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BRIEF SUGGESTIONS AS TO THE PREVENTION,  
RECOGNITION, AND TREATMENT OF  
CHOLERA.

BY

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OF PHILADELPHIA.



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**BRIEF SUGGESTIONS AS TO THE PREVENTION,  
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IN view of the probable visitation of the Asiatic scourge, it may not be amiss, at this time, to call attention to some of the more practical features of the disease.

*First, as to prophylaxis.* The prevention is better than the cure. After the germ has obtained a foothold, what is the proper course to pursue to guard against the disease?

The first important step is to keep the body and its surroundings perfectly clean. The body should be frequently bathed and the clothing changed. See that all cellars are free from contaminating substances, and all privies and gutters properly disinfected. Avoid crowding, as this favors the propagation of the disease. Eat moderately of good, nutritious food (don't starve yourself). Avoid fatigue, exposure, intemperance, and all excesses or anything that has a tendency to depress the vital energies. Take a full amount of sleep at regular intervals. Regularity and temperance in all things are of the utmost importance.

All drinking-water and milk should be boiled—



this being especially important in Philadelphia, owing to the danger of the water being contaminated in its passage through the Schuylkill valley above the city. Avoidance of all saline laxatives is a safe rule during an epidemic.

I will quote from an article of mine entitled "Sulphuric Acid as a Prophylactic in Cholera," published in the *Philadelphia Medical Times*, July 12, 1873:

During this last visitation (1866-67) I was resident-physician in the Insane Department of the Philadelphia Hospital. The disease had almost entirely disappeared from the city and from all parts of the Philadelphia Almshouse and Hospital, except from the women's wards in the insane department, where it still continued in a very virulent form. Strange to say, it was almost entirely confined to three of the seven wards on the female side of the hospital. It was so persistent that the Board of Health paid the hospital an official visit, but were unable to account for the presence of the disease in particular wards. It is true that the women's apartments were very much crowded, there being three hundred and fifty inmates, but the wards in which it was so prevalent had proportionately fewer inmates than others which almost entirely escaped. During the whole epidemic only two cases occurred in the male wards, while among the females one in every nine was attacked. Sex would not account for this difference, for statistics at large show that male and female lunatics are equally liable to the disease.

After having concluded to use sulphuric acid, the next thing was to administer it to all the patients, many of whom were so suspicious that they refused at all times to take medicine, for fear of being poisoned. Knowing that it would be impossible to conceal it in their-food or usual drinks, I concluded to administer it disguised as lemonade, and announced through the nurses to the patients that I intended to "treat" the whole institution to lemonade every day, which announcement was well received in general, and by some

of them with enthusiasm. The drink was made in this way. About twenty drops of the dilute sulphuric acid were mixed with four ounces of water and sweetened with white sugar. Some oil of lemon and a few cut lemons greatly assisted in the disguise. What followed the administration of the sulphuric acid can best be shown by the notes taken at the time. The diary was begun on August 20, 1866, before which time seventeen cases had occurred in the insane department.

August 20.—Four new cases.

August 21.—Four new cases.

August 22.—Four new cases.

August 23.—Two new cases. Board of Health visited the hospital.

August 24.—Five new cases.

August 25.—One new case. Acid given for the first time, in the afternoon.

August 26.—Four new cases *during the early morning hours* within twelve hours after the first administration of the acid.

August 27.—No new cases.

August 28.—One new case—a woman who refused to take the acid.

August 29.—No new cases.

August 30.—No new cases.

August 31.—No new cases. The acid was discontinued.

September 1.—No new cases.

September 2.—Two new cases—two days after the suspension of the acid.

September 3.—No new cases. Acid resumed.

The acid was continued for some time, and no more cases occurred.

