

Planning prosthetic and orthotic programmes to aid developing countries

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At present there is a profusion of agencies and governments which send missions of prosthetics and orthotics experts into developing countries. Included are the UN, the World Rehabilitation Fund, the World Health Organization, the Social and Rehabilitation Service of HEW, Public Health Service, certain religious organizations, HOPE ship, and perhaps others. These agencies send experts to developing countries with the best intentions but sometimes without regard to each other's work. These efforts should avoid duplication, programmes should not overlap, one mission should not be critical of another, and agencies should not compete for the limited talent available to man the missions.

Co-ordination

The simplest solution is to employ a co-ordinating body to open effective channels of communication among these agencies and to advise and guide them on the best methods to pursue their goals. Their lines of interest and action cross where their programmes in support of prosthetic rehabilitation programmes extend into the same developing countries. A neutral agency, which does not conduct such programmes itself and which has extensive expertise in these matters, should be engaged to co-ordinate these functions.

The International Society for Prosthetics and Orthotics is an impartial international body which can draw upon expert talent the world over: it has established relationships with many international and national agencies. In recognition of these problems, the ISPO has a fully effective Committee on Education.

National and private agencies which sponsor

overseas missions should contract with ISPO to co-ordinate their efforts. A very small investment will produce great returns in assuring more effective use of total project funds.

Planning

Three kinds of programmes are generally sponsored by agencies in the United States. One is the "research" programme in which advanced researchers and developers are aided by financial support, equipment and facilities, and by collaboration with counterpart experts from the United States. In this circumstance, a one- or two-phase effort is usually sufficient to achieve the rather limited purpose of supporting the development of a particular prosthetic component, system, or technique. Maintaining liaison between the sponsor and the developer is readily effected by a single person reinforced by the advice of other experts. A classic example of this type of programme is the Social and Rehabilitation Service support rendered Dr. Franjo Gracanin and Dr. Losze Vodovnik of Ljubljana, Yugoslavia who have carried through a project leading to the development of a neuro-stimulator designed for hemiplegics. Another example is the Veterans Administration support of Dr. Pierre Rabischong of the Unite de Recherches de Biomecanique, Montpellier, France. Dr. Rabischong is developing an advanced control system to enable quadriplegics to drive automotive vehicles, a goal which may have important impact on the treatment of paralysed persons.

A second type of programme involves the introduction of a device or a technique into an established prosthetics and orthotics rehabilitation programme in a particular country. An effort of this kind may require the sending of a team of prosthetists, therapists, engineers and physicians to transfer required medical/surgical procedures, prescription indications, training

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techniques, and prosthetic or orthotic skills. In this instance, a one-time effort will suffice since the task is essentially one of teaching the new techniques to an already skilled and knowledgeable counterpart group. A typical example is the training programme held at the Commission Nacional de Rehabilitación del Lisiado in Buenos Aires in 1965. A seminar preceding the workshop was attended by doctors and other interested persons in allied fields from surrounding countries. The principles of total contact socket design and fitting were stressed as were the indications for prescription along with other technical and social aspects. However, the workshop which followed was restricted to the skilled technicians and medical persons on clinic teams to work out the environmental problems which arose. Subsequent surveys indicate that excellent total contact sockets were being routinely fabricated of a polyester resin obtained locally.

The third type of programme is aimed at developing countries in which there are no organized prosthetic and orthotic rehabilitation programmes or in which they are weak. The task in this case is quite different from the two mentioned above since it is not addressed to a well-organized prosthetics and orthotics rehabilitation community nor to skilled practitioners of all the participating disciplines. In this case a programme must be designed as a vehicle to carry the new knowledge and skills to the treatment teams and to the patient population. A programme of this nature cannot be effectively executed in one or two phases: it requires a long-range plan executed in several inter-related phases if the results are to be additive and to lead to a viable, effective local programme.

Effective long-range plans for such a programme cannot be made by the sponsoring agency and its own personnel. It is essential that appropriate representatives of the developing country participate in the initial planning in order to understand the prevailing conditions, to identify their goals, and to assess the available resources. Their own desires for the conduct and eventual results of the programme must be determined if a practical and effective plan is to be developed.

The *first* step in a programme of this nature is to bring representatives of the host country and sponsors together for planning meetings.

