Ⅵ－4. ペルー国コレラ関連資料

添 付 資 料 1

MINISTERIO DE SALUD
DEL PERU

THE EPIDEMIC OF CHOLERA IN PERU

A. DESCRIPTION OF THE EPIDEMIC

1. The Beginning. During the last week of January, 1991, the Office of Epidemiology (OE) of the Ministry of Health of Peru was notified of an unusual number of cases of severe watery diarrhea affecting mainly adults from Chancay, a town located 90 km north of the city of Lima. A team of epidemiologists from the Training Programme in Field Epidemiology (TPFE) being conducted at the OE was sent to evaluate the situation. Almost simultaneously, similar notification was received from Piura (about 900 km north of Chancay) and Chimbote (about 400 km north of Chancay). Stool samples from patients with this clinical picture from Chancay were brought to Lima for microbiologic examination at the National Institute of Health. These studies confirmed the presence of V. cholerae 01, biotype El Tor, serotype Inaba. The results were reconfirmed by the Centers for Diseases Control, Atlanta, Georgia, USA. Similar samples from Piura and Chimbote yielded the same isolates.

2. The Surveillance System. Once it was established that cholera was in Peru, the epidemiologic surveillance system of the Ministry of Health was reinforced and put to use for control of the epidemic. First, TPFE trainees were sent to the affected areas to support existing surveillance personnel or to establish a new surveillance site. Second, instructions were given to all statistical units pertaining to public health sector facilities to notify all cases of acute watery diarrhea attended at those facilities. Thirdly, a standardized reporting form was developed and distributed to all health facilities for notification of cases of acute watery diarrhea.

3. Case Definition. For the purposes of surveillance, a case of cholera was considered as any episode of acute watery diarrhea in persons age five years or more. Bacteriologic confirmation of V. cholerae was made only in the first cases attended at any one health facility.

4. The Evolution of the Epidemic. Data available indicate that the epidemic began simultaneously in three areas: Chancay, Chimbote, and Piura. Within each of these cities, the

epidemic spread progressively and rapidly. Clearly related to the migration of persons from affected areas, secondary foci of cholera appeared in neighboring cities within days of the initial outbreaks. Within several more days, the epidemic ceased to be a mainly urban phenomenon as cases began to be reported from smaller towns and rural areas on the coast as well as from the sierra and jungle. By the end of the first month from notification of the first cases of cholera, approximately 50,000 cases had been reported, with about 250 deaths. In the following three weeks, another 50,000 cases had been notified, with an additional 350 fatalities.

5. Analysis of the Mortality. In cities of the coast, a high attack rate is accompanied by a low case-fatality rate, whereas in the sierra, the attack rate is low but the case-fatality rate is high. This difference appears to be attributable to various factors. The population density is higher on the coast. At the same time, the population in the sierra has less access to a health care delivery system than does the coastal population. The urban population on the coast appears to have responded rapidly and positively to health education messages regarding the need to seek treatment at an early stage of the disease. The prompt availability of a standardized treatment protocol which included instructions as to the organization of health services, and the complete dedication of health professionals and other health workers were also instrumental factors in maintaining a low case fatality rate.

6. Epidemiologic Investigations. Various case-control studies are being conducted in different affected areas to identify specific transmission mechanisms of cholera. Also, studies are being conducted to determine the intra-familial secondary attack rate. A sero-epidemiologic study is being planned to be conducted after the epidemic ends to determine the total prevalence of the infection in the population of various cities.

B. MEASURES TAKEN TO TREAT CASES

1. Organization of the Health Services. In all hospitals, a Cholera Treatment Unit was organized. A specific area of each hospital was set aside specifically for treatment of cholera cases. These units are staffed by physicians, nurses, and auxiliaries who are assigned on an exclusive basis. Each hospital has also organized a Cholera Control Committee, which is presided by the hospital director and functions to coordinate all activities related to cholera control in the hospital. All routines for hospital admission and discharge

were simplified to the utmost for cholera patients.

2. Standardization of Case Management. A protocol for case management was prepared and distributed to all health professionals in the country. The key components of this protocol are the use of rapid intravenous therapy for severe cases, and the extensive use of oral rehydration therapy. For intravenous therapy, along with a saline solution, a locally produced polyelectrolyte solution is being used. Its composition is similar to that of the WHO oral rehydration solution.

3. Logistic System. A centralized system was developed to distribute supplies and medicines to all affected areas. It was established that all medical care and treatment was to be provided free of charge. The quantity of supplies needed in each affected area was calculated on the basis a fixed list of supplies and medicines which was determined by the treatment protocol, in addition to the number of cholera cases reported.

4. Mobil Team. Each team is composed of a physician-trained in treatment of rehydration therapy (these were mainly pediatricians familiar with the already functioning Diarrheal Diseases Control Programme of the Ministry of Health), a health technician, and a health educator. These teams are sent to affected areas for several days at a time to train local health professionals, to treat cases with them, and to help them organize the health facility.

5. Strategy for Rural Areas. Remote areas are being served by rural brigades, comprised of volunteer pediatric or internal medicine residents from Lima, joined by nurses from nearby cities or towns. These groups are equipped with sleeping bags, medicine kits, and chlorine powder, and remain in rural areas for up to three weeks at a time.

6. Home-based Therapy. Pre-epidemic programs for community-based distribution of ORS packets are being strengthened in order to increase home use of ORS for early cholera treatment. This is being carried out with the participation of community organizations.

C. NATIONAL LABORATORY NETWORK

1. For Microbiologic Studies on Human Feces. A central reference laboratory has been established at the National Institute of Health in Lima, which is able to identify and biotype *V. cholerae* 01 and perform antibiotic sensitivity testing. Around this central laboratory, local laboratories have been

established in practically all cities in which cholera has appeared. These local laboratories are receiving bacteriologic supplies and their technicians were trained on-site by a microbiologist from the National Institute of Health. A sample of all positive isolates are submitted to the central laboratory for bacteriologic confirmation. Every seven to ten days, cross-sectional microbiologic surveillance in affected areas is being conducted through this system of laboratories. Microbiologic-confirmed surveillance of cholera in children under age five years is also being conducted.

2. For Microbiologic Studies on Food and Water. Samples of water from city water supply systems or from open ditches used as sources of drinking water are being collected and analyzed on a periodic basis for the presence of V. cholerae 01. The same is being carried out on market produce and prepared food sold on the street.

D. MEASURES TAKEN TO PREVENT THE SPREAD OF THE EPIDEMIC

1. Health Education. There has been an intensive diffusion of messages to the general population to improve personal and domestic hygiene habits. All mass-media communication channels have been used extensively. The five principal messages have been:

   - boil water before drinking;
   - avoid prepared drinks and other drinks of doubtful origin;
   - avoid ingestion of uncooked foods, especially hydrobiologic foods;
   - wash hands frequently;
   - clean kitchen utensils, especially cutting boards, immediately after use.

2. Control of Street Food Vendors. In coordination with local governments, measures are being taken to erradicate the sale of street foods. Where this is not possible, street vendors are being taught to improve the level of hygiene of their products.

3. Chlorination of the Urban Water Supply System. In coordination with the Ministry of Housing, the level of chlorination is being increased in potable water treatment plants. Surveillance is being conducted of residual chlorine in the water supply system.

4. Home-based Chlorination of Water. For families who do not have access to piped water in their home, and who instead buy and

store water in tanks for several days at a time, chlorine powder is being distributed in small sachets with instructions to chlorinate their water tanks. This activity is being conducted in coordination with UNICEF.

5. Domestic Disposal of Human Waste. For families which do not have access to a sewage disposal system, and who practice defecation in the open, instructions are being given to bury their waste in the ground to be covered with lye which is distributed to them free of charge. This activity is also being conducted in coordination with UNICEF.

6. Erradication of Irrigations with Sewage Water. In coordination with the Ministry of Agriculture and local governments, measures are being taken to stop use of sewage water to irrigate cultivated fields of leafy and short stem vegetables.

7. Long-term Measures for Environmental Sanitation. A number of major projects need to be undertaken in coordination with other governmental sectors in order to improve the basic sanitation system. Among these projects are: building of latrines, rehabilitation of water and sewage pipe systems, expansion of water and sewage pipe systems to cover a wider portion of the population, and construction of sewage treatment plants. Included here is the rehabilitation of water and sewage pipe systems of public hospitals and other health facilities.

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25-3-1991

Guidelines for cholera control

PROGRAMME FOR CONTROL OF DIARRHOEAL DISEASE

WORLD HEALTH ORGANIZATION

The Diarrhoeal Diseases Control Programme (CDD) of the World Health Organization was launched in May 1978 by a resolution of the 31st World Health Assembly. The resolution acknowledged the shortcomings of then-current cholera control measures and the similarities between cholera and other acute diarrhoeal diseases.

The Programme's Technical Advisory Group has encouraged the creation of national CDD programmes, with the belief that cholera can be most effectively controlled through continuous efforts to control diarrhoea.

These guidelines have been prepared to help managers of national CDD programmes to implement cholera control activities. They may also be useful to international, bilateral, and nongovernmental agencies when deciding on appropriate assistance to countries for controlling cholera outbreaks.

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1. INTRODUCTION

Cholera has spread widely since 1961 to affect at least 98 countries. Extensive experience has shown that the introduction of cholera into a country cannot be prevented. However, its spread *within* a country *can* be contained by appropriate control measures.

During the past three decades, intensive research has contributed substantially to our understanding of the disease's epidemiology and clinical management. We know now that:

- improved modes of treatment in a well-organized health facility can reduce case fatality rates for cholera to as little as 1%;
- mass vaccination and mass chemoprophylaxis are ineffective in preventing or controlling outbreaks;
- where cholera is present but not epidemic, it causes fewer than 5% of all acute diarrhoea cases;
- more than 90% of cholera cases are mild, and may be difficult to distinguish from other types of acute diarrhoeal diseases.

Because cholera can be an acute public health problem with the potential to spread fast and cause many deaths, special attention must be given to surveillance and control. This booklet provides practical information to assist national CDD programmes in their efforts to control cholera.

2. ABOUT THE CHOLERA ORGANISM

There are more than 60 serogroups of *Vibrio cholerae*, but only serogroup 01 can cause cholera. *V. cholerae* 01 occurs as two biotypes — classical and El Tor. Each biotype also occurs as two serotypes — Ogawa and Inaba. The El Tor biotype has caused nearly all of the recent cholera outbreaks, although cases caused by the classical biotype still occur on the Indian subcontinent.

The El Tor biotype causes a higher infection-to-case ratio and survives longer than the classical biotype in the environment, e.g., in water, nightsoil (human waste used as fertilizer), and sewage. It may survive as a free-living organism, perhaps in association with certain plants and aquatic animals, without cholera cases or carriers occurring in

Common sources of infection

- **Fish**
  particularly shellfish taken from contaminated water and eaten raw or insufficiently cooked.
- **Contaminated foods, stored unrefrigerated**
  e.g., milk, cooked rice, lentils, potatoes, kidney beans, eggs, chicken. Although the original contamination may be slight, bacteria multiply to infectious levels during storage.
- **Leafy vegetables**
  that have been "freshened" with contaminated water.
- **Drinking water**
  that has been contaminated at its source (e.g., by faeces through an incompletely sealed well) or during storage (e.g., by contact with hands contaminated by faeces).

the area. By contrast, the classical biotype has not been isolated from water or from aquatic plants and animals in the absence of human infection.

Faecally-contaminated water usually serves as the source of vibrios, either directly or by contaminating food. Carbonated water, however, is safe since vibrios are unable to survive in the acidic solution.

The infectious dose of *V. cholerae* 01 varies, depending on a person's susceptibility which can be affected by gastric acidity (the vibrio is destroyed at pH 5 or lower); and degree of immunity produced by prior infection with *V. cholerae* 01. Breast-feeding protects infants and young children.

3. BEING PREPARED: LONG-TERM ACTIVITIES

In an unprepared community, cholera can kill as many as 50% of patients. When treatment facilities are organized and proper treatment is available, as few as 1% of cases may be fatal.

