WORLD HEALTH ORGANIZATION
ORGANISATION MONDIALE DE LA SANTÉ

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SEVENTH GENERAL PROGRAMME OF WORK
COVERING THE PERIOD 1984-1989

W.H.O.- Programmes - Medium-term programmes
Technology, Radiology
technology, Medical

Global Medium-Term Programmes
(Tables of activities and Evaluation component)

LABORATORY TECHNOLOGY
RADIOLOGICAL TECHNOLOGY

The complete medium-term programme for Clinical, laboratory and radiological technology for health systems based on primary health care will be ready only towards the end of 1983. It will comprise the activities for Clinical, laboratory and radiological technology and a common target, together with the related tables of activities, for joint action on diagnostic, therapeutic and rehabilitative technology in support of primary health care and the first referral level. As soon as this programme is completed it will be circulated in the usual manner.

In the meantime, as the Headquarters Programme Committee has already discussed and generally approved the Laboratory and Radiological Technology components of the above-mentioned programme it has been decided to circulate the present document, which is an extract from the global medium-term programme for programme 12.1 of the Seventh General Programme of Work, and which includes only the tables showing the activities for Laboratory technology and Radiological technology for health systems based on primary health care, together with elements for Chapter 8 on Monitoring, evaluation and indicators related to Laboratory and Radiological Technology.

It is hoped that this will give useful complementary information to regional offices and initiate the mobilization of all resources required for the implementation of the activities of these two components of the programme.

LABORATORY TECHNOLOGY FOR HEALTH SYSTEMS BASED ON PRIMARY HEALTH CARE

Target 3:

By 1986 at least three countries in each region will have developed models of integrated peripheral laboratories in support of primary health care and the related first referral hospital; and by 1989 these models will have been evaluated, adapated and applied in at least 30% of countries in each region.

Activities	1984-1985	1986-1987	1988-1989	Linkages
1. Identification of the most appropriate technology through permanent contact with other relevant units of science and technology that can be applied and integrated at the peripheral health laboratory level.	HQ	HQ	HQ	PHC, NCD, CDS, VPH, EHE, MAP
2. Provision of support for the development of national strategies and activities leading to the development of peripheral laboratory services as an integral part of the national health service.	SEARO, EMRO, EURO, PAHO, HQ			PHC, NCD, CDS, VPH, EHE, MAP
3. Initiation and participation in the follow-up of field operational studies in peripheral laboratories at country level.	AFRO, EMRO, EURO, PAHO, SEARO, WPRO, HQ			PHC, NCD, CDS, VPH, EHE, MAP
4. Participation in the evaluation of the results of field studies on peripheral laboratories and prepare guidelines on laboratory services at primary health care level for country replication.		EURO, EMRO, PAHO SEARO, WPRO, HQ		PHC, NCD, CDS, VPH, EHE, MAP
5. Promotion of peripheral laboratories with an active role in primary health care support and communicable disease surveillance and control.	AFRO, EMRO, EURO, PAHO, SEARO, WPRO, HQ			PHC, NCD, VPH, EHE, CDS, MAP
6. Preparation and distribution of guidelines and manuals for diagnostic methods appropriate to primary health care and the immediate supporting level of the health system, and testing them in the field	PAHO, SEARO, HQ			PHC, TUB, PDP, MAP CDS, HMD, IFCC
7. Promotion of the expansion of blood transfusion services to peripheral hospitals based on voluntary non-remunerated donations, and select regional and/or national production of components and derivatives	AFRO	EMRO, PAHO, HQ		BLG, LORCS, ISBT
8. Organization of national workshop for development of blood transfusion services at primary health care level.		EMRO, PAHO, SEARO		LORCS, ISBT, DANIDA

Target 4:

By 1986 development of ways and means for the systematic assessment and related exchange of technical information on appropriate technology in the field of health laboratory technology at the regional and global level.
By 1989 at least 50% of the Member States will have introduced a laboratory improvement programme and 30% of those participating in WHO quality assessment programmes will have established a national scheme.