It will be seen by the above diary that up to the time of administering sulphuric acid the disease was pursuing a steady course in the female department. It is true, and should be here stated, that every means had been tried to banish the disease, such as ventilating and cleansing the wards, spreading disinfectants, scattering the patients by using a large sewing-room for a sleeping ward, attention to diet, etc., but without apparent effect. The acid was first given on the 25th of August and continued until the 31st. Four cases occurred *within twelve*

hours of the time when the acid was first given. After this only one case occurred while the acid was being used, viz., on the 28th. This was a poor ignorant (?) lunatic, who, upon tasting it, spit it out, and surprised me very much by saying, with great vehemence, "Doc-ther, ye call this limonade; but ye can't desave me; it's nothing but ile of vitriol." On the 31st of August it will be seen that the "lemonade" was stopped, on account of the exhaustion of the supply of white sugar in the drug store, as without this sugar it would have been impossible to prepare the acid in such a manner as to insure the patients' taking it. On the 2d of September, *two days after the suspension of the use of the acid, two new cases occurred*, both of which proved fatal. The prophylactic was then resumed, and *no new cases afterwards occurred in the insane department; but cases continued to arrive from the city until the 1st of November.* The use of the acid was continued uninterruptedly for several weeks. My friend Dr. J. F. Wilson gave it to the patients in the surgical wards during the epidemic, and he informs me that *cholera visited every department of the almshouse and hospital except the surgical wards.*

The question naturally arises, was it the sulphuric acid that arrested the march of the disease? I think it was, for the following reasons:

1. *The prompt disappearance of the disease within twelve hours of the time when the acid was first administered*, the only case arising during its use being that of a patient who refused to receive it. The acid was stopped on the 31st of August, and two days after this two cases occurred. The acid was then immediately resumed, and not a single case occurred afterwards.

2. *The fatality attending the disease.* When an epidemic declines from natural causes, it generally becomes less fatal. Of the four patients attacked on the 26th of August, three died, of whom one was a young, robust epileptic, who lived but five hours after the first symptoms; another was a strong lunatic, who succumbed in nine hours. The two cases which occurred on the 2d of September, after the suspension of the use of the acid, both died, thus showing that the type was none the less fatal.

How did the sulphuric acid act? According to Dr. G. B. Wood, it has the following effect upon the system, viz., *tonic, astringent, refrigerant*, and diuretic. It has been largely used in the treatment of the first and second stages of cholera. Dr. Macnamara, in his work on Asiatic Cholera, recommends the use of dilute sulphuric acid, in doses of fifteen minims, in the second stage. The celebrated "Austrian Specific" was composed of sulphuric and nitric acids. Nitric acid had been used in India in the treatment of cholera with considerable success. It was tried in England and found to be of no avail, when further investigation proved that the nitric acid of India contained a considerable amount of sulphuric acid. The latter was an accidental product of the manufacture of the nitric acid in India. Hence the use of the combination of these two acids in the treatment of cholera. Elixir Hallerii, or liquor acidi Hallerii, has been much used in India, and is ordered as part of the medical stores of the British army there. It consists of sulphuric acid and alcohol. Drs. Buxton, Sansom, and Fuller, of England, used sulphuric acid with success in the first stages of cholera, especially in the choleraic diarrhea. From the above statements it would appear that sulphuric acid itself has some effect upon the disease, and now we will proceed to discuss its influence as a prophylactic.

It had been noticed that workers in copper were remarkably exempt from cholera, and upon investigation it was found that the air surrounding them was considerably charged with sulphuric acid, which gave rise to the supposition that this was the active preventive agent. This led to the use of sulphuric acid in cholera districts and hospitals, but with what results I have not been able to learn.

It has already been stated that sulphuric acid may act beneficially independent of any specific action upon the cholera germ.

I have said that it is a tonic, astringent, refrigerant, and diuretic. The vital energies are often very much reduced, digestion is poor, and the intestines and the system at large are in a relaxed condition, the result of the high temperature of summer. Here we find the condition favorable to an attack of cholera. The tonic,

astrigent, and refrigerant effects of the sulphuric acid would all be eminently indicated by the conditions, and its administration might tide the patient over the period of danger. It may also act beneficially in another way. We all know the depressing effect of fear, which undoubtedly predisposes to cholera. A prophylactic given in such cases would allay the fear and thus ward off the disease.

It would seem that the article is of more importance since the comparatively recent discovery of the comma-bacillus, which cannot live in an acid medium. May this fact not account for the efficacy of sulphuric acid as a prophylactic? The germ is, perhaps, destroyed in the alimentary canal before the products of its activity are taken up by the system. The remedy is in any case well worth a trial; for, if it should only allay the fears of the timid, the otherwise resulting depression might be avoided.

