876 LIBRARY
SURGEON GENERAL'S OFFICE
MAY 11 1912

Prevention of cholera

PREVENTION AND RESTRICTION

OF

CHOLERA.

DOCUMENT ISSUED BY THE MICHIGAN STATE BOARD OF HEALTH.

[92.] Revised and Printed, August, 1885.

To the Officers and Members of Local Boards of Health in Michigan:—

GENTLEMEN:—The continuance of cholera in certain parts of Europe, the probability that it may be brought to the larger cities of this country, and spread from them, or that by some traveler, immigrant, or returning tourist it may be brought to almost any town in this State even before it appears on the seaboard,* make timely the publication of what seem to be the best means of preventing and restricting the disease.

PROPER DIRECTION OF EFFORTS.

Asiatic cholera is not caused by anything ordinarily in this State or country, therefore efforts for its prevention or restriction should be directed especially towards the prevention of the introduction of that invisible cause of the disease which is produced in and spread by each infected person; and in case the disease shall reach your locality, to the restriction and destruction of that cause with the greatest possible haste and thoroughness. Even now, by a cleaning up of filthy places, and by especial care to guard the purity of wells and other sources of water supply, most communities can be put in better condition to control and destroy the infection of cholera should it be introduced. But when cholera appears, something must be done besides cleaning up.

WHO WILL KEEP IT OUT OF YOUR JURISDICTION?

By reason of the tide of immigration, this country is especially liable to the introduction of communicable diseases; and by reason of its exceedingly imperfect support of the National Board of Health, the National Government

*In 1873 something like this occurred. Three distinct outbreaks of cholera in widely remote parts of the United States were traced to the unpacking of personal effects of immigrants who had come to New York city on uninfected vessels, exciting no suspicion there that they carried the infection of cholera. Within thirty-six hours after they unpacked their effects, the first cases of the disease occurred. This was at Carthage, Ohio; Crow River, Minnesota; and Yankton, Dakota. Small pox was brought into Wisconsin by German immigrants who came on the steamer Salier, landing at Baltimore May 15, reaching Black Creek, Wis., May 19, and taken sick May 21, 1884. Small-pox was also in 1884, introduced into Shelby county, Iowa, in a similar manner, by immigrants who came through Baltimore. Small-pox was brought to LeRoy, Michigan, by an immigrant who left Bremen, on steamer Weser, May 22, landed at New York June 4, reached LeRoy June 9, and was taken sick June 8, 1884.

supplies little protection to the public health, such as the National Board of Health might be enabled to render by means of a complete system of notification, inspection, disinfection, etc.; and inasmuch as quarantine powers in this State are vested in the local boards of health, it is important that they be prompt to act and continue persistent in action, so far as it is possible, for the prevention of the introduction of cholera.* So little can be hoped for, however, from irregular local quarantines, that every board of health should also be prepared to restrict the disease.† Newly-arrived immigrants should be under the surveillance of your health officer.

CAUSE OF THE DISEASE.

Microscopical and experimental researches in Egypt, India, and Germany, made at the expense of the German Government, by Dr. Robert Koch, one of the most successful observers of disease-causing germs, seem to demonstrate, what general observation of the disease had already indicated, that Asiatic cholera is caused by the growth and reproduction in the body of innumerable bacilli or one-celled plants of a kind peculiar to this disease, invisible to the naked eye; that these bacilli may enter the body by the air inhaled, but are far more likely to enter by food or drink taken into the stomach; that they are present in the excreta of a person sick with cholera, and in his clothing soiled thereby, and, therefore, may be on almost everything that comes in contact with his body.

PREPARATIONS TO RESIST CHOLERA.

There is probably nothing in Michigan from which cholera germs can be originated; but there are many places in which they might thrive and reproduce when once introduced from abroad.

The investigations by Dr. Koch and others make it probable that the bacillus of cholera can live and reproduce its kind indefinitely in certain, but not in all substances outside the body, namely, in certain alkaline but not in acid solutions; and as the normal condition of the stomach is acid, that it cannot live in the human stomach in its normal condition. The intestinal juices being normally alkaline, the bacillus can, probably, reproduce itself therein without limit whenever it can pass through the stomach, and perhaps also in the stomach itself if, through the regurgitation of bile or otherwise, its contents should become alkaline. This makes it of especial importance that in times of danger from cholera, the stomach should be kept in its naturally good condition.

Because of the possibility that the cholera bacillus may find lodgment and multiply in various kinds of moist filth, it is important that everything about the house, cellars, barns, premises, alleys and streets, should be cleaned up and kept dry, and as clean as possible, and that there should be a general

---

*Sections 1708 to 1712 inclusive, and section 1695 of the Compiled Laws of Mich., 1871, give local boards of health authority in certain manner to inspect and restrain travelers, remove infected persons, and take possession of and disinfect baggage, goods, premises, and to make regulations respecting articles capable of conveying infection.