Activities	1984-1985	1986-1987	1988-1989	Linkages
Training				
1. Organization of training courses for laboratory tutors introducing methodology for teaching peripheral health laboratory workers	AFRO	EMRO, PAHO, HQ		HMD, DANIDA, IAMLT MAP
2. Organization of training programme on health laboratory technology including procedures on biosafety in a continuing basis	SEARO	EMRO, PAHO, WPRO AFRO		IFCC, ICSH, DANIDA SMM
3. Preparation and field evaluation of self-instruction material for peripheral laboratory workers	PAHO, HQ			HMD
4. Organization of training courses for laboratory managers, introducing cost control, supervision, and skills for efficient use of resources		EMRO, PAHO, WPRO		MPN/SHS, CDC, DANIDA
5. Organization of training in health technology assessment		EURO, PAHO		Collaborating Centres
6. Organization of an Expert Committee Meeting to review training of health laboratory personnel		AFRO & HQ		HMD, IAMLT, NGOs CDC
Quality assessment and standardization				
7. Establishment of collaborating centres for quality assurance activities in microbiology, clinical chemistry, haematology and blood transfusion	EURO	EMRO, PAHO, SEARO		NGOs & Collaborating Centres
8. Preparation of guidelines on the organization of national quality assurance schemes and the preparation of test materials for the various laboratory disciplines	HQ & PAHO			NGOs & Collaborating Centres
9. Promotion of national quality assurance programmes and organization of training courses for this purpose.	EMRO, PAHO, SEARO, WPRO, HQ, AFRO			HMD, NGOs, & Collaborating Centres
10. Development of international reference preparations and methods, recommended methods and specifications with respect to diagnostic material and information exchange on health laboratory standards	PAHO & HQ			IFCC, ICSH, CDC, NCCLS, ECCLS
Technology assessment				
11. Provision of logistic and technical support to collaborating centres undertaking research and development of appropriate technology including exchange of scientists	AFRO, EURO, PAHO, HQ			
12. Determination of needs of countries with regard to laboratory technology in support of primary health care and classify them by problems and priorities	AFRO, EMRO, PAHO			NGOs, CDS, NCD
13. Preparation of an inventory of appropriate technology in the field of health laboratory services with emphasis on technology applicable at the peripheral level	AFRO, EMRO, PAHO, HQ			NGOs, Collaborating Centres
14. Designation of collaborating centres, development of mechanisms for the assessment of laboratory technology, and dissemination of information on identified appropriate technology	AFRO, EMRO, EURO PAHO, SEARO		HQ	Collaborating Centres
15. Development of, guidelines on national policies and a system for health technology assessment	EURO, PAHO			Collaborating Centres

Target 5:

Promotion of self reliance; by 1989 the majority of developing countries will have introduced a national programme for the preparation of essential reagents and developed a distribution system. Production of low cost, basic equipment will have been initiated either within a few countries and/or through TCDC. Maintenance and repair centres for laboratory equipment will be established in a majority of developing countries.

Activities	1984-1985	1986-1987	1988-1989	Linkages
Reagent production				
1. Preparation of lists of essential reagents required on the basis of the essential tests and appropriate methods, identified in close collaboration with experts panels and NGOs	HQ, PAHO			NGOs, CDS, NCD, MAP
2. Preparation of manuals on methods for production and control of reagents		HQ, PAHO		NGOs, HMD, MAP
3. Designation of collaborating centres for distribution of reference material used in the control and standardization of reagents produced locally	SEARO	HQ, PAHO		Collaborating Centres
4. Cooperation with countries in establishing reagent production, and organizing a reliable system of supply and control	AFRO	HQ, PAHO, SEARO		NGOs, UNIDO, UNICEF
5. Cooperation with countries in the establishment and good management of laboratory animal breeding		SEARO		Collaborating Centres, NGOs
Equipment, development, maintenance and repair				
6. Identification of causes of breakdown of laboratory equipment, reasons for poor laboratory results related to inappropriate operation and faults, and the development of equipment specifications aimed at overcoming these weaknesses		HQ, PAHO		Industry, Collaborating Centres, NGOs
7. Promotion of research and design of simple appropriate laboratory equipment on the basis of determined specifications, and organization of the evaluation of this equipment through collaborating centres, research workers and field staff		HQ, PAHO		Collaborating Centres
8. Preparation of guidelines on the organization of maintenance and repair services, including design of equipment record cards	HQ			IFCC, ICSH, IMALT Collaborating Centres
9. Identification of the most efficient set-up for the establishment/or expansion of maintenance and repair facilities for laboratory equipment.		PAHO, SEARO		Collaborating Centres
9. Development of a network of training centres for maintenance and repair of laboratory equipment	AFRO	HQ, PAHO		Collaborating Centres, NGOs
Management				
(Please see activities 3 and 4 under Target 4).				

RADIOLOGICAL TECHNOLOGY FOR HEALTH SYSTEMS BASED ON PRIMARY HEALTH CARE

Target 6:

Training and Manpower.

