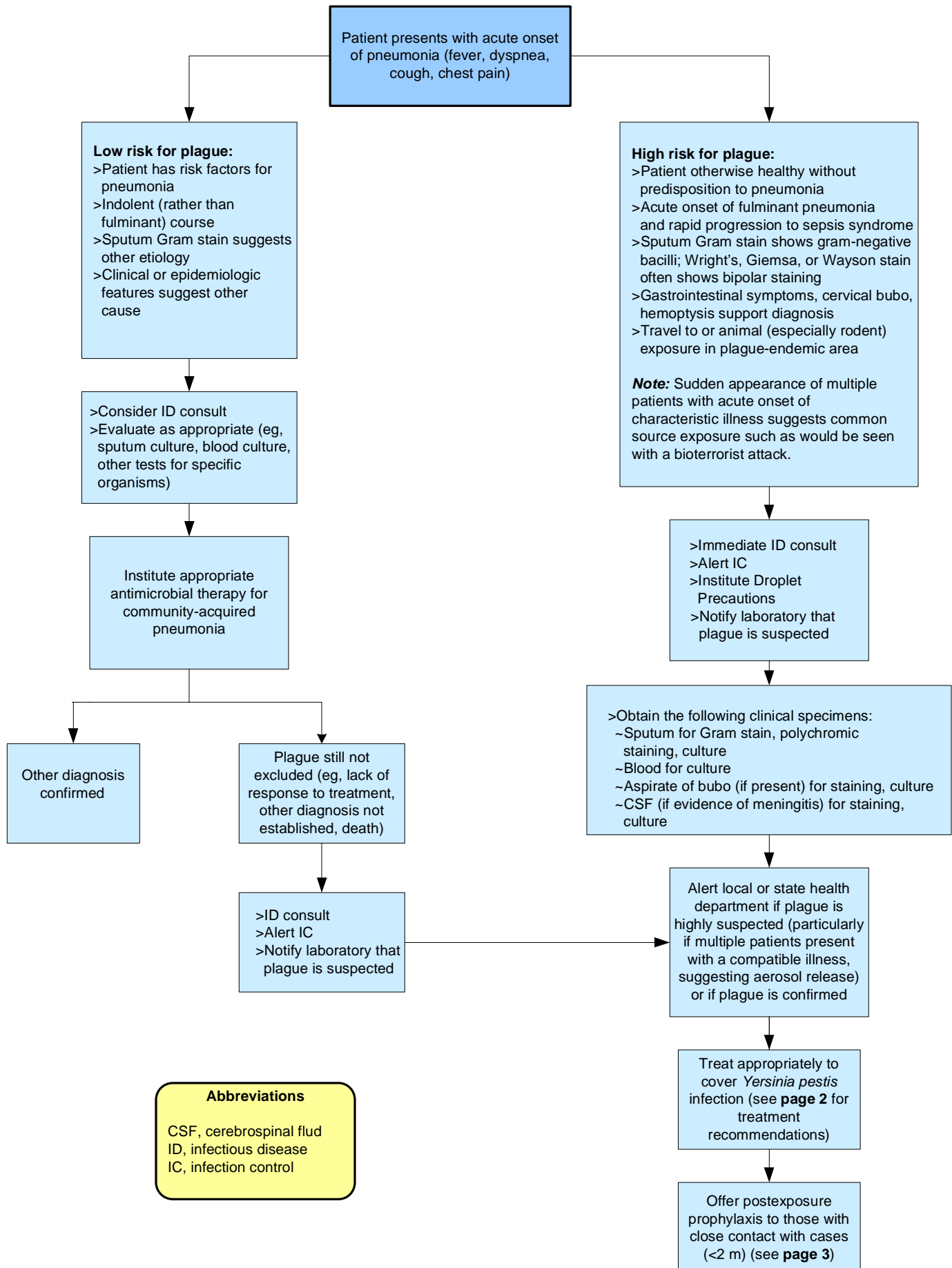


# Clinical Pathway: Pneumonic Plague



<b>Recommendations from the Working Group on Civilian Biodefense for Treatment of Pneumonic Plague During a Bioterrorism Event</b>	
<b>Choices by Patient Category</b>	<b>Therapy Recommendations*</b>
Adults: Preferred choices	Streptomycin, 1 gm IM twice daily for 10 days† <b>or</b> Gentamicin, 5 mg/kg IM or IV once daily or 2 mg/kg loading dose followed by 1.7 mg/kg IM or IV 3 times daily for 10 days‡§
Adults: Alternative choices**	Doxycycline, 100 mg IV twice daily or 200 mg IV once daily for 10 days§ <b>or</b> Ciprofloxacin, 400 mg IV twice daily for 10 days§†† <b>or</b> Chloramphenicol, 25 mg/kg IV 4 times daily for 10 days‡‡
Children: Preferred choices	Streptomycin, 15 mg/kg IM twice daily (maximum daily dose, 2 gm) <b>or</b> Gentamicin 2.5 mg/kg IM or IV 3 times daily for 10 days‡
Children: Alternative choices**	Doxycycline: ≥45 kg, give adult dosage <45 kg, give 2.2 mg/kg IV twice daily for 10 days (maximum, 200 mg/day) <b>or</b> Ciprofloxacin, 15 mg/kg IV twice daily for 10 days (maximum daily dose, 1 gm)†† <b>or</b> Chloramphenicol, 25 mg/kg IV 4 times daily for 10 days (maximum daily dose, 4 gm)‡‡§§
<p>Abbreviations: IM, intramuscularly; IV, intravenously.</p> <p>*These recommendations are most appropriate for the contained casualty setting where resources are adequate to treat all patients with intravenous antibiotics. In the mass casualty setting where the medical care delivery system is not able to meet the demands for patient care, oral antibiotics may need to be substituted for intravenous antibiotics for treatment of patients with plague. In such a situation, the recommendations in the table on postexposure prophylaxis should be followed for treatment, except that treatment should be continued for 10 days instead of 7 days.</p> <p>†Streptomycin is not acceptable for use in pregnant women because irreversible deafness in children exposed in utero has been reported.</p> <p>‡Aminoglycosides must be adjusted according to renal function.</p> <p>§Acceptable for pregnant women. Although fetal toxicity may occur with doxycycline use, the Working Group recommended doxycycline or ciprofloxacin if gentamicin is not available or if oral antibiotics must be used.</p> <p>**Trimethoprim-sulfamethoxazole has been used successfully to treat plague; however, the Working Group considers this agent as a second-tier choice.</p> <p>††Other fluoroquinolones may be substituted at dosages appropriate for age.</p> <p>‡‡Concentration should be maintained between 5 and 20 µg/mL; concentrations &gt;25 µg/mL can cause reversible bone marrow suppression. The oral formulation is available only outside the United States. Some experts have recommended that chloramphenicol be used to treat patients with plague meningitis, since chloramphenicol penetrates the blood-brain barrier (AAP. Plague. In: Pickering LK, ed. 2000 Red book: report of the Committee on Infectious Diseases. Ed 25. Elk Grove Village, Ill: American Academy of Pediatrics, 2000:450-2; Butler T. Plague. In: Strickland GT, ed. Tropical medicine. Philadelphia, Pa: WB Saunders, 1991:408-16; Dennis D, Meier F. Plague. In: Horsburgh CR, Nelson AM, eds. Pathology of emerging infections. Washington, DC: ASM Press, 1997:21-47). However, controlled trials to verify improvement in outcome have not been performed.</p> <p>§§According to the Working Group, children younger than 2 years of age should not receive chloramphenicol. However, the American Academy of Pediatrics (AAP) has recommended chloramphenicol as the drug of choice for treating plague meningitis in children. The AAP <i>Red Book</i> (see reference above) does not indicate that chloramphenicol should not be given to children with serious infections who are beyond the newborn period but younger than 2 years of age.</p> <p><i>Adapted from Inglesby TV, et al. Plague as a biological weapon: medical and public health management. JAMA 2000;283(17):2281-90 [http://jama.ama-assn.org/issues/v283n17/full/jst90013.html].</i></p>	

