TABLE 4.—CASES OF ACUTE BACTERIAL MENINGITIS, EXCLUDING NEONATES,[1] BY AGE GROUP, SEVERITY, AND OUTCOME, LOS ANGELES COUNTY GENERAL HOSPITAL, 1 YEAR EXPERIENCE TO JULY 1966

	Severity [2] on admission to hospital							
	Mild		Moderate		Severe		Total	
Age group	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
2 to 11 months	48	1	18	0	15	5	81	6
1 to 14 years	103	0	11	0	14	2	128	2
15 to 44 years	28	0	0	0	21	4	49	4
45 to 59 years	10	1	0	0	17	7	27	8
60 years and over	6	0	0	0	17	8	23	8
Total	195	2	29	0	84	26	308	28

[1] 15 infants up to 2 months of age treated, with 6 deaths.
[2] Severe—coma, semicoma, significant hypotension, or definite shock; moderate—convulsions; mild—none of the above.

TABLE 5.—SINGLE VERSUS MULTIPLE ANTIMICROBIAL THERAPY IN PATIENTS MORE THAN 2 MONTHS OF AGE WITH ACUTE BACTERIAL MENINGITIS, BY SEVERITY OF ILLNESS, LOS ANGELES COUNTY GENERAL HOSPITAL (1 YEAR EXPERIENCE TO JULY 1966)

	Therapeutic regimen selected								
	Ampicillin alone			Ampicillin plus chloramphenicol plus streptomycin			Total patients treated [1]		
Severity of illness on admission	Cases	Deaths	Percent	Cases	Deaths	Percent	Cases	Deaths	Percent
Mild	100	1	1.0	76	0	--------	176	1	0.6
Moderate	14	0	--------	10	0	--------	24	0	0
Severe	31	5	16.1	37	14	37.8	68	19	27.8
Total	145	6	4.1	123	14	11.4	268	20	7.5

[1] Patients excluded: unusual organisms, 15; error in treatment assignment or penicillin allergy, 17; endocarditis, mechanical defect, etc., 6; inadequate records, 2; total exclusions, 40, with 8 deaths.

Table 6 demonstrates the positive correlation of increasing age with an increasing proportion of deaths. It is important, however, to note that the increased fatality in the multiple drug regimen occurred at all ages, and was not limited to infants, as in the "grey syndrome" associated with chloramphenicol (9), nor did it involve the elderly or the alcoholic exclusively.

When one examines the response recorded in Table 7 to single vs, multiple therapy by category of disease, no single category predominates in the excess mortality found among patients receiving multiple drug therapy.

It is apparent from these data that adding other antimicrobial agents to a single effective bactericidal drug in the therapy of the common types of acute bacterial meningitis may be detrimental. The reasons for this difference are obscure. Perhaps this is the one time in 50 ($p \cong 0.02$) in which this difference could have occurred by chance alone. On the other hand, it seems entirely possible that interference between chloramphenicol and ampicillin may have occurred (1). In addition, the toxicity of chloramphenicol may be sufficient, in the critically ill person, to have an adverse effect upon survival. In any event, careful investigative work is needed for further evaluation of our present antibiotics in the management of bacterial meningitis.

A recently described antimicrobial agent, hetacillin, offers promise of efficacy similar to that of ampicillin for the treatment of these infections. *In vitro* activity appears to be similar to that of ampicillin, as is shown in Figures 3, 4 and 5. These data were derived using standard procedures with 25 strains of pneumococci and meningococci, and 25 strains of *Hemophilus influenzae* Type B recently isolated from spinal fluid.* These data, together with the demonstrably greater peak serum levels obtained after injection of equivalent doses (10), suggest that hetacillin deserves careful evaluation in the treatment of meningitis.

*Curves of rate of killing of a few strains of meningococci are similar for ampicillin, penicillin G and hetacillin.