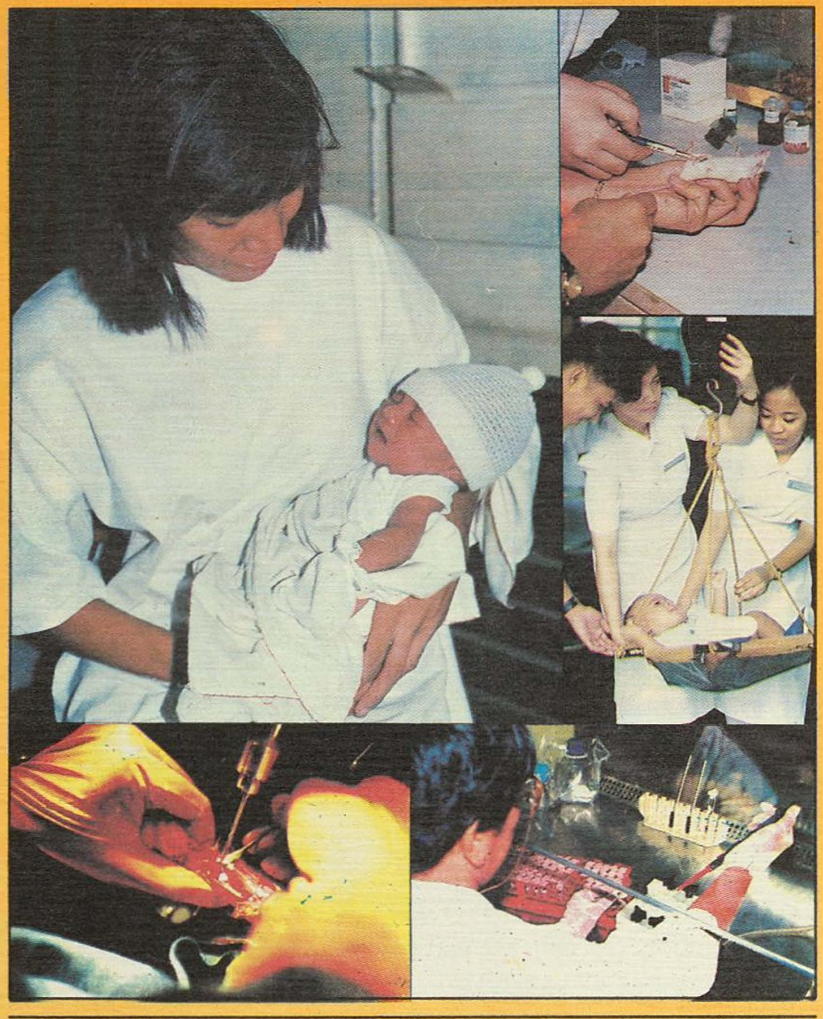


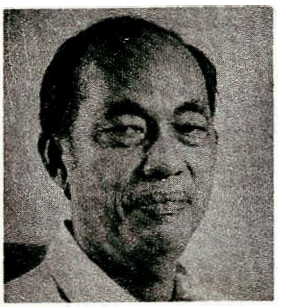
ANNUAL REPORT 1991
PHILIPPINE COUNCIL FOR HEALTH RESEARCH AND DEVELOPMENT

PCHRD

CONTENTS

PHILIPPINE COUNCIL FOR HEALTH RESEARCH & DEVELOPMENT
Department of Science & Technology
Gen. Santos Ave., Bicutan, Taguig, Metro Manila
Tel. Nos.: 822-04-29; 822-10-22; 822-06-07;
822-09-61 to 67 loc. 2110, 2111, 2112, 2113

MESSAGE



In the pursuit of national development, health has always been considered a common denominator, one of the pillars in the task of nation building, stemming from the assumption that a healthy population develops into an economically productive and socially active citizenry, capable of making significant contributions.

The PCHRD was created purposely to consolidate health research into a dynamic force -- a force that would create considerable impact and contribute in the essential task of improving the quality of life of all Filipinos.

In the year past, the Council, as highlighted in this Report, made distinct contributions to this end-in-view. During this period, likewise, the Governing Council continued to extend incalculable support to the Council's programs, ensuring that these are in tandem with national priorities.

With these achievements, we look forward to 1992, working to reinforce and improve on our gains during the past year. Together, we continue our service so that those who have less in life may have more in opportunity.

CEFERINO L. FOLLOSCO
Chairman,
PCHRD Governing Board
and,
Secretary, DOST

MESSAGE

To our valued researchers, users and supporters of research:

It is my privilege to present PCHRD's accomplishments for 1991.

Last year marked the Council's 9th year of existence. We are pleased to report that significant achievements in the field of health R & D were attained the highlights of which are presented in the succeeding pages. To sustain these gains, PCHRD will, in 1992, aggressively pursue its program on technology transfer; upgrade R & D in identified priority areas of pharmaceutical, biotechnology and traditional areas of concern; and, continuously develop and strengthen the health S & T infrastructure.

Once again, we thank those institutions and individuals in the health research network who have worked hand in hand with us in our effort to contribute in the attainment of our S & T goal of a newly industrializing country (NIC) by the year 2000.

RACITA L. ZARA, M.D.
Executive Director

TECHNOLOGY DELIVERY

TECHNOLOGY DIFFUSION

The Council highlighted 16 health and related technologies during the year through its participation in six technology fairs held in Benguet Province, Legaspi City, Cebu City, University of the Philippines Los Baños, Laguna, the Philippine Trade Training Center, and DOST- Bicutan and the holding of two exhibits at the Philippine General Hospital and PCHRD lobbies.

Technologies were also disseminated through the distribution of publications, conduct of press conferences, symposia and workshops, and press releases.

TECHNOLOGY COMMERCIAL-IZATION

Under the Department of Science and Technology's DOST) Comprehensive Technology Transfer and Commercialization Program, three health R & D technologies were formally transferred to the private sector. These were realized through cooperation and assistance of the technology generators, and the Technology Application and Promotion Institute, Department of Science and Technology (TAPI-DOST).

Dosage Formulations of Medicinal Plants

Four herbal tablets will be locally produced by Herba Pharm Corporation as follows: 300 mg *lagundi* tablet for relief of cough due to common colds, flu and pharyngitis; 250 mg *tsaang gubat* tablet for symptomatic relief of non-specific diarrhea and colic secondary to gastro-intestinal disorder; 250 mg *yerba buena* tablet for symptomatic relief of pain, aches and discomforts such as headache, toothache, muscle pain, dysmenorrhea, and post operative pain secondary to minor surgery; and 250 mg *sambong* tablet for urinary tract pain and burning sensation, to increase urinary output secondary to fluid retention.

Herbal tablets will be priced at least 25% lower than their cheapest existing counterpart. The availability of safe efficacious and low cost medicines is expected to benefit the country in terms of improved access by more people to drugs for common ailments.

Hepatitis B Diagnostic Kit

The local hepatitis B diagnostic kit to detect the presence of hepatitis B surface antigen (HBsAg) in the serum of HBV-suspected individuals will soon be mass produced and made available in the market by the Medical Test Systems, Inc. (MEDTEST).

The diagnostic kit, consisting of normal rabbit serum-phosphate buffer saline (NRS-PBS), 88% reverse passive hemagglutination (RPHA) cells, positive control and negative control, will cost about P5 lower than the imported brands.

Antibiotic Sensitivity Disk

The local manufacture and distribution of the antibiotic sensitivity disks by MEDTEST will initially cover at least 35% of the National Capital Region's demand. The product will cost P14-16 cheaper than the imported ones.

Consisting of a flat absorbent paper disk measuring 6 mm in diameter and containing an evenly distributed amount of antibiotic or antimicrobial, it is primarily used as a tool in testing an organism's susceptibility or resistance to certain drugs or antibiotics.

The technology was developed by microbiology research laboratory of UP-Philippine General Hospital headed by Dr. Melecia M. Antonio-Velmonte.

COMMUNICATION ACTIVITIES

The utilization of research results remains as one of the Council's priority areas of concern. In response to this objective, different communication strategies are used to encourage and influence its target clientele to seek and use health research findings. These strategies include the conduct of the **Agham Ugnayan sa Press** and symposia, production of publications and audiovisual materials, and the putting up of and participation in exhibits or technology fairs.

Eleven press conferences were conducted during the year covering the topics on:

- the effects of chemical and nuclear weapons on health
- the health benefits and safety measures in the different kinds of exercises
- the 1990 accomplishments of PCHRD highlighting two technologies, namely the local production of antibiotic sensitivity disk and anthropometric standards for 0-19 years old
- the predictability of visual acuity after cataract surgery
- health economics studies for better patient care
- perception of sexual abuse among 7 to 14-year old streetchildren at three drop-in centers in Metro Manila
- the local fabrication of an electromyograph (EMG)
- update on the Generics Act implementation and compliance
- women and child health care knowledge, beliefs and practices among Filipino women in Metro Manila
- prevalence survey of general pulmunary symptoms and acute and chronic lung diseases in an urban Philippine community
- alkaloid content of seven Cinchona species

Likewise, five symposia in the Ermita Health Science Community were held on:

- nutritional guidelines for Filipinos
- the emerging role of biotechnology in medicine
- health service delivery and utilization among urban poor households in Manila
- arts and health
- politics in health

A special activity, the scientific poster session on health and related technologies, is held annually. This year's winning entries were the local production of USP grade dextrose from cassava starch for intravenous fluids/antidiarrheal tablets (first place, professional category), the new growth charts for Filipinos (second place, professional category and awardee for the best-packaged technology as exhibited), and the project on the comparative analysis of serum analyte levels in human placenta and a commercial serum standard (first place, student category). The 10 finalists were awarded plaques of recognition while the winners received cash prizes as well as plaques of recognition.

The Council also participated in six national and regional technology fairs. As well, it conducted two poster exhibits featuring technologies on the four medicinal plant tablets (*lagundi, tsaang gubat, yerba buena* and *sambong*); the local production of the hepatitis B diagnostic kit, antibiotic sensitivity disk, cerebrospinal fluid (CSF) shunt, implants for internal fixation of fractures, cheap, stable serum/plasma standards for common clinical chemistry determinations; the Council's information services, health research network, publications, and S & T services.

The Association of Philippine Medical Colleges adopted the manuals on *Research Methods in Health and Medicine* (Vol. I - Planning and Vol. II - Hospital-based Research) as reference materials to enhance research capabilities within the 25 medical schools nationwide. Also, the publication on the *Reference Manual on the Philippine National Drug Policy and the Generics Act of 1988* is used in the continuing education program of the Philippine Pharmaceutical Association.

The *Directory of Health Research Institutions*, the *Inventory of Ongoing and Completed Researches* (1990-1991), and the *State of the Art on Cancer and Nutrition* were among the new publications printed in 1991. A total of 16 publications were produced and distributed to 18,850 recipients in the health research network.

Information Systems and Service

HERDIN's four information services namely, retrospective search, selective dissemination of information (SDI), online, and document delivery, were availed of from PCHRD, Department of Health and the University of the Philippines Manila sites by researchers in the health community. Some 1,400 clients were served by PCHRD alone.

Twenty-two institutions within the health research network were provided technical assistance through the conduct of training courses and consultations, among other things.