Within a national CDD programme, the following activities are considered important for cholera control and, in endemic areas, should be reinforced before the expected cholera season.

3.1 Training in clinical management of acute diarrhoea

In a national CDD programme, medical and paramedical personnel should receive intensive and continuing training to ensure that they are familiar with the latest techniques for clinical management of acute diarrhoeal diseases, including cholera.

Guidelines for training health workers and additional information for the clinical management of cholera can be found in the WHO document, Management of the Patient with Diarrhoea . The assessment and treatment procedures for cholera cases are essentially the same as for diarrhoea from other causes.

3.2 Health education

Health education is the key to public awareness and cooperation. Experienced health educators, therefore, can play an important role in epidemic control. An outbreak can be more quickly controlled when the public understands the problem and how they can help to solve it.

Health education should be conducted continually by the national CDD programme to support environmental sanitation activities and to inform the public of the basic principles of diarrhoeal disease transmission and prevention.

In areas where cholera is endemic or there is a risk of outbreaks, it is particularly important to inform people that it is no longer considered a fatal disease, that most cases can be treated with simple measures, and that vaccination is not effective and is not a substitute for good personal hygiene and food safety.

Ideally, all members of the health team should provide health education and should be trained to teach by doing, i.e., serving the community by providing treatment, digging latrines, and improving the water supply.

To be effective, health workers must consider the cultural and religious practices of individuals and their communities. They should teach and gain the cooperation of individuals in the best positions to influence public behaviour, such as religious and political leaders, teachers, and the media.

Key points for public education

- with proper treatment, cholera is not fatal
- most cases can be treated with simple measures
- human excreta must be disposed of safely
- good personal hygiene habits help prevent transmission of cholera
- safe preparation of food and proper cleaning of utensils reduce risk of infection
- use only clean water for drinking and bathing
- vaccination is not effective

3.3 Environmental sanitation

Good sanitation and hygiene markedly reduce the risk of transmitting enteric pathogens, including cholera vibrios. Therefore, the highest priority should be given to practising the basic principles of sanitation regarding human waste disposal, personal hygiene, and food safety, as well as ensuring that safe water supplies are available.

When large groups of people congregate, such as for fairs, funerals, and religious festivals, particular care must be taken to ensure safe disposal of human waste, an uncontaminated water supply, and

safe food preparation. This is as relevant in cholera-threatened areas as it is in endemic areas.

3.3.1 Disposing human waste

Appropriate facilities for human waste disposal are a basic need of all communities; in areas threatened by cholera constructing such facilities is vital. With the cooperation of the community, sanitary systems, e.g., latrines, should be constructed, with attention to local customs and the existing terrain.

At the same time, people should be taught how to use latrines, the dangers of defecating on the ground or in or near water, and the importance of thorough hand-washing with soap or ash after defecating.

Building a simple pit latrine

A pit latrine is a practical temporary solution to disposing of human excreta. It must be at least 10 metres away from living quarters and 30 metres away from any surface or underground water source. It should not be in a marshy area.

For one family the pit should be at least 2 metres deep with a 1 square metre opening.

For a community, the pit should be 1 metre wide, 2 metres deep and 6 to 10 metres long.

The edges of the pit or trench must be higher than ground level to prevent rain or other water from draining into it. The latrines should have a concrete or wooden cover supported by a beam. The openings should have properly fitting lids so that they can be covered after use.

3.3.2 Assuring a safe water supply

Access to safe water is also a basic requirement, made more acute when cholera occurs. Since water is the most important vehicle for transmitting cholera, all efforts must be made to provide safe water for washing and cooking, as well as for drinking. Contaminated surface water used for washing can cause infection even when drinking water is safe. When public bathing places are contaminated, as confirmed by laboratory tests, appropriate measures—including closing off affected areas — should be taken to minimize the danger.

Various approaches have been described for supplying safe water quickly and with limited resources. In urban areas, properly treated drinking water should be made available to the public. In rural areas, where water is not treated and tube-well or closed dug-well water is not available, people need to be taught that water can be made safe at home by boiling or by adding a chlorine-releasing preparation. A supply of suitable chemicals for treating water and narrow-mouthed earthen pots with covers for storing water, may be especially helpful for reducing cholera transmission within a family.

Further information on water supply and sanitation can be

On receipt of this information, the referral facility should promptly arrange rapid bacteriological and epidemiological investigations to confirm the etiology of the outbreak. It should also inform the national CDD programme manager who can then take appropriate control measures and implement notification according to the International Health Regulations.

Those concerned with travellers (e.g., airport health officers and pharmacists) should be alerted to look for cases of severe diarrhoea and notify a health officer should they occur.

Unfortunately, some countries do not report cases within their borders for fear that restrictions may be quite unjustifiably imposed on their travellers or trade. Officials reluctant to report cases should bear in mind that notification facilitates negotiations for removing restrictions and promotes international collaboration.

4. EARLY RESPONSES TO THE THREAT OF AN OUTBREAK

When a cholera outbreak occurs, control measures consist largely of reinforcing and intensifying preparatory activities which are already established. In addition, the following activities should be initiated.

4.1 National coordinating committee

National CDD programmes usually have a national programme manager who is responsible for all activities, including cholera control. They may also have an advisory committee which, reinforced by members from other ministries, may also function as a National Cholera Outbreak Control Committee. This Committee should be responsible for:

- regional and international collaboration;
- collection and reporting of information;
- organization of any necessary training;
- procurement, storage, and distribution of required supplies;
- implementation, monitoring, and evaluation of control activities.

Depending on the size of the country and its health service structure, similar committees may be created at the provincial or state level.

Alternatively, some countries may have a National Epidemic Control Committee which is responsible for controlling all epidemics and health emergencies. In this case, the manager of the national CDD

programme should be a member of this Committee, so that he can coordinate the activities required for cholera control.

In the event that no such committees exist when a cholera outbreak threatens, it is essential that a committee or special task force be rapidly formed to carry out the functions described above.

4.2 Establishing mobile control teams

If cholera appears or is a threat in countries or areas with poor peripheral health services, mobile teams may have to be formed at the district or provincial level, and trained to:

- establish and operate a temporary treatment centre;
- apply appropriate environmental sanitary measures and disinfection;
- carry out health education activities and disseminate information to the public to prevent panic;
- identify close contacts of patients and provide *selective* chemoprophylaxis;
- conduct an epidemiological study to establish, if possible, the mode of disease transmission involved in the outbreak;
- collect stool and environmental specimens for submission to a bacteriology laboratory;
- provide the required logistical support to laboratories and health facilities.

The members of each team — who may be otherwise employed in a laboratory, hospital, or elsewhere — should be brought together for briefing on emergency activities, their individual responsibilities, the location of their supplies, and the situation in which the services of the team will be needed. *(The basic supplies needed by each team are listed on page 8.)*

4.3 Supplies and equipment

Emergency supply requirements should be determined and individuals assigned to coordinate their procurement and distribution. Provision of supplies and equipment by external agencies should be organized by the national coordinating committee or task force to assure that all drugs and material meet national standards and requirements, and to avoid duplication of requests.

*Supplies needed to treat about 200 * patients during a cholera outbreak*

*Rehydration Supplies***

_____ • 240 litres Ringer's Lactate Solution (480 bags, 0.5 litre each) with giving sets
_____ • 10 disposible syringes (5 or 10 ml)
_____ • 10 needles (18 gauge) for adults
_____ • 20 needles (21-22 gauge) for children
_____ • 10 scalp-vein sets
_____ • 10 naso-gastric tubes
_____ — adult size: 16 Fr. 20 inches long
_____ — child size: 8 Fr. 15 inches long
_____ • 1300 packets ORS (for 1 litre each)

Antibiotics

_____ • 4800 capsules tetracycline, 250 mg (24 caps per case)
_____ • 20 x 60 ml bottles tetracycline syrup (for young children)

OR

_____ • the alternative antibiotic for your area.

If selective chemoprophylaxis is planned, the additional requirements for 5 close contacts per patient (about 1000 people) are:

_____ • 24 000 caps tetracycline, 250 mg (24 caps per person)

OR

_____ • 1000 caps doxycycline, 100 mg (1 cap per person)

Other Treatment Supplies

_____ • 2 large water dispensers with tap (marked at 5, 8, 10 litre intervals) for making ORS solution in bulk
_____ • 20 bottles (1 litre) for ORS solution (empty IV bottles)
_____ • 20 bottles (0.5 litre)
_____ • 40 tumblers, 200 ml
_____ • 20 teaspoons
_____ • 20 tablespoons
_____ • 10 tubeclamps
_____ • 3 kidney dishes
_____ • 3 forceps
_____ • 5 spirit lamps

Miscellaneous

_____ • 2 flashlights
_____ • strong twine (1 reel)
_____ • cotton wool (5 kg)
_____ • adhesive tape (3 reels)

NOTE:
** 200 cholera patients in a total population of 100 000 is the expected average number during an outbreak.*

*** The amount of supplies listed allows enough intravenous fluid followed by ORS for 40 patients, and the exclusive use of ORS for the other 160 patients.*

4.4 Establishing emergency treatment centres

Simplification of treatment — the most important recent advance in cholera control — can put effective treatment within immediate reach of most patients, thereby preventing deaths. The excellent results obtained with prompt and appropriate treatment will also serve to calm public fears.

Most cases can be treated in existing health centres if rehydration materials (Oral Rehydration Salts and intravenous fluid) and antibiotics are available , and health workers are trained in diarrhoea case management. In countries with an established national CDD programme, such facilities, materials, and personnel are usually available, although there may be a need for retraining health workers and for replenishing supplies.

If facilities, supplies, and trained staff do not exist, it will be necessary to establish emergency treatment facilities in or near affected communities and to provide them with the necessary supplies and staff training. Where health centres are lacking, temporary treatment facilities can be established in huts, school buildings, or tents.

5. TREATMENT OF CHOLERA

5.1 Early case finding

Detecting cholera cases early is important for prompt treatment and to minimize decontamination of the environment.

Early case detection also permits infected household contacts to be identified and helps the epidemiologist to investigate how cholera is being spread so that specific control measures can be taken. Members of voluntary organizations, religious leaders, teachers, students, and other community members should be encouraged to help by providing information on the occurrence of cases.

5.2 Case management

Most cholera patients can be adequately treated by the oral administration of a glucose-electrolyte solution, the contents of which approximate the water and electrolyte composition of the diarrhoeal stool. Intravenous electrolyte solutions containing alkali and potassium salts are required usually only for the initial rehydration of severely dehydrated patients who are in shock or unable to drink.

Patients should be treated before they go into shock. In infected areas with many cases but few health workers, grouping cholera patients in

a single centre can facilitate treatment, and also helps to minimize environmental contamination.

5.2.1 Rehydration therapy

The dehydration, acidosis and potassium depletion of cholera result from the loss of water and salts in the stool and vomitus. Treatment consists of replacing water and electrolytes in the proportions lost.

For oral rehydration, an Oral Rehydration Salts (ORS) solution is recommended. Pre-packaged ORS is available and is ideal for use in outlying areas, so should be reserved for this purpose when supplies are scarce. In hospitals and health centres where large volumes are consumed daily, the solution can be made in the required volumes by weighing out the individual ingredients supplied in bulk containers. A rice-based ORS solution may be used where it is available.

To make one litre of glucose-ORS solution from bulk ingredients*

The sugar and salts, in the amounts shown, should be completely dissolved in one litre of clean drinking water. Boiled water, cooled before use, is best.

3.5 grams.....sodium chloride (common salt)

plus

20 grams.....glucose, anhydrous

or

40 grams.....sucrose (common sugar)

or

22 grams..... glucose, monohydrate

plus

2.9 grams...trisodium citrate,dihydrate

or

2.5 grams..... sodium bicarbonate

plus

1.5 grams.....potassium chloride

* *To make one litre of rice-based ORS solution, boil 50 grams of rice powder in one litre of water for 5 minutes. Cool the solution. Add 3.5 grams sodium chloride, 2.9 grams trisodium citrate (or 2.5 grams sodium bicarbonate) and 1.5 grams potassium chloride. Mix well.*

Cholera patients require intravenous rehydration more often than patients with diarrhoea due to other causes. Ringer's Lactate Solution (Hartmann's Solution for injection) is the fluid recommended for intravenous rehydration as it is commonly available commercially and its composition is suitable for treatment of all acute diarrhoeas in patients of all ages.

