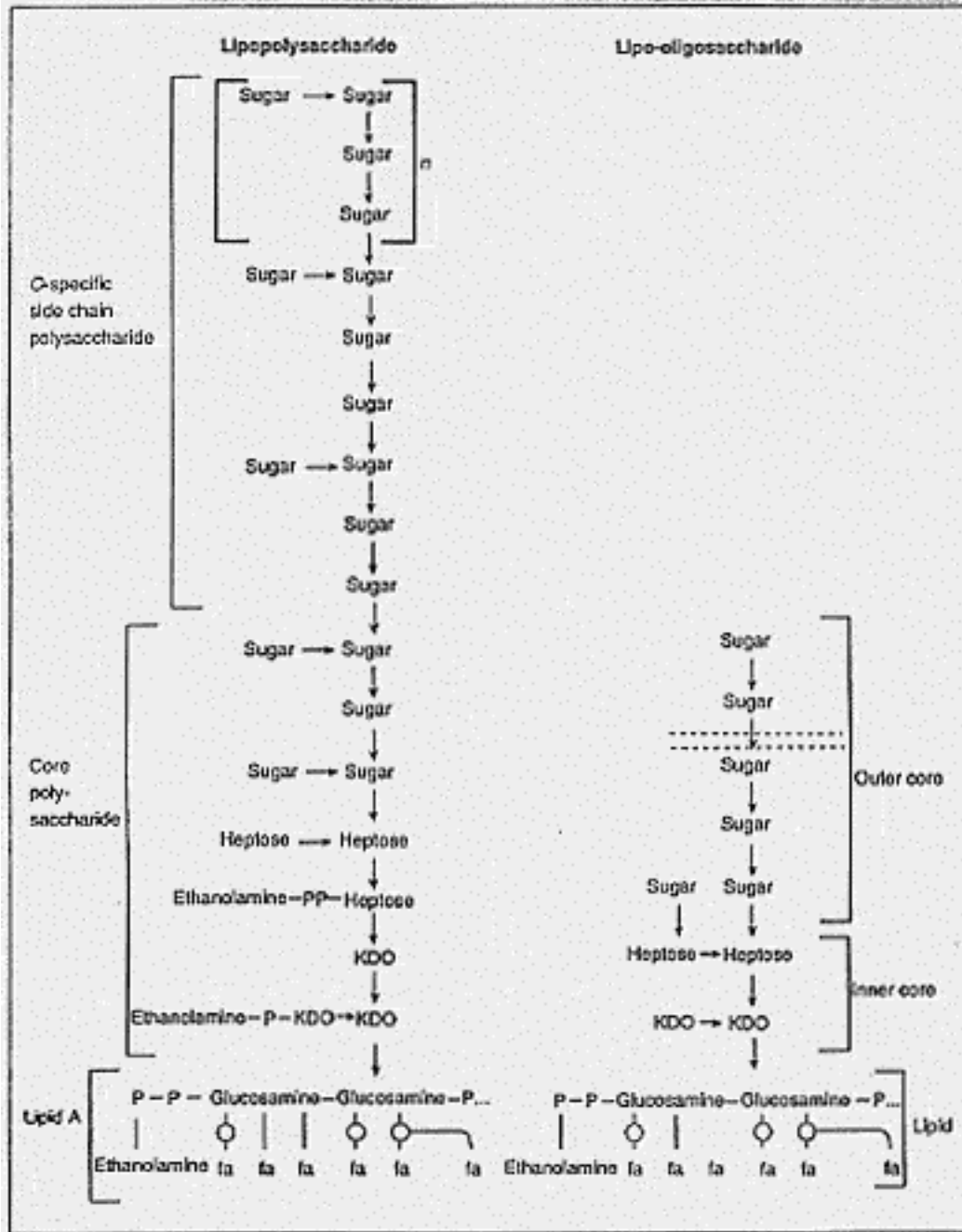


### CAPSULES - IMPORTANT VIRULENCE FACTORS

pathogen	capsule	important type	vaccine
<i>Neisseria meningitidis</i>	polysaccharide	A, B, C, Y, W-135	good for A and C; poor for B
<i>Haemophilus influenzae</i>	polysaccharide	b	Hib vaccine for <1-year-olds
<i>Streptococcus pneumoniae</i>	polysaccharide	many	pneumovax:23-valent most common types
group B <i>streptococcus</i>	} polysaccharide rich in sialic acid	(Ia, Ib, II) III in neonatal meningitis	- ? future
<i>Escherichia coli</i>		K1 in meningitis	- ? future

