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THE 1ST NORDIC CONFERENCE IN EPIDEMIOLOGY

Bergen, 12–15 June 2000

Arranged by

Norwegian Epidemiological Society

in collaboration with

Danish Epidemiological Society

Swedish Epidemiology Association

Epidemiologists in Finland and Iceland

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The 1st Nordic Conference in Epidemiology

Bergen 12–15 June 2000
Radisson SAS Royal Hotel

Arranged by

Norwegian Epidemiological Society

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Danish Epidemiological Society, Swedish Epidemiological Association,
and Epidemiologists in Finland and Iceland

Scientific committee:

Jukka T. Salonen, Timo Hakulinen and Elina Hemminki (Finland), Henrik Toft Sørensen, Berit L. Heitmann, Henrik Møller, Jan Wohlfahrt and Torben Jørgensen (Denmark), Holmfridur K. Gunnarsdottir (Iceland), Anders Ahlbom, Sven Cnattingius, Måns Rosén and Dag S. Thelle (Sweden), Camilla Stoltenberg, Steinar Tretli and Rolv Skjærven (Norway)

Organizing committee:

Grace M. Egeland, Kari K. Melve, Lorentz M. Irgens, Rolv T. Lie, Stein A. Lie, Rolv Skjærven

Welcome to Bergen

Nordic epidemiology has, during the last decade, shown its strength in high data quality and follow-up opportunities in homogenous and stable populations. The Nordic population registries are acknowledged worldwide as excellent data sources for research, and we have unique possibilities to link different registries and other sources of information.

The Nordic countries have many common roots, with similar cultural and social relations. However, there are also differences in living conditions, food and drinking habits, work regulations etc. We are convinced that this meeting, bringing Nordic epidemiologists together for the first time, will be very stimulating – both personally and professionally. The goal of the conference is to stimulate new and high quality research through strengthening the ties between researchers in the different Nordic countries.

Since we are focusing on Nordic epidemiology, the main speakers for the conference all come from the Nordic countries. We have given high priority to contributions from participants, resulting in many oral presentations. All oral presentations will be in plenary session. Also, poster presentations have been given a central place in the programme.

The main programme consists of three topic areas:

- The study of health and disease using population-based registers. The Nordic Countries have excellent registers and epidemiology in the Nordic countries is internationally acknowledged because of its registers. The question to be discussed is how we shall develop research related to health registers in the future.
- The study of genetic contribution to diseases in populations and of the interplay between genes and the environment: genetic epidemiology. The human gene mapping project is well underway. What implications will genetic advances have for our understanding of human diseases, and how can epidemiology contribute to our understanding of the way genes work?
- Obesity is an increasing health problem in the Nordic countries. The study of lifestyle, nutrition and coronary heart disease has a long epidemiological tradition in the Nordic countries and will be represented at the conference by contributions from several countries.

We do hope that this conference will mark the start of a long tradition:
a conference in Nordic epidemiology every second year!

We are happy to welcome Nordic epidemiologists to Bergen, a town with a long tradition as a Nordic meeting place. Today, Bergen is a meeting place with an international character. Bergen is reknown for its hospitality, Bergeners for their good humor and witty remarks. You will find the centre of the town intimate, surrounded as it is by seven mountains. Bergen is situated in the heart of one of the world's most popular tourist attractions: the beautiful and dramatic fjord country of Western Norway. We hope that while you are in Bergen, you will be able to take the opportunity to see fjords, mountains and waterfalls.

The conference hotel, Radisson SAS Royal Hotel, is situated at the Bryggen (the waterfront), which is on the UNESCOs heritage list. The hotel is incorporated into the old Bryggen architecture, uniting thousand years of building traditions with modern architecture. The hotel is a few minutes walk from the famous Fish Market, the Funicular to mount Fløyen, and other tourist attractions. We do hope you will find time to experience some, if not all of this when you are in Bergen. You may understand why Bergen was chosen European City of Culture year 2000.

In particular, we do look forward to seeing you at the conference dinner, to be held at Norway's oldest and largest sailing vessel – a three-masted, square rigged bark, which is moored in the harbour next to the conference hotel.