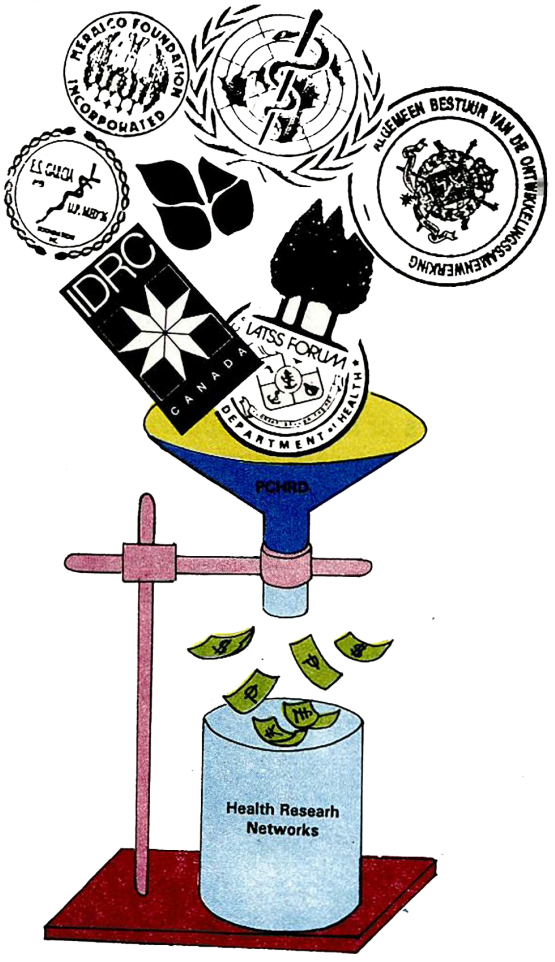
As an ongoing activity, 3,500 new entries were inputted into the HERDIN databases placing the current content to 12,316 records.

S & T LINKAGES

The joint PCHRD-Department of Budget and Management review system was put in place during the year. Of the 205 projects submitted by DOST, UP Manila, UP Los Banos, and DOH for review, 188 were recommended to the Department of Budget and Management (DBM) for implementation in 1992.

In addition to the Council's approved budget of P16.5M for the year, assistance from external sources amounting to P2.61M was generated to support information network, manpower development, S & T promotion, technology transfer, and research activities. These agencies include the International Development Research Centre (IDRC), Australian Information Development Assistance Bureau (AIDAB), World Health Organization (WHO), Department of Health (DOH), Marsman Foundation, Pharmaceutical Health Care Association of the Philippines (PHAP), San Miguel Foundation, Fernando Lopez Foundation, Eusebio Garcia Foundation, Meralco Foundation, AIM Scientific Research Foundation, International Agency for Traffic and Safety Sciences, British Council, and the Belgium General Administration and Cooperation for Development.

As a result of the Council's services and activities, linkages were established and maintained with some 186 local and international institutions.



As far as R & D breakthroughs are concerned

- a local anthropometric standard was adopted by the Department of Health (DOH), Department of Education, Culture and Sports (DECS), National Nutrition Council (NNC), Nutrition Center of the Philippines (NCP), Philippine Pediatric Society (PPS) and other users based on the results of the study done by the Food and Nutrition Research Institute of the Department of Science and Technology (FNRI-DOST) and PPS;

- advocacy for "no smoking" was strengthened through the results of the studies on the epidemiology of acute and chronic lung diseases which revealed the adverse effect of passive smoking on children's health;

- the refinement of a deoxyribonucleic acid (DNA) probe and monoclonal antibody for hepatitis B is expected to give a more sensitive and cost-effective indicator of hepatitis B virus transmission;

- the identification of *Cinchona ledgeriana* bark as the most promising species for quinine production, the drug of choice for the treatment of malaria, points out another area where the country has a competitive advantage commercially;

- a local substrate (molasses) identified for fermentation of penicillin has the potential of reducing penicillin importation from its present estimates of 168 tons costing about P6.3M/annum, and

- clinical trials (phase II) showed potentials of *Blumea balsamifera* (*sambong*) for the treatment of urolithiasis and *Cassia alata* (*akapulko*) as antifungal.

During the year, the Council provided assistance to 56 projects through grants-in-aid; evaluated 110 new project proposals referred by other agencies; monitored 53 ongoing projects funded by DOST, UP Manila, and DOH. The Council also developed 16 project proposals for foreign assistance.

Abstracts of PCHRD-supported projects in 1991 are contained in the following pages. They are arranged according to the Council's three program thrusts, viz., biotechnology, pharmaceuticals and traditional areas of concern.

Pilot Manufacture of Hepatitis B Virus (HBV) Reagents and Raw Materials for HBV Vaccine

Augusto L. Lingao, M.D.
Liver Study Group
University of the Philippines Manila

Bernadette L. Ramirez, Ph.D.
Research Institute for Tropical Medicine
Department of Health

(Status: Completed)

The project's main objective was the development and production of immunodiagnostic reagents for the detection of hepatitis B virus (HBV) infection.

Phase I of the project involved seroepidemiological studies which included blood collection to determine seroprevalence of hepatitis B surface antigen (HBsAg) among Filipinos. A nationwide seroprevalence of 12% was established.

Phase II focused on the pilot manufacture of reagents for HBsAg testing. The technology for the production of reagents for use in a reversed passive hemagglutination assay (R-PHA) system was established in the laboratory. Quality control standards for reagents production were also adopted.

At least five reagents lots were produced annually from 1986 to 1991 giving a total cumulative production of 223,640 one-point tests. Sixty-nine per cent (69%) of the tests was provided to the Philippine National Red Cross for use in routine screening of donor blood samples while the remaining 31% was used for research purposes.

The commercial production of the R-PHA reagents will soon be undertaken by Medtest, a private manufacturing firm.

Phase III focused on activities for the utilization of laboratory purified HBsAg from contaminated plasma for the production of plasma-derived HBV vaccines. In 1990, a total of 21.2 L of semi-purified HBsAg precipitates were sent to Kitasato Institute in Japan as raw materials for a joint vaccine production venture with RITM. A total of 20,196 vials of HBV vaccines were produced.

DNA and Monoclonal Antibody Studies in Hepatitis B Virus (HBV) Infection and Other Related Diseases

Marita V.T. Reyes, M.D.
Department of Biochemistry and
Molecular Biology, College of Medicine
University of the Philippines Manila

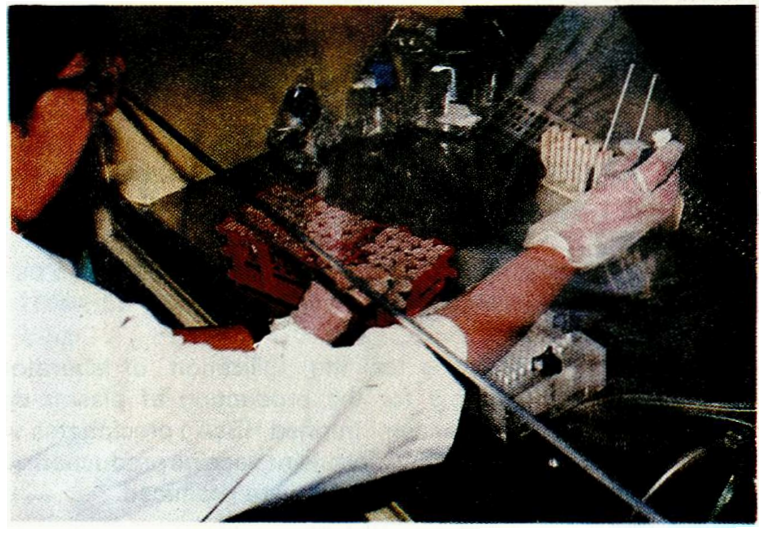
(Status: Completed)

The study attempted to correlate maternal serum HBV DNA and HBeAg/antiHBe positivities with the HBV infection rates of infants of HBsAg positive mothers, to compare the frequencies of HBV DNA integration in Philippine hepatocellular carcinoma (HCC) and in HBV infection, and to produce monoclonal antibodies against the surface antigen (HBsAg) of HBV for diagnostic and possible therapeutic use.

Results showed that maternal serum HBV DNA has a higher predictive value for the infant HBV carrier state than maternal HBeAg positivity. Infants who were found to be HBsAg (+) during the six month follow up were considered carriers.

Although liver tissue samples from patients who were HBsAg (+) gave positive results in the HBV DNA spot hybridization technique, no HBV DNA integration in liver tissue cells were observed in the four hepatocellular CA cases using the southern blot technique.

Monoclonal antibodies were not produced in two experimental runs. Clones which gave positive antibody titers were overcome by non-secreting cells and fungal contamination.



Development of Cheap, Stable Serum/Plasma Standards for Common Clinical Chemistry Determination

Rhodora C. Estacio, M.S.
Department of Biochemistry and
Molecular Biology
College of Medicine
University of the Philippines Manila

(Status: Ongoing)

The project will develop serum standards using indigenous materials in order to upgrade the quality of clinical chemistry determinations and the technology for the preparation of human/animal sera as controls/standards for conventional clinical chemistry.

The study explored the use of other sources of standard/control sera such as animal blood (using bovine and porcine), expired blood, and placental blood. Results showed that animal and placental blood can be used as alternatives to serum/ plasma standards.

Preliminary results of a study to determine the effect of storage time on the stability of five analytes showed that only the levels of FBS and cholesterol were not affected in the lyophilized sera standard at 4°C for 2 weeks.

Comparison of stability characteristics of pooled sera with the commercial available standard control is currently being done.

The Use of Latex Agglutination Test for the Rapid Diagnosis of Tuberculous Meningitis

Manuel P. Macapinlac, M.D.
Department of Biochemistry and
Molecular Biology
College of Medicine
University of the Philippines Manila

(Status: Ongoing)

The project aims to develop a fast method of diagnosing tuberculous meningitis that has a better sensitivity than acid fast staining and culture method.

Antisera from rabbits immunized with BCG were tested against BCG antigen and CSF of TB meningitis patients. The antibodies were bound to the latex particles and were used in the latex testing. Latex agglutination on rabbit sera and on 26 samples of CSF diagnosed as TB meningitis were conducted. Results showed agglutination on rabbit sera and on six of the CSF samples using Tri-buffer in the latex reagent.

Modifications of latex agglutination test on the CSF samples of patients with TB meningitis were conducted using three different buffers: 0.85% NSS, GBS-BSA, and Tri-buffer. Results revealed higher agglutination yield using Tri-buffer with latex antibody.

Cloning of the Hepatitis B Virus (HBV) Deoxyribonucleic Acid (DNA) and Development of an HBV DNA Probe

Rhodora C. Estacio, M.S.
Racquel G. Zafra, M.S.
Department of Biochemistry and Molecular Biology
College of Medicine
University of the Philippines Manila

(Status: New)

The study aims to isolate and clone the genetic material (DNA) of the hepatitis B virus, prepare a labeled cloned HBV DNA probe, and determine and compare the specificity of the cloned HBV DNA probe with a commercial one.

Activities will include collection of serum samples from patients, isolation of hepatitis B virus (Dane particle) from serum and cloning of HBV DNA in plasmid, separation of previously cloned HBV DNA from its plasmid vector and nick-translation of purified HBV DNA, and characterization of cloned HBV DNA probe and comparison with commercial probe.

Production of Serum and Alternative Culture Media Using Coconut Water and Egg Yolk for Mammalian Cell Cultivation

Pham Binh Chay, Ph.D.
National Institutes of Biotechnology and Applied Microbiology (BIOTECH)
University of the Philippines Los Baños

(Status: New)

The study will establish a bench-scale production system of serum and alternative culture media for mammalian cell cultivation for clinical pharmaceutical, medical and monoclonal antibody use.

Part I of the study will be the preparation of serum using young calf. Separation, purification, filtration, packaging, labelling and storage will be carried out.

Part II will be the formulation of alternative culture media prepared from young (2-3 months) or old (12-14 months) coconut water and egg yolk.

Development of Pregnancy Kit: Anti-Beta HCG Monoclonal Antibody Based Testing in Urine

Felicitas L. Lacbawan, M.D.
Department of Biochemistry and
Molecular Biology
College of Medicine
University of the Philippines Manila

(Status: New)

The project aims to develop a fast, simple and sensitive pregnancy test utilizing a sandwich method of enzyme-linked monoclonal antibody for qualitative determination of beta human chorionic gonadotropin (bHCG) in urine samples. It hopes to standardize the developed pregnancy test using the locally produced reagents.