23a



23b

BACTERIAL MENINGITIS - VIRULENCE FACTORS FOR MAJOR PATHOGENS			
virulence factor	bacterial pathogen		
	<i>Neisseria meningitidis</i>	<i>Haemophilus influenzae</i>	<i>Streptococcus pneumoniae</i>
capsule	+	+	+
IgA protease	+	+	+
pili	+	+	-
endotoxin	+	+	-
outer membrane proteins	?	+	-

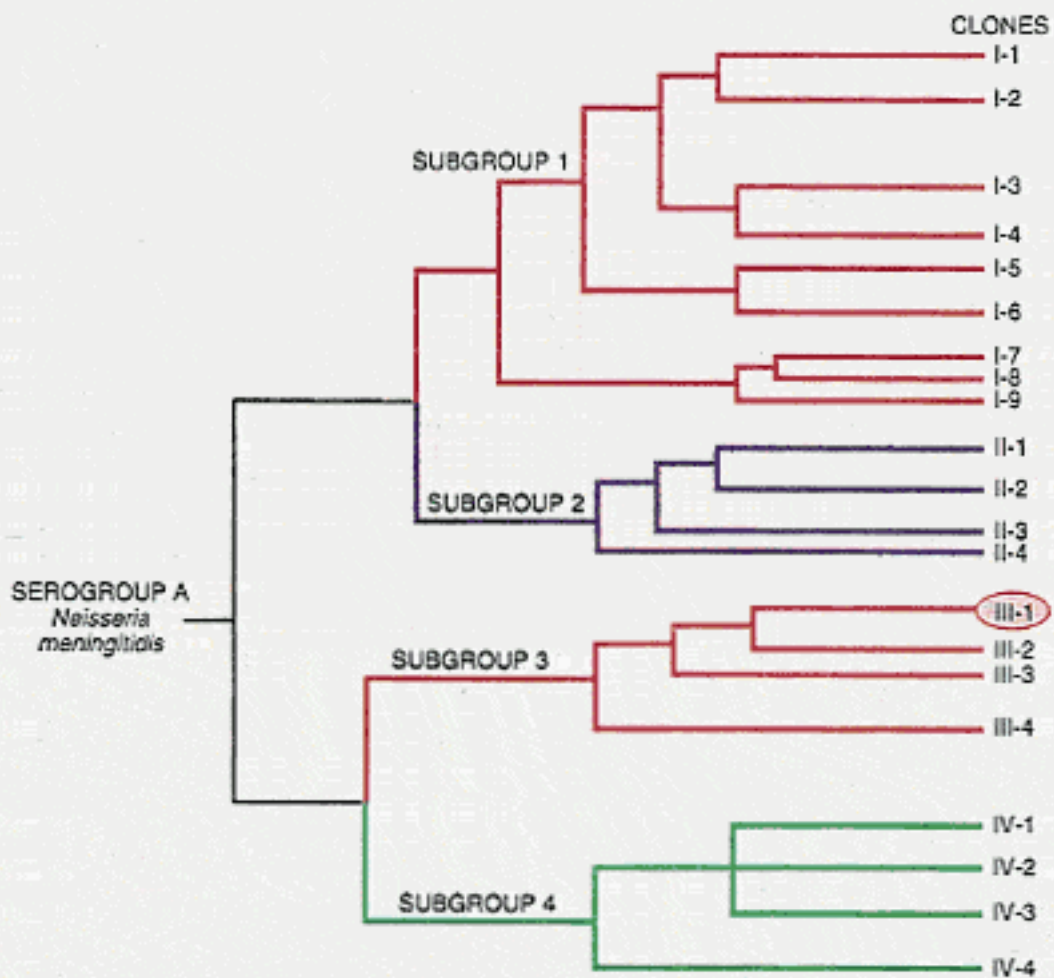
23c

TABLE 10-6. PROPORTION OF CERTAIN INFECTIOUS DISEASES CAUSED BY COMMON BACTERIAL CLONAL TYPES

Species	Total Number of Clonal Types Identified	Number of Clonal Types Commonly Isolated from Cases of Disease	Percentage of Disease Due to Common Clonal Types
<i>Bordetella pertussis</i>	2	2	100
<i>Haemophilus influenzae</i> type b			
North America	104	6	81