On behalf of the scientific and organizing committees

Rolv Skjærven

The 1st Nordic conference in epidemiology Bergen 12–15 June 2000

Programme

(O = Oral presentations, abstracts page 13-42; P = Poster presentations, abstracts page 43-81)

12 June

1900 **Get-together** Leprosy Museum. Guided tour and light meal

13 June

0800-0900 **Registration** SAS Royal Bryggen Hotel

0900-0920 **Introduction and Welcome**

Invited speakers:

0920-0950 Irgens, Lorentz M *N* Challenges to registry based epidemiological surveillance and research

0950-1020 Olsen, Jørn *Dk* The research potential through EU – How can Nordic epidemiologists benefit?

1020-1100 Coffee break with fruit

Invited speakers:

1100-1140 Stefánsson, Kári *Ic* deCode and epidemiology in Iceland

1140-1210 Pederson, Nancy L *S* Twin studies in genetical epidemiology

1210-1240 Kaprio, Jaakko *Fi* Longitudinal twin studies

1240-1340 Lunch

Submitted papers:

Perinatal epidemiology		Oral session: 4 presentations	
1340	Wisborg, Kirsten	<i>Dk</i>	Exposure to tobacco smoke in utero and the risk of stillbirth and death in the first year of life O01
1350	Vestergaard, Mogens	<i>Dk</i>	Breastfeeding and febrile convulsions O02
1400	Fonager, Kirsten	<i>Dk</i>	Birth outcomes in women exposed to anticonvulsant drugs O03
1410	Kesmodel, Ulrik	<i>Dk</i>	Validity of self-reported alcohol intake among pregnant Danish women O04
1420-1430	Discussion		

1430-1530 Coffee break with fruit

Poster session: 13 posters

Submitted papers:

Perinatal epidemiology			
	Henriksen, Tine Brink	<i>Dk</i>	Male and female alcohol consumption and early embryonal loss P01
	Kesmodel, Ulrik	<i>Dk</i>	Alcohol in pregnancy and the risk of spontaneous abortion P02
	Kristensen, Petter	<i>N</i>	Impact of birth outcome on subsequent fertility in Norway, 1967-1997 P03
	Nordeng, H	<i>N</i>	Factors associated with drug use in early pregnancy in parous Scandinavian women P04

Submitted papers:**Cancer epidemiology**

Gram, Inger T	<i>N</i>	Cigarette smoking and the incidence of lung cancer among a cohort of young Norwegian women	P05
Johansen, Anne Mette T	<i>Dk</i>	Does income influence the survival of cancer patients	P06
Kibur, Mari	<i>Fi</i>	Seropositivity to STIs: comparison of Estonian and Finnish women	P07
Maskarinec, Gertraud	<i>N</i>	An investigation of ethnicity and mammographic densities	P08
Nygård, Jan F	<i>N</i>	Coordinated cervical cancer screening in Norway. Impact of invitation	P09

Submitted papers:**Occupational epidemiology**

Andersson, Eva	<i>S</i>	A cancer register study among male pulp and paper workers	P10
Flodmark, BT	<i>S</i>	Burnout in employees working with information technology	P11
Gunnarsdóttir, Hólmfríður K	<i>Ic</i>	Mortality among female industrial workers	P12
Sandanger, Inger	<i>N</i>	Relation between health problems and sickness absence: gender and age differences – a comparison of low-back pain, psychiatric disorders, and injuries	P13

Submitted papers:**Cancer epidemiology****Oral session: 5 presentations**

1530	Gram, Inger T	<i>N</i>	Oral contraceptive use in relation to mammographic patterns	O05
1540	Kumle, Merethe	<i>N</i>	Oral contraceptive use as a risk factor for breast cancer, “The Women’s Lifestyle And Health Study”	O06
1550-1600	Discussion			
1600	Winther, Jeanette F	<i>Dk</i>	Risk of cancer among siblings of childhood cancer patients: A collaborative study in the Nordic countries	O07
1610	Engholm, Gerda	<i>Dk</i>	Does a cancer diagnosis increase the risk of breaking up marriage or cohabitation	O08
1620	Gudmundsson, Kristjan	<i>Ic</i>	Increased total mortality and cancer mortality in Dupuytren’s disease	O09
1630-1640	Discussion			