Specific activities will include production of mouse/rabbit polyclonal anti-HCG with commercially available purified HCG, production of mouse monoclonal anti-beta HCG, conjugation of monoclonal antibody with peroxidase enzyme, standardization of developed pregnancy test, and assembly and packaging of the pregnancy test kits.

ANTIBIOTICS

Penicillin from Philippine Carbohydrate Raw Materials

Asuncion K. Raymundo, Ph.D.
National Institutes of Biotechnology
and Applied Microbiology (BIOTECH)
University of the Philippines Los Baños

(Status: Completed)

The project aimed to evaluate the penicillin producing capability of *Penicillium chrysogenum* strains available at the National Institutes of Biotechnology and Applied Microbiology (BIOTECH) and also to assess the suitability of molasses, brown sugar, glucose and cheese whey as substrates for penicillin production.

Of the four strains of *Penicillium chrysogenum* available at BIOTECH only the strains of JCM 2056 and DSM 1075 were found to be better producers of penicillin using Porter's medium with either molasses, brown sugar, glucose and cheese whey as potential lactose substitute. The pH trend showed a shift to the alkaline range indicating that alkaline metabolites were produced during fermentation.

The standardization of qualitative assay of penicillin G was achieved. Peak productivity of penicillin using 2L fermentor with 20 g/L molasses in Porter's medium could be expected on the 48th hour for the strain DSM 1075.

Separation and identification of pen G component of the fermentation broth was attained by thin layer chromatography (TLC) and high pressure liquid chromatography (HPLC). Analysis of fermentation broth by HPLC confirms the presence of pen G by spiking a known standard. Standard pen G gave a retention time of 0.8-1.2 min. Pen G was found to be unstable in water and buffer after 7 days storage at refrigerator temperature.

BIOLOGICALS

Studies on the Improvement of Rabies Vaccine: Phase I

Dolores M. Mercado
Biological Production Services
Department of Health
Phase I

Research Institute for Tropical Medicine
Department of Health
Phase II

(Status: New)

Phase I of the project will develop a tissue culture rabies vaccine using Rhesus fetal lung diploid cell culture. Production activities will include cell cultivation, inoculation, harvest filtration, inactivation, adsorption, concentration, preparation of final vaccine, and dispensing. The vaccine will be tested for sterility, safety, myoplasma, adventitious virus, potency, and assay for antigen, BLP, and AlPO4.

Phase II will involve the conduct of clinical trials.

Alkaloid Content in Seven Cinchona Species from the Mt. Kitanglad, Bukidnon Plantation

Fabian M. Dayrit, Ph.D.
Philippine Institute of Pure
and Applied Chemistry (PIPAC)
Ateneo de Manila University

(Status: Completed)

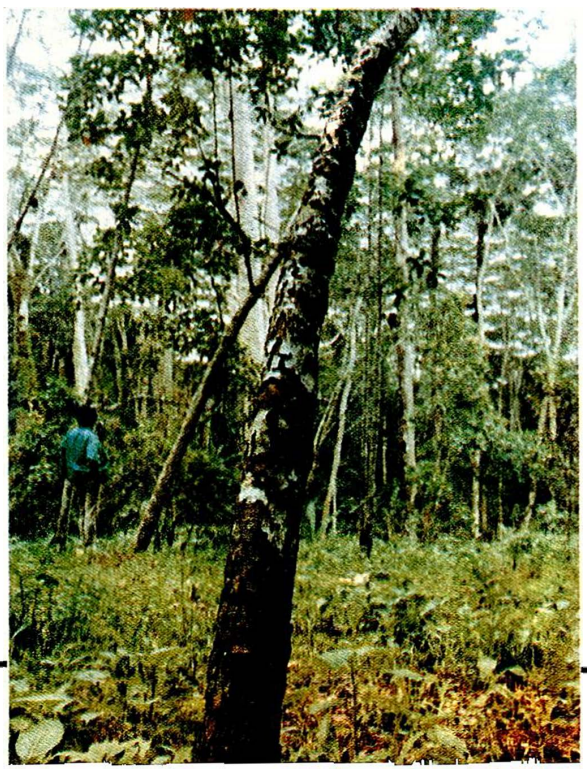
The objectives of the study were to to collect a statistically representative number of samples of bark material from each of the seven Cinchona species from the Philippine Cinchona Reforestation Project in Mt. Kitanglad, Bukidnon; determine which species gives the highest yield of quinine; and, to investigate the effects of tree age and sampling season on quinine yield.

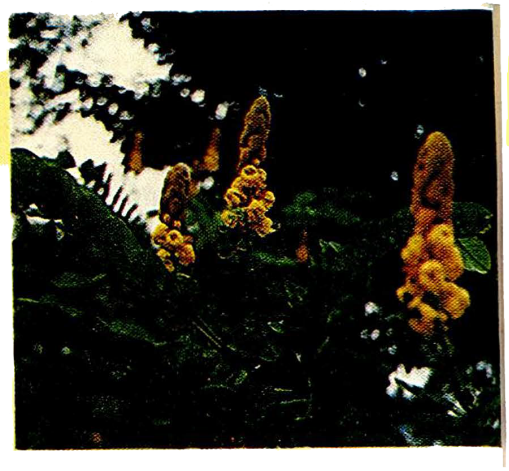
Analysis was carried out on the four of the major Cinchona alkaloids--quinine, quinidine, cinchonine, and cinchonidine--using high performance thin layer chromatography (HPTLC). Results of the analyses of the wet and dry season samples showed that the species with the highest percent quinine content in the bark are *C. ledgeriana, C. tjinjiroena, and C. officinalis*.

There was no significant difference in alkaloid yield between the wet and dry season samples.

Additional information will be needed on the characteristics of the species such as growth performance with age, diseases, need for treatment or fertilization, pest infestation, and method of debarking. Recommendations also include the setting up of two pilot plants, one for bark processing at the plantation site and a chemical extraction plant for the purification of quinine. Purification of the minor alkaloids (quinidine) can also be considered.

Studies on the breeding and propagation of the high-yielding Cinchona trees should be initiated.





Pharmacologic and Toxicologic Studies of Philippine Medicinal Plants

Horacio R. Estrada, M.D.
Department of Pharmacology
College of Medicine
University of the Philippines Manila

(Status: Ongoing)

The objectives of the study are to conduct lethal dose 50 studies of *Vitex negundo* (*lagundi*), *Blumea balsamifera* (*sambong*), *Peperomia pellucida* (*ulasimang bato*), *Momordica charantia* (*ampalaya*) and *Cassia alata* (*akapulko*), bioassay studies of *lagundi*, cat tracheal chain on *lagundi* isolates, and pharmacodynamics of *lagundi, sambong, ulasimang bato*, and *ampalaya*.

Toxicity tests on the following plants preparations and raw materials gave these LD50 values: *ulasimang bato* decoction of fresh whole plant (330g/kg), *akapulko* dried milled leaves (130g/kg), effect of rainy season on *sambong* dried leaves (127.23g/kg), effect of dry season on *sambong* dried leaves (143.62g/kg), *lagundi* defatted extract (158.0g/kg), and *lagundi* pediatric syrup (350g/kg).

Validation tests on the bronchodilating effects of 10 isolates using cat tracheal chain method showed contraction and dilatation effects on four out of 10 isolates.

Five of another set of 11 isolate combinations studied exhibited dilatation effect.

As well, bioassay tests on five batches of *lagundi* pediatric syrup revealed significant bronchodilating effect.

Establishment of Quality Control Bioassay Procedures for Medicinal Plant Products

Romeo F. Quijano, M.D.
Department of Pharmacology
College of Medicine
University of the Philippines Manila
(Status: Ongoing)

The project's objectives are to perform short and long term toxicity study on *Vitex negundo* (*lagundi*) tablets, conduct test for hypoglycemic effect of *Momordica charantia* (*ampalaya*), anti-hyperurecemic effect of *Peperomia pellucida* (*ulasimang bato*), and diuretic effect of *Blumea balsamifera* (*sambong*), and to perform various bioassay tests on other medicinal plant products.

Bioassay tests were conducted on *sambong* tablets and powdered dried leaves, and *ampalaya* defatted extract. Using the rat metabolic cage method, the five batches of tablets and leaves showed significant diuretic effect at dose levels 1.25 and 3.13 g/kg, respectively. For the *ampalaya* defatted extract, hypoglycemic effect was evaluated using hydrochlorothiazide as an inducer. The fresh whole plant of *ulasimang bato* also showed a significant anti-hyperurecemic effect at dose levels 6.6, 5.4, and 4.17 g/kg and doses levels of 4.17, 2.40 and 1.05 g/kg for the freeze dried powdered leaves.

Phase IV Community Trial: Comparative, Randomized Double-blind Trial of *Vitex negundo* L. (*Lagundi*) Tablet Among Adolescent Patients with Acute Cough of Moderate Severity in Selected Rural Health Units in Cotabato City

Nelia P. Cortes-Maramba, M.D.
Department of Pharmacology, College of Medicine
University of the Philippines Manila

(Status: Ongoing)

The project seeks to conduct expanded trials on efficacy, safety and acceptability of *Vitex negundo* (*lagundi*) tablets in a community setting. It will determine and compare efficacy of lagundi tablets with placebo in the treatment of acute cough of moderate severity, its adverse effects in comparison with placebo, and its acceptability among adolescent patients.

Training seminar and orientation of health personnel were completed . Four specific study sites were identified in Cotabato City namely, Malagas, Dinaig, Parang, and Pigkawayan. Information materials and patient data file with informed consent were finalized. Clinical trials were administered among 105 patients.

Dosage Forms from Medicinal Plants Constituents

Natividad F. de Castro, Ph.D.
College of Pharmacy
University of the Philippines Manila

(Status: Ongoing)

The main objectives of the project within the National Integrated Research Program on Medicinal Plants (NIRPROMP) are to formulate, prepare, and improve pharmaceutical dosage forms from medicinal plant materials; determine excipients for use in dosage formulation with emphasis on indigenous materials; set quality control specifications for raw materials and finished products; and undertake stability studies on the finished products.

Two hundred fifty four (254) bottles of 60 m *Cassia alata* (*akapulko*) lotion, 90 bottles of 60 ml *akapulko* placebo lotion, 80 bottles of sodium thiosulfate solution, 64 bottles of 100 *Blumea balsamifera* (*sambong*) tablets each, 11,500 *Vitex negundo* (*lagundi*) placebo tablets, a 60-liter batch of *lagundi* pediatric syrup, 200 ml 50% of *akapulko* decoction, and *Momordica charantia* (*ampalaya*) extract were produced to be used for mutagenicity studies, bioassays, LD50 determinations, metal analyses and clinical trials.

Stability studies on *lagundi* extract tablets 100 mg, *lagundi* pediatric syrup 150 mg/5ml, *sambong* tablets 250 mg, and *akapulko* lotion are ongoing. Pre-formulation and compatibility studies for *Peperomia pellucida* (*ulasimang bato*) are still in progress.

Clinical Screening and Validation Studies of Medicinal Plant Products Used in Traditional Folk Medicine in the Philippines

Nelia P. Cortes-Maramba, M.D.
Department of Pharmacology
College of Medicine
University of the Philippines Manila

(Status: Ongoing)

The study aims to assess the clinical efficacy and safety of various medicinal plant products. -

Phase II's double-blind randomized controlled clinical trials showed statistically significant efficacy of 50% *Cassia alata* (*akapulko*) lotion and 25% sodium thiosulfate in comparison with the placebo based on myocolic cure and disappearance of erythema among patients with tinea versicolor. Likewise, the efficacy and safety of 25.% sodium thiosulfate and 50% *akapulko* lotion were comparable.

