin).

Anaerobes: Serious respiratory tract infections such as empyema, anaerobic pneumonitis, and lung abscess; serious skin and soft-tissue infections; septicemia; intra-abdominal infections such as peritonitis and intra-abdominal abscess (typically resulting from anaerobic organisms resident in the normal gastrointestinal tract); infections of the female pelvis and genital tract such as endometritis, nongonococcal tubo-ovarian abscess, pelvic cellulitis, and postsurgical vaginal cuff infection.

Streptococci: Serious respiratory tract infections; serious skin and soft-tissue infections; septicemia.

Staphylococci: Serious respiratory tract infections; serious skin and soft-tissue infections; septicemia; acute hematogenous osteomyelitis.

Pneumococci: Serious respiratory tract infections.

Adjunctive Therapy: In the surgical treatment of chronic bone and joint infections due to susceptible organisms. Indicated surgical procedures should be performed in conjunction with antibiotic therapy.

Bacteriologic studies should be performed to determine the causative organisms and their susceptibility to clindamycin.

Contraindications: History of hypersensitivity to clindamycin or lincomycin.

Warnings: See WARNING box. Studies indicate a toxin(s) produced by *Clostridia* is one primary cause of antibiotic-associated colitis. Cholestyramine and colestipol resins have been shown to bind the toxin in vitro. Mild cases of colitis may respond to drug discontinuance alone. Moderate to severe cases should be managed promptly with fluid, electrolyte, and protein supplementation as indicated. Systemic corticoids and corticoid retention enemas may help relieve the colitis. Other causes of colitis should also be considered.

A careful inquiry should be made concerning previous sensitivities to drugs and other allergens. Antagonism has been demonstrated between clindamycin and erythromycin in vitro. Because of possible clinical significance, these two drugs should not be administered concurrently.

Usage in Pregnancy: Safety for use in pregnancy has not been established.

Usage in Newborns and Infants: When clindamycin phosphate is administered to newborns and infants, appropriate monitoring of organ system functions is desirable.

Nursing Mothers: Clindamycin has been reported to appear in breast milk in the range of 0.7 to 3.8 mcg/ml.

Usage in Meningitis: Since clindamycin does not diffuse adequately into the cerebrospinal fluid, the drug should not be used in meningitis.

SERIOUS ANAPHYLACTOID REACTIONS REQUIRE IMMEDIATE EMERGENCY TREATMENT WITH EPINEPHRINE. OXYGEN AND INTRAVENOUS CORTICOSTEROIDS SHOULD ALSO BE ADMINISTERED AS INDICATED.

Precautions: Review of experience to date suggests that a subgroup of older patients with associated severe illness may tolerate diarrhea less well. When clindamycin is indicated in these patients, they should be carefully monitored for change in bowel frequency. Prescribe with caution in individuals with a history of gastrointestinal disease, particularly colitis.

Do not inject intravenously as an undiluted bolus; infuse as directed in package insert. Indicated surgical procedures should be performed in conjunction with therapy. Patients with very severe renal disease and/or very severe hepatic disease accompanied by severe metabolic aberrations should be dosed with caution and serum clindamycin levels monitored during high-dose therapy.

Prescribe with caution in atopic individuals. During prolonged therapy, periodic liver and kidney function tests and blood counts should be performed. Use may result in overgrowth of nonsusceptible organisms, particularly yeasts. Should superinfection occur, adjust therapy as clinical situation dictates. Clindamycin has been shown to have neuromuscular blocking properties that may enhance the action of other neuromuscular blocking agents. Use with caution in patients receiving such agents.

Adverse Reactions: *Gastrointestinal:* Abdominal pain, nausea, vomiting, and diarrhea. (See WARNING box.) *Hypersensitivity Reactions:* Maculopapular rash and urticaria have been observed. Generalized mild to moderate morbilliform-like skin rashes are the most frequently reported of all adverse reactions. Rare instances of erythema multiforme, some resembling Stevens-Johnson syndrome, have been associated with clindamycin. A few cases of anaphylactoid reactions have been reported. If a hypersensitivity reaction occurs, the drug should be discontinued. The usual agents (epinephrine, corticosteroids, antihistamines) should be available for emergency treatment of serious reactions. *Liver:* Jaundice and abnormalities in liver function tests have been observed during clindamycin therapy. *Hematopoietic:* Neutropenia, eosinophilia, agranulocytosis, and thrombocytopenia have been reported; no direct etiologic relationship to concurrent clindamycin therapy has been made. *Local Reactions:* Pain, induration, and sterile abscess have been reported after intramuscular injection, and thrombophlebitis after intravenous infusion. Reactions can be minimized or avoided by giving deep intramuscular injections and avoiding prolonged use of indwelling intravenous catheters. *Musculoskeletal:* Rare instances of polyarthritis have been reported.

How Supplied: Available as sterile solution with each ml containing clindamycin phosphate equivalent to 150 mg clindamycin. Ampoules of 2 and 4 ml.

Caution: Federal law prohibits dispensing without prescription. MED B-7-S

References: 1. Thadepalli H, Gorbach SL, Broido PW, Norsen J, Nyhus L: Abdominal trauma, anaerobes, and antibiotics. *Surg Gynecol Obstet* 137:270-276, 1973. **2.** DiZerega G, Yonekura L, Roy S, Nakamura RM, Ledger WJ: A comparison of clindamycin-gentamicin and penicillin-gentamicin in the treatment of postcesarean section endomyometritis. *Am J Obstet Gynecol* 134:238-242, 1979.

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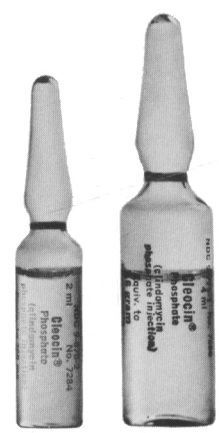

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