Submitted papers:**Methods****Oral session: 3 presentations**

1640	Eiliv, Lund	<i>N</i>	The total burden of random variation, selection and information bias giving the observed variation in epidemiological results	O10
1650	Strömberg, Ulf	<i>S</i>	Prediction of study result from an early look at case-control data by estimating predictive coverage probability	O11
1700	Stigum, Hein	<i>N</i>	Sensitivity and uncertainty analysis in cost-effect models	O12
1710-1720	Discussion			
1730-1900			Annual Meeting of the Norwegian Epidemiological Society	
1930-2200	Mayor's reception		Bergen Art Museum: Official Bergen invites you to light snacks	

14 June**Invited speakers:**

0900-0930	Heitmann, Berit L	<i>Dk</i>	The increasing prevalence of obesity, and its consequences
0930-1000	Thelle, Dag S	<i>S</i>	Total fat and cardiovascular disease – Myth or fact?

1000-1100 Coffee break with fruit

Poster session: 13 posters**Submitted papers:****Cardiovascular epidemiology**

Frost, Lars	<i>Dk</i>	Incident thromboembolism in the aorta, renal, mesenteric, pelvic or extremity arteries after discharge from the hospital with a diagnosis of atrial fibrillation	P14
Frost, Lars	<i>Dk</i>	Seasonal variation in incidence of atrial fibrillation	P15
Rosengren, Annika	<i>S</i>	Sex differences in 1-year survival after myocardial infarction in Sweden. Data from the national AMI register	P16

Submitted papers:**Methods**

Hansen, Henrik L	<i>Dk</i>	Geocoding of all addresses in Denmark gives new opportunities for high quality ‘small area’ epidemiological studies	P17
Hilden, Jørgen	<i>Dk</i>	What fraction of the incidence variation does this covariate explain?	P18
Samuelsen, Sven Ove	<i>N</i>	Adjustment of relative risks	P19

Submitted papers:**Nutritional epidemiology**

Høidrup, S	<i>Dk</i>	Unit for dietary studies at the Copenhagen county centre of preventive medicine – a new large diet database available for nutrient researchers	P20
Mosdøl, Annhild	<i>N</i>	Induced changes in coffee consumption alters ad libitum dietary intake	P21

Submitted papers:**Pharmacoepidemiology**

Ruths, Sabine	<i>N</i>	Psychotropic drug-use in nursing homes – are the diagnostic indications good enough?	P22
Straand, Jørund	<i>N</i>	Withdrawing long-term drug therapy among patients in general practice. A prospective, multipractice study	P23
Vetvik, Kåre	<i>N</i>	Prescription of acid suppressant drugs and cisapride in the two most southern municipalities in Norway	P24

Submitted papers:**Dental epidemiology**

Källestål, Carina	<i>S</i>	Increasing socio-economic gaps in caries. Incidence data among Swedish teenagers from 12 to 14 years of age	P25
Virtanen, Jorma	<i>Fi</i>	Decrease in dental caries: Trends in attack distributions and progression in three age cohorts in Finland	P26

Invited speakers:

1100-1130	Borch-Johnsen, Knut	<i>Dk</i>	The epidemic of type 2 diabetes. The Nordic situation
1130-1200	Hallas, Jesper	<i>Dk</i>	Pharmacoepidemiology: methodological challenges and opportunities