Results of the clinical trials conducted to compare *Blumea balsamifera* (*sambong*) tablet and placebo in reducing intraocular pressure (IOP) in primary glaucoma indicated that at a dose of 1,250 mg (26.12 + 4.32 mg/kg) as single dose, a 14.7% decrease in IOP was obtained with *sambong*(4.19 mmHg drop) and 10.8% with placebo (1.97mmHg). At higher doses 2,500 mg and 3,750 mg, placebo effected a greater drop although in mean IOP drop (mmHg) there was no difference between the high doses of *sambong* and placebo. Diuresis occurred among *sambong*-treated subjects and none was observed with the placebo group.

Meanwhile, in a randomized double-blind placebo controlled study to determine the therapeutic efficacy, acceptability and well as the side effects of *sambong* tablets in the treatment of urinary tract stones, statistical analysis of results from 25 patients showed the following:

- *Sambong* and placebo did not alter significantly the 24 hr. urinary colume, pH, protein, creatinine, uric acid, and calcium as well as serum uric acid and calcium.
- Radiographic evidence of decrease in size of stones and the combined decrease in number and/or size of stones among the *sambong*-treated group were significant when compared with the placebo-treated group.
- The *sambong*-treated and group had a higher improvement rate (43.48% vs. 30.43%) and higher cure rate when compared with placebo group.
- The *sambong* group showed more objective evidence of improvement when compared with placebo, radiographically or by actual passage of stones.

Phytochemistry of *Vitex negundo*, L. (*Lagundi*)

Fabian M. Dayrit, Ph.D.
Philippine Institute of Pure
and Applied Chemistry (PIPAC)
Ateneo de Manila University

(Status: Ongoing)

This study is part of the National Integrated Research Program on Medicinal Plants (NIRPROMP). Its main objective is to identify the pharmacologically-active constituents of *Vitex negundo* (*lagundi*). Other responsibilities of the study are to analyze samples of various medicinal plants for the presence of toxic metals, specifically, Hg, Cd, As, and Pb; prepare standard TLC procedures for the qualitative analysis of medicinal plants; and assist in the preparation of plant extracts for the use of the other project components.

Extraction and bioassay fractions from *lagundi* has been ongoing. It has been observed that the activities of the fractions vary if these are tested as combinations with other fractions. This indicates possible existence of several active compounds.

To date, a total of 13 compounds have been purified from various active and non-active fractions of *lagundi*. From the active ethyl acetate fraction, nine compounds have been purified and of this number six have been identified using physical and spectroscopic techniques. A number of the purified compounds have been tested for their individual activity using various bioassay procedures. Similarly, the activities of some of the pure compounds vary when mixed with other pure compounds. Purification is continuing on the other compounds contained in the active fractions.

Preliminary results suggest that there is no single active compound present but a more complex activity.

Mutagenicity and Clastogenicity of Drug Preparations from Philippine Medicinal Plants

Clara Y. Lim-Sylianco, Ph.D.
Institute of Chemistry
University of the Philippines Diliman

(Status: Ongoing)

The project aims to study the mutagenicity and clastogenicity potentials of drug preparations from medicinal plants, the anti-mutagenic potential of non-mutagenic preparations against mutacarcinogens, and the reduction of mutagenicity potential of mutagenic preparations.

The direct-DNA damaging potential (Rec assay), mutagenicity before metabolic activation (Ames Test), mutagenicity after metabolic activation (HMA), and chromosome-breaking effects (micronucleus test) were investigated on the following samples: *Cassia alata* (*akapulko*) powder, leaves-milled and lotion; *Momordica charantia* (*ampalaya*) powder and defatted extract; *Blumea balsamifera* (*sambong*) powder, tablet and ethanol extract; *Peperomia pellucida* (*ulasimang bato*) decoction, freeze-dried *ulasimang bato*; *Carmona retusa* (*tsaang gubat*) powder, and *Vitex negundi* (*lagundi*) pediatric syrup.

Establishment and Maintenance of a Medicinal Plants Production Farm

Prof. Ernesta G. Quintana
Department of Horticulture
College of Agriculture
University of the Philippines Los Banos

(Status: Ongoing)

The project which is under the National Integrated Research Program on Medicinal Plants (NIRPROMP) maintains several production sites totalling about 3 ha in area. These are planted with *Cassia alata* (*akapulko*), *Momordica charantia* (*ampalaya*), *Vitex negundo* (*lagundi*), *Quisqualis indica* (*niyog-niyogan*), *Blumea balsamifera* (*sambong*), *Carmona retusa* (*tsaang gubat*) and *Peperomia pellucida* (*ulasimang bato*).

Cultural management studies have been conducted to ensure adequate supply of raw materials for the other components of NIRPROMP, namely the UP College of Medicine (UPCM), UP College of Pharmacy (UPCP), and the Philippine Institute of Pure and Applied Chemistry (PIPAC).

Planting materials of medicinal plants are being maintained in the greenhouse for replanting, replacement and for expansion of supply. Lectures on cultural management of medicinal plants are given to interested visitors of the project and to communities upon invitation.

Isolation, Purification, and Characterization of a Seed Gum from *Leucaena leucocephala L.* (*Ipil-ipil*)

Irene M. Villasenor, M.D.
Institute of Chemistry
University of the Philippines Diliman

(Status: New)

The study's objectives are to isolate the *Leucaena leucocephala L.* (*ipil-ipil*) seed gum from its natural biochemical environment and identify the components of the crude gum, and; to develop purification method for the crude gum to meet production specifications required by the pharmaceutical industry.

The effect of *ipil-ipil* seed gum on the cohesive qualities of a tablet will be determined by replacing the commonly used gum in a tablet formulation. The comparative effects of both commonly used gum and *ipil-ipil* seed gum on a tablet formulation will be checked by testing tablet hardness using the Pfizer hardness tester.

PARENTERALS

Development of the Implementation Plan for the Production of IV Fluids Using Locally Produced Raw Materials

Dr. Leopoldo H. Lazatin
College of Medicine
University of the Philippines Manila

(Status: New)

A comprehensive program aimed at developing local capability and expertise in producing parenterals (U.S.P. grade dextrose and sodium chloride) is envisioned. A feasibility study confirmed the viability of establishing an IV fluid production plant.

The project, which is the second phase of the comprehensive program, targets the development of an implementation plan which will initiate the setting up of the production plant at the UP-Philippine General Hospital. It will involve generation and selection of the best proposal for the establishment of the IV fluid plant according to identified plant specifications; negotiation with interested foreign funding agency(ies); assessment of recent developments and updating of data regarding IV fluids production; and documentation of action plans for the implementation.

SPECIALTY DEVICES/ MEDICAL EQIPMENT

Development of Cerebrospinal Fluid (CSF) Shunt

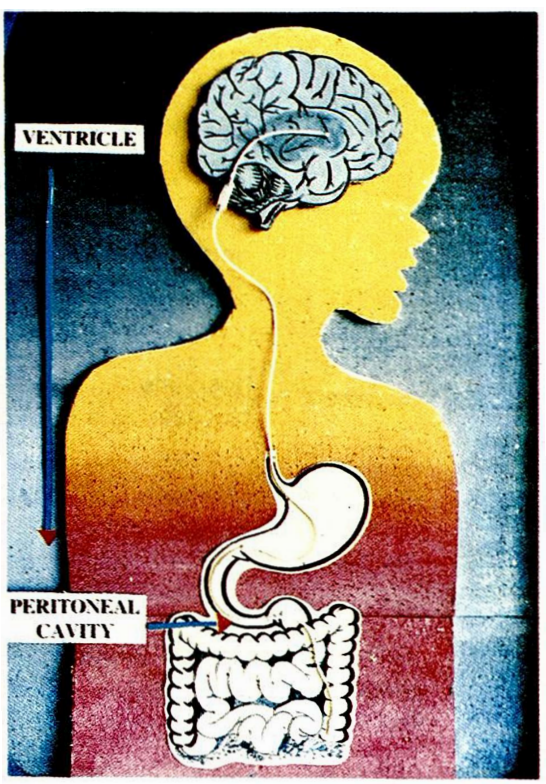
Richard Chu, Ph.D.
College of Engineering
University of the Philippines Diliman

Renato Sibayan, M.D.
Faculty of Medicine and Surgery
University of Santo Tomas

(Status: Ongoing)

Phase I of the study is to provide a locally fabricated prototype CSF shunt for treatment of hydrocephalus. Phase II will test the efficacy of the CSF shunt prototype through clinical trials.

The fabrication of 50 shunts and the calibration of their performance are in progress.



Histologic Evaluation of Tissue Compatibility of Locally-Made Implants for Internal Fixation of Fractures

Rene C. Catan, M.D.
Philippine Orthopedic Center

(Status: Ongoing)

The project aims to fabricate low cost implants using surgical steel 316 L SS plates and screws and have these tested for tissue compatibility through animal experiments. Cost-effectiveness of locally fabricated implants will be determined and compared with that of the standard imported ones.

Twenty-five adult rabbits representing the experimental group were implanted with locally fabricated bone plates on their tibias while another 25 adult rabbits comprising the control group were implanted with imported bone plates. Surgeries on the first batch of 12 rabbits were conducted at the research laboratory of the National Kidney Institute. Subsequent surgeries were done at the Philippine Orthopedic Hospital to ensure a more intensive post-operative care for the animals.

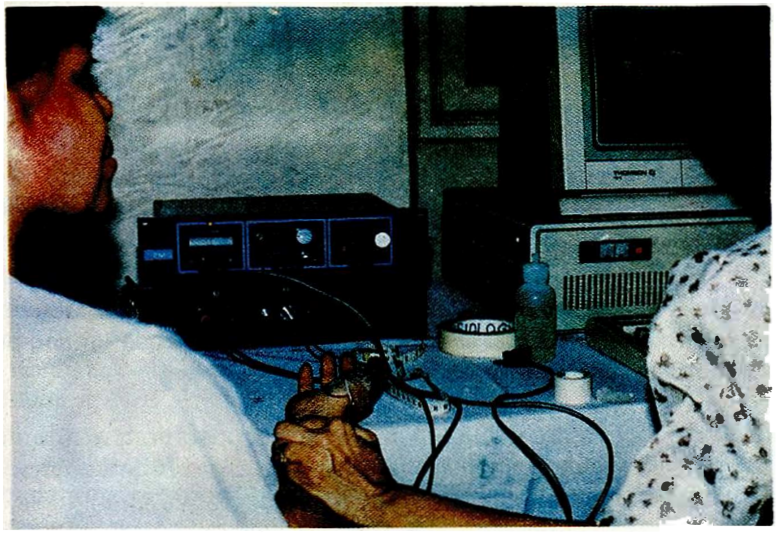
Cataract Surgical Set for Filipino Ophthalmologists

Romeo V. Fajardo, M.D.
Department of Ophthalmology
University of the Philippines-Philippine General Hospital

(Status: New)

The study aims to develop a prototype design of cataract surgical set suited for local ophthalmologists' use. Chemical analysis of an imported sample will be undertaken to characterize the material suitable for use in the fabrication. The prototype set will be subjected to passivation and mechanical features tests.

It will involve instrument trials on the utility of the surgical tests in five hospitals. An evaluation instrument will be prepared for use in the multi-center study to cover data on the instrument's applicability for surgery.



Development of Prototype PC-Based Electromyograph (EMG): Phase II

Mr. Rolando O. Dizon
Advanced Science and Technology Institute
Department of Science and Technology
(Stage I)

Zenaida G. Bagabaldo, M.D.
College of Medicine
University of the Philippines Manila
(Stage II)

(Status: New)

The project covers two major activities: the improvement of the electromyograph (EMG) prototype earlier developed by the University of the Philippines Manila Electrical Engineering Department, National Engineering Center, and the conduct of clinical trials of the enhanced EMG prototype by College of Medicine, University of the Philippines Manila.

Stage I includes an evaluation of the prototype EMG after which design and development of the five components of the PC-based EMG system will be done. It will enhance the preamplifier system with microcontroller and the PC-based data acquisition system as well as modify EMG stimulator and software.