The Legislature has granted to the State Board of Health power to establish a system of inspection of immigrants and travelers, the disinfection of baggage, etc. The act takes effect September 18, 1885. After that date, the appropriation to maintain such inspection and disinfection, can be used if cholera or other dangerous communicable disease threatens, and the Governor of Michigan orders it used.

†Sections 1706 and 1707 require the board of health to "make effectual provision" for the safety of the inhabitants whenever a disease which endangers the public health ***shall occur within its jurisdiction.***

antiseptic treatment of all places liable to become infected. Especially should privy-vaults, sewers, cess-pools, drains, and similar places, be thoroughly and often made antiseptic with a strong solution of copperas, which may be made acid by the addition of sulphuric acid. The cholera germs are said to thrive in nutritive alkaline solutions, and the contents of most privy-vaults are alkaline; hence the importance of such thorough and frequent antiseptic treatment of them as shall make their contents unfavorable to any germs which may find lodgment there.

Privies, cess-pools, drains, water-closets, sewers, gutters, etc., not known to be infected, should be frequently and liberally treated with "chloride of lime," or with copperas solution made in the proportion of one and one-half pounds of copperas to one gallon of water.

RESTRICTION OF CHOLERA.

One of the chief means of restricting cholera is to disinfect immediately and thoroughly all the discharges from those sick with cholera, or with the premonitory diarrhea, and to disinfect, boil, or burn at once completely all their cast-off clothing, bedding, etc.

The fecal discharges are not as infectious when first voided as they soon become, hence the importance of immediate disinfection. Thrown without disinfection into a privy-vault, cess-pool, or sewer, the fluids vomited, and especially the discharges from the bowels of a cholera patient may soon infect all its contents, and render it a source of infection to those who approach.*

All the discharges from the body,—the vomit, the discharges from the bowels and the bladder, should be received into vessels containing some concentrated disinfectant, such as "chloride of lime," chlorinated soda, or chloride of zinc.† In country districts, villages, and small cities, where the privy is not far distant from a well, the discharges should not be thrown into the privy-vault, but, after being disinfected, they should be carried a greater distance from any source of drinking water, and then covered with earth.

The diarrhea preceding cholera is frequently painless; there is, therefore, during the occurrence of cholera, great danger of cholera being spread by the discharges of persons yet able to travel about.‡

During the first stages of cholera, and especially during the initiatory diarrhea, prompt medical treatment is important and useful, both for the benefit of the individual and as a means of checking the spread of the disease.

It has been the practice in England, and should be the practice everywhere, when a man is found sick with cholera, to learn by inquiry what privies he has visited, and at once send an officer on the back track to disinfect them. For reasons just stated, notice should at once be sent to the board of health of a locality from which a case of cholera has come.

---

*In 1873, a colored boy went to Columbia, Ky., from Lebanon, Ky., where the county fair had been held, and where cholera was then present. He suffered from diarrhea, and used a privy which was large and full, but from which no sickness had previously been traced. He was found in a state of collapse, and died in the stable. Nearly every person who entered that privy within a few days thereafter was taken sick with cholera. Farmers who came in from the country and only visited it once were stricken with cholera. The privy was disinfected, after which no case was traced to it.

†"Standard Solution No. 1," of the American Public Health Association's Committee, is made by adding to each gallon of soft water, four ounces of chloride of lime of the best quality, which should contain at least 25 per cent of available chlorine. "Use one pint of this solution for the disinfection of each discharge in cholera, typhoid fever, etc. Mix well and leave in vessel for at least ten minutes before throwing into privy-vault or water closet."

‡See footnote above.*

Great care should be had to prevent the contamination of the water-supply by choleraic discharges, as by drainage into wells, springs, or other water-supply, from a privy-vault, sewer, drain, or cemetery. It is safest to boil all water from wells. Privies often drain into wells, unsuspected by those who use the water. Should cholera discharges pass into such a vault, an outbreak of cholera among those using the water would be likely to occur. If such a well were the source of the general water-supply of a city, cholera might soon be epidemic there. Extraordinary care should be taken to prevent cholera discharges from entering any general water-supply from a well or from a small stream. The use of water from a source liable to be infected with cholera excreta should be promptly stopped; and great care should also be given to the milk supply.

Bodies of those dead from cholera should be wrapped in a cloth wet with a strong solution of chlorinated soda, or with "Standard Solution No. 1,"* or with a zinc solution, and at once buried; the zinc solution should be made in proportions of one-half pound of chloride of zinc to one gallon of water, or as follows: water one gallon; sulphate of zinc eight ounces; common salt four ounces.

DISINFECTION OF CLOTHING, ROOMS, ETC.

Clothing soiled by a cholera patient, if laid aside and allowed to remain moist, soon becomes especially dangerous. It is, therefore, important that all such articles be immediately burned or placed in a strong disinfecting solution until such time as they can be burned, or boiled, washed and dried. (Dr. Koch's experiments indicate that the bacilli of cholera are destroyed by being thoroughly dried for three hours or more.)