Normal saline or half-normal saline solutions are less effective, but can be used if Ringer's Lactate Solution is unavailable. *Plain glucose in water is ineffective and should not be used.*

During an outbreak, usually 80-90% of patients can be treated by oral rehydration alone, using ORS solution. Most patients who at first need intravenous fluid can thereafter be treated with ORS until diarrhoea stops.

For more information on rehydration therapy, health workers can refer to two WHO documents: Management of the Patient with Diarrhoea, and A Manual for the Treatment of Diarrhoea — for Use by Physicians and other Senior Health Workers.

5.2.2 Feeding the cholera patient

Cholera patients should be permitted to drink water in addition to taking ORS solution. Food should be given after three to four hours of treatment, when rehydration is completed. In infants, continued breast-feeding should be encouraged.

5.2.3 Antibiotics

In severe cholera cases, antibiotics can reduce the volume and duration of diarrhoea, and shorten the period during which cholera vibrios are excreted. Antibiotics should be given orally as soon as vomiting stops, usually within a few hours of beginning rehydration. There is no advantage to using injectable antibiotics, which are expensive.

Tetracycline is the antibiotic of choice in most places. Doxycycline, a long-acting form of tetracycline which is administered only once, is preferred when available because of the considerable advantages of single-dose treatment.

In some places, *V. cholerae* has developed resistance to tetracycline and other antibiotics. This is suggested when diarrhoea continues after 48 hours of antibiotic treatment. Thus, it is important to determine the antibiotic sensitivity of newly isolated organisms, and to be aware of antibiotic sensitivity patterns in adjacent geographic areas.

Antibiotics used to treat cholera

	Dosage	
	Children	*Adults*
Antibiotic(s) of choice		
tetracycline *4 times per day for 3 days*	12.5 mg/kg	500 mg
or		
doxycycline *a single dose*	.....	300 mg
***Alternatives** (when strains are resistant to tetracycline)**		
furazolidone *4 times per day for 3 days*	1.25 mg/kg	100 mg
or		
trimethoprim (TMP) -sulfamethoxazole (SMX) *twice a day for 3 days*	TMP 5 mg/kg and SMX 25 mg/kg	TMP 160 mg and SMX 800 mg

**Erythromycin and chloramphenicol may also be used when other recommended antibiotics are not available.*

When vibrio strains are resistant to tetracycline, furazolidone or trimethoprim-sulfamethoxazole may be used. (Other alternatives are erythromycin and chloramphenicol.) For young children, when tetracycline syrup is not available, liquid preparations of trimethoprim-sulfamethoxazole may be used. Sulfadoxine (fanasil) is not effective, and can cause serious and even fatal reactions after even one dose.

No other anti-diarrhoeal, anti-emetic, anti-spasmodic, cardiotonic, or corticosteroid should be used to treat cholera.

6. PREVENTING THE SPREAD OF THE OUTBREAK

People get cholera from drinking water or eating food contaminated with cholera organisms. Prevention is based on reducing the chances of ingesting vibrios. When cholera appears in a community, activities must be intensified to promote the sanitary disposal of human waste, a safe water supply, and safe food practices. *(See Section 3.)* In addition, the following measures should be implemented.

6.1 Health education

The community should be kept actively informed and educated about the extent and severity of the outbreak. Every available channel of information should be used to inform and reassure the public about the effectiveness and simplicity of current treatment methods, and the benefits of reporting cholera cases promptly. They should be told of sources of contamination, and ways to avoid infection.

6.2 Disposal of dead bodies, and disinfection

Some public health supply requirements

- sufficient disinfectant (e.g., cresol/lysol)
- sufficient chlorine chemicals (hypochlorite or bleaching powder) for water treatment
- water testing kits (5), orthotolidine with reserve solution
- megaphones/portable loudspeakers (3)

In unhygienic living conditions, contamination of a cholera patient's surroundings is almost inevitable. Disinfection of the patient's room, clothing, used articles, and surroundings should be encouraged and disinfectant provided.

Funerals for those who die of cholera should be held quickly, near the place of death. Efforts should be made, through intensive health education or by legislation, to limit funeral gatherings, ritual washing of the dead, or feasting. Funerals may bring people from uninfected areas into an infected area from which they can carry the

cholera organism back home.

Those who care for and clean up after the cholera patient, and especially those who prepare the body (which may include cleaning the large bowel) can be exposed to high concentrations of vibrios. These are often the same people who then prepare large quantities of food for funeral attendees. This practice should be discouraged to minimize the risk of substantial cholera transmission. If other people are not available to prepare the food, meticulous hand-washing with soap and clean water is essential before handling food.

6.3 Chemoprophylaxis

Mass treatment of a community with antibiotics, often referred to as mass chemoprophylaxis, has never succeeded in limiting the spread of cholera.

Theoretically, this is an attractive cholera control strategy, but experience during the past 20 years has been disappointing. There are a number of reasons for this failure:

- it usually takes longer to organize the distribution and administration of the drug, as well as for the drug to act, than for the infection to spread;
- the effect of the drug persists only for a few days;
- the entire population of an area therefore needs to be simultaneously treated under supervision and then kept isolated to prevent their reinfection;
- it is extremely difficult to persuade a large number of supposedly infected but symptom-free people to take a drug.

Not only has mass chemoprophylaxis failed to prevent the spread of cholera, it diverts attention and resources from effective measures. Also, in several countries, it has contributed to the emergence of antibiotic resistance in the vibrio, depriving severely ill patients of a valuable treatment.

Selective treatment for members of the same household, who share food and shelter with a cholera patient, may be useful. However, in communities with El Tor cholera, secondary cases may be rare. Also, in societies where intimate social mixing and the exchange of food between households is common, it is difficult to determine who is a close contact. In addition, most of those infected with *V. cholerae* 01 of El Tor biotype have only mild disease, and so they and their close contacts escape

detection and treatment.

As a rule, therefore, the value of selective chemoprophylaxis depends on the local situation. It is justified only if surveillance shows that an average of one household member in a family of five becomes ill after the first case.

The recommendations and dosages of drugs for therapeutic use of antibiotics apply also when these drugs are used preventively. Doxycycline is preferred because only one dose is needed.

6.4 Vaccination

The vaccines currently available do not help in controlling cholera for a number of reasons:

- they lack a sufficient degree of effectiveness;
- they frequently do not have the required potency;
- the immunity they do produce lasts for only 3 to 6 months;
- vaccination does not reduce the rate of asymptomatic infections.

Most importantly, vaccination gives a false sense of security to those vaccinated and to health authorities, who may then neglect more effective measures. Furthermore, vaccination campaigns divert resources, attention, and manpower from more useful activities.

Vaccination campaigns to control cholera are not only wasteful of scarce resources, they can introduce far more serious health threats. When unsafe injection practices are used, serum hepatitis has often followed mass vaccination campaigns; and in recent years, the risk of HIV infection has become a major health threat.

As a consequence of these limitations, the 26th World Health Assembly abolished the requirement in the International Health Regulations of a certificate of vaccination against cholera .

6.5 Travel and trade restrictions (cordon sanitaire)

Travel and trade restrictions between countries or different areas of one country cannot prevent the introduction of cholera. It is extremely difficult, even with enormous efforts, to detect and isolate all infected persons, most of whom have no signs of illness.

What is more, such impositions encourage the suppression of outbreak information, which hampers collaboration between agencies and countries in joint efforts to control cholera outbreaks. A "cordon sanitaire" involving border check-posts also diverts manpower and resources from more effective control activities.

7. EPIDEMIOLOGY: INVESTIGATING THE OUTBREAK

At the start of an outbreak, even as general control measures are taken, epidemiological studies should be started to determine the magnitude of the outbreak and mode of transmission so that more effective and specific control measures can be applied.

Close communication should be established between the epidemiologists in the field and the clinicians, sanitarians, and laboratory staff. This allows suspected and confirmed cholera cases to be identified and recorded in time and place, preferably on a spot map.

Case control studies which may help define the mode of transmission — particularly in newly infected areas — may be undertaken, if necessary, with assistance from WHO or other outside sources. It may also be helpful to submit samples of suspect water, sewage, and foods for laboratory analysis.

With the help of clinicians and the laboratory, a sufficient number of stool specimens should be examined to identify the causative organism and test its sensitivity to antibiotics. Once the presence of cholera is confirmed, it is not necessary to examine specimens from all cases or contacts. In fact, this is to be discouraged since it places an unnecessary burden on laboratory facilities and is not necessary for effective treatment.

In newly infected areas, people of all ages may be affected. However, the more mobile members of the community (usually adults) may be more affected since they have greater exposure to possible sources of contamination, such as meals outside the home. A preponderance of cases in children suggests that the disease is endemic in the area.

The epidemiologist should alert and maintain contact with all health workers and community leaders to ensure prompt detection of newly affected areas. The CDD programme manager should be kept informed of the situation in all areas. Pertinent information should be provided to the public to prevent panic and gain general support for control activities. *(See Section 3.2)*

8. THE ROLE OF THE LABORATORY

Successful treatment of cholera does not depend in any way on laboratory examinations. However, laboratory analysis of specimens from the first suspected cases is essential to confirm the presence of cholera so that resources can be mobilized and the epidemiologic features of the outbreak can be determined.

Diagnostic laboratory supplies

- 1000 rectal swabs (if they cannot be produced locally)
- 500 g Cary-Blair medium
- 3 x 300 g TCBS medium
- 5 x 2 ml Polyvalent or O-Group 1 cholera diagnostic antiserum
- nutrient agar (500 g)
- bacto-peptone (1 kg)
- 500 Petri dishes (9 cm)
- 1000 test tubes (13 x 100 mm)
- 1000 disposable Bijou bottles

The only way to confirm cholera in new areas is by bacteriological examination of stool samples from suspected cholera patients. Environmental sampling, including the use of Moore swabs for sewage samples, can help clarify how infection is being spread and why it may persist or disappear from a community.

Laboratories at the local level should be capable of culturing and identifying *V. cholerae* 01, using the methods outlined in the WHO document, Manual for Laboratory Investigations of Acute Enteric Infections. They should stock the necessary supplies of media and antisera, and be able to provide transport media and rectal swabs to field workers for collecting specimens.

The laboratory must keep hospital clinicians and epidemiologists promptly informed of all results. National laboratories may contact WHO to arrange for technical cooperation with specialized laboratories, as needed, e.g., to verify laboratory findings or to characterize an atypical strain.

In areas where cholera is endemic or threatening, laboratory services with facilities for bacteriological work should be able to identify *V. cholerae* 01 as rapidly as possible. However, determining the vibrio biotype and serotype is not essential for control and is not important for treating patients.

8.1 Collecting stool samples

Stool specimens or rectal swabs from suspected cases should be promptly submitted for laboratory examination in a transport medium (e.g., Carey-Blair medium), a supply of which should be stocked by the local health centre or health officer. (Techniques for collecting specimens are also described in the WHO document, Manual for Laboratory Investigations of Acute Enteric Infections.) If a transport medium is not available, a cotton-tipped rectal swab should be soaked in the liquid stool, placed in a sterile plastic bag, tightly sealed, and sent to the laboratory.

The name, age and address of the patient, the clinical signs, and the date and time when the specimen was obtained should be written on a request slip and sent with the specimen. The specimen should preferably be collected before an antibiotic is given to the patient. Samples of nightsoil and sewage (preferably collected by Moore's swab technique) may be examined when epidemiologically indicated to help detect outbreaks early.

8.2 Reference laboratory

In areas at risk, a national reference laboratory should be established with responsibility for providing culture media and essential antisera, training workers in local and regional laboratories in appropriate isolation techniques, and monitoring the quality of laboratory services and training needs.

This laboratory should have the competence to identify and biotype *V. cholerae* 01 and to perform antibiotic sensitivity testing. For more complicated procedures (e.g., phage-typing and toxin testing), it may refer strains to the appropriate WHO Collaborating Centre.