1200-1300 **Lunch**

Submitted papers:	Perinatal epidemiology		Oral session: 4 presentations	
1300	Egeland, Grace M	<i>N</i>	Daughters of diabetic pregnancies and their reproductive histories	O13
1310	Stene, Lars C	<i>N</i>	Association between birth weight and the risk of childhood type 1 diabetes in a population based cohort study	O14
1320	Melve, Kari Klungsøyr	<i>N</i>	Families with a malformed infant: Is growth of siblings affected?	O15
1330 1340-1350	Kristensen, Janni Discussion	<i>Dk</i>	Prepregnancy body mass index and pregnancy outcome	O16
Submitted papers:	Nutritional epidemiology		Oral session: 3 presentations	
1350	Jacobs, David R Jr	<i>N</i>	Lower mortality among whole grain bread eaters in men and women in the Norwegian county study	O17
1400	Søgaard, Anne Johanne	<i>N</i>	Body mass index and total mortality according to physical activity in Norwegian men	O18
1410	Jacobsen, Bjarne K	<i>N</i>	Increase in weight in all birth cohorts in Tromsø, Norway. A prospective study – 1974-1994.	O19
1420-1430	Discussion			
1430-1530	Coffee break with fruit		Poster session: 13 posters	
Submitted papers:	Health			
	Forsmo, Siri	<i>N</i>	What is the prevalence of osteoporosis according to WHO-guidelines? The Nord-Trøndelag health survey	P27
	Forsmo, Siri	<i>N</i>	Bone density and the association to reproductive and lifestyle factors in early postmenopausal women	P28
	Gissler, Mika	<i>Fi</i>	Finnish administrative registers in studying childhood health	P29
	Gudmundsson, Kristjan	<i>Ic</i>	On the epidemiology of Dupuytren's disease	P30
	Helweg-Larsen, Karin	<i>Dk</i>	Violence against women in Denmark, prevalence and health consequences	P31
	Juel, Knud	<i>Dk</i>	Effect of tobacco, alcohol and other substances on mortality in Denmark. Variation with sex and region in 25 years 1973-1997	P32
	Lie, Stein Atle	<i>N</i>	Mortality after total hip replacement. 10 years follow-up of 39543 patients in the Norwegian arthroplasty register.	P33
	Lithman, Thor	<i>S</i>	Social differences in health care consumption	P34
	Løchen, Maja-Lisa	<i>N</i>	Physical activity and blood pressure: is there a U-shaped relationship? The Tromsø study	P35
	Nilsson, Staffan	<i>S</i>	Mortality among male and female smokers in Sweden	P36
	Quaade, T	<i>Dk</i>	Mortality in relation to early retirement in Denmark: A population based study	P37
	Smith-Sivertsen, Tone	<i>N</i>	Allergic disorders in an area polluted by nickel refining. A Norwegian-Russian population-based study	P38
	Svedberg, Pia	<i>S</i>	Comorbidity for irritable bowel syndrome: A twin study	P39
Submitted papers:	Health		Oral session: 5 presentations	
1530	Hannestad, Yngvild	<i>N</i>	A community-based epidemiological survey of female urinary incontinence. The Norwegian EPINCONT study	O20
1540	Nystad, Wenche	<i>N</i>	Asthma with and without eczema or hay fever	O21

1540	Høidrup, S	<i>Dk</i>	Hormone replacement therapy and hip fracture risk – The effect modification by tobacco smoking, alcohol intake, physical activity and body mass index	O22
1550	Grytten, Linda	<i>N</i>	Self-perceived health and self-reported illness for women and men. The Nord-Trøndelag health study	O23
1600 1610-1620	Nafstad, Per Discussion	<i>N</i>	Mortality and temperature in Oslo, Norway, 1990-1995	O24
1700	Sailing the fjords		Statsraad Lemkuhl (three masted bark) will bring us into the fjords. Seafood. We have the ship for 7 hours!	

15 June

Invited speakers:

0900-0930	Salonen, Jukka T	<i>Fi</i>	Trends in nutritional epidemiology in cardiovascular diseases	
0930-1000	Vollset, Stein E	<i>N</i>	Homocysteine and disease	
1000-1030	Coffee break with fruit			

Submitted papers:

	Registers		Oral session: 2 presentations	
1030	Amundsen, Ellen J	<i>N</i>	Using population based registers on HIV and AIDS in Denmark, Norway and Sweden to estimate incidence rates, prevalence and undiagnosed HIV	O25
1040	Espehaug, Birgitte	<i>N</i>	Impact of a quality control system – The Norwegian arthroplasty register 1987-1999	O26
1050-1100	Discussion			

Submitted papers:

	Cardiovascular epidemiology		Oral session: 2 presentations	
1100	Frost, Lars	<i>Dk</i>	Stroke and atrial fibrillation: A follow-up study of the effect of anticoagulation	O27
1110	Möller, Jette	<i>S</i>	Sexual activity a trigger of myocardial infarction	O28

Submitted papers:

	Occupational epidemiology		Oral session: 2 presentations	
1120	Andersen, Otto	<i>Dk</i>	Occupational mortality – the Danish experience 1970-1995	O29
1130	Leino-Arjas, Päivi	<i>Fi</i>	Unemployment and causes of hospitalization in Finnish men	O30

1140-1150 Discussion

1150-1200 Closing Session

1200-1300 Lunch

1315 Satellite meetings

1) Nordic Nutritional Epidemiology (see separate agenda)
2) Nordic Pharmacoepidemiology (see separate agenda)
3) Meeting for board members of the Nordic Epidemiological Societies

1930 Dinner for Satellite meeting participants

Author register

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EXPOSURE TO TOBACCO SMOKE IN UTERO AND THE RISK OF STILLBIRTH AND DEATH IN THE FIRST YEAR OF LIFE

Wisborg, Kirsten; Kesmodel, Ulrik; Henriksen, Tine Brink; Olsen, Sjurður Fródi;

Secher, Niels Jørgen

Perinatal Epidemiological Research Unit, Department of Obstetrics and Gynecology, Aarhus University Hospital, 8220 Aarhus N, Denmark

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The authors examined the association between exposure to tobacco smoke in utero and the risk of stillbirth and of infant mortality and its components (early neonatal 0-6 days old, late neonatal 7-27 days and, post neonatal 28 days to one year) in a cohort of 25,102 singleton children of pregnant women booking for delivery at Aarhus University Hospital. Exposure to tobacco smoke in utero was associated with an increased risk of stillbirth (odds ratio=2.0, 95% confidence interval: 1.4, 2.9). Post neonatal mortality was more than doubled in children born to women who had smoked during pregnancy, compared with children of non smokers (odds ratio=2.7, 95% confidence interval: 1.5, 4.9), while the risk of early neonatal and late neonatal mortality was insignificantly increased (odds ratio=1.6, 95% confidence interval: 0.9,2.6; and odds ratio=1.3, 95% confidence interval: 0.5,3.5). Conclusions were not changed after adjustment for sex of the child, parity, maternal age, marital status, years of education, occupational status, alcohol and caffeine intake during pregnancy, and maternal height and weight in a logistic regression model. Approximately 25% of all stillbirths and 35% of all post neonatal deaths in a population with 30% pregnant smokers could be avoided if all pregnant smokers stopped smoking.

BREASTFEEDING AND FEBRILE CONVULSIONS

Vestergaard, Mogens; Wisborg, Kirsten; Henriksen, Tine Brink; Obel, Carsten; Madsen, Kreesten
Meldgaard; Olsen, Jørn; Secher, Niels Jørgen; Østergaard, John
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Background: It has been suggested that breastfeeding enhances brain development, and protects infants against infectious diseases. However, the association between breastfeeding and febrile convulsions has not yet been examined.

Aim: To evaluate the association between exclusive breastfeeding and febrile convulsions

Population and methods: We invited all infants who were eight months old, and were living in the municipality of Aarhus, Denmark during 1992 to participate in the study. Health visitors interviewed the parents about duration of breastfeeding and background variables. Information about febrile convulsions was obtained by linking the study cohort with the National Patient Registry by means of a unique personal identification number. Hospital records were reviewed to estimate the validity of the diagnosis. Complete follow-up was obtained for 2724 infants (79 %).

Results: We followed 2712 infants for 14,013 person years (mean 4.81; SD 0.68), and identified 94 infants who were admitted to a hospital with febrile convulsions at least once. The incidence rate was 6.7 per 1000 person years, and the cumulative incidence was 3.5%. For children exclusively breastfed 3-4 months and 5+ months the Hazard Ratio was 0,98 (95% CI: 0,58 - 1,65) and 1,0 (95% CI: 0,60 – 1,67) respectively when compared with children exclusively breastfed for 0 - 2 months.

Conclusion: Our study revealed no association between breastfeeding and febrile convulsions.

BIRTH OUTCOMES IN WOMEN EXPOSED TO ANTICONVULSANT DRUGS

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Objectives: To examine the risk of malformations and fetal growth in women treated with anticonvulsant drugs in North Jutland County, Denmark.

Material and methods: All women treated with anticonvulsant drugs in the county were identified in a Pharmaco-Epidemiological Prescription Database and linked to the Danish Medical Birth Registry and the Regional Hospital Discharge Registry.