Stage II involves clinical trials of the final model on human subjects. Comparison of the electro-physiologic test results on 30 subjects with results using imported EMG will be conducted. These tests include nerve conduction test and repetitive nerve stimulation test.

COMMUNICABLE DISEASES

Surveillance of Nosocomial Infection and Antibiotic Efficacy in the Philippine General Hospital

Ramon de Vera, M.D.
University of the Philippines-Philippine General Hospital

(Status: Ongoing)

The study plans to establish a system of nosocomial infection surveillance at the Philippine General Hospital and to formulate active case finding procedures to accurately determine infection rates.

From January to March 1991, 1,627 surgical operations at the department of surgery, UP-PGH, underwent surveillance for occurrence of infections. The types of infections screened were surgical wound, postoperative pneumonia, bacteremia, and postoperative abdominopelvic. The overall departamental operative infection rate was 6.8% (111/1,627). Analysis component of nosocomial infection is ongoing.

Surveillance was continously done from April to August at the out-patient department and the infection screened was on surgical wounds only. For the 1,685 minor operations done in the department, 14 patients had nosocomial infection. On the other hand, of the 448 major operations conducted, 15 patients had nosocomial infections.

Diagnosis of Acid-fast Bacilli from Body Fluids Using Cytosieve Technique

Salvacion C. Quiepo, M.D., DTMH
Research Institute for Tropical Medicine
Department of Health

(Status: New)

The study seeks to compare the cytosieve membrane filtration against centrifugation as two concentrtaion techniques in the diagnosis of acid-fast bacilli (AFB) in body fluids and effusions. It also aims to determine the sensitivity of the cytosieve technique in detecting AFB and compare it to the routine AFB staining of slide smears.

Body fluids from pleural, peritoneal, pericardial cavities, bronchial washings, sputum and CSF which are highly suspected of TB will be tested for the presence of AFB. One third of the volume of the fluid submitted will be processed using the cytosieve technique (membrane pore size of 0.45 um.), one third using centrifugation and smearing the sediments on glass slides, and another one third through the AFB culture technique as the gold standard.

Prevalence of Antibodies to Hepatitis C Virus (HCV) Among Risk Groups in the Philippines

Ernesto O. Domingo, M.D.
Liver Study Group
University of the Philippines-Philippine General Hospital

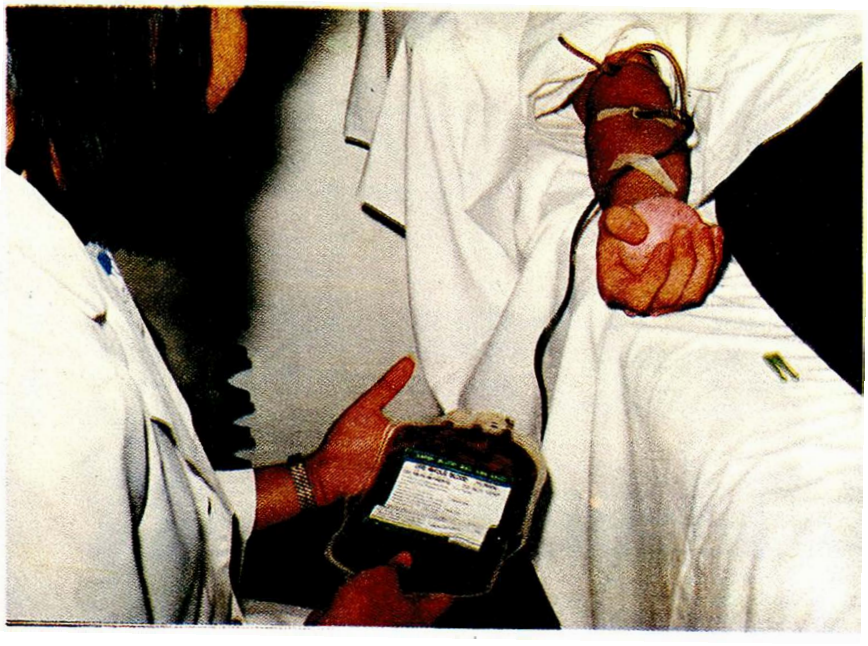
Mary Ann D. Lansang, M.D.
Research Institute for Tropical Medicine
Department of Health

(Status: New)

The study will determine the distribution and risk of hepatitis C infection in various groups in the Philippines. It will look into the prevalence of anti-HCV antibody among Filipino blood donors, the risk of hepatitis C virus (HCV) infection among transfusion patients, and explore the association between chronic liver disease/PHC and HCV infection.

The presence of anti-HCV will be tested in 500 blood samples from a pool of 5,789 samples from as many blood donors. Similar tests will be performed on the sera of 100 multiply transfused patients and an equal number of age and sex matched neighborhood controls without previous blood transfusion. Finally, a case control study involving 90 chronic hepatitis, cirrhosis and hepatocellular carcinoma patients and age and sex matched neighborhood controls will also be tested for anti-HCV.

Blood donor sera and controls will additionally be tested for HBsAg subjects and their controls will be tested for HBsAg (AUSTRIA Kit) and anti-HBc (RIA CORAB b8 + Kit). Ortho diagnostics/chronic HCV antibody ELISA test system will be used.



DEGENERATIVE AND METABOLIC DISEASES

Population-based Cancer Registry

Corazon A. Ngelangel, M.D.
University of the Philippines-Philippine General Hospital

(Status: Completed)

The research was conducted to obtain data on the incidence and prevalence of cancer and its distribution into the different segments of the population of Rizal province.

Results showed that between 1983 to 1987, a total of 13,617 new cancer cases were recorded. The average annual number of new cases was 6,176 in males and 7,443 in females. The crude incidence rates for all cancers were 77 per 100,000 in males and 87.8 in females. These represented age-standardized rates of 178.5 and 174.2 per 100,000 in males and in females, respectively.

The most frequent cancers in men were in the lung, liver, prostate, stomach, colon, rectum, oral cavity, nasopharynx, lymphoma, and larynx. In women, cancers of the breast, cervix, lung, liver, thyroid, stomach, colon, rectum, oral cavity, and corpus uteri were most common. For both sexes, the top three cancers are lung, breast, and liver.

Cancer is predominantly a disease of the elderly, with increasing incidence starting at age 30. In the childhood age group, leukemia ranks first followed by brain, eye, kidney, lymphoma, and liver cancers.

Modified WHO Treatment of Cancer Pain: A Multi-center Open Trial in the Philippines

Antonio H. Villalon, M.D.
Department of Oncology
University of the Philippines-Philippine General Hospital

(Status: New)

The study hopes to develop a new procedure for the management of cancer pain in the Philippines. Clinical trials of the modified WHO analgesic ladder will be conducted to determine local effectivity of the new procedure among Filipino cancer patients. It will study how often the modified WHO analgesic ladder offers pain relief in advanced cancer patients and how many side effects are experienced with this method. It will also try to determine the quality of life among patients on morphine therapy.

Thirty-eight patients were enrolled as follows:: 31 from the Philippine General Hospital, 2 from the Jose Reyes Memorial Hospital, and 4 from the Rizal Provincial Hospital. Of the 31 cancer patients enrolled in PGH, 20 were female while 11 were males. Most were in the middle age group (48.5 years old). Breast cancer is most prevalent among the patients seen (12 cases) followed by nasopharyngeal, bronchogenic, and colorectal cancer (4 cases each). Most of the patients are on level 0 to 1, categorized as fully active patients who can perform activities except strenuous ones.

As to the initial pain assessment, 29% of the patients seldom experience pain, 26% experience occasional/slight pain, while 22.5% have frequent/moderate or always/severe pain.

Strengthening of the Hospital-based Tumor Registry of the UP-PGH

Michael J. Liquete, M.D.
University of the Philippines-Philippine General Hospital

(Status: Completed)

The study was undertaken to stregthen the hospital-based tumor registry of the UP-PGH in order to study and evaluate the magnitude of cancer problem in the hospital. Cancer cases treated in the hospital were listed and their relative frequencies determined.

A total of 3,747 cases for CY 1990 was gathered from different sources, such as histopath, cytology, hematology, PERI, RT planning, autopsy and ultrasound. All cases were crosschecked from the previous years of 1987, 1988, 1989, and indexed as well. Data analysis is in progress.

ENVIRONMENTAL POLLUTANTS

Survey of Work Hazards and Health Status of Laboratory Workers in the Ermita Health Science Community

Benjamin C. Vitasa, M.D.
Department of Occupational and Environmental Health
College of Public Health
University of the Philippines Manila

(Status: New)

The project seeks to promote and maintain the safety and health of laboratory workers in the Ermita Health Science Community (EHSC). Specifically, it will identify and assess selected work hazards present in EHSC laboratories, assess the health status of laboratory workers; and develop, establish, and recommend occupational safety and health standards for laboratory workers in EHSC member-institutions.

A cross-sectional prevalence survey of hazards present in all laboratories in EHSC using chemical, physical, and biological agents will be conducted. Self-administered questionnaires will be used and actual measurement of hazards will be done. Laboratory validation of illness will be conducted through review of medical records and laboratory findings. Recommendations for immediate control of hazards will be done if findings prove to be significant.

Letters were sent to heads of various institutions in EHSC participating in the study. Institutional coordinators have been designated.

Questionnaires have been pre-tested in a Manila-based university outside of EHSC. About 900 copies of the revised questionnaire have been distributed to respondent-laboratory workers for collection and data entry.

HEALTH PROBLEMS OF MOTHER AND CHILD

A Health Education Program to Promote Breastfeeding and Improve Weaning Practices: Its Effects on Infant Feeding and ARI Morbidity in the First Year of Life

Mary Ann D. Lansang, M.D.
Cynthia Miguel, M.S.
Research Institute for Tropical Medicine
Department of Health

(Status: Completed)

The study sought to determine the effects of a health education intervention on breastfeeding and improve weaning practices on acute respiratory infections (ARI) morbidity through a randomized controlled study of clusters of urban poor households in the municipality of Muntinlupa, Metro Manila. The intervention in the experimental clusters was provided by neighborhood peers (mother councilors) to pregnant mothers up to the time their infants turned one year old. ARI events were monitored during 3 three-month surveillance periods when ARI incidence was expected to be high.

The relative risks for moderate to severe ARI were significantly higher among infants aged 0-8 months in the control clusters. The mean duration of ARI episodes was also longer in the control clusters. Breastfeeding was confirmed to have a protective effect against ARI in both the experimental and control clusters. Maternal care in the experimental clusters was believed to be associated with reduced ARI incidence.

Interruption of Maternal-Child Hepatitis B Virus (HBV) Transmission: A Comparative Study of Efficacy of Three Regimens of Hepatitis B s Antigen (HBsAg) Vaccine with or Without Hyperimmunoglobulin (HBIG)

Carmelita F. Domingo, M.D.
University of the Philippines-Philippine General Hospital

(Status: Ongoing)

The project aims to provide background data on hepatitis B (HBV) virus maternal-child transmission in the Philippines, compare the HBV infection rate among high risk infants who received three vaccine regimens, and determine the optimum practical HBV vaccine regimen for use in control programs.

Accomplishments include an HBV profile of recruited mothers which showed that 46.6% were positive for at least one of the HBV markers and 11.9% were HBsAg positive. After one year of follow up, preliminary analysis showed that 58,482 (3.9%) of the 1.5 million babies born every year will be infected by their mothers and 26% of these infected infants will become HBsAg carriers during the first year of life. Analysis after two years of follow up reflected that 2.4% of infants of HBsAg negative mothers became infected suggesting that other modes of transmission are important after the first year of life. Intervention program 1 provided infants of HBsAg positive mothers with vaccination using the old kitasato vaccine regimen. Intervention program 2 utilized kitasato vaccine with higher vaccine doses. Blood extractions were done using both the old and the new kitasato regimens.

