

THE FAILURE OF A BACTERIAL
VACCINE AS A PROPHYLACTIC
AGAINST INFLUENZA

G. W. McCOY, M.D.

Director, Hygienic Laboratory

WASHINGTON, D. C.

V. B. MURRAY, M.D.

Assistant Surgeon, United States Public Health Service

AND

A. L. TEETER

Intern, Stanford University Hospital

SAN FRANCISCO

The necessity for accurate, controlled observations on preparations that are used as prophylactic agents for influenza is our reason for presenting the sub-joined data.

The bacterial vaccine used in the present investigation was kindly furnished by Dr. F. O. Tonney, chief of the laboratory of the Chicago Health Department. While we are not intimately acquainted with the process of the preparation of the vaccine, we believe that it is an agent that should exhibit the immunizing properties, if any exist, of the micro-organisms used in its preparation.

Each cubic centimeter contains, approximately:

B. influenzae	500,000,000
Pneumococci Type I	500,000,000
Pneumococci Type II	500,000,000
Pneumococci Type III	500,000,000
Pneumococci Type IV	1,500,000,000
Streptococcus hemolyticus	1,000,000,000
Staphylococcus pyogenes-aureus	500,000,000

Two or more strains of each organism were used.

The dose used was 0.5 c.c. at the first injection, 1 c.c. at the second and 1.5 c.c. at the third. The interval between the injections was forty-eight hours.

The persons vaccinated were patients at a state institution for the insane. Only patients of 41 years of age or under were vaccinated, as it was anticipated that if influenza appeared in the institution the great majority of cases would be in persons in this age group, and furthermore there was not sufficient vaccine at hand to provide material for a larger number of persons.

In each ward of the hospital a list was made of all patients aged 41 or under, and each alternate patient was vaccinated, the remainder being considered as controls. Each group numbered 390. The vaccination was completed November 15, and fortunately the institution remained free from influenza until November 26, when cases began to appear, although at this time the epidemic had almost disappeared from the community at large. The cases were clinically like those that have been observed elsewhere, and there was the usual percentage of severe cases and of cases with serious pulmonary complications, some terminating fatally.

The accompanying tabulation shows the results in the two groups up to Dec. 9, 1918.

INCIDENCE OF INFLUENZA AND PNEUMONIA IN THE
VACCINATED AND THE CONTROLS

	Vaccinated	Not Vaccinated
Persons in group	390	390
Number developing influenza	119	103
Number developing pneumonia	23	17
Deaths	10	7

It appears clear from the evidence afforded by these observations that no protection was afforded by the vaccine.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

EMETINE BISMUTH IODIDE.—Emetinae Bismutho-Iodidum.—Emetine Bismuthous Iodide.—Bismuth Emetine Iodide.—A complex iodide of emetine and bismuth, containing from 17 to 23 per cent. of anhydrous emetine and from 15 to 20 per cent. of bismuth.

Actions and Uses.—Emetine bismuth iodide has the action of emetine, but when taken by the mouth, on account of its insolubility, it is less likely to cause vomiting than the soluble salts of emetine administered orally.

It has been used with apparent good results in the treatment of chronic cases and carriers of amebic dysentery, even where the hypodermic administration of emetine had failed.

Dosage.—The commonly used dose has been 0.2 Gm. (3 grains) daily for four days, either in a single dose at the midday meal or in divided doses. The drug should be given as dry powder, enclosed in capsules or cachets as desired, or in the form of pills or capsules which resist disintegration in the stomach.

Emetine bismuth iodide is an odorless, orange-red powder having a slightly bitter taste.

It is but slightly soluble (with decomposition and liberation of emetine) in water, and dilute acids. It is decomposed by alkaline liquids and by strong acids.

Shake 0.1 Gm. of emetine bismuth iodide with 10 Cc. of tenth-normal hydrochloric acid volumetric solution during fifteen minutes. Filter and dilute 1 Cc. of the filtrate to 100 Cc. To a 5 Cc. portion add 1 drop of mercuric potassium iodide test solution, shake and allow to stand one minute. No distinct milkiness or turbidity should appear.

When assayed by the following method, emetine bismuth iodide contains from 17 to 23 per cent. of anhydrous emetine and from 15 to 20 per cent. of bismuth.

To about 0.5 Gm., accurately weighed, of emetine bismuth iodide in a glass stoppered flask add 10 Cc. of water and 3 Cc. of ammonia water, shake and allow to stand ten minutes. Add 50 Cc. of ether to the flask, shake for ten minutes and then shake every ten minutes during two hours. Decant 25 Cc. of the ethereal layer into a 25 Cc. graduated flask. Filter this through a pledget of cotton into a small beaker. Wash the flask and filter with ether. Allow the ether to evaporate spontaneously and dry over sulphuric acid. Take up the alkaloid with fiftieth-normal sulphuric acid volumetric solution and titrate back with fiftieth-normal sodium hydroxide volumetric solution using cochineal as an indicator. Each Cc. of fiftieth-normal sulphuric acid volumetric solution consumed is equivalent to 0.0048 Gm. of anhydrous emetine.

Place the flask, containing the residue from the emetine determination, upon the water bath and allow the remaining ether to evaporate. Transfer the aqueous liquid and precipitate to a beaker rinsing the flask with a few Cc. of concentrated hydrochloric acid. Add about 30 Cc. of concentrated hydrochloric acid to the beaker and boil. Dilute to about 300 Cc., again heat to boiling and filter. Add ammonia water until a slight turbidity appears. Add hydrochloric acid drop by drop until the solution just becomes clear. Heat to boiling, add 50 Cc. of 10 per cent. ammonium phosphate solution and boil for several minutes. Let stand for one-half hour. Transfer the precipitate to a tared Gooch crucible, which has been strongly heated for one hour in a nickel crucible before being weighed. Wash with hot water, dry, and heat in a nickel crucible to constant weight. Each Gm. of bismuth phosphate (BiPO₄) corresponds to 0.6863 Gm. of bismuth.

Emetine Bismuth Iodide-Abbott.—A brand of emetine bismuth iodide complying with the New and Nonofficial Remedies standards.

The Abbott Laboratories, Chicago. No U. S. patent or trademark.

Bismuth Emetine Iodide-Mulford.—A brand of emetine bismuth iodide complying with the New and Nonofficial Remedies standards.

The H. K. Mulford Co., Philadelphia. No U. S. patent or trademark. *Cachets Bismuth Emetine Iodide-Mulford, 2 grains.*—Each cachet contains bismuth emetine iodide-Mulford 0.13 Gm. (2 grains).

CREOSOTE CARBONATE (See N. N. R., 1918, p. 87).

Creosote Carbonate-S. & G.—A brand of creosote carbonate, U. S. P.

Manufactured by Schering & Glatz, Inc., New York.

GUAIACOL CARBONATE (See N. N. R., 1918, p. 87).

Guaiaacol Carbonate-S. & G.—A brand of guaiaacol carbonate, U. S. P.

Manufactured by Schering & Glatz, Inc., New York.