USES OF ELECTRONIC PATIENT INFORMATION SYSTEMS AND NATIONAL REGISTERS

– Implementation of the clinical practice guideline and evaluation of costs and use of resources in patients with incident type 2 diabetes in Finland

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RATIONAL

Finland has a long tradition in comprehensive electronic patient registries1. However, the use of electronic patient records of primary and secondary health care together with national registers is uncommon in comparative studies. The problem is that relevant data are scattered between different register holders. Effective management of diabetes is the cornerstone for prevention of diabetic complications. However, how well the Finnish Care guidelines for diabetes is implemented in practice is unknown.

OBJECTIVES

One purpose of the ongoing study is to identify how the Finnish electronic patient information systems and national registers can be used to explore the treatment for patients with incident type 2 diabetes. To survey the implementation of the Current Care guidelines we aim to collect all relevant structured variables from different data systems.

METHODS

As often in pharmacoepidemiological studies, we collect nationwide patient data on prescriptions, hospital and primary care, reimbursed dental care, and the causes of death. In addition to the national patient registers we selected primary and specialty care organizations in seven different geographical regions representing four patient information system providers to participate in the study (Figure 1). In all, study permit applications were sent to 11 local register holders, three local system providers to participate in the study and one was left out for rational reasons (Figure 1).

Local registers are mainly used as a source of information on laboratory values, diagnoses and prescriptions, but also on medical procedures, contact types and billing to estimate the health economic aspects. Nationwide cost data will be based on hospital benchmarking database, sickness allowances and rehabilitations. The study protocol was sent for ethics committee review and the Office of the Data Protection Ombudsman was informed of the study.

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REFERENCES


CONCLUSIONS

Register linkages enable longitudinal follow-up of patients for research purposes in Finland. Combining local and nationwide patient registers provide a valuable resource for evaluating risks, benefits and costs. The combining allows us to compare the equivalency of local and nationwide patient register data. In Finland the coverage of the nationwide registers is up to 100%. Also the quality of local registers e.g. in laboratory data is very high. However, the data has not been collected for study purposes, which may affect the quality of some data. We did not aim to test mining, thus only structured data were requested from the register holders. Some variables ingested in exercise and dietary habits may be registered only in the open text fields and are than not available for this study. Nationwide prescription data includes reimbursed medications only. In this study we have access to all prescriptions via the local registers.

Gathering information from different information providers was laborious. The workload and the complexity of data mining would clearly exceed-wide in large database systems. Data from Helsinki had to be excluded from the study due to financial reasons. This affected the population size and generalization of the results significantly. The assessment time of the study permit applications was relatively low between different register holders, and was unreasonable low for two nationwide permits. The benefits of the regiter studies, such as quick reactions to safety signals by research using the existent data, should be cherished.

RESULTS: STUDY DATABASE

We are currently collecting a cohort to study the implementation of the clinical practice guideline and evaluate the costs and resource uses in diabetes patients. The actual size of the cohort will be determined after the data has been collected. The inclusion criteria are:

• diagnosis for diabetes (ICD-10 code E10., E11, E13 or E14., or ICD-2 code T89 or T90)
• a written or purchased prescription for diabetic medication (ATC code A03A or A10B)
• special reimbursement status for diabetes (refund code 103)
• HbA1c value ≥ 6.5%
• urine clearance test ≥ 11 mmol/l, or
• nutrition counselling related to diabetes

The data will be gathered from 2009 to 2012. For this particular study the analysis data will include incident type 2 diabetes cases only. Only those citizens that have been living in Finland for two years prior to index date will be included in the study.

The cohort study database is special because in addition to nationwide data we use local providers as information source on e.g. high quality laboratory data. The structured variables that we requested from the local registers were:

• ID number
• birth date
• gender
• place of domicile
• smoking habits
• BMI/weight & height
• waist circumference
• dietary habits
• nutrition counselling
• physical exercise
• exercise counselling
• all medications
• all diagnoses
• all laboratory measurements
• blood pressure
• foot therapy
• ocular fundus photography
• all operations
• incl. amputations of the lower extremities
• name of the hospital/health centre
• data resource use
• type (visit, phone call, email)
• professional (doctor, nurse, dentist etc.)
• billing

The persons are identified in the registers with unique personal identification numbers. These IDs also enable the data linkage between different registers.

Our unique combined register database of diabetic patient cohort (Figure 2) improves the evaluation of prognosis and care of diabetic patients.

Nationale data includes detailed information also on:

• drug purchases
• special reimbursements
• dental care
• sickness allowance
• rehabilitation
• inpatient days
• causes of death

In Finland the national cost data will be based on hospital benchmarking database, sickness allowances and rehabilitations. The study protocol was sent for ethics committee review and the Office of the Data Protection Ombudsman was informed of the study.