WHO collaborating centres

WHO Collaborating Centre for Reference and Research on Vibrios (and for Diarrhoeal Disease Research and Training)
National Institute of Cholera and Enteric Diseases
(Indian Council of Medical Research)
P-33, CIT Road Scheme XM
Beliaghata
Calcutta 700010
INDIA

WHO Collaborating Centre for Phage-Typing and Resistance of Enterobacteria
Central Public Health Laboratory
London NW9 5HT
UNITED KINGDOM

9. AFTER AN OUTBREAK IS CONTROLLED

Emergency control measures should lead to the development of long-term control measures to improve the safety of public water supplies and sanitation facilities.

Public health education programmes should continually stress the principles of good personal hygiene and the importance of using only safe water.

In urban areas, a water supply system should ideally provide potable water under constant positive pressure through a system piped into private homes. The water should contain an antibacterial such as chlorine. Properly operated sewage treatment facilities connected to all households are an ideal towards which all communities should strive.

In rural areas, water sources should be protected from surface contamination, and latrines should always be situated so as to drain away from water supplies. The installation of simple devices such as tube wells should be encouraged. Cholera will utimately be brought under control only when water supplies, sanitation, and personal hygiene practices are safe enough to prevent the transmission of *V. cholerae* 01.

Until such conditions are achieved, preparation and vigilance are the best hope for effective control.

ADDITIONAL REFERENCES

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St. Louis, M.E.; Porter, J.D.; Helal A. et al. Epidemic cholera in West Africa: the role of food handling and high-risk foods. *American Journal of Epidemiology*, vol. 13(no. 4), (1980).

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添 付 資 料 3

RESPONDING TO THE THREAT OF A CHOLERA OUTBREAK

- Cholera is treatable. *Health workers who have been trained in the case management of diarrhoea, and have adequate supplies for treating patients, can prevent deaths due to cholera.*

- Most cholera cases are mild. *Even when there is a cholera outbreak, 90% of the cases are mild and can be treated by simple measures. Many infected persons have no symptoms.*

- Nevertheless, cholera should be taken seriously because it can quickly result in death. *With cholera a patient can rapidly lose water and essential salts from the body, and become dehydrated. Untreated, this can result in death within three to four hours after symptoms appear.*

- To prevent deaths due to cholera, the public must be informed to take patients with suspected cholera immediately to a health worker for treatment. *Most cases of cholera can be rehydrated quickly, and simply, with an Oral Rehydration Salts (ORS) solution to replace the lost water and salts. The few patients who become severely dehydrated need a fluid that is given intravenously. Rehydration, and treatment with an appropriate antibiotic, can save the lives of nearly all patients who are brought to a health facility for early treatment.*

- The best preparation in the threat of a cholera epidemic is to have a strong programme for the control of diarrhoeal diseases. *The conditions that create cholera epidemics are the same as those favouring other diarrhoeas. In the long term, improved water supply and sanitation is the only solution for the prevention of cholera. In an outbreak, the early detection and treatment of cholera patients is the best control measure. The treatment of cholera is very similar to that of other acute diarrhoeas. Countries with effective diarrhoeal disease control programmes have trained health professionals, and the essential supplies, already in place. They are ready to act quickly when a cholera outbreak threatens.*

- Vaccinating against cholera and limiting movement of possible carriers are ineffective against the spread of cholera. *The available vaccines are unable to prevent cholera infection. It is also difficult, even with enormous efforts, to detect and isolate all infected persons, most of whom have no signs of illness. Most importantly, imposing these measures diverts resources and manpower from more useful control activities.*

- Even in the midst of a cholera outbreak, more children die from <u>other</u> causes of diarrhoea. *Approximately 120 persons died from cholera in the first three weeks of the outbreak in Peru. However, it is estimated that during the same period ten to twenty times more Peruvian children - and almost 200,000 globally - died from diarrhoea due to other causes. These children have been given little attention in the press.*

WHO Programme for the Control of Diarrhoeal Disease (CDD)
1211 Geneva 27, Switzerland

Ⅵ－5. ＩＮＳ（国立衛生研究所）関連資料

内　　容

Ⅰ　政策方針

Ⅱ　国立衛生研究所の組織

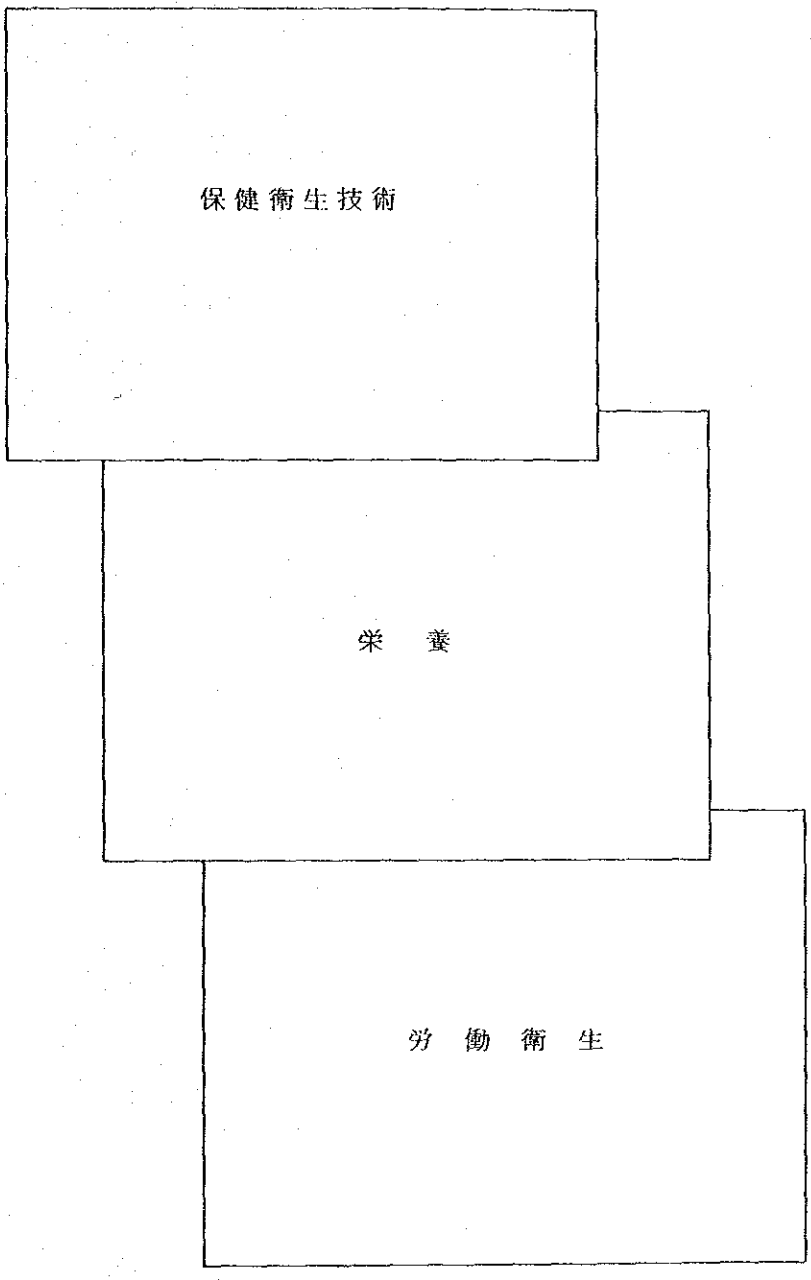
Ⅲ　人　材

Ⅳ　１９９１年第１四半期予算と支出

Ⅴ　生物製剤の生産目標と達成率

Ⅰ　政策方針

専門分野



国立衛生研究所

緊急政策　1990年8月～12月

1　各種細胞系統の管理・培養センター（Cell bank）の発展に貢献する。

2　レファレンス・センターの発展に貢献する。

3　全国研究所ネットワークを強化する。

4　文書、参考文献サービスを実施する。

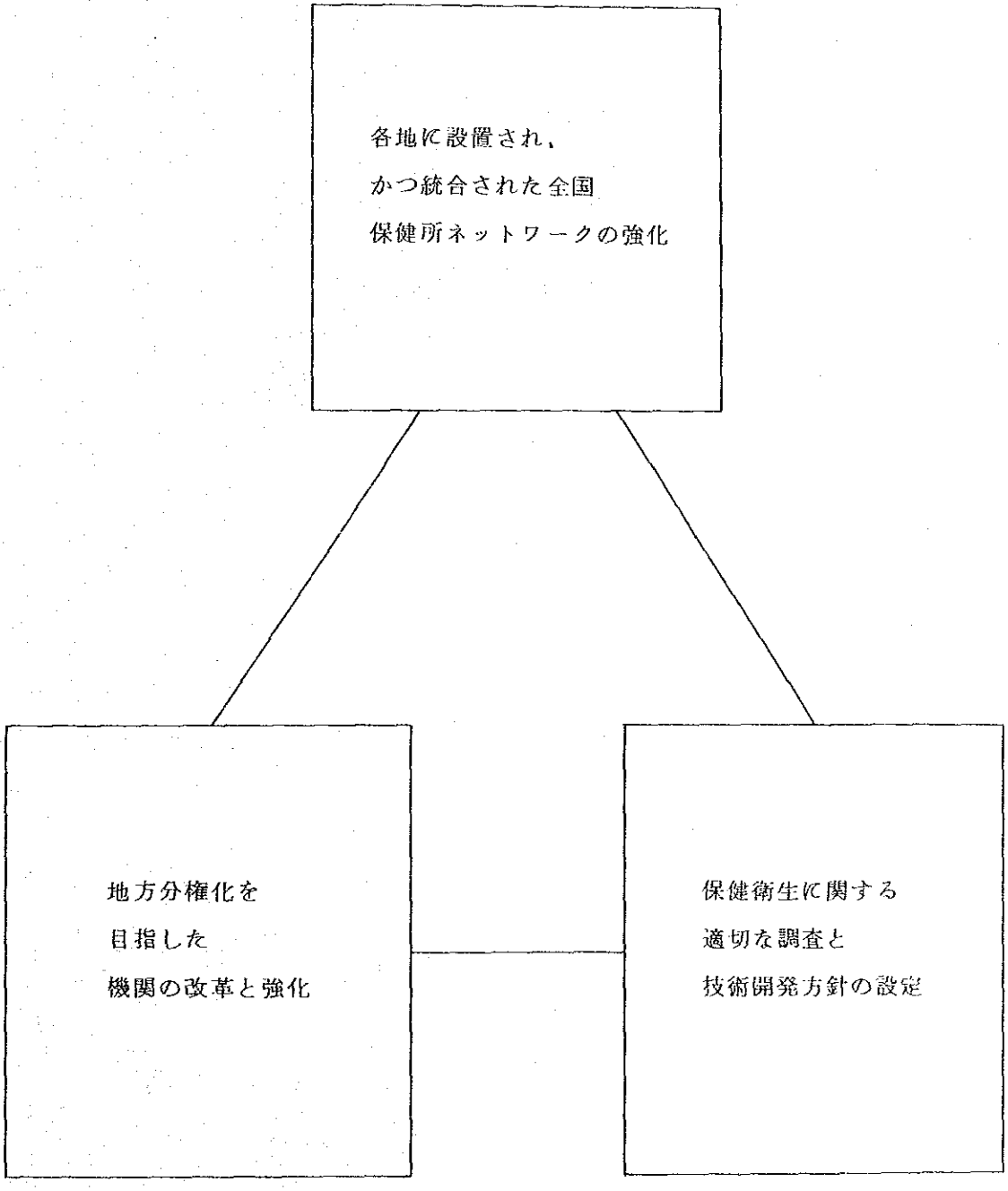
5　バイオテクノロジーの研究と診断キット生産活動、現地での早期診断方法の開発、適切な技術の研究を促進する。