The host group should come prepared to present their view of the best kind of aid which the planned programme could provide. Their proposal should include details on the areas in which training and education are required, the organization of the prosthetic rehabilitation community for exploiting the proposed training and education, their plan for measuring the effectiveness of the programme, their desires for follow-up phases after the initiation of the programme, and all the pertinent details on the availability of materials, facilities, equipment, and personnel in their own countries.

The planning session should then turn to the question of determining the extent to which the sponsoring agency has or can draw upon the means for carrying out the programme proposed by the host group. Even at this early stage the capabilities of ISPO are essential. Through ISPO those missions aimed principally at training can take advantage of already established facilities such as those in Teheran, Buenos Aires, Bogota, New York, Copenhagen, and those regional centres organized by the World Rehabilitation Fund.

In the *second* planning step the sponsoring agency, through ISPO, should designate a leader for the yet-to-be nominated team to visit the host country very shortly after the initial meeting. This trip is necessary to corroborate the information initially obtained, and to assess the capabilities of the region for support of the training and educational effort in terms of personnel, equipment, and facilities. He should also evaluate the capability of the existing rehabilitation service delivery system for transmitting the new methods.

The *third* planning step calls for the design of the programme with great detail on the first phase and the general outlines of second, third and subsequent phases as required. These three planning steps will obviate many common problems which otherwise must be solved *ad hoc* after the mission has arrived in the host country. Meetings with representatives of the host country and the information obtained by the representative of the sponsoring agency are essential to develop an adequate estimate of the real needs in the host country.

It is essential that the agency in the country sponsoring the mission develops an adequate estimate of the audience sector.

Of fundamental significance in this respect are:

a. *Facilities*

The physical facilities available including lecture rooms, production equipment, etc., work benches and hand tools, machinery, availability of supplies required for a course. This information is necessary for planning the kind and quantity of tools and materials to be shipped and whether it will be necessary to maintain the supply, a matter which may well colour the entire content of the course and programme.

b. *Organization*

It is essential to know the organization of the host group with respect to the relationships among various disciplines as, for example, medical/surgical, prosthetic/orthotic, occupational/physical therapy, and the administrative pattern from the local to the decision-making level. To achieve any real measure of success, the visiting mission must be fully aware of the status held by each of the groups in order to determine the extent to which they can independently carry out elements of the programme. The visiting mission must also know the lowest echelons of authority with which they must deal in order to institute procedures with reasonable assurance that they will be carried out. This means that the sponsoring agency must determine in advance the local team composition and the seats of authority, in order to secure the co-operation of those concerned.

c. *Language*

The sponsoring agency should recognize at the outset that differences in language and customs may be significant barriers to efficient operation. It is extremely rare, particularly in the United States, to find technically competent teachers who are fluent in a language other than English. In the past, sponsoring agencies have simply ignored this problem or have depended on the fact that members of the host group had a smattering of English. In our experience "a command" of English most frequently means reasonable fluency in ordinary conversational English and only an extremely tenuous grasp of the technical language of prosthetics and orthotics, let alone the medical and physical therapy jargons. Local interpreters, even those whose English is extensive, are often inadequate

in that these people hear the technical language for the first time during the course. Furthermore, teaching through an interpreter is excessively time-consuming and even at best, reduces the feedback from the class to the vanishing point.

We recommend this problem be handled by arranging for the translation of all written material into the language of the host country by university medical faculties and engineering departments. The translated material should be checked out and distributed to the host group well in advance of the course to enable the partly fluent English speaking members to prepare to act as assistant instructors rather than interpreters. An advanced local prosthetist acting as an assistant instructor after he has prepared himself by reading the material in his native language is probably the most effective means of transmission. Extensive use of visual presentation is valuable.

d. *Social structure*

It is important to recognize that the culture of a country is reflected in a set of social attitudes. Included are concepts of the responsibility of society toward the handicapped, their place in society, and the attitudes of the handicapped toward themselves, and the non-handicapped population. In certain cultures, amputation or paralysis may bar an individual from meaningful employment, a reflection of the attitudes of both the handicapped and the non-handicapped. These differences may also be reflected in varying views of patients' needs and desires in the host country and in the country of the sponsoring agency.

