

## Hospital pharmacy in Finland

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### Introduction

Finnish hospital pharmacy originated in the 1960s, when hospital pharmacies were first set up and the first pharmacists were employed by hospitals. Today there are 24 hospital pharmacies and over 200 medicine centres, employing a total of 500 well qualified pharmacists and providing a comprehensive modern service. Finland is a world leader in conducting clinical trials and hospital pharmacists have the enthusiasm to take initiatives and steadily improve pharmaceutical services. Hospital pharmacists of the future will be even better educated and have a significant decision-making role in drug therapy-related policies and formularies.

way. The 1970s saw considerable development of drug formularies, and the central medicines stores were renamed medicine centres by the new Medicines Act of 1988.

There are now 24 hospital pharmacies under the direction of a chief pharmacist and about 224 medicine centres, run by either a pharmacist or an assistant pharmacist. Financial considerations often place the hospital pharmacy on an independent footing. A recent change to the Medicines Act allows hospital pharmacies at district level to expand and undertake the centralised compounding of medications for small medicine centres. This is

drug price. So-called special services, such as ward pharmacy, are usually billed separately, while the pharmaceutical industry is billed for pharmaceutical services for clinical trials.

Activities within the pharmacy are governed by laws, regulations, Good Manufacturing Practice, Good Clinical Practice etc. The National Agency for Medicines (NAM) supervises the activities of hospital pharmacists by for example performing inspections. The NAM has the authority, granted by the Medicines Act, to suspend permission for the pharmacy to operate, if activities do not comply with the laws and regulations in effect.



Helsinki University Central Hospital (HUCH), pharmacy delivery room

### The organisational framework

Until 1928 community pharmacies were responsible for supplying medicines to hospitals. A further change in the law in 1949 allowed hospitals to order medicines directly from pharmaceutical wholesalers or manufacturers. The manager of the central medicines store was required to be a pharmacist or an assistant pharmacist. In 1964 hospitals were given permission to start pharmacies for the first time, with Helsinki University Hospital leading the

intended to improve cost effectiveness and ensure adequate resources and facilities for this function. As cooperation between pharmacies develops, methods for joint procurement of medicines are under development.

In general, hospital pharmacies price services in such a way as to cover running costs and break even. Each ward or clinic gets a basic pharmaceutical service and the cost is included in the

### Pharmacy staff

The chief pharmacist, pharmacist in charge or assistant pharmacist in charge has not only overall professional and legal responsibility but financial charge of his/her pharmacy. In larger hospitals, there are several licensed pharmacists (M.Sc.) who each take a particular area of responsibility.

The Finnish local authorities employ around 420,000 people or 17% of the entire workforce. Hospitals and health centres employ about 4% of all pharmacists (i.e. about 65 people) while 10% of assistant pharmacists work in this sector (about 400 people). The training in Finland to become a hospital pharmacist is one of the longest in Europe.

### Drug formularies and procurement

Hospital pharmacies and medicine centres are required to compile drug formularies in close collaboration with the drug formulary committee. By law, six month's supply of formulary items and two week's supply of electrolytes and glucose-containing infusions as well as plasma

expanders must be stocked. The average drug formulary consists of fewer than 1000 preparations out of the 4500 approved medicines and pharmacists play a major role in promoting the formularies. Supplies are procured from the wholesalers or manufacturers directly by tender, which has been quite successful in keeping prices at less than the normal wholesale level. Some university hospital pharmacies have formed regional drug purchase bodies to further drive down prices as the volume supplied increases.

### Information technology supports key functions

All hospital pharmacies are computerised and information technology (IT) plays a key role in compounding, storage logistics, dispensing activities as well as procurement. However each unit has often developed its own software, suited to its needs, so incompatibilities exist between systems. For example, it is not possible for stock orders generated automatically within a hospital to be relayed automatically to the wholesalers. The most sophisticated software programs perform cytotoxic compounding calculations, making use of treatment regimens. Controlled drugs are tracked, including returns, by means of barcodes.

### Drug information

Answering queries from physicians and nurses is an integral part of the job. In a few large hospitals a pharmacist is appointed to this service. Typical issues include the availability of medicines (particularly of those with no marketing authorisation), proper handling of products and the reconstitution of medicines. As the clinical approach becomes better recognised, the pharmacy is being turned to more on questions of interaction between medicines. An integral part of the drug information service is to improve drug safety by drawing up guidelines, for example on reconstitution, and issuing bulletins and circulars to the wards. Statistical information is collected on drug consumption and feedback is provided to suppliers.

### Automation

Medicines are usually distributed in original packaging to the wards when ordered. However experimentation with automated drug dispensing started in the 1980s and today a small number of pharmacies provide multi-dose dispensing service to long term patients and to a lesser degree to acute-care patients. These hospital pharmacies also compile a complete medication profile of the patients concerned, and the pharmacist monitors for possible drug interactions. These pilot

**Table 1. Ward pharmacy activities**

- supplying, ordering and documenting ward stock drugs
- developing ward or medial unit drug treatment protocols
- reconstitution of intravenous drugs
- delivery of oral drugs
- lecturing on drug use to ward staff

schemes are bringing recognition that nurse workloads are reduced and stocks of drugs are reduced on the wards, while safety is improved by the unambiguous identification of patient and medicine.

### Pharmaceutical production

Medicines are usually manufactured if they are not available commercially, for example products that are no longer marketed. The most common items are single dose powders for infants, while university pharmacies supply a range of sterile products. Production is closely regulated and procedures in the larger hospitals are validated. These hospitals are producing more and more ready-to-use solutions for IV administration under the responsibility of the pharmacy department.

### Cytotoxic reconstitution

Centralised pharmacy cytotoxic services have developed over the last 20 years in Finland. Today all cytotoxic drugs for intravenous use are prepared in pharmacies to high safety standards.

### Clinical trials

Finland is involved in approximately 9% of the total number of ongoing clinical trials of drugs in the world, out of proportion

to its population of 5 million. The majority of trials are carried out in the university hospitals, and pharmacists are responsible for handling and supplying the drugs. Finland is so advanced here because of the high prevalence of cardiovascular disease and depression, coupled with a high quality of organisation in hospitals and medical care.

### Clinical pharmacy

Services known as ward pharmacy have been provided in Finland since 1991. The term covers the pharmacy's comprehensive

responsibility for the ward and the patient. Ward pharmacists promote appropriate, effective and safe medication as part of the healthcare team (see Table 1).

The Finnish Pharmacists' Association and the Union of Health care and Social Professionals published a joint report in 2003 setting out proposals for the further development of ward pharmacy. Quality Assurance and the control of medication errors were the two main themes.

Finland shows how it is possible to start from scratch and build a modern hospital pharmacy system in 40 years. Today pharmacists have the overall legal and professional responsibility for hospital pharmacy activities.

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This information was originally prepared for presentation to the 2004 General Assembly of the EAHP by Marisa Eronen, Jaana Lehtomäki and Merja Nylander and was first published in *Dosis* magazine Vol 20 2/04 p 103. For further information please contact

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