6　国立衛生研究所の構造戦略への情報処理システムの導入を行う。

7　全国研究所ネットワークの支援を要する培養・診断施設の基盤設備の拡充を図る。

国立衛生研究所

活動方針1991 — 1995



Ⅱ　国立衛生研究所の組織

国立衛生研究所の組織改定

1990年4月～1991年1月

国立衛生研究所

公衆衛生 レファレンス・ ラボ	動物衛生 レファレンス・ ラボ	ドクトル・ウゴ・ ルンブレラス・ クルス衛生研究 センター	消費財 生産 センター

▲
▲
▲
▲

各機関の国立衛生研究所への統合

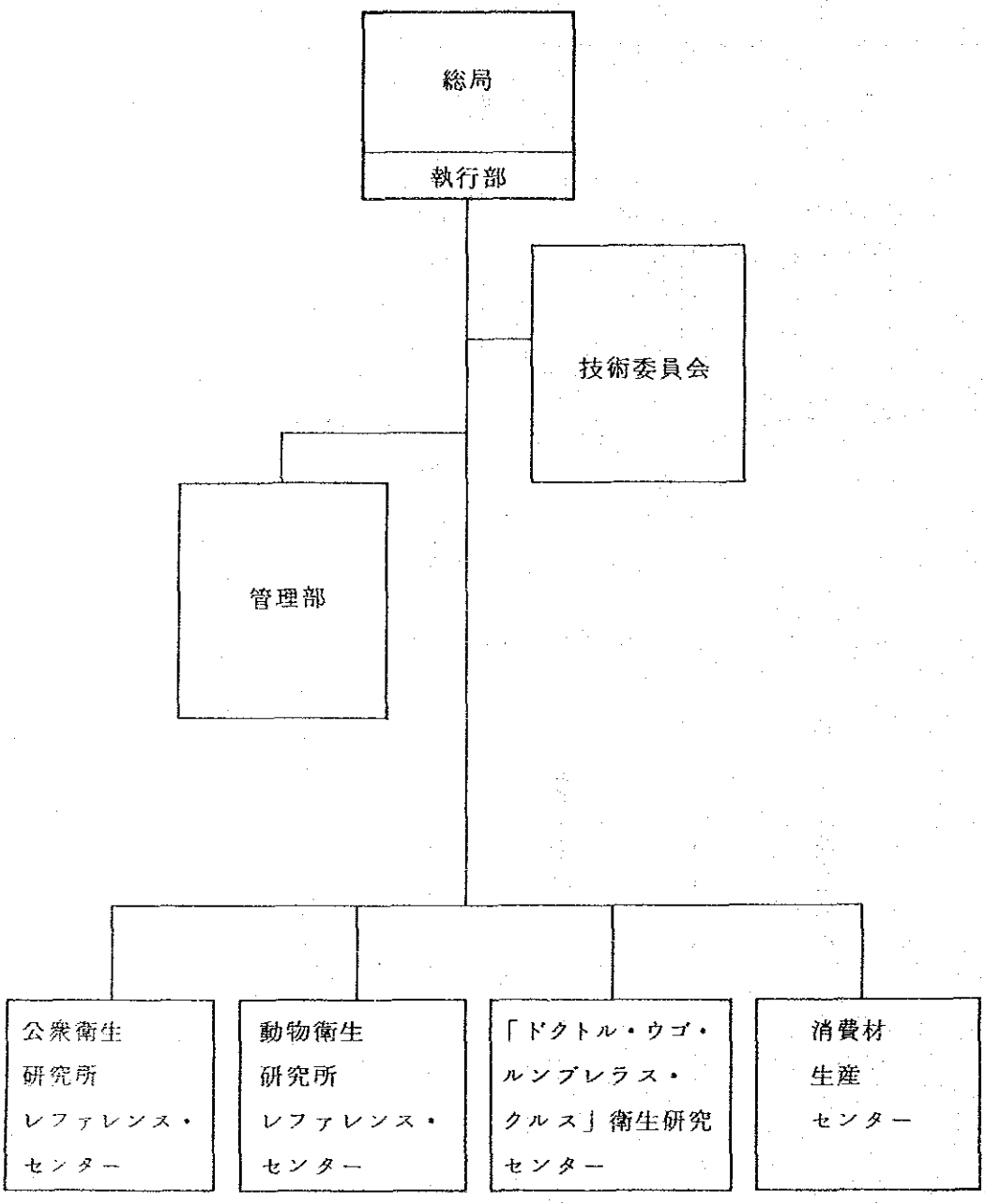
▲ ▲ ▲ ▲

国立食品栄養研究所 | コナマッド品質管理 | 国立労働衛生研究所 | 早期胃がん発見計画

国立衛生研究所

組織図

1988年～1990年3月



Ⅲ　人　　材

国立衛生研究所

職員関連統計データ表
(1991 年 4 月 26 日現在)

	中央 - INS	I.N.N.	I.N.A.	I.N.S.O	合計
公務員 幹部	29	4	29	16	78
医療 スタッフ	123	26	15	39	203
内科医	27	3	2	27	53
薬剤師	16	6	0	1	23
獣医	16	2	0	0	18
生物学者	56	3	0	1	60
心理学医	0	0	1	5	6
化学者	0	2	0	1	3
看護婦	0	0	0	1	1
栄養士	0	8	11	0	19
ｹｰｽﾜｰｶｰ	1	0	0	2	3
医療技師	2	0	0	1	3
上級栄養士	0	1	1	0	2
研究所員	10	1	0	0	11
臨床研究所員	1	0	0	0	1
専門家（資格保有）	40	12	16	24	92
技師（資格保有）	216	30	59	52	357
助手（資格保有）	39	0	3	14	56
1990 年 合計 = 946				合計	786

中央 I.N.S. ： 中央事務局、研究、公衆衛生ラボ、消費財生産、品質管理
I.N.N. ： 国立栄養研究所
I.N.A. ： 国立食品研究所
I.N.S.O. ： 国立労働衛生研究所

出所： 国立衛生研究所、人材局、1991 年

Ⅳ　1991年1～3月の予算と支出

国立衛生院

1991 年第 1 四半期の支出計算書

支出計算書

	認可予算	I.N.S. 中央 001	I.N.N. 002	I.N.A. 003	I.N.S.O. 004	周囲 101	支出額合計	残金	達成率 %	達成率合計 %
国庫	4648992	195464.23	27745	501910	61677	0	786796.2	3862195.77	16.92	16.21
01.00 給与	297720	53914.55	7635	12862	17416	0	91827.55	205892.45		
02.00 財貨	3547766	52500	8901	371862	22500	0	455763	3092003		
03.00 サービス	418445	9125	2976	66000	1905	0	80006	338439		
04.00 当座振替	114820	29243.64	7684	14613	15257	0	66797.64	48022.36		
05.00 年金	249403	50681.04	549	36573	4599	0	92402.04	157000.96		
08.00 工事	20838	0	0	0	0	0	0	20838		
自己収入	205894	59085	33580	0	2174	0	94839	111055	46.06	1.95
02.00 財貨	131953	13515	31440	0	1396	0	46351	85602		
03.00 サービス	40385	45570	2140	0	778	0	48488	8103		
14.00 投資プロジェクトと関連しない資本財	33556	0	0	0	0	0	0	33556		
合計	4854886	254549.23	61325	501910	63851	0	881635.2	3973250.77	18.16	18.16
01.00 給与	297720	53914.55	7635	12862	17416	0	91827.55	205892.45		
02.00 財貨	3679719	66015	40341	371862	23896	0	502114	3177605		
03.00 サービス	458830	54695	5116	66000	2683	0	128494	346542		
04.00 当座振替	114820	29243.64	7684	14613	15257	0	66797.64	48022.36		
05.00 年金	249403	50681.04	549	36573	4599	0	92402.04	157000.96		
08.00 工事	20838	0	0	0	0	0	0	20838		
14.00 投資プロジェクトと関連しない資本財	33556	0	0	0	0	0	0	33556		

中央 I.N.S. ： 中央事務局、研究、公衆衛生研究所、消費財生産、品質管理
I.N.N. ： 国立栄養研究所
I.N.A. ： 国立食品研究所
I.N.S.O. ： 国立労働衛生研究所

出所： 国立衛生院、事務局、1991 年 4 月

（単位： 百万インティ）

V　生物製剤の生産目標と達成率

国立衛生院

1990 年 ── 生物製剤の生産目標

	1990 年 目標		1990 年 上半期			1990 年 下半期			1990 年 合計		
	瓶	薬量	瓶	薬量	達成率 %	瓶	薬量	達成率 %	瓶	薬量	達成率 %
人体用生化学的薬剤の生産	48700	786200	14275	226243	29.31	16053	325403	32.96	30328	551646	62.27
・ワクチン	39500	581000	9054	73532	22.92	10470	122840	26.51	19524	196372	49.42
・抗原	4000	200000	3010	150500	75.25	4020	201000	100.50	7030	351500	175.7
・血清	5200	5200	2211	2211	42.52	1563	1563	30.06	3774	3774	72.57
動物用生化学的薬剤の生産	136980	2164100	11239	190240	8.20	12670	185840	9.25	23909	376080	17.4
・ワクチン	119720	1722000	10802	170420	9.02	11293	129080	9.43	22095	299500	18.5
・バクテリア	13560	272100	0	0	0.00	96	1920	0.71	96	1920	0.7
・抗原	3700	170000	437	19820	11.81	1281	54840	34.62	1718	74660	46.4
合計	185680	2950300							54237	927726	29.21

出所： 国立衛生研究所、企画予算課
1990 年 10 月 ~ 12 月の企画・予算評価、リマ市、1991 年 2 月

国立衛生院

開発プロジェクト

	プロジェクト名	予算（米ドル）
1	全国衛生研究所ネットワーク	1,641,630
2	生物レファレンス・センター	2,021,400
3	文書情報センター	666,768
4	セルバンク開設	2,565,000
5	地方衛生研究所の実施と充実	2,187,550
6	環境管理	150,000
7	品質管理センター開設	980,000
8	消費財生産センターの開設と再装備	1,000,000
9	全国動物衛生研究所網の設置と開発	3,345,000
	合　　計	14,557,348

国立衛生研究所

プロジェクト：全国衛生研究所ネットワーク

首都圏　モデル

予　　算

* インフラストラクチャ	$ 300,000
* 機器類	500,000
* 計算機器	150,000
* 業務費	
バン、旅費	100,000
プロジェクター、他	25,000
オーディオ機器	25,000
* 技能研修	200,000
コース，セミナーのプログラミング	25,000
* 相談料	100,000
* 規格の設定	100,000
* 図書の充実	75,000
* 技術的支援	25,000
* 調整のためのミーティング	16,630
合　計（米ドル）	1,641,630

国立衛生研究所

プロジェクト名：全国衛生研究所ネットワーク

首都圏モデル

全国の衛生研究所は、特定の病気の診断を効率的かつ機能的に行なう上で、重要な役割を担っており、国家の衛生計画の推進に大きく貢献している。発展途上国の抱える基本的な問題のひとつに、下部組織である周辺研究所の業務の立ち後れが挙げられる。

研究所網設立に係る専門家は、諸研究機関をできるだけ統括し、現在ある資源をより有効に利用するとともに、業務の二度手間を省くよう提案を提出している。

ペルーでは、国立衛生研究所の指導のもと、現在ある人材および設備を利用しながら調整のとれた業務を行なう衛生研究所網を組織することが必要とされている。

国立衛生研究所は、すでに標準化された実験業務を他の研究所に分散し、下部組織である周辺病院はこれをルーティンワークとして実施する必要がある。周辺病院は、管轄区内の医療施設の調整機関となる。当面、業務の分散化はリマ首都圏で実施し、後に全国に対象を広げていく予定である。また、中央組織は中間組織の調整機関とする。

国立衛生研究所は、全国にある研究所の調整機関として、地域の医療施設や研究所の活動の基準を設定し、統制、管理、監視する。

研究活動は、各レベルでレベルに見合った方法で行なう必要がある。まず、中央レベルでは、保健衛生に関する新技術を開発し、優先順位の高い病気の診断に必要な適切な技術の開発を担当する。一方、周辺（下部）レベルでは、疫学調査および比較的複雑でない調査を行なう。国立衛生研究所を国内の衛生面の研究活動を調整する機関とすれば、その下にある衛生研究所は、上部で定められた方針を実現する機関であると言えよう。

