# 10. Coordination of the Agencies Involved in the Organization and Delivery of Radiology Services

## 10.1 The Role of the Central Government

While the actual planning and operation of health services, including radiology services, should take place at the local level, in accordance with the criteria of ***local health system*** management, it should be the responsibility of the central government, within the context of public sector reform, to provide guidance regarding how radiology services should be organized and operated. This function should be independent from, but consistent with, the government's regulatory activities in the area of radiation protection and safety at radiological installations. As the previous chapters have illustrated, the provision of guidance requires a certain level of scientific and technological expertise in order to address both technical issues relating to the radiological equipment itself and the ***risks*** posed by ***ionizing radiations***, if the equipment emits them. This expertise is required not only for the development of standards and norms, but also for the day-to-day operation of radiological facilities which, like those in ministry of health and social security hospitals, which used to come under the direct jurisdiction of the central government, but have now been privatized or depend on a municipal government..

The key professionals who are able to provide this level of expertise in both normative and service-related activities are medical physicists. However, the availability of these professionals is limited, particularly in the area of imaging. The estimated number of medical physicists in the Region of the Americas is shown in Table 10.1.

Given this situation, it will be difficult for many governments to hire well-qualified medical physicists, as the United States did in 1994 to implement the Mammography Quality Standard Act (see Appendix II-B), which require that government-approved medical physicists survey all existing mammography units to ensure optimal equipment performance and minimal radiation ***dose***. Another obstacle which may prevent governments from hiring medical physicists is the high salary that these professionals generally command. (Well-trained medical physicists in the United States make over US$100,000 a year.)

Unless physicists, like many government-employed physicians, can find a secondary source of income—for example, in private practice—the probability of their remaining in government service is low. Although the government may have invested considerable money and time in their training, it is likely that many will emigrate to the United States or Europe, or they will join an international organization such as the IAEA in Vienna, or they will leave the field altogether. A different solution must be found.

**Table 10.1**
**Estimated Number of Medical Physicists in Countries of the Region of the Americas, 1994**

| Country | Medical Physicists |
|---|---|
| Argentina | 108 |
| Barbados | 1 |
| Bolivia | 3 |
| Brazil | 700 |
| Chile | 5 |
| Colombia | 17 |
| Costa Rica | 3 |
| Cuba | 20 |
| Ecuador | 4 |
| Honduras | 1 |
| Jamaica | 1 |
| Mexico | 30 |
| Panama | 2 |
| Paraguay | 1 |
| Peru | 6 |
| Trinidad & Tobago | 4 |
| Uruguay | 2 |
| Venezuela | 14 |

A similar problem occurs with regard to availability of testing equipment, for example, the equipment required to evaluate diagnostic units. In some cases, the SSDLs will have survey-type instruments, and an agreement to share equipment between two governmental institutions may be reached. However, in most cases the needs will exceed the inventory of available equipment. The government must own a minimum set of equipment for inspections, although more sophisticated items, such as thermoluminescent dosimetry systems, may be leased from outside suppliers.

## 10.2 The Role of Universities

It would appear that the first place to seek physicists is the physics department of a university. Although there are very few medical physicists working in universities in Latin America and the Caribbean, they may be approached to provide guidance regarding the development of standards, but it will be difficult to engage them in providing direct services such as equipment surveys. However, physics graduate students may be willing to provide such services in order to broaden their professional experience and increase their income.

Even when a university does not have any medical physicists on staff, it may be possible to arrange for some contractual services, as long as some needed training and equipment are provided. Examples of such services might be thermoluminescent dosimetry, as mentioned before, and structural ***shielding*** calculations.

The most important role universities can play is educational. They should assist the medical management of ***local health systems*** in providing training, including continuing education courses, to physicians, physicists, engineers, and technologists.

In no case should a university itself assume a regulatory role.

## 10.3 The Role of Scientific and Professional Organizations

Although medical physics societies exist only in Argentina, Brazil, Canada, Colombia, Cuba, Mexico, Panama, Trinidad and Tobago, the United States and Venezuela, almost all the countries of the Region have associations of radiologists and radiological technologists. The cooperation of these organizations is essential in the development of clinical protocols, and it may also prove invaluable in equipment assessment and the application of ***quality assurance*** criteria. Their assistance should be enlisted through the creation of radiology and radiological health advisory committees to the government, which would provide guidance to governments on technical issues. In the area of medical physics, the government might consider engaging qualified medical physicists individually as "state inspectors" on an *ad hoc* basis. The government might also consider requesting the assistance of a foreign expert panel to evaluate the qualifications of physicists.

## 10.4 The Role of Industry

Manufacturing and service corporations might also help in providing experts and equipment on a loan basis. In some countries these firms may have knowledge of the latest technological developments and they will be able to provide technical assistance. They should not be asked to give information on the performance of a competitor's product. In many countries major equipment manufacturers are a good source of grants and fellowships for clinicians, technologists, physicists, and maintenance engineers, and they often provide support in the organization of refresher courses and other continuing education activities.

## 10.5 The Role of International Organizations

The role of international organizations is to provide advisory services to governments and institutions in the areas of radiation medicine and radiation protection and safety, to visit the countries to assess existing policies and resources in health services and radiation protection programs, to develop standards and guidelines, to promote ***quality assurance*** and training programs, to produce relevant publications, to coordinate interregional activities, to distribute bibliography and equipment, to promote the marketing of national products to be used in radiology services and to provide direct technical assistance in radiological emergencies.

Examples of consultations in radiation medicine:

- Planning of radiological services
- Specification, selection, acceptance testing, maintenance, and repair of equipment
- Review of imaging and radiotherapy procedures
- Calibration of radiation ***sources***
- Physical and clinical dosimetry

Examples of consultations in radiation protection:

- Implementation of the *BSS (26)*

- Determination of environmental radiation levels
- Assessment of ***occupational***, ***medical***, and ***public exposures***
- ***Shielding*** specifications
- Evaluation of ***contamination*** problems
- ***Radioactive waste*** management
- Recommendations on ***dose limits*** and constraints
- Determination of non-***ionizing radiation risks***