

## DELIVERY OF PROSTHETICS AND ORTHOTICS SERVICES CURRENT STATUS AND FUTURE NEEDS

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The finest research and development program in any field of medicine is of little value unless the results are made available to the patients that it was intended to help.

Considerable success has been achieved in this country and in Canada in making the results of research and development in prosthetics and orthotics available to appropriate patients by providing educational opportunities to prosthetists, orthotists, physicians, and therapists. Yet, we all know that the delivery of prosthetics and orthotics services are not as efficient as they might be.

Before making recommendations for improvement let us look at some of the questions and facts facing practicing prosthetists and orthotists.

To whom are the services rendered?

- Physicians? No, that is to whom we are responsible for failure since the physician expects us to perform our duties successfully.

- The patient? Yes, but where are these patients? What are their disabilities? How

many are there to be treated?

Where are these patients?

- The patients being currently treated by our existing delivery system are basically in the populated areas.

- "There is a universally accepted thesis that orthotic/prosthetic services are used in direct relationship to their availability and quality."<sup>1</sup>

- But, the patients available or in need of treatment are in every county, parish, and province in the world.

What are their disabilities?

- Amputation
- Paralysis
- Birth Defects
- Deformities
- Disease

How many of these patients are there?

- According to the figures compiled in 1971 and 1973 by the National Academy of Sciences there are:

Disability	Population
<u>Amputation</u>	300,000
<u>Paralysis:</u>	
Hemiplegia	340,000
Paraplegia	200,000
Quadriplegia	38,000
Misc. (upper limbs only or one lower limb)	<u>502,000</u>
SUB TOTAL	1,080,000
<u>Birth Defects:</u>	
Cerebral Palsy	750,000
Spina Bifida	27,500
Osteogenesis Imperfecta	<u>30,000</u>
SUB TOTAL	807,500
<u>Deformities:</u>	
Upper Limb	819,000
Lower Limb	2,916,000
Spinal	<u>1,135,000</u>
SUB TOTAL	4,870,000
<u>Disease:</u>	
Muscular Dystrophy	200,000
Multiple Sclerosis	500,000
Parkinson's	1,000,000
Disabling Arthritis	<u>2,201,000</u>
SUB TOTAL	3,901,000
TOTAL	<u>10,958,500</u>

• These figures amount to about 7 percent of the population. This 7 percent figure closely agrees with the 7½ percent figure quoted from the United Kingdom.

• 7 percent—that is what the unemployment rate is in the United States. Should equal emphasis be placed on caring for the disabled as the unemployed?

How many are being cared for?

• This a very difficult question to answer accurately. In communities where service is available and of high quality, the per capita expenditure is about one dollar and twenty five cents (\$1.25) per year. This could conceivably be greater if even higher quality services were readily available.

• The expenditure per capita is about seventy cents (70¢) annually.

• If these figures are accurate, only 56 percent of the needed services are being performed by the current system.

By whom are these services being performed?

• The only accurate numbers concerning practitioners we have are concerned with those involved in the program of the American Board for Certification; and unfortunately there are many people delivering services who are not involved with the certification program.

• There are currently about 1,600 practitioners certified by A.B.C.

CP — 36 percent  
CO — 41 percent  
CPO — 23 percent

• Of these 1,600—12.5 percent have baccalaureate level education.

• 50 percent of these have high school education or less — NO short courses, NO college level training at all.

• 22.5 percent of these certifees will retire in the next ten years (or are retired).

• 50 percent have been in the field more than 20 years.

How are these services being delivered?

- They are for the most part delivered by a part-time, semi-professional.

- They are delivered by a part-time mechanic, carpenter, craftsman.

- They are ordered by an independent, better educated, oft-times autonomous, but not so knowledgeable, physician, through a shy, inferiority complex ridden, under-educated (formerly) prosthetist or orthotist who in addition to patient care responsibilities, must fabricate the devices in his "shop."

- Not every practitioner fits the above description just as every clinic and physician certainly does not, but the numbers of prosthetists, orthotists, physicians and clinics that do certainly generate the predominate colors of the current picture of service delivery in prosthetics and orthotics.

- Still 56 percent of the needed services are being provided.

### Future Needs

If that is the current state of delivery, what *can* the future hold? What must the future have to provide a more complete, more modern, more realistic, more economical, more efficient, more beneficial delivery of services?

To whom?

- We cannot make our plans based on someone curing paraplegia or quadriplegia, but must anticipate there will be at least as many, if not more, as medical science preserves these lives. The same can be said of the other categories outlined. We must assume we will continue to be needed by 7 percent of the total population.

Who will deliver these services?

- The A.B.C. has taken the first major step in defining who will provide patient care service in orthotics and prosthetics with the upgrading of requirements for certification examination. The requirement for a baccalaureate degree will provide the patient, physician and clinic with not only a better educated, but more self-confident, knowledgeable, full-time practitioner of patient management.

- This practitioner will not have the manual trade skills so evident in current practice, and should not need them.

- Rather than trade skills the practitioner of tomorrow will have a more thorough knowledge of the body sciences, including a finer understanding of what is truly involved rather than a superficial overview of the problem. He will, of necessity, have mechanical and electrical concepts included in his education.

- He will, in short, need to have a "professional's" education, responsibility, and attitude. That education will have to be available in many colleges and universities, not just one or two.

How will these services be delivered?

- We now get into the real charge to this workshop.

- What can research do to facilitate delivery of services to the full 7 percent of the population; to the spina bifida in Pineville, Virginia, to the paraplegic in Plains, Georgia, to the cerebral palsy victim in Belmont, Nevada?

- Research must first develop a system (or systems) of measurement and design that can be transmitted to a fabrication center or laboratory so rapidly and so accurately that the laboratory can produce devices that fit, function, and facilitate habilitation or rehabilitation.

The prosthetics and orthotics practice of tomorrow will not have a "shop" anymore than the dentist's treatment room or the cast room is a "shop."

The dentist and the orthopedist use modular components and we are fast approaching that in prosthetics; but there remains the fabrication of the interface—the socket.

Orthotics has not yet developed a modular system in lower limbs and has touched only the surface in upper-limb and spinal problems.

### Recommendations

For each area of treatment—lower-limb orthotics, spinal orthotics, below-knee pro-

sthetics, etc.—a system should be developed for measuring, correcting or modifying those measurements, and transmitting the corrected measurements to a fabrication center rapidly, whether the center is 4 miles, 40 miles or 400 miles away.

Each new device, component, technique, or design must be compatible with a central fabrication system or provide for such use.

The achievement of the central production system must not compromise patient care effectiveness but must enhance it.

As all legal contracts say "time is of the essence," this system must facilitate rapid delivery rather than impede it.

In the future we must deliver our services to all who need them. We must provide these services to every locality in a timely and quality fashion. Only by allowing the practitioner to practice his profession more

and trade less, can he reach out or offer his services to more people in less densely populated areas.

At least 44 percent of the population that need help is not being helped. Only *we* have the skill, education, and responsibility to care for them.

Service? Delivery? Research? Yes, they go hand-in-hand! Each is dependent upon the other.

#### References:

*Status of Manpower*, Samuel Hammontree, Report of Ponte Vedra Conference sponsored by the American Board for Certification in Prosthetics and Orthotics and held in February 1976 at Ponte Vedra, Florida (in press).