

Professional profile of dialysis technicians in Europe

This article is based on the invited presentation at the A.N.T.E. Congress in Gorizia in May 2000

Defining the “dialysis technician”

The term “dialysis” or “renal technician” is generally used for people entrusted with technically oriented tasks in a dialysis unit. Unlike other professions in the renal care team (nurses and physicians in particular) the term per se does not describe the exact scope of duties and responsibilities or educational background and professional standing of the technician.

These unclarities are not as meaningless as they might appear at first glance. In fact, they have serious implications, which are discussed later. Additional confusion is sometimes caused by using the word “technician” or “patient technician” to describe those people doing the most routine work with patients. Americans use the term “technologist”. There are two distinct features in which the technical group differ from all the other disciplines in the renal care team:

- Technicians are the only group of professionals working in the clinical environment (and thus potentially able to cause serious damage to patients and other staff alike by impaired quality of work) without any certification of their competence.
- Their contribution to the final outcome of the work of the renal care team, i.e. quality care of renal patients, is mediated by other groups, namely by nurses and physicians. (Even well prepared and calibrated dialysis machines may cause trouble to a patient if improperly used). As a consequence of this, the well-being of the patient is a motivation for the technician rather than a final goal and appreciation of his work (when properly done) comes from other professions rather than from the patients.

Professional profile questionnaire

With the aim of mapping differences in technical work and technicians’ positions throughout Europe, a questionnaire was prepared by the EDTNA/ERCA SIG and circulated to technicians in most European countries. It contained several blocks of questions focusing on:

- General data - number of technicians in relation to other professions and their division into groups according to their affiliation (hospital, manufacturers, third party service organisations),
- Legislation related to technical work in dialysis units (staffing policy regulations, subordination, regulations on technical documentation, approach to vaccination against hepatitis B)
- Educational background and qualifications (classification

of technical staff into categories, availability of specialised education and/or educational materials, certification, system of continuing education)

- Duties and responsibilities (work performed, authority to purchase)

Although the final response rate has been below 50% (at least partial data were acquired from Belgium, Czech Republic, Denmark, Germany, Italy, Sweden, and United Kingdom), some unique information including the status of technicians, legislation awareness and health security has been obtained.

Results of the questionnaire

Technicians are not as small a minority as is generally believed. Their number in individual countries is just slightly less or comparable to the number of dialysis physicians. Number ratio of technical staff to nurses ranges from 1:7 (Belgium) to 1:20 (Sweden, Czech Republic). Workload expressed as number of dialysis sessions per year per technician is less variable – from 5000 to 8000 sessions per year per one full-time technician.

Percentage of “in-house” technicians (i.e. those employed by the hospital) ranges from below 10% to 50% + of all technicians in a country. (The other two categories are manufacturer’s technicians and third party technicians.) No country reported that a comparative analysis of cost-effectiveness of technical work performed by those three categories of technicians would have ever been attempted. Presence of the “in-house” technical staff also does not seem to have any significant impact on number of machines kept spare in the unit.

Regulations on staffing policy, (if there are any) in all countries, do not mention technical staff and the decision on coverage of technical needs of the unit is in most cases made by the medical director or the chief physician. This is also the person that the dialysis technician is most often responsible to. Less often it is the head of the biomedical engineering department of the hospital (typical for Sweden and the United Kingdom with well developed biomedical engineering structures in some hospitals).

Surprisingly, most responders to the questionnaire reported no local regulations on the frequency of preventive maintenance and calibration of dialysis machines and on documentation of the service work done on machines. This is difficult to believe, because such terms as risk assessment and risk management are now concepts defined by European standards. Such things may add to the technician’s workload, however, they may also have a significant protective value

(one can imagine the value of service documentation on a machine malfunction which could lead to damage to a patient or nursing member).

An even bigger surprise was that in some countries (Denmark, United Kingdom) vaccination against hepatitis B is not obligatory for technical staff!! I wonder whether these peculiar findings reflect poor knowledge of relevant legislation among technicians rather than real absence of such legislation. Unfortunately, a question of availability (and real application) of insurance against damage to patients and staff caused by unintentional omission of some duties by the technician was not included in the questionnaire.

Educational requirements and the possibility of further specialised education for technical staff was very poor. A post of dialysis technician can reportedly be held in most countries by anybody with an educational background ranging from a simple apprenticeship training in electrical or mechanical engineering, to graduates from technical secondary school or college, up to clinical engineers with a degree from a technical university, in all cases without any specialised education and training. Educational requirements are clearly lower for manufacturer and third-party technicians compared to those in-house. Specialised education is in most countries provided only by manufacturers of purchased dialysis technology, i.e. is machine-specific. The only European exceptions are courses in biomedical engineering covering renal care technology organised by the University of Compiègne in France. The United Kingdom is currently working towards the establishment of a well-defined structure of technical staff, including registration (so far voluntary).

There is currently no comprehensive and generally recognised textbook on dialysis technology available in Europe which could be used as a basis for a specialised educational course. Voluntary national technical associations in a few countries are however working on a technical core curriculum at present (joint effort in Belgium and the Netherlands, United Kingdom).