中央組織は、国立衛生研究所以外の保健衛生研究機関（大学、他の省庁、非政府機関など）や他方組織や国際組織との業務調整も担当する。

最新の診断技術や研究所網の規定や諸手続きに関して、各レベルの人材を常時、養成することも必要である。

研究所網は、衛生面の実情調査と政策の決定に向けて、（厚生）省の伝染病局とともに総合的な活動を行なう必要がある。

＊衛生研究所の段階的レベル

各レベルの研究所が担うべき役割を決め、これらをひとつの組織として設定する必要がある。この組織の中では、簡単で緊急度の高い研究課題はなるべく分散し、複雑な調査研究のみを中央レベルで行なう。

研究所は、次の３つのレベルに分類する。

1）中央組織：国立衛生研究所の本部内にあり、研究所網の運営、技術、規範管理を行なう。その他にも、以下の業務を行なう。

・全国研究所網の管理
・中間組織のレファレンス機能
・中間組織の人材の養成
・中間ならびに下部（周辺）組織の業務の評価と監督
・全国研究所網の規定ならびに庶務的、技術的諸手続きのマニュアル作成
・研究成果の報告方法を統一するための技術ならびに提出方法の規格化
・中間組織で実施する実験業務の品質管理

2）中間組織：管轄内の諸研究所を統制する機関で、戦略的に好都合な場所に配備する。

リマ州の特殊な人口分布形態を考慮して、当面、首都圏の4カ所とリマ市街1カ所に中間研究所を置き、それぞれカエタノ・エレディア病院、マリア・アウクシリアドラ病院、カジャオ病院、イポリト・ウナヌエ病院、ドス・デ・マヨ病院で業務を実施する。

次の段階では、リマの首都圏に設立したモデル設備をもとに、地方の研究所を設立する予定である。

中間組織は、以下の業務を行なう。

・下部組織へ移管する可能性のある業務について、周辺（下部）研究所の人材を訓練する。
・下部組織の統制
・採取した試料や情報の流れならびに技術規定に関して、下部組織がマニュアルの規定や手続きに則り業務を遂行しているかどうかの評価と監督
・下部組織への試薬、その他資材の供給
・疫学調査と、副次的な診断方法の改善

3）下部組織：最低限の設備を有する小規模な病院、医療センター、診療所などの中にある基礎的な活動組織で、以下の業務を行なう。

・中間組織から移管されてきた単純な診断実験業務の実施
・必要な試料の採取と、該当の組織への提供
・現地での疫学研究

＊首都圏の実験的研究所

人材の養成、規格化された実験業務の分散、試薬や実験内容の品質管理、予め選定された消耗品あるいは診断キットの供給、参考試料や情報の管理、規準化、流れ、中央組織からの情報提供などに関して、中央組織と下部組織である研究所間で計画された活動をすべて実施するための実験的研究所グループを設立することが必要と思われる。

これらの実験的研究所は、リマ、カジャオ、および戦略的に都合のよい地点、4カ所に配置する。

＊研究所網の活動計画

現在、全国衛生研究所網の設立に際し、短・中・長期的目標を定め、段階別に計画を策定中である。これらの目標は、経済的実情と活動の成果を考慮しながら、修正していく性格のものである。

計画は、国内の公衆衛生の実情に沿って、諸活動の優先順位を考慮しながら進めていかなければならない。わが国では、感染症が最も深刻な保健衛生面の問題となっているため、まず、この点を優先的に解消していく必要がある。

（疫学総局）との調整のもと、プライオリティの高い感染症が何であるかを規定し、これに基づいて当面、研究所網を機能させてゆく予定である。

まず、リマ首都圏内にある中央組織および中間組織を構成する既存の研究所の現状調査を行なう。

次に、優先順位に基づいて各レベルのモデル研究所を設立する。この際、インフラストラクチャ、人材、機器類、供給品に関して必要最低限の必要品目を定める必要がある。

現在、リマ市の3カ所において現状の調査が開始されており、さらにピウラ市で地方の実験的組織を設立中である。

諸活動は、添付のスケジュールに基づいて実施していく予定である。

Ⅵ－6. ＵＤＥＳ（保健医療機構）関連資料

(1) 保健医療機構（UDES）

Ⅰ. 機構

1）中央レベル

保健省（中央集権）

2）県レベル

UDES（UNIDAD DEPARTAMENTAL DE SALUD）地方分権

全国28UDES（リマは4、他県は1県につき1つのUDESがある。）

Ⅱ. UDESについて

行政上は各行政府の次官の管轄下にあり、保健分野については保健省次官の管轄下にあるUDESは、諮問委員会及び専門技術委員会、監督、評価、監査部、住民組織部、医療技術支援部、管理支援部から構成される。

医療技術支援部：研修、企画、投資と予算、プログラム・規範及び医療サービスを担当

管理支援部：財務、人事、供給・援護

1. 機能

1）推進

コミュニティの自主的参加：

・保健問題の確認と優先度の決定

・保健サービスの計画、コミュニティと共に活動の社会的調整

2）作成

基本的な年間活動計画：

・地方活動計画

・保健省の特別保健政策

3）計画立案、指導、監督と評価：

・すべての保健活動

・人材養成

4）調整：

・他部門，民間部門と共に援助計画の調整

・管轄内の国立の施設や国際機関の前では保健省に該当する統轄の役割

5）組織：

・各地方の需要に応じて各診療レベルの医療施設を組織

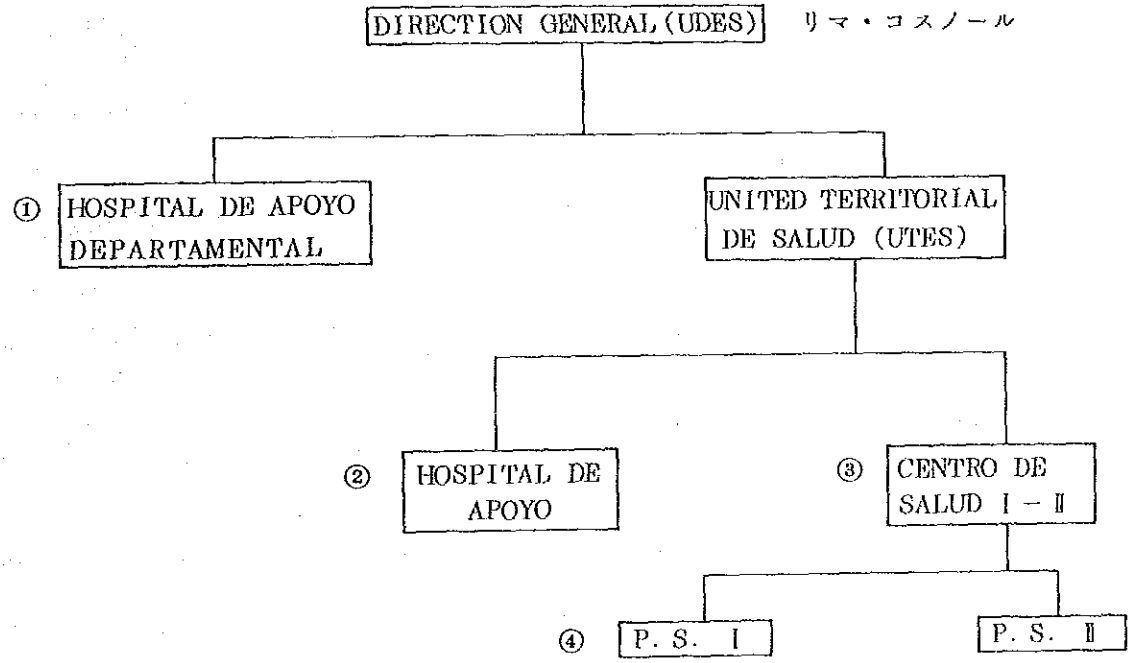
2. リマ首都圏のUDES

・UDES LIMA-NORTE：COMAS, SAN MARTIN DE PORRES, LOS OLIVOS,

PUENTE PIEDRA CARABAYLLO, CANTA,
HUACHO, CHANCAY, CAJATAMBO

- UDES LIMA-ESTE: CANTO GRANDE, CHOSICA, EL AGUSTION, ATE, VITARTE, SANTA ANITA, SAN JUAN DE LURIGANCHO, HUACHIPA
- UDES LIMA-CIUDAD: CERCADO DE LIMA, RIMAC, LA VICTORIA
- UDES LIMA-SUR: CHORILLOS, MIRAFLORES, BARRANCO, VILLA EL SALVADOR, SAN JUAN DE MIRAFLORES, PUCUSANA, CHILCA, CANETE, YAUYOS

3. 組織図



例：①MARIAAUXILIADORA支援病院、REZOLA支援病院（CANETE）

②プロジェクト関連医療施設では該当なし

③CENTRO DE SALUD Ⅰ：プロジェクト内で母子病院と呼んでいるMANUEL BARRETO等の6つの病院が該当する。②と③の区別が明確でない。

CENTRO DE SALUD Ⅱ：プロジェクト内ではパチャカマックヘルス・センター（C. S. PACHACAMAC）但しベッドが無くても分娩介助はしていた。
現在は敷地外に24時間体制の診療室（ベッド有り）を開業して，C. S. Ⅰの傾向が強い。

4. 1次・2次医療施設の区分

1) HOSPITAL DE APOYO

一般的に5部門（内科、外科、産婦人科、小児科、歯科）を持つ。

2) CENTRO DE SALUD TIPO Ⅰ：

住民30,000人迄、有床

3) CENTRO DE SALUD TIPO Ⅱ：

2)と同じ但し無床

4) PUESTO DE SALUD TIPO Ⅰ：

住民5,000人（都市周辺部）、住民3,000人（僻地）。常勤の医師(4)

5) PUESTO DE SALUD TIPO Ⅱ：

4)と同じ。医療従事者1人（ENFERMERIA TECNICOまたはAUXILIAR DE ENFERMERIA）

(2) UDSLS研究所システムの組織（仮訳）

リマ南部州衛生局（UDSLS）の研究所システムの組織の展望

UDSLS 衛生施設および既存の研究所，ここで働く職員，研究所の設備および既存のインフラストラクチャの評価に基づいて，疫病局は，UDSLS 指導部の承認のもと，次のような衛生研究所システムの組織を確立する。（表1を参照）

衛生研究所の評価によれば，アポヨ・マリア・アウクシリアドラ病院内にリマ南部州衛生局のレファレンス・ラボがあり，これは技術的には国立衛生院内にある国立レファレンス・センターに属している。同ラボは，UDES内の結核診断に関連するレファレンス活動，特にレベル2のラボ（我々の評価によれば6カ所）の監督および品質管理活動，および分泌物の培養，新しく発見された菌株の抵抗力の研究を担当する。

表2に示した指定ラボは，H. A. M. A. のラボと直接相互依存関係にあり，その所轄地域内のローカル・ラボや，あるいはローカル・ラボからのアクセスしやすさの点からレベル2のラボの管轄地域内にはないが，このレベル2のラボと相互依存関係を持つことが暗示され，そこの研究員の技術的能力が十分開発されるまではこのレベル2のラボに依存することが望まれるローカル・ラボの直接，間接の監督を行なうとともに，これらの研究機関で行なわれる杆菌検査の品質管理を担当する。（表3，4，5，6，7，8を参照）。また，ラボをもたず，試料を採取し，杆菌検査をしてもらうために近くのラボに持ち込む衛生センターは，試料採取機関（U. R. M.）と呼ばれる。

以上，研究所システムの組織について大まかに述べたところで，次に，現場で見られる既存の連絡経路に従って，それらの相互依存関係について具体的に見てみよう。

UTESバランコ～チョリジョス～スルコの研究機関は、本UTESに属し、研究施設を持っていない施設で採取された試料を、以下の要領で処理することになっている。

研究機関	試料採取機関
－CHORILLOS 2	－CHORILLOS 1；サンフランシスコ病院診療所
－G. BERNASCONI	－SURCO；ALICIA LASTRES 3 C. C. 保健所
－SAN GENARO	－SAN GENARO保健所
－BS. AS. DE VILLA	－BS. AS. DE V. 保健所
－DELICIAS DE VILLA	－DELICIAS DE VILLA保健所