Results: We identified 235 pregnancies exposed to anticonvulsants around conception and/or during pregnancy as well as 17 259 unexposed pregnancies where the mother had not received any prescription. There was one case of neural tube defect among 15 malformations in the exposed cohort. The overall risk of malformations was 2.2 (95% confidence intervals 1.3-3.8). The risk of low birth weight and preterm delivery was 1.5 (95% confidence intervals 0.6-3.7) and 1.6 (95% confidence intervals 1.0-2.5), respectively.

Conclusion: We found an increased risk of congenital malformations and a tendency to growth retardation in children of women exposed to anticonvulsants.

VALIDITY OF SELF-REPORTED ALCOHOL INTAKE AMONG PREGNANT DANISH WOMEN

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Among pregnant Danish women we assessed the agreement between four different measures of concurrent alcohol intake at approximately 16-18 weeks of gestation using two week diaries, a measure of average intake/week obtained from personal interviews, a measure of intake within the last 7 days also from interviews, and a measure from self administered questionnaires. Participants were 441 women attending routine antenatal care at the Midwife Centre in Aarhus, Denmark, from October till December 1998. Percent agreement " 1 category ranged between 73 and 82 percent. Overall mean intake (SD, standard deviation) ranged between 1.09 (1.35) drinks/week for diaries, and 0.69 (0.85) for questionnaires. Mean differences between methods were all close to zero, but when stratifying by average weekly intake mean difference increased with increasing alcohol intake independent of method. This conclusion was not changed by multivariate analyses. Three of the four measures yielded comparable distributions of average alcohol intake in pregnancy, but reports of intake within the last 7 days seems to be an inappropriate measure of average intake, yielding three times as many abstainers as expected. All four instruments yielded very similar associations between alcohol intake and birthweight, birthlength, gestational age and Apgar score.

ORAL CONTRACEPTIVE USE IN RELATION TO MAMMOGRAPHIC PATTERNS

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High-risk mammographic patterns may be used as a surrogate endpoint for breast cancer in etiologic research. We examined the relationship between OC-use and mammographic patterns among 3,194 Norwegian women, aged 40-56 years, participating in the Third Tromsø study. A trained nurse asked the women about their current use of hormones at the screening facility. Information on ever OC-use, duration and age of first OC-use and other epidemiological data were obtained through questionnaires. The mammograms were categorised into five groups based on anatomic-mammographic correlations. For analysis, patterns I through III were combined into a low-risk group and patterns IV and V into a high-risk group. Odds ratios stratified by menopausal status and adjusted for age, body mass index, age at menarche and parity with 95% confidence intervals, were estimated using logistic regression. Postmenopausal women reporting ever OC-use were 70% more likely (OR=1.7 95% CI 1.1-2.7) to have high-risk mammographic patterns compared with those reporting never OC-use. Among premenopausal women the corresponding figure was 10 % (OR=1.1 95% CI 0.9-1.4). Nulliparous women who had ever used OC's were five times more likely (OR=5.0 95% CI 2.3-11.2) to have high-risk mammographic patterns compared with those reporting never OC-use. Our findings support the notion that OC-use may exert its effect on breast cancer risk through changes in breast tissue, which can be observed, on a mammogram.

ORAL CONTRACEPTIVE USE AS A RISK FACTOR FOR BREAST CANCER, “THE WOMEN’S LIFESTYLE AND HEALTH STUDY”

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“The Women’s Lifestyle and Health study” is a prospective cohort study initiated to examine the relationship between oral contraceptive use and the risk of breast cancer. A Swedish and Norwegian cohort were enrolled in 1991/92, utilising similar survey questionnaires. In Norway 100.000 women aged 34-49 were randomly drawn from the Central person register and mailed a questionnaire. Altogether 57.6% returned the questionnaire (n=57.604). In Sweden, a sample of 96.000 women aged 30-49, living in seven counties in central Sweden (“Uppsala Hälsovård region”) were obtained from a population registry at Statistics Sweden. The response rate was 51.3% (n=49.261).