The design of devices and the establishment of certain procedures may be rooted in concern for patients' psycho-social adjustment as well as functional regain. But in a culture where the handicapped are sequestered rather than brought back into the community, these matters are meaningless. Sophisticated devices with high cosmetic quality may be impractical. Prosthetic devices designed for use with western dress may be highly overdesigned or badly designed for cultures with vastly different dress patterns. In these situations it may be more fruitful to focus training on prosthetic principles, the use of local materials, and the adaptation of components to achieve greater versatility.

Consideration of tradition and local mores is also important in scheduling. Traditional

working hours, holidays and meal times in a particular cultural matrix must be observed in scheduling a training programme in order to avoid introducing unnecessary impediments.

There may also be a large gulf in the social status of professional and technical team members of the host country. The "clinic team" concept rests on the foundation of equally significant contributions of all the disciplines represented even though final responsibility for the patient's welfare rests with the team leader, the physician. In some developing countries, physical therapists represent a distinctly lower social stratum than physicians, and sometimes prosthetists and orthotists or technicians occupy an even lower prestige level.

The reality of such a situation must be faced by the mission members. They must realize that social pressure in such an environment may force a physician into a paternalistic and sometimes superficially arrogant attitude *despite his personal feelings to the contrary*. Legitimate and desirable ambitions of paramedical and technical personnel are often thwarted by these circumstances. The clinic team then appears weak with few or no significant contributions by its members. The visiting group can do little to change this picture since the mould of tradition may make both the physician and the others uncomfortable in the open give-and-take atmosphere of the classic clinic team. It is far more effective to recognize the realities and, by developing the knowledge and skill of the prosthetists and therapists, to enable them to elevate their status and make their positions more secure.

Selecting the expert team

Even in a fully developed country the teaching of technical prosthetics and orthotics skills is a difficult matter. It requires the organization of special programmes, facilities, and administrative support. It also demands competent, technical *educators*, which is to say, highly specialized personnel who are not only competent in a particular technical area but who are also competent to teach it. Missions consisting of one or two prosthetists or orthotists from the commercial community of the developed country are not likely to be the most effective group. We do not mean in any way to deprecate the contributions of such people who invariably

are highly motivated to "do good" and often undertake these missions at great financial loss to themselves.

Individual members of the expert team should be selected mostly on the basis of their experience and effectiveness in teaching the specialized areas in prosthetics or orthotics which constitute the content of the programme. Composition of the team may vary in succeeding phases as emphases and subject matter change. Where possible, individual team members should be friendly to each other or have worked with each other to minimize the possibility of strained relationships within the team. They should be dedicated to the principles of the Samaritan because in the absence of financial or other personal gain, their underlying attitude strongly affects student motivation. Their professional status should be unquestioned to ensure sufficient stature to facilitate communication with the group in the host country. Broad experience enables them to vary basic procedures and techniques *knowledgeably* to meet local needs. To be avoided are personnel who look upon the programme as an opportunity for a junket.

Ideally, each discipline considered in the programme should be represented on the team. But this is sometimes unrealistic since physicians and therapists find it difficult to be away from their practices for lengthy periods. These problems can sometimes be overcome by the selection of an adequate team leader.

The team leader, regardless of his professional field, should be selected on the basis of broad experience in all aspects of the programme and particularly for his skills in administration of training and research programmes. He should certainly have a working, if not a completely fluent knowledge of the local language. He should be known to persons of the host country by reason of his professional reputation or writings. He should be a versatile person who is capable of improvisation, expediting procedures, and one not easily deterred by problems. He must keep the goal of the mission in sight throughout the programme, taking all the necessary steps to ensure its success. He should be reasonably poised and cultured so that he may communicate freely at all echelons of administration and operations—Embassy officials, the medical, and paramedical communities.

Team members should be selected from among universities and hospitals offering programmes in prosthetics and orthotics. For example, in collaboration with representatives of the rehabilitation community in Portugal, Dr. Sidney Fishman of New York University has developed a long-term and highly effective prosthetics education programme. The programme was developed by direct and lengthy collaboration between Dr. Fishman and key members of his staff and their counterparts in Portugal. The Portuguese authorities have made available appropriate facilities and equipment as well as English-speaking personnel who have been trained by Dr. Fishman and his group to act as instructors presenting the material to students in their native language. A two-platoon system was employed in which one team presented the first 2 or 2½ weeks of a 4 or 5 week programme, and the second team presented the second half with approximately a week of overlap to maintain continuity. This reduced the amount of time individual members spent away from their other duties. It also allowed Dr. Fishman to deploy a variety of specialized personnel in each technical area of the programme.