## Recommendations from the Working Group on Civilian Biodefense for Antibiotic Postexposure Prophylaxis During an Outbreak of Pneumonic Plague Following a Bioterrorism Event

<b>Choices by Patient Category</b>	<b>Therapy Recommendations*</b>
Adults: Preferred choices	Doxycycline, 100 mg PO twice daily for 7 days†‡ <b>or</b> Ciprofloxacin, 500 mg PO twice daily for 7 days‡§
Adults: Alternative choice**	Chloramphenicol, 25 mg/kg PO 4 times daily for 7 days††
Children: Preferred choices	Doxycycline: if ≥45 kg, give adult dosage; if <45 kg, give 2.2 mg/kg PO twice daily for 7 days† <b>or</b> Ciprofloxacin, 20 mg/kg PO twice daily for 7 days (maximum daily dose, 1 gm§
Children: Alternative choice**	Chloramphenicol, 25 mg/kg PO 4 times daily for 7 days (maximum daily dose, 4 gm)††‡‡

Abbreviation: PO, orally.

\*Recommendations were reached by consensus of the Working Group on Civilian Biodefense and may not necessarily be approved by the Food and Drug Administration. Although these recommendations are intended for postexposure prophylaxis, they also can be used for treatment of plague cases in the mass casualty setting where the number of patients is too great for all patients to receive intravenous antibiotics and oral antibiotics must be substituted (except that treatment should be continued for 10 days instead of 7 days as for prophylaxis).

†Tetracycline can be substituted for doxycycline at a dose of 10-25 mg/kg/day divided into 2-4 doses.

‡Acceptable for pregnant women. Although fetal toxicity may occur with doxycycline use and toxic effects on the liver in pregnancy have been noted with the tetracycline class, the Working Group recommended doxycycline or ciprofloxacin for postexposure prophylaxis of pregnant women or for treatment of infection in the mass casualty setting.

§Other fluoroquinolones may be substituted at dosages appropriate for age.

\*\*Trimethoprim-sulfamethoxazole (40 mg sulfa/kg/day administered orally in 2 divided doses for 7 days) has been recommended for postexposure prophylaxis in children younger than 8 years old and pregnant women (AAP. Plague. In: Pickering LK, ed. 2000 Red book: report of the Committee on Infectious Diseases. Ed 25. Elk Grove Village, Ill: American Academy of Pediatrics, 2000:450-2; McGovern. Plague. In: Zajtchuk R, Bellamy RF, eds. Textbook of military medicine: medical aspects of chemical and biological warfare. Washington, DC: Office of the Surgeon General, Borden Institute, Walter Reed Army Medical Center, 1997 [<http://www.nbc-med.org/SiteContent/HomePage/WhatsNew/MedAspects/contents.html>].

††Concentration should be maintained between 5 and 20 µg/mL; concentrations >25 µg/mL can cause reversible bone marrow suppression. The oral formulation is available only outside the United States.

‡‡According to the Working Group, children younger than 2 years of age should not receive chloramphenicol.

Adapted from Inglesby TV, et al. Plague as a biological weapon: medical and public health management. JAMA 2000;283(17):2281-90 [<http://jama.ama-assn.org/issues/v283n17/full/jst90013.html>].