Summary. Sulfanilamide by subcutaneous injection in dose of 0.160 g per kilo apparently prolonged the lives of some mice when given in 2 doses 6 hours apart before intraperitoneal inoculation with *B. typhosus* in a dose fatal in about 48 hours, followed by subsequent doses at 6-hour intervals. But when the compound in the same dose was given by subcutaneous injection immediately after inoculation followed by subsequent doses at 6-hour intervals there was much less evidence of therapeutic activity. However, sulfanilamide was much more effective when given intraperitoneally in the same dose 2 hours after intraperitoneal inoculation followed by a second dose 4 hours later and subsequent doses at 6-hour intervals. Of the total of 22 treated mice in 3 experiments, 3 survived and the lives of 7 were prolonged, whereas all of 8 untreated controls succumbed in 1 to 2 days after inoculation.

Sulfapyridine was less effective. Of 10 mice given 0.160 g by intraperitoneal injection immediately after inoculation, followed by a second dose 4 hours later and subsequent doses at 6-hour intervals, one survived and the lives of 2 were prolonged about 24 hours beyond the survival of 4 untreated controls which succumbed in 24 to 48 hours after inoculation.

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Sulfapyridine and Sulfanilamide in Experimental Pneumococcal, Meningococcal, Welch Bacillary and Friedländer's Bacillary Infections in Mice.*

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We[1, 2] have discussed the comparative therapeutic efficiency of sulfapyridine and sulfanilamide in the treatment of experimental hemolytic streptococcal and Type I pneumococcal infections in mice. These reports were based upon results obtained in mice the origins of

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1 Long, P. H., Bliss, E. A., and Feinstone, W. H., *Penna. Med. J.*, 1939, **42**, 483.

2 Long, P. H., *J. A. M. A.*, 1939, **112**, 538.

TABLE I.

Comparative Therapeutic Effects of Sulfapyridine and Sulfanilamide in Control of Experimental Pneumococcal, Meningococcal, Welch Bacillary and Friedländer's Bacillary Infections in Mice.

Organism	No. Mice	Inoculum M.L.D.	Drug	Deaths—Days After Infection											Survivals	
				1	2	3	4	5	6	7	8	9	10	10-15	No.	%
Pneu. I	25	630	S.P.	10	9	4	1								1	4
"	25	"	S.	24	1											
"	15	"	Control	15												
Pneu. II	50	890	S.P.		7	13	10	5	7	6	1	1				
"	50	"	S.	6	41	2	1									
"	30	"	Control	30												
Pneu. III	50	1040	S.P.	1	4	6	8	2	1	25	2	1				
"	50	"	S.	2	5	5	1	17	11	9						
"	30	"	Control	30												
Meningococcus	50	10,000	S.P.	30	11	1									8	16
"	50	"	S.	14	22	1			1						12	24
"	30	"	Control	30												
Welch Bacillus	40	—	S.P.	23	1										16	40
"	40	—	S.	24	3										13	32
"	40	—	Control	36	1										3	7
Friedländer's Type B	45	1603	S.P.	1			1		1	20	9	2	8	3		
"	45	"	S.			9	9	17	1	4						
"	30	"	Control	24	6											

S. = Sulfanilamide.
S.P. = Sulfapyridine.
Treatment—Pneumococcal and Friedländer's infections, 10 mg *per os* T.I.D. for 5 days, B.I.D. for 1 day, Q.D. for 1 day. Meningococcal and Welch bacillary infections, 10 mg just after infection.

which were unknown. Recently, we have used pure bred mice (strain CF1) whose genetic formula is ccaabb, as test animals for the study of the effects of chemotherapeutic agents upon various types of experimental infections. We believe the use of pure bred mice eliminates the factor of variations in host susceptibility.

In this report we will present data concerning the comparative therapeutic effects of sulfapyridine and sulfanilamide upon experimental infections in mice produced by several types of microörganisms. With the exception of the Welch bacillus and meningococcus, the strains of organisms were virulent for mice in dilutions of 10^8 to 10^9, and the meningococcus was made highly virulent by suspension in mucin. The technic of producing these infections has already been described by us.[3, 4] The data presented in each instance represent the average of several experiments.

As will be noted in Table I, the chemotherapeutic effect of sulfapyridine in experimental Types I, II, and III pneumococcal infections in mice is superior to that of sulfanilamide. The results obtained by us are distinctly inferior to those reported by Whitby,[5] but this may be explained by the higher mouse virulence of the strains of pneumococci which we employed and the fact that we used slightly smaller, though more frequently repeated, doses of sulfapyridine.

Little difference was noted in the chemotherapeutic effects of the two compounds in the control of experimental meningococcal or Welch bacillary infections in mice. In experimental Friedländer's bacillary infections in mice sulfapyridine maintained about the same margin of superiority as a therapeutic agent over sulfanilamide as was noted in the instance of the pneumococcal infections.

In conclusion, we may say that while sulfapyridine is superior to sulfanilamide in its therapeutic efficiency in the control of experimental pneumococcal and Friedländer's bacillary infections in mice, its effect does not approach that noted when either drug is used in the treatment of experimental hemolytic streptococcal infections in mice. Hence, it should be borne in mind that while sulfapyridine gives definite indications of being a useful drug in the treatment of pneumococcal pneumonia in human beings, it does not represent the ultimate goal in the chemotherapy of pneumococcal infections.

[3] Long, P. H., and Bliss, E. A., *Canad. Med. Assn. J.*, 1937, **37**, 457.

[4] Feinstone, W. H., Bliss, E. A., Ott, E., and Long, P. H., *Bull. Johns Hopkins Hosp.*, 1938, **62**, 565.

[5] Whitby, L. E. H., *Lancet*, 1938, **1**, 1210.