The non-immunized group is followed up to determine the infection rate of children as they grow older. The same is being done with the immunized group to determine the protective efficiency of the various regimens. Blood collection and testing of sera from infants/children are being conducted.

MALNUTRITION

Malnutrition-related Diabetes (MRD) Among Hospitalized Filipino Children

Carmelita F. Domingo, M.D.
University of the Philippines-Philippine General Hospital

(Status: Completed)

This pilot project attempted to determine the prevalence and the clinical presentation of malnutrition related diabetes (MRD) among Filipino children, and describe the children's MRD clinical manifestations and laboratory findings.

The recruitment of 50 subjects needed for the study was completed and so with the necessary laboratory/medical tests which include the determination of serum C-Reptide. Data analysis and nutrition intervention are ongoing.

Nutritional Intervention in Acute Diarrhea: The Use of Coconut Oil in the Dietary Regimen During the Acute Phase

Elizabeth P. Gabriel, M.D.
Department of Pediatrics
University of the Philippines-Philippine General Hospital

(Status: Ongoing)

The study aims to determine the suitability of using coconut oil to augment caloric intake during acute diarrhea, if its use by young children will result in any adverse clinical and biochemical effects, and determine the tolerance and acceptability of coconut oil in the diet.

A total of 20 patients were recruited for the pilot study. These subjects underwent physical and laboratory tests such as blood examinations (hemoglobin, white blood cell), serum cholesterol and triglycerides, stool examination, stool culture, and anthropometric measurements. Fifteen patients were followed up. Data analysis is in progress.

Epidemiological Study of Goiter and Iodine Deficiency Disorders (IDD) in a Goiter Endemic Area for an IDD Control Program (Phases II and III)

Rodolfo F. Florentino, M.D., Ph.D.
Food and Nutrition Research Institute
Department of Science and Technology

(Status: Completed)

The study examined the extent of goiter and the etiologic factors (environmental, biological, and socio-cultural) contributing to the endemicity of iodine deficiency disorders (IDD) in a known endemic community with the end in view of modelling a control program of water iodination.

Iodine content of diet, water, soil and urine was analyzed using the Technicon Industrial Method of ceric sulfate reduction on the autoanalyzer. Radio immunoassay technique was used for serum T4 and thyroid stimulating hormone (TSH) determinations. Clinical examination revealed goiter prevalence rate of 32% in the population. Goiter grade was highly associated with nutritional status. Analytic study underscored the significant contribution of environmental factors in the endemicity of goiter. Bacterial contamination of the community's water supply with *Escherichia coli* was also implicated. Mental ability and family history of goiter were significantly correlated.

The study recommends the implementation of an intensive health education program and the disinfection of the community's water supply. Water iodination as a control measure was found feasible.

HEALTH ECONOMICS

Efficiency of Diagnostic and Therapeutic Modalities in Government Hospitals in Metro Manila

Tessa Tan-Torres, M.D.
Clinical Epidemiology Unit
University of the Philippines-Philippine General Hospital

(Status: Completed)

The project sought to improve health care delivery in government hospitals through the identification of more efficient health care management tools. The following independent studies were done.

Sub-project 1

Comparing Costs of Hospital-based Treatments of Diarrhea at the Research Institute for Tropical Medicine (RITM)

Irene C. Lintag, M.D.
Mari Rose A. Aplasca, M.D.
Research Institute for Tropical Medicine, Department of Health

Cost effectiveness of two hospital-based treatments of acute diarrhea one year before (May 1, 1988 - April 30, 1989) and one year after (May 1, 1989 - April 30, 1990) the establishment of a diarrhea management unit (DMU) at RITM was compared. Two hundred episodes of diarrhea in children 5 years old and below were randomly sampled from each period.

The establishment of DMU resulted in the improvement in practices of the hospital health care workers.There was 33.3% reduction in the patient's average length of stay admitted for diarrhea alone; 100% increase in patients who were correctly hydrated; 52.9 % decrease in the proportion of patients with some intravenous fluid (IVF); 21.0% increase in the proportion of patients with some dehydration given oral rehydration solution (ORS); and 41% decrease in the proportion of patients inappropriately given antibiotics. ORS consumption increased to as much as 51.6% in the DMU period.

Savings were seen due to the reduction of annual in-patient and out-patient diarrhea cases as indicated by laboratory and drug costs. Overall, the hospital had a net savings of 4.9% per diarrhea patient.

project 2

Cost Comparison of Triple-Drug Regimen and Four-Drug Regimen in the Short-Course Daily Chemotherapy for Pulmonary Tuberculosis

Abelardo J. Alera, M.D.
Arturo B. Cabanban, M.D.
San Lazaro Hospital

A cost benefit analysis comparing short course triple versus quadruple drug treatment for sputum positive patients with pulmunary tuberculosis was done. The six-month regimens compared were isoniazid, rifampicin and pyrazinamide given in the triple drug regimen with the addition of ethambutol in the quadruple drug regimen. Literature, both local and foreign, was critically appraied to determine the treatmentt failure and relapse rates associated with these regimens. Local data on drug resistance of mycobacterium tuberculosis were also reviewed.

The review showed that triple drug regimen in Filipinos give a treatment failure rate of 12.5% (95% C.I.)20%) and relapse rate at one year of 5.1% (95% C.I.4)6%). Data from quadruple drug studies done in countries with no reported prevalence of ethambutol resistance show that failure rate does not exceed 3% and relapse rate, 4%. Local sutides how, depending on the center performing the testing, resistance to tubercle bacilli to isoniazid (range 25-89%), streptomycin (range 19-50%), ethambutol (range 22-42%). Resistance to rifampicin in 7.6% and pyrazinamide in 14% of 130 isolates was demonstrated. Local clinical experience, outside of research setting, with triple drug regimen shows an encouraging 8% failure rate among patients given medications through the control program in 1990. However, a mailed questionnaire survey had 40% of 237 doctors saying that they encountered unsatisfactory results with triple drug regimen due to high cost, poor compliance, and drug resistance.

Cost benefit analysis combining the efficacy data from the literature reviewed showed that, at present, quadruple drug regimen is more cost beneficial than the triple drug regimen. It is only in the best case scenario of the triple drug regimen where failure rate is 5% and relapse rate is 4% that triple drug therapy is more cost beneficial that quadruple drug therapy. These rates are not realistic estimates presently.

To validate these results, it is imperative that a nationwide multi-center randomized trial comparing triple versus quadruple drug regimens be undertaken to provide solid evidence of the effectiveness of both regimens. A more precise cost-benefit analysis can then be done which will be the basis for any policy change leading to the optimum treatment regimen for Filipino sputum positive tuberculous patients.

Sub-project 3

Clinical Outcomes and Costs of Hospitalization of Inborn and Outbom Infants in a Perinatal Unit

Armando D. Sayao, M.D.
Evelyn L. Siasu, M.D.
Sonia R. Sarcia, M.D.
Philippine Children's Medical Center

Early identification of high-risk pregnant mothers and transfer in time for delivery of their babies in a perinatal center is preferred over transporting ill newborn infants to a neonatal intensive care unit.

This study, conducted at the Philippine Children's Medical Center (PCMC), matched 19 inborn infants with 19 outborn infants in terms of birthweight, apgar score at 5, and gestational age. Only 5% of the inborn infants died compared with 42% of the outborn infants. A 35% lowering of costs, approximately P5,300 savings per child born in PCMC, was documented. Establishment of a perinatal center resulted in better clinical outcomes and lower hospitalization costs in inborn compared to outborn infants.

Sub-project 4

Ketoconazole and Adjusted Dose Cyclosporin versus Standard Dose Cyclosporin in Triple Drug Immunosuppression of Post Kidney Transplant Patients: Comparison of Outcomes and Costs

Irmingarda Gueco, M.D.
Ulysses Baniga, M.D.
Filoteo Alano, M.D.
National Kidney Institute

Cyclosporin, a costly drug, is a current mainstay of immunosuppressive regimens in transplant patients. The dose of the drug may be decreased by concommittant administration of ketoconazole, an oral antifungal agent which blocks the metabolic pathway of cyclosporin.

This study examined the costs and clinical outcomes of 13 patients given ketoconazole and their matched controls. Matching variables include age, sex, pretransplant renal diagnosis, human leukocyte antigens (HLA) typing, donor source of kidney, date of transplant, duration of follow-up while on ketoconazole and serum creatinine on entry. Seven patients on ketoconazole and their controls were part of a retrospective cohort. The remaining six patients and their controls were studied prospectively. Mean duration of time on ketoconazole for the cases was 147 days.

Results showed that all patients, while on ketoconazole and their controls, for the same duration of follow up, were alive and had functioning grafts. At the time of most recent follow up, three deaths had been recorded in the ketoconazole group compared with one in the control group. The deaths occurred at least four weeks after discontinuation of ketoconazole. Three rejection episodes in the ketoconazole group were treated successfully while one control had progressive rejection necessitating return to dialysis.

compared with one in the control group. The deaths occurred at least four weeks after discontinuation of ketoconazole. Three rejection episodes in the ketoconazole group were treated successfully while one control had progressive rejection necessitating return to dialysis.

The savings in total costs reached P9.000 - P10,000 in five month period with a mean saving of P70/day. The difference in total costs is statistically significant ($p = 0.01$). No significant difference in patient and graft survival in the ketoconazole group compared to the control group was demonstrated. It is recommended that a randomized placebo-controlled trial be carried out to rigorously document the encouraging results shown in this study.

Determining the Optimum Number of Views in Radiographic Diagnosis of Paranasal Sinusitis

Sub-project 5

Gil M. Vicente, M.D.
Felicidad C. Felicilda, M.D.
Antonio H. Chua, M.D.
Lorenzo E. Vera Cruz, M.D.
Jose R. Reyes Medical Center

Sinusitis is one of the most common causes for consultation in the outpatient department of a general hospital. Radiographic diagnosis is helpful in confirming clinical impressions and is essential in pre-operative assessments. Different views can be taken and combined in various ways to detect the paranasal sinuses affected.

This study compared, in 30 patients clinically diagnosed as having sinusitis, the various combinations in terms of positive yield with the yield attained by a gold standard, computed tomography. An incremental cost-effectiveness analysis was then carried out to determine the optimum number of views neede to diagnose sinusitis. Results showed:

1. Concordance with CT scan of positive yield ranges from 61% for single views to a maximum of 85% for a 4 view combination.

2. At a cost of P50.00 per x-ray plate, Waters open mouth view is a good screening tool with a positive yield of 69% and a cost-effectiveness ratio of P72.50 per affected sinus detected.

3. Caldwell view is a good complement to the Waters open mouth view, increasing the positive yield by 11% with an incremental cost-effectiveness ratio of P455.00 per extra affected sinus detected.

4. The use of three or four views increased the yield minimally when compared to the Waters open mouth + Caldwell views combination with incremental cost-effectiveness ratios ranging from P1,667.00 to P5,000.00 per extra affected sinus detected.

In a developing country, this information is useful in formulating policy on subsidy of radiologic examinations for the many patients with sinusitis who go to government hospitals for consultations.

Sub-project 6

The Management of Pregnant Patients with Herpes Simplex Virus II or Papilloma Virus Infections: Probable Outcomes and Costs

Ricardo Manalastas, Jr., M.D.
University of the Philippines-Philippine General Hospital

The study reviewed the issues in the management of pregnant patients with either human papilloma virus (HPV) or herpes simplex virus 2 (HSV-2) infections. Data for the HSV study were generated through patient interviews, serology and culture in 27 parturients, analysis of accounting records in the hospital, and review of annual reports of pertinent professional organizations.

Human Papilloma Virus: A prevalence rate of 3.5% among pregnant women with prenatal care has been reported. Infected woman with bulky lesions prior to onset of labor may be subjected to debulking or ablation with the use of electrocautery. This can cause vulvar scarring and a high recurrence rate of 33%. If the HPV infected woman presents only when labor has commenced, vaginal delivery is still the preferred mode of delivery. In the few where bulky lesions may present a significant risk of obstruction or hemmorrhage, caesarian section may be considered. The risk of the vaginally delivered newborn of aspirating HPV and developing juvenile laryngeal papillomatosis later in life is less than 1:1,500.

