SUMMARY

In December 2003 the Dutch Advisory Council on Health Research (RGO) received a letter from the Minister of Health, Welfare and Sport (VWS) in which he emphasised the importance of a good knowledge infrastructure surrounding the provision of medicinal products and the pharmaceutical care sector in order to realise and maintain the rational prescription of medicinal products and the quality of pharmaceutical care. In the light of the imminent changes to the health care system the Minister requested the Council to advise him on the current state of affairs concerning the knowledge infrastructure in the pharmaceutical care sector. In addition, he asked the Council for recommendations for improvements in these areas.

Firstly, the Council gives an overview of the major events, which have contributed to the way in which the system currently operates. It is striking that previously the medicines dossier has concentrated primarily on cost-control. It is only over the last few years that cost-awareness has been coupled with striving for the best possible quality.

Subsequently the Council maps the infrastructure of the provision of medicinal products and pharmaceutical care as well as the knowledge infrastructure surrounding those. The Council defines the pharmaceutical knowledge infrastructure as the total of the public and private structural provisions and arrangements in the fields of training and fundamental, clinical and epidemiological research with the aim of enabling, monitoring, guiding and improving the provision of medicinal products and the pharmaceutical care sector.

This report distinguishes between functional, operational and contextual knowledge. Functional knowledge concerns knowledge of the product itself, services or treatment and the purpose of the application or the use of the product, the services or treatment. In the context of the provision of medicinal products and pharmaceutical care this mainly concerns the chemical and biochemical sectors, pharmacy and medicine. Operational knowledge is knowledge of the production process from where the product, the service or the treatment comes into being. It includes knowledge of operating procedures (prescribed or otherwise) and the use of materials and knowledge concerning the manner of interaction with client or patient. In this report it concerns the industrial production of medicines as well as the medical guidelines and information and the knowledge of prescribing and using medicines. Contextual knowledge covers the specific

settings within which the provision of services or treatment occurs. This includes market knowledge, other providers, the needs of specific target groups and general societal developments, in this case marketing knowledge, but also knowledge of the health care system.
Finally implicit and explicit knowledge are differentiated. Implicit knowledge includes personal insight and skills drawn partly from experience. This encompasses the empirical knowledge not only of the professionals (the 'gut feelings' of doctors, pharmacists and nurses) but also of the patients in relation both to their disease and their reaction to medicines. In contrast explicit knowledge is knowledge verified by (scientific) research, which has been recorded in papers, plans, guidelines etc (evidence-based medicine).

Within the chain of the provision of pharmaceuticals the various different functions and responsibilities are clearly defined: the development and production of medicines is principally the domain of the pharmaceutical industry, bulk distribution of the wholesalers and retail distribution of the pharmacies. The Dutch Health Care Inspectorate (IGZ) oversees the quality of production and product. There are two points in the chain where the authorities can intervene. First, a drug may not be put on the market without being registered by the registering authority, either the Dutch Medicines Evaluation Board (CBG) or the European Agency for the Evaluation of Medicinal Products (EMEA). Registration implies that the drug has been found to be sufficiently effective and safe. Following registration the safety of the drug continues to be monitored by means of pharmacovigilance. In the Netherlands this task is officially carried out by the Netherlands Pharmacovigilance Centre - Lareb, which falls under the auspices of the CBG. Besides Lareb there are a number of other institutions including the National Institute for Public Health and the Environment (RIVM) and the Dutch Institute for Proper Use of Medicines (DGV), who also register the adverse effects of medicines. Synchronization with Lareb is not always optimal.
A second point of intervention are the assessments made by the Commission for Pharmaceutical Help (CFH) (a Committee of the Health Care Insurance Board [CVZ]), of the interchangeability of medicines, their therapeutic value, the resulting costs should they be admitted to the Drug Reimbursement System (GVS), and the examination of the cost-effectiveness of pharmaceutical treatments. The Minister makes use of these assessments when deciding whether or not a particular medicine may be included in the Reimbursement System.
The various steps in this chain are strictly controlled, usually by European legislation. For this reason the applying knowledge infrastructure is clearly structured and the knowledge itself is explicit and of a functional nature.

The functions within the pharmaceutical care sector are fulfilled by physicians (diagnosis and therapy), pharmacists (pharmaceutical care when delivering the medicines) and the patients, who take the medicines. The responsibilities within this primary care process are clear.
The knowledge employed in this chain although mainly functional, is also operational and contextual in nature. Much of the knowledge is documented and therefore explicit but when making a diagnosis, choosing the correct therapy and when taking the medicines, implicit empirical knowledge and "gut feeling" play an important role.
Pharmaceutical care is subject to various steering processes such as training, continuing professional education and development, advertising, information campaigns and guidelines. These processes are carried out by a large number of institutions and organisations, with a strong emphasis on explicit, functional knowledge. The Council observes that the quality of the information and its applicability to particular target groups is out of proportion with the supplied amount.

Although the knowledge infrastructure as a whole functions reasonably well, the Council is of the opinion that there are too many organisations involved in (the regulation of) the provision of pharmaceutical products and pharmaceutical care in the Netherlands.
With respect to the provision of medicinal products, the Council calls for a simplification of the infrastructure by merging registration, pharmacovigilance, assessments for reimbursement and the promotion of the efficient use of medicines into one bureau. This will greatly aid transparency and decisiveness both within the Netherlands and towards Europe. In any case, pharmacovigilance should be carried out by only one '*back office*', Lareb, which will receive all reports of adverse events in a standardised format. For the pharmaceutical care sector, the Council recommends that in training and continuous professional education more emphasis should be placed on evidence-based medicine and the use of guidelines, in order to better support rational prescribing. Guidelines should be structurally reviewed and renewed. In this the Council endorses the initiative from the Dutch Network for Clinical Excellence (DNCE), which among other things encourages various organisations to deal with guidelines collectively. In addition, the provision of information, particularly for patients and consumers, must be better structured and coordinated by giving patient organisations a central role in the process, with therapy compliance as the starting point.

No knowledge without research. In the Netherlands there is a large knowledge gap in research on the position of medicinal products in the general population in the long run. An inventory has shown that all parties in pharmaceutical field are in need of this knowledge: from general practitioners to insurers, from patients to industry. Since this type of research does not belong clearly in either the public or the private domain, the Council suggests the creation of a new programme for research into the use of medicinal products, to be financed by the government, industry and the insurance companies. It could function as a pioneer programme, which would serve as an example to other forms of public-private partnership.

At the explicit request of the Minister the Council examined the knowledge infrastructure of the pharmaceutical care sector specifically in the light of the forthcoming changes to the health care services. The introduction of the free market will have a particular influence on the knowledge infrastructure. The workings of the free market will give knowledge a market value and the free exchange of information will no longer be accepted as a matter of course. The Minister should be alert to this risk and take appropriate measures so that knowledge will continue to be exchanged freely.

Finally, the Council concludes that although the Dutch knowledge infrastructure for the pharmaceutical care sector is functioning reasonably well, it is spread over too many institutions resulting in less transparency and decisiveness than is actually possible. Merger and coordination will be the key words for the knowledge infrastructure of the future.