*Diagnosis and Treatment.* It is most important to recognize the disease in its earlier stages; for at this period simple treatment is usually attended with success. Later on, in the cold stage, or in that of collapse, about 50 per cent. die, even under the most skilful management of the physician and nurse.

What are the first symptoms of cholera? The *first stage* is the forming stage or *stage of invasion*, sometimes called *cholérine*, or the *diarrheal stage*. The intestines are in an irritable condition. The discharges are at first yellow and fetid; later on becoming whitish or grayish, and being composed of serum and epithelium. Fibrinous flakes are sometimes present and the stools are blood-stained. This is the stage of invasion. It may come on

abruptly, or gradually. Death may, in some rare cases, take place without vomiting or diarrhea. I had an opportunity of observing two such cases at the Philadelphia Hospital in 1866. At the autopsy the stomach and intestines were found filled with the so-called "rice-water" material, which usually constitutes the discharge in cholera.

Sometimes the first stage is abruptly ushered in with restlessness, wakefulness, noises in the ears, languor, depression, headache, muscular weakness, and a weak, small pulse.

In the cases of insidious onset the earliest symptom is a mild diarrhea. The stools are at first yellow, afterward watery, copious, and frequent, with abdominal pain, slight tympany, borborygmi and nausea. The extremities, especially the lower, become painfully cramped.

This stage may last several days, or only for a short time, and may escape observation altogether. Prompt measures at this stage may stay the disease; hence the importance of recognizing the earliest symptoms.

Thoughtless persons and children are usually the ones that allow this stage to pass by without attention. Such persons should be carefully watched by those having charge of them.

During an epidemic, any tendency to looseness of the bowels, even if seemingly innocent, should be promptly attended to by sending the patient to bed, and carefully regulating his diet. Chilling draughts should be avoided, and under no circumstances should patients be allowed to rise—a bed-

pan being used when the bladder or bowels are to be evacuated:

The prognosis is especially grave when the attack is ushered in abruptly, with great irritability of the stomach and bowels, profuse depression, with painful cramps in the muscles of the legs and abdominal walls.

Dr. A. Herman<sup>1</sup> states that the detection of albumin, cylinders, and epithelium in the urine during the time of the precursory diarrhea is a sure sign that the case is one of cholera; otherwise the diarrhea is of other origin. The discovery of the comma-bacillus in the dejections will afford positive proof.

The treatment for this stage is usually as follows: If the case is tardy in onset, simple remedies are usually efficacious, together with the directions already given as to rest and nursing. A combination of general and local stimulants, local sedatives, astringents, and stomachics has proved of benefit in the majority of cases.

A formula that has heretofore been much used and extolled is the so-called Asiatic tincture:

R.—Chloroformi . . . . .	fʒj.
Camphoræ . . . . .	ʒij.
Ft. sol. et adde	
Sp. ætheris. co. . . . .	fʒij.
Tr. opii	} . . . . āā fʒss.—M.
Tr. capsici	
Ol. caryophylli	

S.—From five to fifty drops in water.

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<sup>1</sup> Allgem. Wien. med. Zeitschr., 1873.

The following combination has been recommended by Dr. E. R. Squibb:

R.—Tr. opii }  
 Tr. camphoræ } . . . āā f3j.  
 Tr. capsici }  
 Chloroformi (purified) . . . f3iij.  
 Alcoholis (strong) . . . q. s. ad f3i.—M.  
 S.—A teaspoonful in water.

Dr. Alfred Stillé recommended for the precursory diarrhea a formula containing tincture of catechu, chalk mixture, and a small quantity of laudanum. Chlorodyne has been much used in this stage of the disease. Small doses of brandy with lime-water, frequently repeated, or, better, plain soda-water, sometimes control the vomiting. In this stage opium, with calomel or blue pill, has been recommended by many writers, to stimulate the biliary secretions. For local application, mustard plaster or mustard and chloroform sometimes allay the abdominal pains.