In all instances where HPV genital infection is suspected, biopsy of colposcopic or gross lesions is recommended to rule out dysplasia and cancer.

Herpes Simplex Virus II: A woman infected with HSV intermittently sheds the virus even in the absence of lesions. If a vaginal delivery is attempted, the maximum risk of viral shedding can be as high as 12%. In 27 HSV IgG positive women who did not exhibit lesions at the onset of delivery. The result of economic analysis using a decision tree to compare the strategy of weekly virus cultures versus physical examination alone showed that doing cultures will entail an additional cost of P8,337,500 without detecting and averting additional cases of neonatal herpes. Based on this, the adoption of the recommendations of the Infectious Disease Society of Obstetrics and Gynecology on the management of HSV-2 infections during pregnancy is suggested.

Evaluation of New Assays/Approaches for the Control of Health Programs: Process Documentation of an nterview Program for ARI in Children in an Urban Community

Socorro P. Lupisan, M.D.
Research Institute for Tropical Medicine
Department of Health

(Status: Completed)

This two-year project documented the implementation process of the WHO-recommended ARI Case Management and Health Education Program for children 0-4 years old in Pasay City. Process documentation research (PDR) was utilized. The foci of observation included the health center staff, volunteer health workers and mothers.

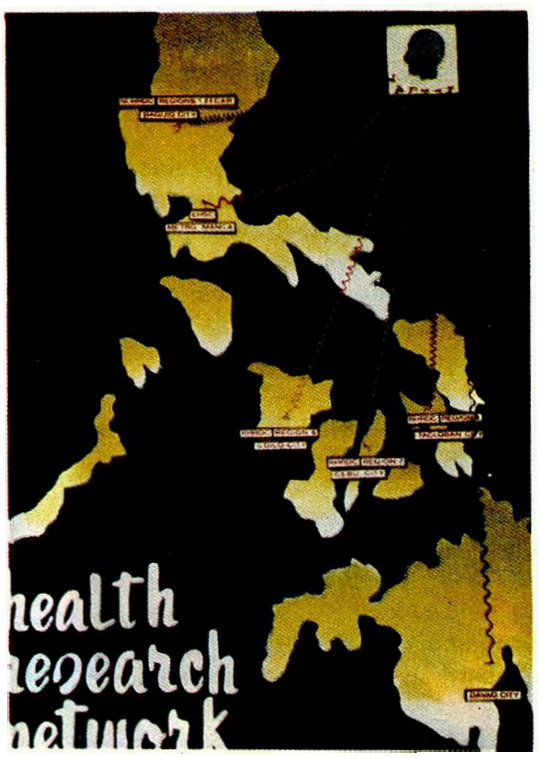
PDR showed that the ARI case management program was acceptable to both health providers and mothers. With regard to ARI case management, compliance of the health center staff with the standard protocol for management was good. Counting respiratory rate (RR) was done by midwives in most cases, and physicians relied on them on this matter. Over-and-under diagnosis by midwives was relatively low (15.1% and 5.5%, respectively). Except for taking over the physicians' role when the latter is not available, nurses have no clear cut role in the program.

Volunteer health workers were found to be "trainable" regarding ARI case management, but they did not adequately perform the ARI tasks assigned to them.

Mothers, who were "users" or "intermittent users" of the primary health care system, generally complied with the ARI case management prescribed at the health center. However, imcomplete compliance with antibiotic treatment for moderate ARI (11.4%) and non-compliance with hospital referral for severe ARI (33.3%) were observed. With regard to child assessment, over-and underdiagnosis were low (8.1% and 9.4% respectively) as compared with the assessment by the trained observers.

INSTITUTION DEVELOPMENT

The University of the Philippines Manila (UPM) and the University of Sto. Tomas (UST) Faculty of Medicine and Surgery were awarded equipment grants amounting to P4.3M. These institutions are two of the seven institutions which will be the focus of assistance by PCHRD. The other five include Far Eastern University, Manila Central University, University of the East, Cebu Institute of Medicine and the Davao Medical School Foundation. The equipment grant to UPM will enhance the teaching and research capabilities of the Department of Biology, College of Arts and Sciences; the Departments of Biochemistry and Molecular Biology, and Physiology of the College of Medicine; and the Department of Medical Microbiology of the College of Public Health.



The grant to UST will be used to upgrade the laboratory facilities of the Department of Laboratory Medicine. The equipment will enable the department to continue its research program on infectious diseases.

In line with its thrust on decentralization and regionalization, research promotion activities of the five Regional Health Research and Development Committees (RHRDCs)in Northern Luzon, Regions 6, 7, 8, and 11 were continuously being sustained. During the year, 11 beginning reserchers from the regions completed their projects supported by research apprenticeship grants.

In order to ensure that researches conducted in the regions adhere to ethical standards, a training on the ethical review of research in human subjects was conducted among members of the Ethics Review Committee of the respective RHRDC's.

Dissemination of research activities of member-institutions became the focus of the Ermita Health Science Community (EHSC). This was done through the EHSC Newscap, symposia, lectures, and exhibits.

COMPLETED PROJECTS SUPPORTED BY RESEARCH APPRENTICE GRANTS

TITLE	PROJECT LEADER/ INSTITUTION
A Clinical Correlation with BCG and Chest X-Ray	Dr. Vivien Alix-Seno Colegio de la Immaculata Concepcion
A Study of Indigenous Medical and Medicinal Resources as a Component in Herbal Care DeliverySystem of Two Rural Communities in Negros Occidental	Ms. Carmen Benares University of Saint La Salle (Bacolod)
A Study of Selected Social and Economic Factors Related to Immunization Status of 0-6 Year Old Children in Selected Barangays in Iloilo	Ms. Perla Suyo Central Philippines University
A Study of Solid Waste Disposal Practice of Iloilo City Residents	Mr. Leopoldo Millamena Central Philippines University
A Study of the Water Supply Among Households in Selected Depressed Areas in Iloilo City	Dr. Amelia Grecia Western Visayas State University
A Study on the Determinants of Low Treatment Compliance Related to Pulmonary Tuberculosis	Mrs. Victoria Lupase Davao Medical School Foundation
Clinical and Bacteriologic Features of Severely Malnourished School Children with Bacteremia	Dr. Geraldine Hernandez Davao Medical School Foundation
Fine Needle Aspiration Biopsy: An Alternative in Diagnosing the Nature of Solid Soft-Tissue Tumors	Dr. Gemi Diawatan Southern Island Medical Center
The Mutagenicity, Clastogenicity and Antimutagenicity Potential of Selected Philippine Medicinal Plants	Dr. Corazon Tan-Meneses Cebu Institute of Medicine
Validity and Reliability of Water Analysis by Barangay Health Workers Using PHC bottle	Dr. Mila Viacrucis Davao Medical School Foundation
Vibrio Parahemolyticus in Seafoods in Metro Cebu	Dr. Alfredo Paguio Matias H. Aznar College of Medicine

MANPOWER DEVELOPMENT

Local and foreign scholarship grants were awarded as a means to develop the research capability of institutions in the health research network. In 1991, 11 students pursuing masteral and doctoral degrees in local universities were supported by PCHRD. In addition, thesis assistance grants were given to five masteral students.

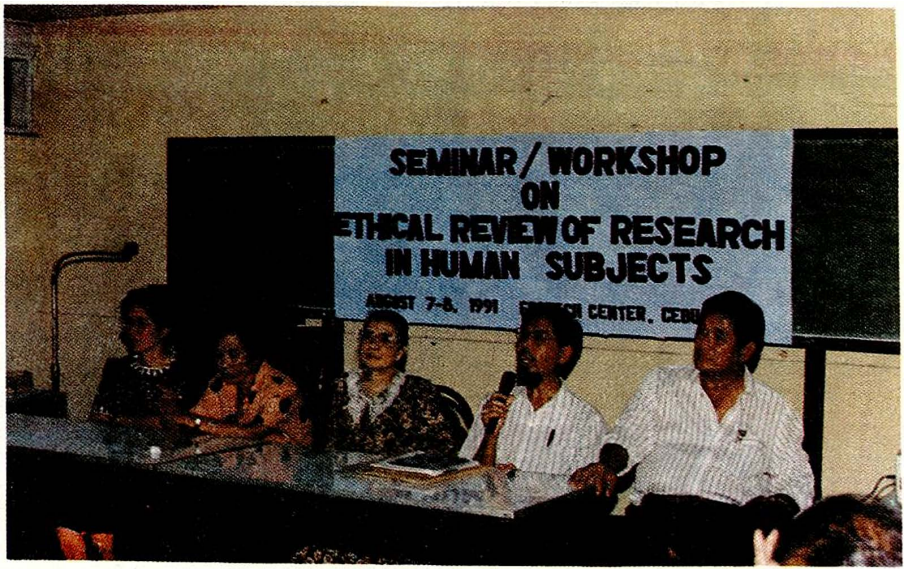
Foreign scholarship grants were made available through the Colombo Plan, Australian International Development Assistance Bureau, and the governments of Spain, South Korea and United Kingdom. A total of 27 researchers from the health research network were endorsed to these funding institutions.

Training courses complmenting formal degree courses were pursued. Seventy-seven (77) medical doctors became beneficiaries of three courses on research methods.

The PCHRD became a partner of the Department of Health (DOH) in implementing two training programs aimed to provide the medical practitioners and allied health workers updated knowledge on the Philippine National Drug Policy and the Generics Act of 1988. The training programs, which took the form of roving seminars, reached 246 government physicians and 5,147 members of the Philippine Pharmaceutical Association (PPhA).

Technical ssistance was also provided by PCHRD in the development and production of the Reference Manual on the Philippine National Drug Policy and the Generics Act of 1988. The book is now being used in the training activities sponsored by DOH and the PPhA.

Incentives to researchers were also provided in the form of awards, professorial and research chairs, and travel grants for attendance to international courses.



Recipients of PCHRD Manpower Development Grants

SCHOLARSHIP GRANTS

Name/Institution	Degree Pursued
Dr. Rita Alvero Emilio Aguinaldo College De La Salle University	MSPh Epidemiology
Dr. Esperanza Balcos Nicanor Reyes MemorialMedical Foundation Far Eastern University	MS Pharmacology
Ms. Gloria Bernas Faculty of Medicine and Surgery University of Sto. Tomas	PhD Biochemistry
Dr. Nicanor Biso Pamantasan ng Lungsod ng Maynila	MSPh Epidemiology
Ms. Rosario David Institute of Opthalmology University of the Philippines Manila	MS Public Health
Dr. Danilo Menorca Pamantasan ng Lungsod ng Maynila	MSMicrobiology
Mrs. Eleanor Padla Ramon Magsaysay Memorial Medical Center University of the East	PhD Microbiology and Parasitology
Dr. Genesis Rivera Nicanor Reyes Memorial Medical Foundation Far Eastern University	MS Pharmacology
Dr. Isidro Sia College of Medicine University of the Philippines Manila	MS Pharmacology
Ms. Nenita Tinoko Environmental Management Bureau Department of Environment and Natural Resources	MS Environmental Engineering
Dr. Romulo de VillaPhD Nicanor Reyes Memorial Medical Foundation Far Eastern University	Molecular Biology and Biotechnology

THESIS GRANTS

Name/Institution	Degree Pursued
Prof. Asuncion Cobar Faculty of Medicine and Surgery University of Sto. Tomas	MS Pharmacy
Dr. Nelson Geraldino Filemon D. Tanchoco Medical Foundation Manila Central University	MSPH Medical Microbiology
Prof. Milagros Salvador Faculty of Medicine and Surgery University of Sto. Tomas	MS Biology
Prof. Priscilla Torres Faculty of Medicine and Surgery University of Sto. Tomas	MS Pharmacy
Prof. Elnora Yu Faculty of Medicineand Surgery University of Sto. Tomas	MS Pharmacetucal and Chemistry