It is not surprising that under these conditions there are no generally valid certificates for dialysis technicians available and no system of obligatory continuing education in place. Positively, all countries reported an encouraging approach to participation of in-house technicians at educational and scientific meetings.

Regarding responsibilities and duties of dialysis technicians only periodic checks, preventive maintenance and service has unanimously been reported by all responding countries and for all technicians regardless of their affiliation and educational level. Other duties reported by some countries or reported to be done occasionally, in all cases by in-house technicians only, included installation of dialysis equipment for home haemodialysis, service of other medical equipment in the unit, co-ordination of contracted services, water treatment system supervision and water quality monitoring, training of nursing and medical staff in proper use of dialysis tech-

nology, regeneration of dialysers for reuse in the unit, management of computers, participation in clinical testing of medical instrumentation, materials and procedures, purchasing of new technology and in research. In some cases technicians order concentrates and other disposable materials. Technician's authority in purchasing new dialysis equipment is again highly "country-dependent" – from the authority to suggest (Germany), up to ultimate authority to approve (Denmark).

What are the needs?

Based on evaluation of responses to the questionnaire, the most important needs of the technical group in the renal care field could be identified and these are more numerous than had been expected at the time of preparing the questionnaire. Apparently, reference figures on standard workload expressed either in number of haemodialysis sessions per year per technician or as a ratio of technician to nurses should be mandatory for any reasonable staffing policy. An alternative approach based on number of dialysis machines cared for by one technician may be used. This figure will, however, be different for manufacturer's and third party technicians (who, as a rule, do the service work only) and for the in-house technicians with much wider scope of duties. (The value of 8000 dialysis sessions per year per technician can be recalculated into machines per technician – for instance for a three shift system on six days in week we need one technician per approximately 10 machines).

To make a qualified decision on which system of technical supervision of the unit is more convenient a detailed analysis of cost-effectiveness (taking into consideration differences in the scope of duties) would be needed. Such analysis should preferably be attempted by other professions rather than by technicians themselves to ensure an unbiased approach. Based on such analysis appropriate guideline figures should be included in staffing policy documents and position and workload of dialysis technicians. Inclusion of appropriate articles into staffing policy documents and labour codes should be demanded to ensure protection against health risks (vaccination) as well as professional and social risks (labour insurance). In general, current trends towards certification of dialysis units according to ISO standards will most probably increase the demand for technical in-house staff. However, their role may be shifted towards co-ordinating technical activities and needs rather than direct service work. Certainly, skills in computer technology will become a must for dialysis technicians in the near future.

However, the very basic, clearly demonstrated need is for an appropriate specialised education system which would be regularly validated and certified. Differentiation of such a system into at least two levels (corresponding to college level and university level educational background) but with no differentiation between in-house technicians and external technicians would probably be rational. Publication of a compre-

hensive technical Core Curriculum is a necessary prerequisite to this.

What can an (international) professional association offer?

Most, if not all of the identified needs may certainly be (and some even have to be) obtained via a national technical association in co-operation with national associations of renal nurses and physicians. However, I believe that approach based on international co-operation may be easier and/or more effective. I have two reasons for this belief: one is the relatively low number of dialysis technicians in any one country and their rather weak lobbying abilities augmented further by heterogeneity in their educational background and/or affiliation and the other is the general unification trend in all kinds of activities dictated by the requirement of equal quality of medical care and free movement of people throughout Europe.

Although the EDTNA/ERCA is an association based on individual membership (currently with some 130 dialysis technicians registered as ordinary members), it is open to mutually beneficial co-operation with any national profes-

sional associations on issues of common interest, such as those discussed in the above paragraphs. For further information on the EDTNA/ERCA interested readers are invited to visit the home page of the Association and/or to join the Internet based discussion forum "EDTNA/ERCA Technical Journal Club" headed by the doyen of the EDTNA/ERCA Technical Special Interest Group André Stragier (www.nephroworld.com/country.edtna_erca)

Acknowledgement

I would like to thank the following people for providing the requested information and/or help with preparation of the questionnaire: Maurice Harrington (UK), Andy Mosson (UK), Liz Lindley (UK), Allen Churchil (Denmark), André Stragier (Belgium), Luc Vonckx (Belgium), Gunnar Malstrom (Sweden), Christa Tast (Germany), Giuliano Pacor and Francesco Sacoman (Italy), and Hans Kamps (the Netherlands)

F. Lopot, Chairman
EDTNA/ERCA Technical Special Interest Group
General University Hospital
Prague, Czech Republic

The screenshot shows a web browser window with the address <http://212.38.87.233/frameset.htm>. The website header features the EDTNA/ERCA logo and the slogan "CARING TOGETHER". Below the header, a navigation menu lists various services: membership, education board, research support, dietitians, technicians, social workers, discussion forum, journal club, conferences, and resources. The main content area is titled "Books" and lists several publications with brief descriptions and dates. A "LATEST TITLES" sidebar on the right highlights "Nephrology" books, including "Dialysis Technology", "Handbook of Dialysis", "European Core Curriculum", and "European Standards". A "related books" button and a "Click here for book order form" link are also visible. A green oval overlay at the bottom of the screenshot contains the text: "VISIT EDTNA/ERCA ON THE INTERNET www.edtna-erca.org".