any other antibiotics except penicillin and streptomycin, and they have proved to be unusually safe, well-tolerated, and effective, as well as convenient to use orally. Reactions are usually not serious and are very rarely fatal.

As newer antibiotics have been introduced they have supplemented the tetracyclines and have filled in the therapeutic gaps when used against organisms usually resistant to them, eg. *Proteus Pseudomonas*, and other resistant strains of coliform organisms.

The chief disadvantage of tetracycline therapy is the expense as compared to that of penicillin and sulfonamides. In addition, certain organisms either develop resistance or are replaced by resistant strains after prolonged or repeated courses of tetracycline therapy.

In the following clinical situations, the tetracycline drugs are considered as first or equal choices:

Respiratory infections.—(a) Pneumonitis due to Eaton Agent (primary atypical pneumonia), psittacosis, *II influenzae*, or pneumocci (in patients allergic to penicillin or when oral therapy is necessary); (b) chronic bronchitis due to mixed organisms, especially *II influenzae* and pneumococci;[24] (c) infections due to some strains of *Klebsiella* (combined with streptomycin or kanamycin); and (d) acute bronchitis of undetermined etiology.

Urinary tract infections.—Infections due to sensitive coliform organisms, especially when they are acute and not acquired in the hospital (often combined with streptomycin, kanamycin or the colistine [colistin sulfate and colistimethate sodium]).

Other gram-negative infections.—(a) Infections due to sensitive strains of *E coli, Aerobacter, Proteus*, and coliform organisms (frequently combined with streptomycin, kanamycin, or the colistins if bacteremia is present); (b) brucellosis (either alone or combined with streptomycin); (c) tularemia (either alone or combined with streptomycin); (d) *Bacteroides* (usually alone or combined with another antibiotic if sensitivity studies indicate that another antibiotic would be effective); and (e) *Shigella.*

Rickettsial diseases.—(a) Rocky mountain spotted fever and (b) typhus fever.

Vital diseases and miscellaneous.—(a) Psittacosis, (b) lymphopathia venerum, (c) trachoma, and (d) granuloma inguinale.

Clostridial infections.—(a) Tetanus and (b) *Clostridium perfringens* (gas gangrene).

Protozoal diseases.—Amebiasis.

In general documented evidence reveals little difference in therapeutic effectiveness between the four main tetracycline homologues. There may be an occasional strain that exhibits a differential sensitivity pattern favoring one homologue over another, but these differences are quantitative rather than qualitative. If a given patient fails to respond to one tetracycline homologue, there is rarely any advantage in changing to another homologue.

PREPARATIONS

The four homologues are marketed under a variety of brand names, each containing a specific salt or additive, with the claim that there is optimal absorption. It has been emphasized that there is little, if any, advantage of one salt or additive over the other. On the other hand, those homologues that contain calcium and dicalcium salts actually depress absorption.[6, 25] Therefore, calcium compounds are no longer incorporated in commercial preparations of the tetracyclines. When prolonged treatment is to be given, their combination with antifungal agents such as nystatin and amphotericin B may delay or decrease the overgrowth of *Candida* organisms about the anus and in the vagina.

Oral preparations of tetracycline, oxytetracycline, and chlortetracycline are available in capsule and tablet form in 50, 100, and 250 mg sizes. They also are supplied in liquid form for administration as drops and by the teaspoonful. Capsules of demethylchlortetracycline contain 150 mg. Liquid preparations of this homologue also are available. The tetracyclines are prepared for topical application as ophthalmic and otic solutions and ointments and as troches and surgical powders.

If a patient is unable to take tetracycline orally, intravenous administration by continuous drip should be initiated. The usual dose for adults is 500 mg every 8 to 12 hours, occasionally, larger doses are indicated. There are several preparations available for intramuscular injection. However, intramuscular administra-