It is best to burn all articles which have been soiled by a person sick with cholera. If this cannot immediately be done in the room, the articles may be securely wrapped in a towel or sheet saturated with solution of chlorinated soda, and then immediately conveyed to the place of burning. In the glowing fire of a large furnace is a good place to burn clothing. Great care should be taken to burn quickly and thoroughly whatever is burned, and not simply warm up and spread the infection.

Articles too valuable to be destroyed should be exposed for one hour to a dry heat of from 240° F. to 250° F., or three hours at a temperature of 150° F., or be treated as follows:

Cotton, linen, flannels, blankets, etc., should be treated with the boiling-hot zinc solution (one-half of the strength of that mentioned in the preceding paragraph), introducing them piece by piece, securing thorough wetting and boiling for at least half an hour. Heavy woolen clothing, silks, stuffed bed-covers, beds, and other articles which cannot be treated with the zinc solution, should be hung in the room during fumigation, pockets being turned inside out, and the whole garment being thoroughly exposed. Afterwards they should be hung in the open air, beaten and shaken. Carpets are best fumigated on the floor, but should afterward be removed to the open air and thoroughly beaten. In no case should the thorough disinfection of clothing, bedding, etc., be omitted.

After a death or recovery from cholera, the room in which there has been a case of cholera, whether fatal or not, should, with all its contents, be thor-

* To each gallon of soft water, add four ounces of "chloride of lime" of the best quality, which should contain at least 25 per cent of available chlorine.

oughly disinfected by exposure for several hours to strong fumes of burning sulphur, and then it should for several hours, if possible for days, be exposed to currents of fresh air.

Because of the innumerable ways in which the infection may be scattered about the house and premises where there has been a case of cholera, the entire house and outbuildings, including cellar, wood-shed, and privy, may well be disinfected.

It is especially important that the contents of the privy be disinfected. For this purpose, use four ounces of the best quality of "chloride of lime" to each gallon of material in the vault.

Rooms to be disinfected by sulphurous fumes, must be vacated. For a room about ten feet square, at least three pounds of sulphur should be used; for larger rooms, proportionately increased quantities, at the rate of three pounds for each one thousand cubic feet of air-space.

Close the room as tight as possible, place the sulphur in iron pots or pans which will not leak, supported upon bricks, over a sheet of zinc, or in a tub containing water, so that in case melted sulphur should leak out of the pot the floor may not be burned, set the sulphur on fire by hot coals or with the aid of a spoonful of alcohol lighted by a match, be careful not to breathe the fumes of the burning sulphur, and when certain the sulphur is burning well, leave the room, close the door, and allow the room to be closed for twenty-four hours.

CARE OF THOSE SICK WITH CHOLERA.

The law (section 1706, Compiled Laws of 1871) requires the local board of health to provide nurses, if necessary. There is no excuse for failure to care for those sick with cholera. They are less dangerous to the community if well cared for than if neglected. A careful nurse will frequently wash the hands in solution of chlorinated soda,* or other disinfecting solution, and always avoid taking into his body with his breath, food or drink, any dust or fluid contaminated with any of the excreta from one sick with cholera. Neither food nor drink should be taken by the nurse while in the room with a person sick with cholera. If there is possibility of the infection of the water, it should be boiled before it is drank. By proper attention to cleanliness, ventilation, disinfection of discharges, and of whatever has been in contact with the sick, and by taking proper care as regards kind of food, regular eating, rest, and sleep, and especially by guarding against taking the specific cause into the body, with his breath, food, or drink, a person in good health may nurse a cholera patient with a reasonable expectation of escaping the disease.

"That cholera patients are not dangerous to their attendants has been proved in this epidemic in the Military Hospital, where not a single attendant has suffered from the slightest choleraic diarrhea."—Port's report to Cholera Commr. for the German Empire, on the Epidemic of 1873-4 in the Garrison of Munich.

LEGAL DUTIES,—PROMPT NOTICES OF OUTBREAK.

The duty of householders and of physicians to give the local board of health prompt notice of the first and of every case of a disease dangerous to the public health; and of the board of health and the health officer to take prompt

*Standard Solution No. 3, American Public Health Association's Committee: To one part of Labarraque's Solution (liquor sodæ chlorinatæ), add five parts of soft water.

measures for the restriction of the disease, have been so fully and so often set forth in circulars from the State Board of Health that they need not be repeated here in connection with so dangerous a disease as is cholera.

Notice should at once be sent, on the first appearance of cholera, to the Secretary of the State Board of Health, Lansing, Mich. But the local board of health should not wait for any person to do its work of restricting the disease in its locality.

AFTER READING THIS DOCUMENT CAREFULLY, PLEASE PRESERVE IT.

A copy may be obtained of the *State Board of Health, Lansing, Michigan.*