FOREIGN TRAINING/TRAVEL GRANTS

Name/Institution	Course Attended
Ms. Josefina Geronimo Research Institute for Tropical Medicine Department of Health	Group Training Course in Medical Technology, Japan (October 24, 1991 to February 1, 1992)
Dr. Kenneth Go Department of Pharmacology College of Medicine University of the Philippines Manila	10th World Congress in Animal, Plant and Microbial Toxins, Singapore (November 3-8, 1991)
Dr. Ma. Fita Guzman Bureau of Food and Drugs Department of Health	International Rhinological Society Convention in Tokyo, Japan (September 23-28, 1991)
Mr. Roel de Mesa National Kidney Institute Department of Health	Group Training Course in Medical Technology, Japan (October 24, 1991 to February 1, 1992)
Mrs. Cristina Villarico Biological Production Service Department of Health	Training Course on Biological Products Technology, Japan (April 12 - Nov. 7, 1991)

AWARDS AND INCENTIVES

Title	Name/Institution
DOST-IBM Science and Technology Award	Dr. Perla Santos-Ocampo College of Medicine University of the Philippines Manila
Eusebio Garcia Foundation Research Chair	Dr. Natividad Puertollano University of the Philippines- Philippine General Hospital
Marsman Professorial Chair in Pharmacology	Dr. Estrella Paje-Villar Faculty of Medicine and Surgery University of Sto. Tomas
PHAP-PCHRD Student Research Awards College of Dentistry	Ms. Melinda Jean Chan Ms. Xenia Velmonte University of the Philippines Manila

POLICY FORMULATION

ADVOCACY

Support to health R & D efforts was demonstrated by

- The Association of the Philippine Medical Colleges' (APMC) declaration of research as a subject requirement in the medical curicullum.
- The Department of Health (DOH), Food and Nutrition Research Institute, Department of Science and Technology (FNRI-DOST), Department of Education, Culture and Sports (DEC), Nutrition Council of the Philippines (NCP), National Nutrition Council (NNC), Philippine Pediatric Society (PPS), and other related bodies' agreement to use only one weight-for- age growth chart, a local standard developed through a joint anthropometric study of FNRI-DOST and PPS.

POLICY GUIDELINES

The following guiding principles serve as reference for implementing the Council's mandate:

- The development of an S & T culture will be promoted.
- A community-oriented, program-based and multidisciplinary approach will be adopted.
- Applied and developmental projects will be given preference.
- Local manufacture of health products using indigenous materials will be encouraged.
- Projects falling under the priority areas of pharmaceuticals, biotechnology, and traditional areas of concern will be given preference.
- The National Health R & D Plan will be promoted within the health research network as **the plan** for the country from which other plans will evolve.
- Biomedical researches involving human subjects should conform to the ethical standards set in the National Guidelines for Biomedical Researches Involving Human Subjects.
- Health research manpower and institutions will be continually upgraded.
- The development of regional research capability will be pursued.
- Technology transfer will be actively pursued.
- Active private sector participation will be encouraged.
- Generation of R & D resources will be actively undertaken.

Operational Guidelines

The following policies apply to PCHRD-supported and implemented projects/ activities:

- Resource allocation
  Researchers seeking financial support from PCHRD should reflect in their project proposals a ready market for their research results. This is a requirement before any assistance can be considered.

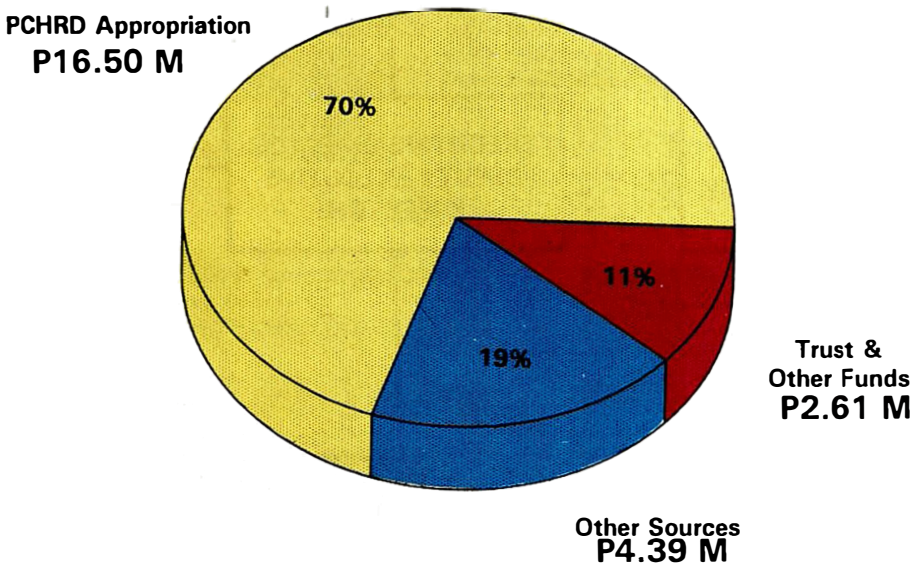
- Criteria for selecting technology adoptors are based on the approved guidelines for adoptors of commerciable product-based technologies.

- Inhouse publications and commissioned work will be guided by the approved policies on authorship, publication style and copyright.

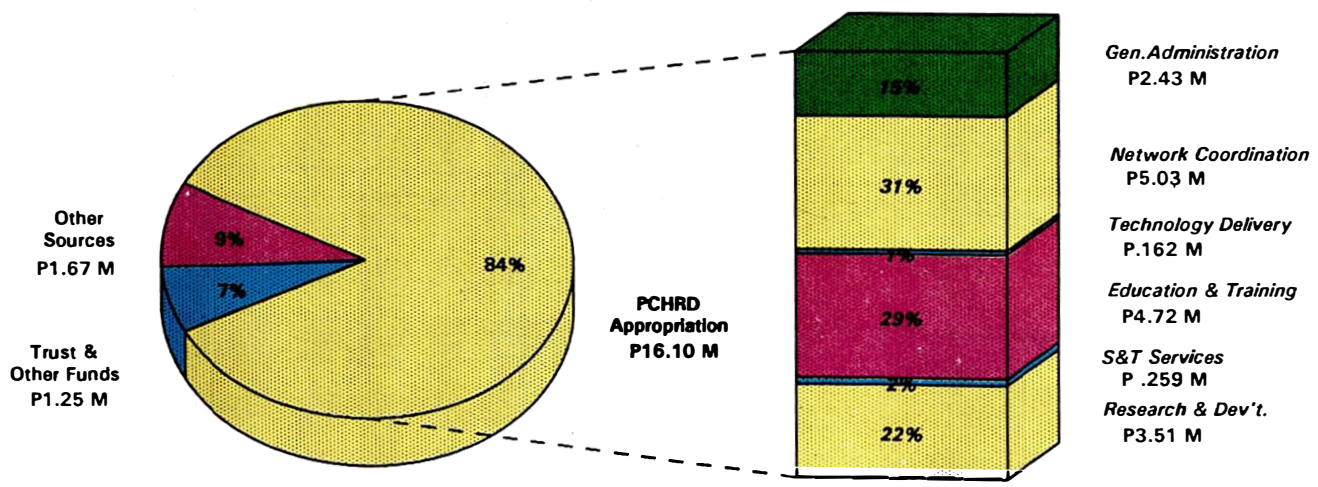
- The guidelines on the authorship of medical papers of UP College of Medicine's Committee on Research Implementation and Manual has been adopted by the Council.

FINANCIAL HIGHLIGHTS

PCHRD Sources of Funds

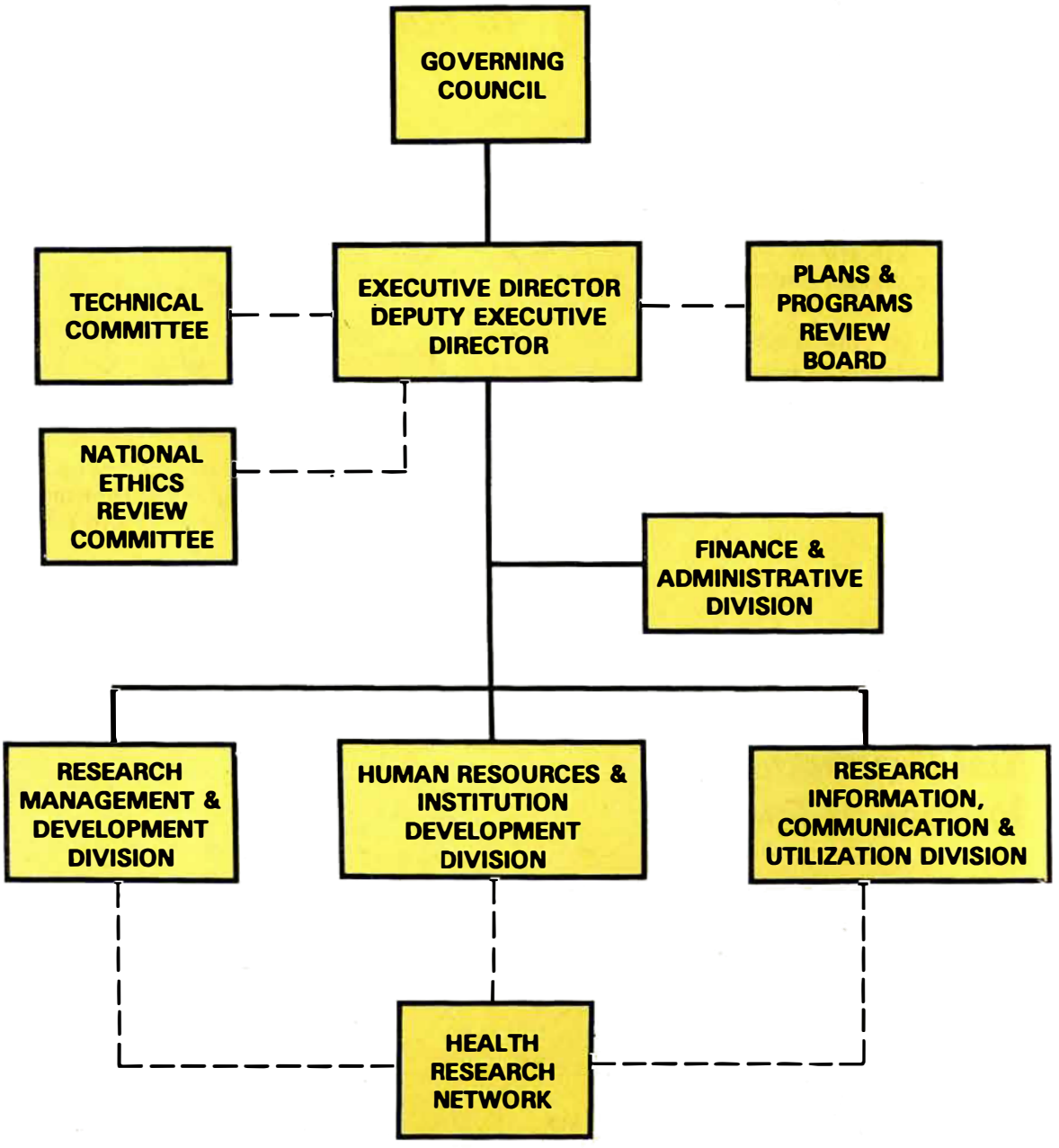


Actual Expenditure by Sources of Funds



Actual Expenditure of PCHRD Appropriation by S&T Activity

ORGANIZATIONAL CHART



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PERSONNEL COMPLEMENT

	Regular	Contractual	Casual	Total
I. Technical	40	5	5	50
II.Support	28	-	-	28
Overall Total	68	5	5	78