Preparation of the team

The members of the team should, during a reasonably formal training session, be made completely familiar with the administration and organizational matrix in which their programme is to be presented. They should be fully briefed on the individuals in the host country with whom they will interact and they should have a complete understanding of the position and authority of each person with whom they will deal in the host country. Members of a team must assure themselves, leaving as little to chance as possible, that all the materials and equipment that each will need to carry out his individual responsibilities will be available. Team members should be carefully indoctrinated on the customs of the country and particularly those traditions which must be considered during the progress of the course.

Each scheduled element in the programme must be assigned to a particular individual in the same fashion as any effective programme is developed. A certain amount of teaching depth should be insured to enable one individual to substitute for another in the event of

illness. Team members should prepare their lesson plans as completely as possible to permit them to be reviewed prior to departure in order to ensure a similar level of content and presentation. Each team member should be informed of a particular person in the host country with whom he will work closely as a co-instructor. He should be fully informed on this individual's background, skills and experience.

Guide books or perhaps glossaries of appropriate phrases prepared by personnel in the host country should be made available to team members. Even for those with no command whatever of the local language, learning certain key words can be very useful, as for example, who, what, when, where, how, now, later, today, tomorrow, I, you, give, take, stop, come, go. Ten or fifteen carefully constructed phrases added to the words given above can provide an extremely useful working vocabulary which is quickly mastered in a few weeks preceding the visit.

Responsibilities of the host group

The representatives of the host country should be encouraged to take advantage of and to exploit to the fullest extent the efforts of the mission. Many problems can be circumvented by some of the steps described above. The host group should be asked to co-ordinate the receipt of supplies and equipment from outwith the host country and the procurement of other supplies and equipment within the host country in time to make them available for the course. The most significant contribution the host group can make is provision for continuing education after the initial course is given, and to integrate new knowledge and techniques into an effective, on-going service programme. It makes little sense to devote a great deal of effort to teaching prosthetic and orthotic treatment techniques which cannot be effectively integrated into the general health care service in the country. Techniques designed for application through a clinic team are lost in the absence of an organized programme with administrative, organizational, fiscal, and professional backup. It is, therefore, incumbent on the rehabilitation community in the host country to take steps to utilize and expand the application of what has been taught.

The planning stage must be co-ordinated in the host country at the lowest levels of authority which can guarantee follow-up measures. It is not enough to plan the technical materials; the planning must include discussions and conferences on the required administrative reinforcement, the appropriate organizational structure, adequate fiscal support, and supply functions. Questions on these matters must be brought up by the sponsoring agency through or with the participation of the team leader (to keep the entire team informed). The answers to these questions and the solutions to problems which they generate must come from the rehabilitation community of the host country but all must be managed if the programme is to be effective.

Summary

In essence, we are concerned with improving the effectiveness of training programmes presented in developing countries with weak or inadequate delivery of modern rehabilitation treatment services. We believe that great improvements can be made by more comprehensive and systematic planning. Sponsoring agencies should co-ordinate their efforts through the International Society for Prosthetics and Orthotics (ISPO) to avoid duplication and waste, and to take advantage of the world-wide scope of this agency. Plans will be more

effectively executed if they are based on an accurate and reliable estimate of the complete situation to be found in the host country, including knowledge of the physical facilities, the organization of the host group, problems of language and of customs. Selecting a team of experts on the basis of criteria appropriate to the mission and preparing its personnel realistically will also lead to more effective programmes. In this connection the universities and teaching hospitals are the richest source of personnel although the team leader may be sought elsewhere. A key element in the whole picture is recognition of the responsibilities of concerned groups in the host country and enlisting their co-operation in preparation and exploitation of the overall effort.

We take pride in the technological advances which have produced instantaneous world-wide communication although the content of the communication is not always a source of pride. The rapid transmission of health and rehabilitation skills and advances is really a debt humans owe to each other regardless of national boundaries or other considerations. Sending missions without ulterior motives from one country, which has advanced in a particular sphere, to another country is to exercise a quintessentially human quality—the brotherhood of man. Let us do our share to reduce the impedances and make the work more effective.