Futher development of regional and national training centres for personnel specialized in radiodiagnosis, radiotherapy, nuclear medicine, medical physics and maintenance and repair of medical equipment by: - the development of regional and national training centres in the African and Western Pacific Regions.

Activities	1984-1985	1986-1987	1988-1989	Linkages
1. Cooperation with Member States in the development of national, inter-country and regional training programmes in the field of radiation medicine and maintenance of medical equipment; at least 2 regional training centres will be operational in AFRO and WPRO by 1989	HQ, Regional Offices and NGOs			HMD, Intl. Soc. of Radiology (ISR)
2. Evaluation of the training component of the BRS project and design of an adequate training programme for tutors used in the training of BRS personnel; at least 25-30 field projects will be thoroughly evaluated and corrective actions recommended by 1989	HQ, AMRO, EMRO & SEARO	HQ, WPRO & EURO	-	HMD (EEV & EPM); Intl. Society of Radiographers & Radiological Technicians

Target 7:

Quality and Efficiency.

Promotion of quality assurance and efficacy/efficiency programmes in diagnostic radiology, radiotherapy and nuclear medicine by:

- an introduction of quality assurance programmes in diagnostic radiology and nuclear medicine to 55-60 WHO Member States by 1989.

This programme is aimed at decreasing cost and exposure and increasing the output of the given technologies.

Activities	1984-1985	1986-1987	1988-1989	Linkages
1. Development and implementation of the Quality Assurance Programme in Diagnostic Imaging in cooperation with IAEA, NGOs, and Regional Offices by organizing workshops and seminars at the Regional level; at least 55 countries will have Q.A. programmes in Diagnostic Radiology and Nuclear Medicine by 1989	HQ, IAEA, NGOs, AMRO, EMRO, EURO & SEARO	HQ, IAEA, NGOs, AFRO & WPRO	HQ, IAEA, NGOs, AFRO, AMRO, EMRO, EURO, SEARO & WPRO	IAEA; Intl. Soc. of Radiology; Intl. Org. of Medical Physicists. Intl. Commission on Radiological Protection; Intl. Soc. of Radiographers & Radiological Technicians
2. Development of a comprehensive programme on Quality Control in Radiotherapy, with the involvement of IAEA, the network of SSDLs; Regional Offices; the Intl. Society of Radiographers and Radiological Technicians; at least 25-30 countries will have Q.A. programmes in Radiotherapy by 1989	HQ, IAEA, NGOs, AMRO EURO & SEARO	HQ, IAEA, NGOs, SSDLs in AMRO, EMRO & SEARO	HQ, IAEA, NGOs, SSDLs in AFRO & WPRO	CAN; IAEA; SSDLs; Intl. Soc. of Rad; Intl. Commission on Radiation Units & Measurements; Intl. Org. of Medical Physicists; Intl. Soc.of Radiographers & Radiological Technicians.
3. Continuation of the efforts towards the increase inefficacy/efficiency of radio-diagnostic and nuclear medicine procedures with the aim of promoting further studies & at implementing the recommendations made by the Scientific Group Meeting held in 1982; action to reduce routine radiological investigations in non-sick persons will be taken in 40-50 countries by 1989	HQ, IAEA, NGOs, AMRO & EURO	HQ, IAEA, NGOs, EMRO & SEARO	HQ, IAEA, NGOs, AFRO & WPRO	IAEA, Intl. Soc. of Radiology; World Federation of Nuclear Medicine

Target 8:

Development in Technology and Policy-making.

- evaluation of the new technologies and their role in the improvement of health care in the developing world;
- development in a comprehensive manner of radiological services at three levels (periphery - BRS, midddle level - GPRS, and central level - SRS);
- joint activity with UNIDO with regard to the production of adequate radiological equipment in developing countries;
- radiation protection services in an additional 5-10 countries.