*The second, or cold stage, or that of collapse.* In this stage the patient is in great danger. The most prominent symptom is the constant discharge of sero-epithelial material from the stomach and bowels. This fluid is of a grayish or whitish color, serous, intermixed with fibrinous flakes, and is usually passed without effort, being sometimes ejected from the bowels and stomach simultaneously. In some cases there is a persistent hiccough and painful cramps in the muscles of the legs, arms, fingers and toes, and abdominal walls. The cramps are often attended with contraction of the extremities. The patient is weak, stupid, heavy; the eyes are dark

and sunken; the conjunctivæ are dull, dry, and covered with a film; the tongue is dry and covered with a light, pasty film, and the nose is sharp and pinched.

The breath is icy cold, the respiration shallow, while the voice is husky and whispering. The skin is cold, blue, shrivelled, and bathed in a cold, clammy sweat. The extremities first become cold, and afterward the trunk. The urine is scanty or suppressed. The blood is deprived of its water, thereby becoming greatly decreased in bulk and thickened, so that the poor, weak heart cannot propel it to supply the thirsty and famished tissues. The patient grows weaker and passes into a state of unconsciousness, and death ensues. Treatment at this stage is usually followed by little apparent benefit.

The skin and mucous membranes are pouring out the fluid from the blood and tissues, so that they are in no condition to absorb medicines brought in contact with them. Medicines injected subcutaneously are scarcely absorbed, for osmosis is reversed. Intravenous and rectal injection of saline fluids has been used with varying results. The bowel would not be likely to absorb and the fluid would probably be rejected. The object of the saline injections is to make good the loss caused by the general leakage from the body. Transfusion of milk has been tried to the same end.

Dr. David B. Smith has proposed the injection into the veins of amyl nitrite, to overcome arterial muscular spasm. He injected into the veins of a

patient two drams in thirty-five minutes, without appreciable benefit.

A physician in India has recently published his experience with corrosive sublimate, which he employed in doses of  $\frac{1}{100}$  grain.

Artificial heat and cutaneous stimulants have been used over and over again, with but little effect. If the patient survives the second stage, reaction slowly takes place. The treatment of the second stage is eminently unsatisfactory. The ability of the patient to tide over the crisis seems of more importance than the administration of medicaments.

*The third stage, or stage of reaction, or stage of secondary fever.* The conditions demanding treatment are extreme prostration, fever, and an alimentary canal deprived of its epithelium. The secretory activity of the kidneys is greatly impaired. The condition is decidedly typhoid. The plan of treatment will be expectant. One important point to be borne in mind is that the stomach and bowels will tolerate but little nourishment, for even after the patient has been convalescing for days a slight error in diet may induce a relapse.

I append a list of the medicines that have been employed in the treatment of cholera—

*Mercury*—Calomel, blue pill, and corrosive sublimate in small and frequently repeated doses. The first two are often combined with opium. These are given for the purpose of quieting the stomach and stimulating the natural secretions.

*Tincture of camphor*—Used as a systemic as well as a local sedative.

*Tincture of capsicum*—A stomachic and stimulant to the gastro-intestinal canal.

*Opium*—Tincture and deodorized tincture as local and general sedatives. To be given in small doses. Morphine has been used hypodermatically.

*Chloroform*—Both as a stimulant and sedative, to allay gastric irritability.

*Sulphuric Acid*—A tonic, refrigerant, and astringent to the gastro-intestinal mucous membrane (and a germicide).

*Nitric Acid* has been employed by itself and in the form of Hope's mixture, a combination with tincture of opium and camphor-water.

*Creasote*—As an antiseptic, as well as to allay irritability of the gastro-intestinal mucous membrane.

*Brandy* is the favorite alcoholic remedy, used early in small doses, in combination with lime-water or plain soda-water. Champagne has been largely used to allay gastric irritability.

*Turpentine* has been administered as a stimulant.

*Atropine* acts as a stimulant to the respiratory and cardiac centers and diminishes secretion.

*Amyl Nitrite* has been tried in the hope that it would dilate the arterioles and subdue muscular spasm.

*Arsenic* has been extensively used to check the vomiting, small doses being used.

Phosphorus, copper salts, lead salts, strychnine, have also been administered.



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