サン・ファン・デ・ミラフローレス区

研究機関	研究機関
－MANUEL BARRETO	－OLLANTAY；VILLA SAN LUIS H. M. I. の保健所と衛生センター2カ所
－CIUDAD DE DIOS	－CIUDAD DE DIOS保健所
－TRECE DE OCTUBRE	－SAN LUIS DE MIRAFLORES センター2カ所の保健所

ビジャ・マリア・デル・トリウンフォ区

研究機関	試料採取機関
－JOSE CARLOS MARIATEGUI	－センターの保健所
－H. M. I. V. M. T.	－H. M. I. の保健所
－NUEVA ESPERANZA	－センターの保健所
－DANIEL DE LURIN	－センターの保健所
－JOSE GALVEZ	－センターの保健所

ビジャ・サルバドル区

研究機関	試料採取機関
－SAN MARTIN	－センターの保健所
－H. M. I. JUAN PABLO II	－H. M. I. の保健所
－H. M. I. SAN JOSE	－H. M. I. の保健所
－H. M. I. CESAR LOPEZ S.	－H. M. I. の保健所

ルリン区

研究機関	試料採取機関
－H. M. I. LURIN	－PUNTA HERMOSA, PUNTA NEGRA, PUCUSANA 衛生センターと保健所各所＊
－JULIO C. TELLO	－センターの保健所
－PACHACAMAC	－センターの保健所

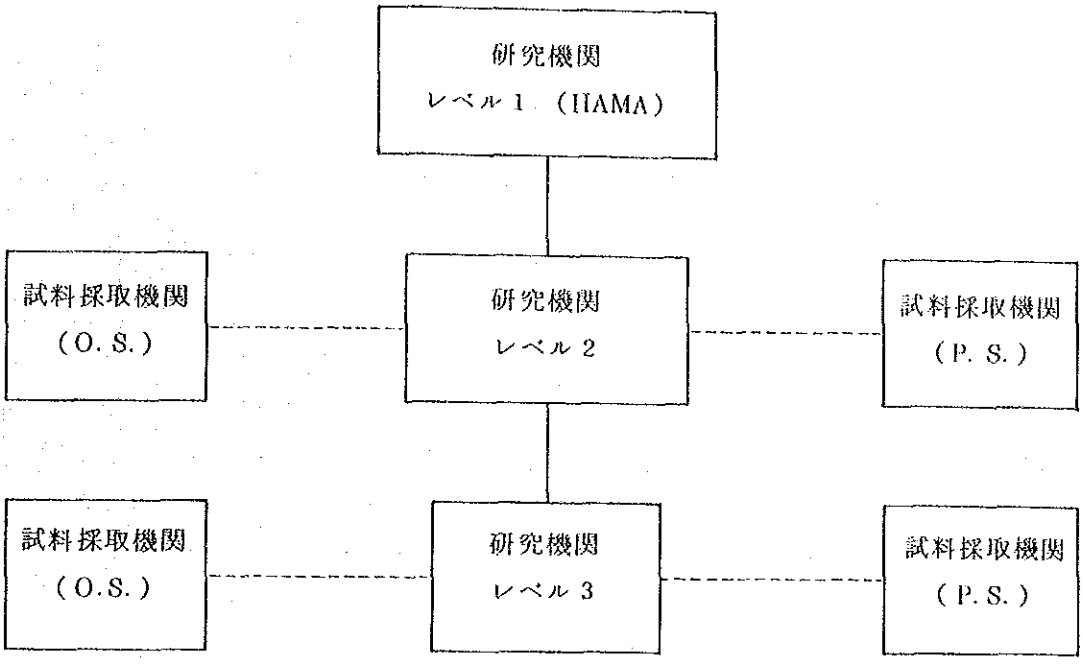
カニェテ区

研究機関	試料採取機関
－REZOLA 病院	－病院の保健所
－IMPERIAL	－センターの保健所
－SAN LUIS	－センターの保健所
－LUNAHUANA	－センターの保健所
－PACARAN	－センターの保健所
－CERRO AZUL	－センターの保健所
－YAUYOS	－センターの保健所
－QUILMANA	－センターの保健所
－MARA	－SAN ANTONIO, AYAYIRI, STA. CRUZ DE FLORES, ASIA 衛生センターと保健所各所

＊UTESのアスンシオン・デ・マリア病院は、将来JICAから機器を援助されることを考慮して、同研究所は技術的にルリンのH. M. I. に属するものとする。

厚生省	厚生省	厚生省
リマ南部州研究所	リマ南部州研究所	リマ南部州研究所
（氏名判読困難）	JOSE ELMO DE LA VEGA DIAZ	JOSE MIGUEL ARCA GONZALEZ DE VALLE
部長	本部長	C. M. P. 16516
疫病管理・衛生研究所局	疫学、統計、情報システム部	所長