Europe	60	3	78
<i>Legionella pneumophila</i>			
Global	50	5	52
Wadsworth VA Hospital	10	1	86
<i>Shigella sonnei</i>	1	1	100

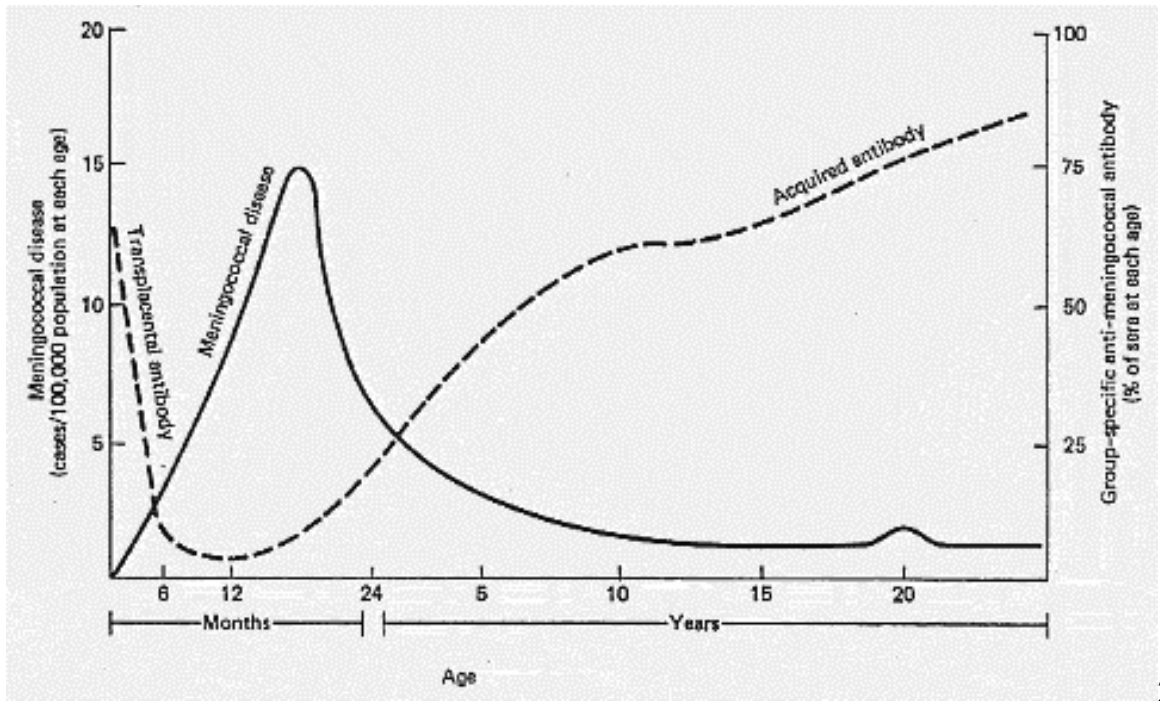
Modified from Mandell GL, Bennett JE, Dorin E. Principles and Practice of Infectious Diseases, 4th ed. New York: Churchill Livingstone; 1990, p. 21, with permission.

23d



SOURCE: Mark Achtman, Max Planck Institute for Molecular Genetics, Berlin

GROUP A MENINGOCOCCI were once thought to be homogeneous. But enzyme electrophoresis studies have shown that group A meningococci are composed of at least 21 lineages, or clones. One clone, III-1, has recently caused epidemics in Asia, the Middle East and Africa.



23f