Notes from the guest editors:
Pharmacoepidemiology – a bridge science

In 1962, the former chief medical officer in Norway, Dr. Karl Evang (1901-1981), claimed that "The introduction of modern pharmacological drugs represents the greatest progress ever made in the history of mankind". Because of the "drug revolution" during the decades since World War II, physicians have now the opportunity to treat patients more safely, rapidly and effectively than ever before. Drug therapy plays an important role in protecting, maintaining and restoring the health of people.

However, medications may be a double-edged sword. The benefits of modern drug therapy are reduced by inappropriate prescribing practice, polypharmacy, and adverse drug reactions. Unnecessary prescriptions shift the focus from non-pharmacological treatment, and contribute to a medicalisation of both life stress and an increasing number of risk factors. The rapidly increasing costs of modern drug therapy represent a growing concern for third party payers, e.g. the national insurance service.

While clinical pharmacology in general relates to effects of drugs in the human body, epidemiological methods must be used for investigating patterns and effects of drugs in defined populations. Drug epidemiology, or pharmacoepidemiology, is simply the application of epidemiological methods to pharmacological issues. However, the term "epidemiology" implies that pharmacoepidemiologic studies are population-based, and may link health events to drug use. In their textbook, Porta and Hartzema define pharmacoepidemiology as the “application of epidemiologic reasoning, methods, and knowledge to the study of the uses and effects of drugs in human population”.

Pharmacoepidemiology has been described as a bridge science because it spans both clinical pharmacology, drug utilization, and epidemiology. The involvement of the multiple disciplines is reflected by the different professions involved in the research, e.g. physicians, pharmacists, statisticians and medical sociologists.

In practice, pharmacoepidemiologic research can be divided into two main fields. The first includes studies of variation in drug use in populations, drug use patterns, identification of predictors for use, generation of hypotheses exploring variations, and public health impacts of drug use. The other field includes follow-up studies of e.g., side-effects, adverse drug effects, – and post marketing studies investigating long-term effects of specific drugs in a population setting. These latter studies are needed to complete what we know about drug effects documented in clinical trials.

In Norway, drug utilization research dates back to the early 1970s under the WHO Drug Utilization Research Group, now renamed EuroDURG. The Norwegian "Pharmacoepidemiology Forum” is the Norwegian research group within the EuroDURG. This Forum is a network of researchers throughout the country and who share a common interest in pharmacoepidemiology.

During the 1st Nordic Conference in Epidemiology (Bergen, June 2000), Pharmacoepidemiology Forum was responsible for setting up a satellite symposium about Pharmacoepidemiology in the Nordic countries. We are thankful to the Norwegian Ministry of Social Welfare and Health for their economic support to this symposium. Because the National Board of Health previously has proposed that a national drug prescription registry should be established in Norway, focus on this symposium was largely limited to research based on health registers and prescription databases. The presentations from this symposium have now been elaborated to the manuscripts presented in the symposium section in this Journal.

One particular feature with the Nordic countries and which is important for epidemiology is the national high quality health registries. The first national disease registry in the world was The Norwegian Leprosy Registry which was established back in 1856. Later, separate individual-based registries for e.g., tuberculosis, cancer, births, epidemic infectious diseases, and vaccinations have been established for the Norwegian population.

In the Norwegian Ministry of Social Welfare and Health, plans for a new registry, a National Drug Prescription Registry, are currently being elaborated. The manuscripts presented in the symposium section of the Journal represent a significant contribution from the scientific community to this work. Both the objectives, contents, and organization of this probable future statistics are addressed. The international experiences reported here are quite uniform when it comes to one essential issue: a unique person identifying number must be included in the database of a future prescription registry. This is because a person identifying code

is the prerequisite for doing longitudinal studies as well as record linkage with data from national or regional health surveys or with other national health registries. Several of the contributing authors of this issue give examples which illustrate some of the benefits which can be obtained for health care and research by linking prescription data with endpoints of drug treatment (e.g., morbidity and mortality data, blood pressure and serum lipid levels). The lack of a population based prescription statistics is probably an important explanation for the relatively low scientific output of pharmacoepidemiologic research in Norway today. A national drug prescription registry may become a useful tool for research and quality assurance to the benefits of the population. However, it may also end up as a “data graveyard”. The difference between the two will to a large extent depend on which data are included, and how the database will be organized and funded.

To get a "taste" of some of the pharmacoepidemiologic research activities presently going on in Norway, researchers have been invited to submit original papers to this theme issue. There are great variations in both methods, materials and objectives in the seven original contributions presented here. All articles have been peer reviewed. Bon appétit!

The guest editors want to thank all authors for their contributions. Thank you also to our external referees, and to chief editor Trond Peder Flaten for an excellent collaboration during this work.

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