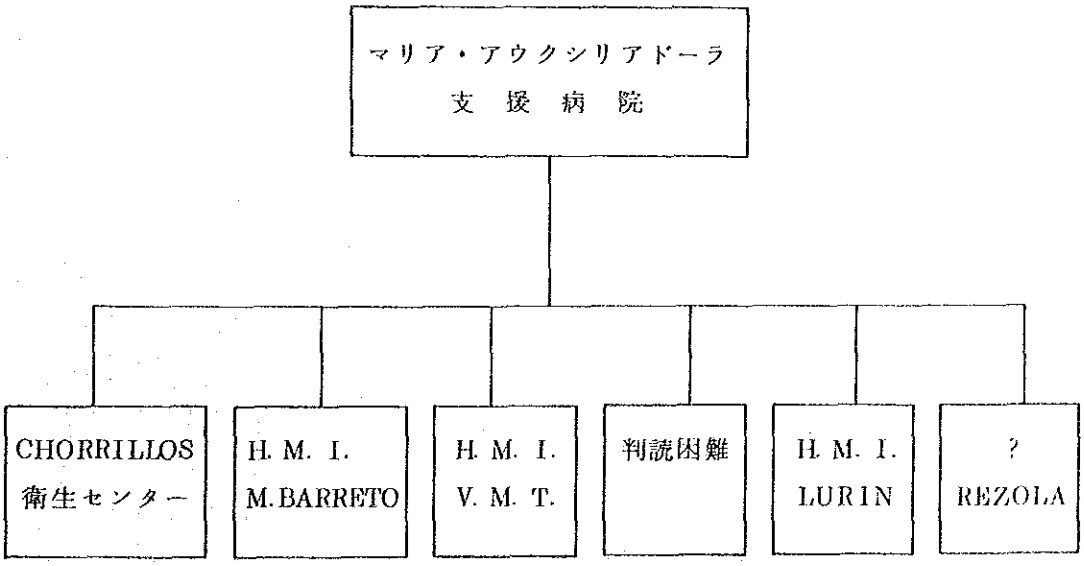
研究機関システムの組織の全体像



疫病局

図1　　UDSLS／疫病・統計・情報システム部

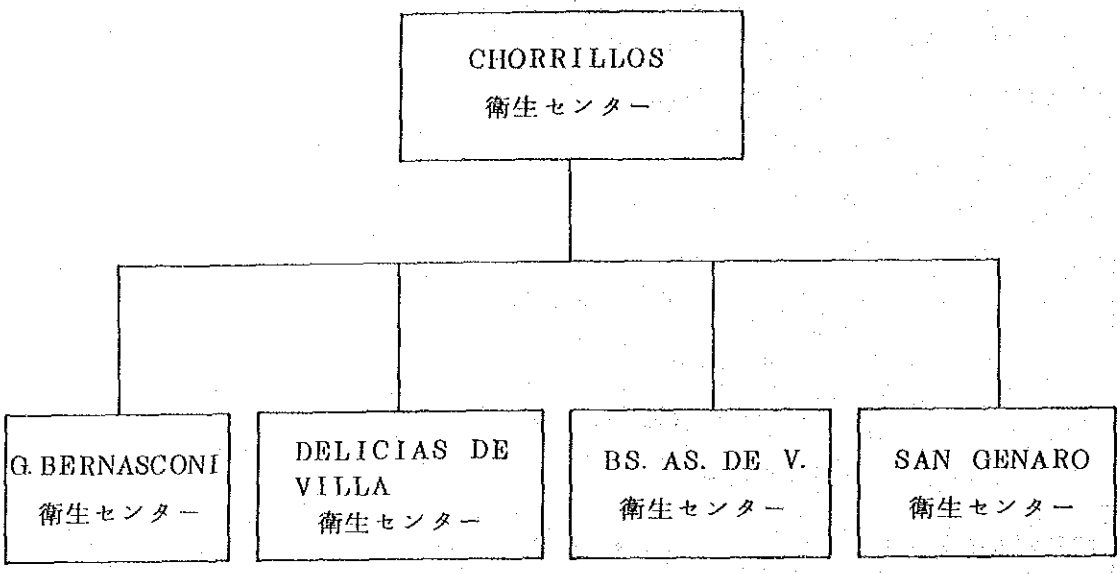
衛生研究機関の監督と品質管理組織



疫病局

図2　　UDSLS／疫病・統計・情報システム部

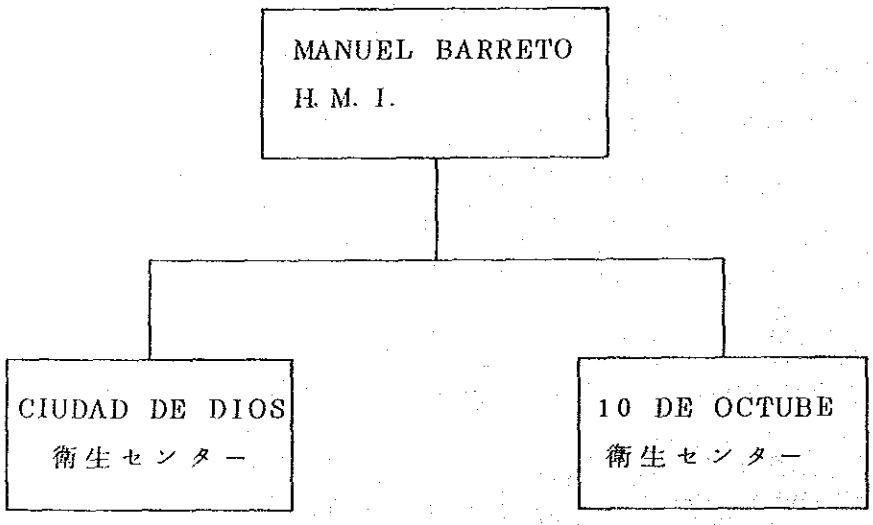
衛生研究機関の監督と品質管理組織



疫病局

図 3　　UDSLS／疫病・統計・情報システム部

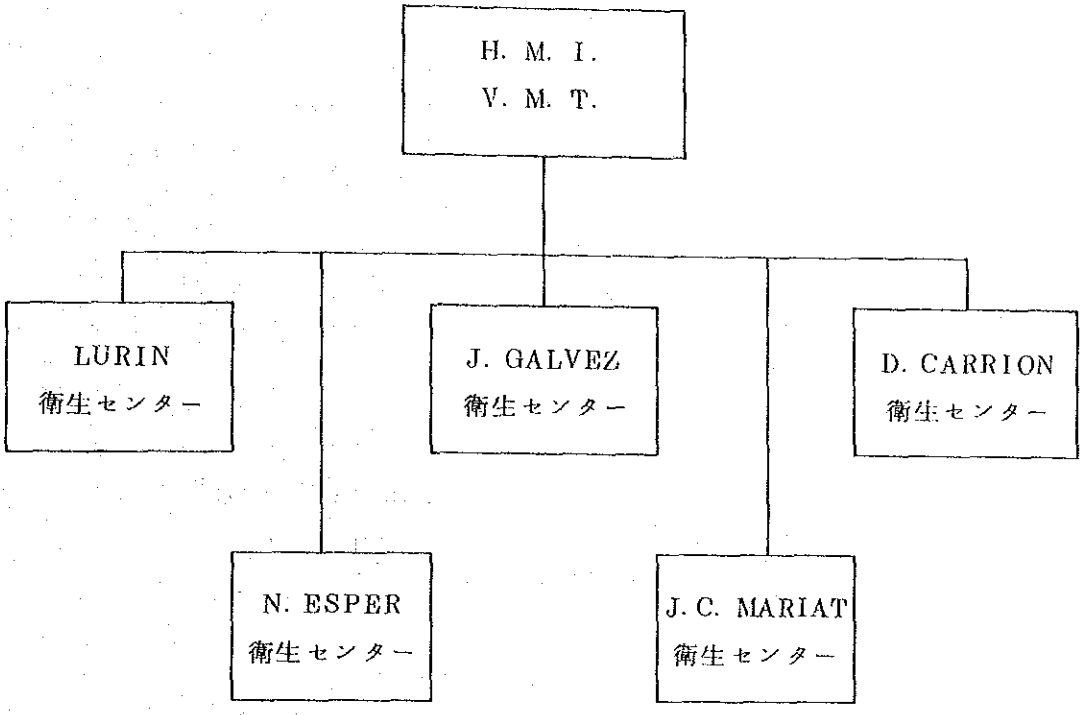
衛生研究機関の監督と品質管理組織



疫病局

図 4　　UDSLS／疫病・統計・情報システム部

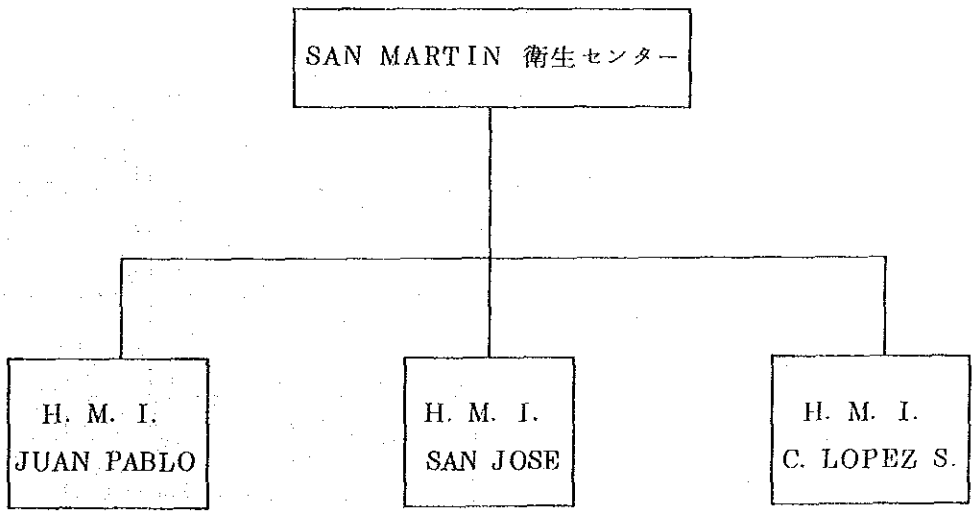
衛生研究機関の監督と品質管理組織



疫病局

図 5　　UDSLS／疫病・統計・情報システム部

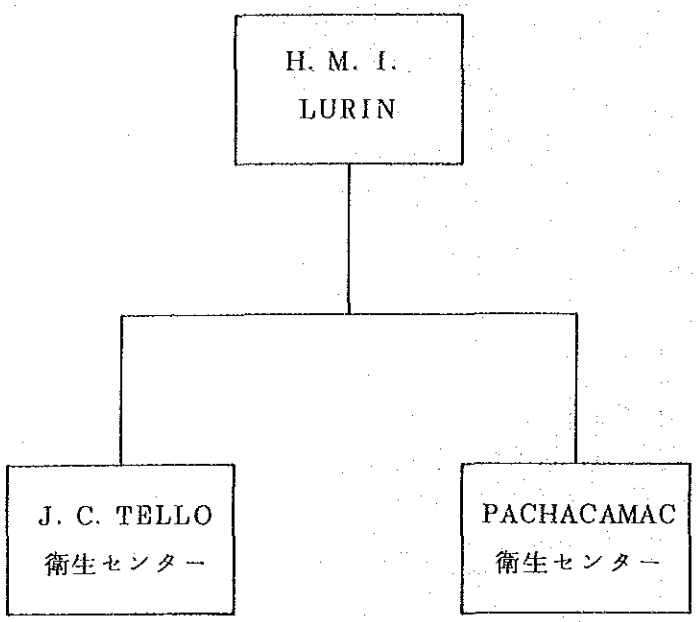
衛生研究機関の監督と品質管理組織



疫病局

図 6　　UDSLS／疫病・統計・情報システム部

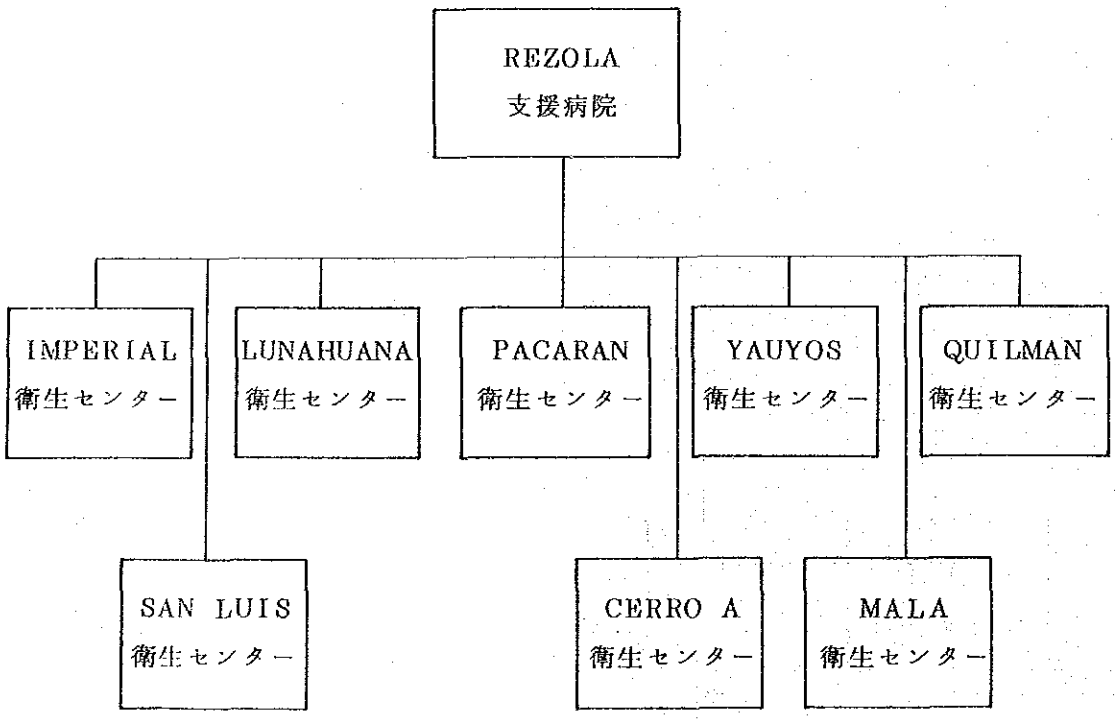
衛生研究機関の監督と品質管理組織



疫病局

図 7　　UDSLS／疫病・統計・情報システム部

衛生研究機関の監督と品質管理組織



疫病局

図 8　　UDSLS／疫病・統計・情報システム部

Ⅵ－7. カエタノ・エレディア病院関連資料

カエタノ・エレディア国立病院

DIRECCION ：

HONORIO DELGADO S/N K. M. 3.5 PANAMERICANA NORTE
DISTRITO INGIENERIA－S. M. P.
CODIGO POSTAL 31
FAX：(51＋14) 821410

LIMA－PERU

1991

カジェタノ・エレディア病院

計算センター

敷地	43,987.90 ㎡
建物面積	12,947.37 ㎡
空地	26,586.70 ㎡
緑地	4,453.817 ㎡
ベッド数	322
職員構成	1,663
医師	159
歯科外科	4
薬剤師	8
獣医	1
生物学医	3
心理学医	7
産科医	26
看護婦	173
栄養士	5
ケースワーカーⅠ	9
臨床検査技師	9
理学療法士	2
事務職員（資格保持）	22
技術者（資格保持）	891
助手（資格保持）	154
レジデント	118
研修医	43
契約職員	2
医務官	2
医務官以外の公務員	5
社会福祉員	1
放射線技師	4
検査技師	15

カエタノ・エレディア病院

計算センター

患者数　80～90年

年	患　者　数
1980	98,637
1981	113,916
1982	132,705
1983	127,079
1984	130,887
1985	155,624
1986	154,815
1987	149,285
1988	152,316
1989	100,039
1990	106,576

カエタノ・エレディア病院

緊急患者数

年	件　数
1980	87,317
1981	96,870
1982	118,631
1983	126,751
1984	125,583
1985	126,730
1986	131,089
1987	124,834
1988	113,902
1989	103,540
1990	101,325

カエタノ・エレディア病院

退院患者数

年	退院患者数
1980	9,217
1981	9,976
1982	10,696
1983	10,644
1984	11,754
1985	12,123
1986	12,936
1987	12,736
1988	13,176
1989	12,841
1990	9,414

カエタノ・エレディア病院

計算センター

専門科別外来患者数

治療件数	患者数	1990年 治療件数
	43,491	106,576
内科	18,989	47,112
一般内科	5,839	12,778
呼吸器科	985	3,373
循環器科	1,430	3,346
神経科	661	1,928
消化器科	1,102	2,921
皮膚科	1,552	3,387
腎臓科	463	1,426
その他	6,957	17,953
外科	10,922	24,498
一般外科	1,965	5,951
外傷科	1,422	2,742
耳鼻咽喉科	3,195	5,986
眼科	2,799	6,259
泌尿器科	412	993
その他	1,129	2,567
小児科	6,718	16,031
産婦人科	6,862	18,935
産科	3,270	9,576
婦人科	3,592	9,359

注：5月と6月はストライキ

カエタノ・エレディア病院

計算センター

科別治療件数

1990年

月	合　計	内　科	外　科	小児科	産婦人科	歯　科
1 月	10,512	3,080	2,682	2,396	1,515	839
2 月	11,208	3,308	2,758	2,707	1,615	820
3 月	9,779	2,785	2,319	2,323	1,571	781
4 月	9,069	2,601	2,355	1,937	1,490	686
5 月	7,399	1,895	2,024	1,648	1,295	537
6 月	6,730	1,705	1,950	1,418	1,149	508
7 月	7,689	1,746	1,601	2,230	1,262	850
8 月	7,622	2,190	1,848	1,655	1,340	589
9 月	6,268	1,685	1,686	1,329	1,073	495
10 月	7,805	2,160	1,936	1,738	1,331	640
11 月	8,770	2,394	2,205	2,118	1,373	680
12 月	8,474	2,219	2,392	1,868	1,304	691
合計	101,325	27,768	25,756	23,367	16,318	8,116

カエタノ・エレディア病院

計算センター

歯・口腔病患者数

年齢別

歯　・　口　腔　病	年度内 患者数	1990年 治療件数
合　　計	1,968	5,747
母　親	667	1,788
子　供	1,156	3,610
乳　児　（1歳未満）		
幼　児　（1～4歳）	140	281
小　児　（5歳）	79	189
学　童　（6～14歳）	937	3,140
成　人	145	349
15～19歳	45	94
20歳以上	100	255

カエタノ・エレディア病院

計算センター

退院患者数

1990年

月	退院者数	入院日数
1 月	983	7,452
2 月	1,144	8,137
3 月	977	7,336
4 月	996	7,185
5 月	479	3,319
6 月	455	2,613
7 月	183	2,954
8 月	714	6,180
9 月	794	6,009
10 月	876	6,689
11 月	924	6,717
12 月	889	6,525
合計	9,414	71,116