Activities	1984-1985	1986-1987	1988-1989	Linkages
1. Scientific Group Meeting on prospectives of the utilization of new diagnostic imaging technologies (ultrasound, digital radiology, etc.) in the developing world	HQ, NGOs & All Regional Offices	-	-	RPD; Intl. Soc. of Radiology; Intl. Org. of Medical Physicists; other NGOs involved
2. Scientific Group Meeting on the use of diagnostic imaging technologies in endemic liver diseases	-	-	HQ, NGOs & All Regional Offices	RPD
3. Implementation of the BRS project on a larger scale with the aim of having the BRS adopted by 60-70 countries by 1989. In view of obtaining reasonably-priced BRS machines, an attempt will be made, in cooperation with UNIDO, to arouse the interest of 3-4 developing countries in the production of BRS machines.	HQ, AMRO, EMRO, EURO & SEARO	HQ & All Regional Off.	HQ & All Regional Off.	HSC, UNIDO; Intl. Soc. of Rad; ISRRT
4. Preparation of a comprehensive planning of radiological services at the country level - Basic Radiological Service (BRS) at the first referral hospital level; General Purpose Radiological Service (GPRS) at the general hospital level (secondary referral hospital); and Specialized Radiological Services (SRS) at the level of university hospitals or specialized medical institutions, and study of the application of this concept in 25-30 countries.	HQ & All Regional Off.	HQ & All Regional Off.	HQ & All Regional Off.	SHS (HPL); HSC; Intl. Soc. of Rad; ISRRT
5. Elaboration of the concept of the General Purpose Radiological Service (GPRS), including the technical specifications for the GPRS machine, staff requirements, tasks. Attempts to introduce the GPRS in 8-10 countries after the construction of appropriate GPRS machines.	EMRO, EURO	Regional Off.	Regional Off.	Intl. Soc. of Rad; ISRRT; X-ray manufacturers
6. Elaboration, in cooperation with CAN/HQ IAEA and NGOs, of recommendations for radiotherapy equipment, (teletherapy and brachytherapy) adapted to the needs of developing countries	HQ, IAEA & NGOs	HQ, IAEA & NGOs	HQ, IAEA, NGOs, UNIDO Radiotherapy Equipment Mnfctrs	CAN; IAEA; UNIDO; Intl. Soc. of Rad; Intl. Commission on Radiological Protection; Intl. Commission on Radiation Units and Measurements; Intl. Org. of Medical Physicists
7. Technical cooperation with IAEA, NGOs and Member States in the development of Radiation Protection services and better utilization of such services offered by WHO	HQ, IAEA, NGOs, AFRO, AMRO & WPRO	HQ, IAEA, NGOs, AMRO & SEARO	HQ, IAEA, NGOs, EMRO & EURO	IAEA; Intl. Commission on Radiological Protection; Intl. Org. of Medical Physicists

8. MONITORING, EVALUATION AND INDICATORS

A. Laboratory technology

A.1 the progress of the medium-term programme will be based on the degree to which actual implementation complies with the targets specified;

A.2 the efficiency and effectiveness of peripheral laboratories will be evaluated according to the indicators included in the protocol for field operational studies;

A.3 further to the evaluation methods mentioned above, the following indicators will be used to assess the impact:

- the number of major diseases detected through peripheral laboratories and the improvement achieved in disease surveillance and control;
- improvement of the quality of laboratory results assessed on the basis of variance index;
- the increase in the number of tests per in and outpatient;
- improvement in laboratory management, which should result in a reduced risk of depletion of stocks of commonly used reagents, a decrease in the incidence of equipment breakdown, achievement of optimal number of tests per laboratory technician, etc., and consequently an increase in efficiency which may be expressed by the diminution in the cost of tests.

B. Radiological technology[1]

A number of direct indicators can be derived with the aim of evaluating the above-mentioned programme. These are:

B.1 indicators of coverage: the ratio of x-ray diagnostic machines, radiological personnel and radiodiagnostic procedures to population. For example, in developing countries at present 20-50 procedures/1000 pop./year are performed with a range of 2-10 procedures:1000/year in rural areas and approximately 60-100 in urban areas. A change in these indicators, as well as in the ratio of machine/population, would demonstrate a positive result of the programme;

B.2 indicators of quality of the activity, which are usually more difficult to determine: these indicators can evaluate the number of countries and the number of facilities in each country where quality assurance programmes were applied, and the results of such programmes, e.g. decrease in the number of wasted procedures (procedures of non-diagnostic quality);

B.3 indicators of efficacious and efficient utilization of radiological facilities, which constitute the final target of the programme, but are most difficult to determine, particularly in developing countries with inadequate records and lack of skilled manpower. Such indicators can be expressed in simple terms as number of procedures/machine/year, number of procedures/specialist/year, cost per procedure, or in more complex ways such as the number of procedures with a direct influence on the patient health outcome, the number of procedures which have altered the diagnostic and therapeutic decision, etc.

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[1] These indicators constitute a suggestion for consideration and adaptation for use at all levels.

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