The questionnaire elicited detailed information on oral contraceptive use, brand name, time period in life of use (duration and age of each separate period of use) as well as other epidemiological data as level of education, height, weight, smoking habits and reproductive variables. Information on emigration, death and cancer diagnoses was collected for each person by linkage to registers in the two countries out 1997.

The crude breast cancer incidence was 704/100.000.

Relative risk rates were obtained with Cox proportional hazard model. The results are under preparation.

**RISK OF CANCER AMONG SIBLINGS OF CHILDHOOD CANCER PATIENTS:
A COLLABORATIVE STUDY IN THE NORDIC COUNTRIES**

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Background: The quantitative importance in the general population of dominant genetic disorders that cause cancer has been assessed in large pedigrees and in epidemiologic studies of cancer frequency in parents and offspring of pediatric cancer patients. If inherited cancers are also associated with recessive genetic traits, however, large groups of siblings must be studied.

Methods: In a population-based cohort study from the national cancer registries of Denmark, Finland, Iceland, Norway and Sweden, the occurrence and rate of cancer among 42 277 siblings of 25 605 pediatric cancer patients were determined and compared with national incidence rates for various categories of tumor.

Results: Overall, 353 cancers were diagnosed in the siblings, whereas 284.2 were expected, yielding a standardized incidence ratio of 1.24 (95% confidence interval, 1.12 to 1.38) for all siblings, 1.23 for brothers and 1.25 for sisters. The elevated risk ratios for siblings, which were particularly high during the first decade of life and gradually approached unity at age 30 or more, appeared to be fully explained by well-described familial cancer syndromes and particularly autosomal dominant disorders.

Conclusions: No distinctive features of the cancer incidence pattern in siblings of pediatric cancer patients in the Nordic countries were suggestive of hitherto unidentified genetic cancer syndromes, and we found no evidence for the existence of recessive cancer syndromes lacking other symptoms in these countries. Siblings of pediatric cancer patients in families with no evidence of known inherited cancer syndromes therefore have no increased risk for cancer.

DOES A CANCER DIAGNOSIS INCREASE THE RISK OF BREAKING UP MARRIAGE OR COHABITATION

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After a life-threatening event as a cancer diagnosis a cancer patient might revise his or her view of life including the relationship to the partner.

In a study of social and economic consequences of a cancer diagnosis we followed all incident cancer patients 1985-87 from the Danish Cancer Register with a diagnosis of testicular, breast or colon cancer, or malignant melanoma, and a population-based control group in different registers in the years 1980 to 1994.

The sub-cohort of persons age 20-60 with a partner in the beginning of the year before diagnosis, was followed every turn of the year for still having the same address as the partner. Using discrete proportional hazard models we analysed the risk of breaking up the marriage or cohabitation relative to the risk in the control group. We found no increase in the relative risk in the year of diagnosis and the first year after with initial treatment for neither men nor women, but an increased relative risk was seen the second or third year, and after that a slowly decreasing risk from that high level.

INCREASED TOTAL MORTALITY AND CANCER MORTALITY IN DUPUYTREN'S DISEASE

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Dupuytren's disease is characterized by benign fibrotic tumours in the palms, eventually leading to contracted fingers. The aim of the present study was to evaluate the mortality rate and causes of death of individuals with Dupuytren's disease. In 1981/82 as part of "The Reykjavík Study" a total of 1297 males were examined for clinical signs of Dupuytren's disease. Participants were classified into three groups: 1) those with no signs of Dupuytren's disease are referred to as the reference cohort, 2) those with palpable nodules in the palmar fascia were classified as having stage I and 3) those who had contracted fingers or had been operated due to contractures were classified as having stage II of Dupuytren's disease. In 1997 after a 15 years follow-up period the mortality rate and causes of death were investigated in relation to the clinical findings from 1981/82. During the 15 year follow-up period 21.5% (225/1048) of the reference cohort had deceased compared to 29.9% (55/184) of those with stage I and 47.7% (31/65) of those with stage II of Dupuytren's disease. When adjusted for age and smoking habits individuals with stage II of the disease showed increased total mortality (HR=1.6; 95% CI=1.1-2.3). Cancer deaths were increased (HR=2.0; 95% CI=1.0-3.7). In conclusion, the study shows increased total mortality of individuals with stage II of Dupuytren's disease and a significant increase in cancer deaths.

THE TOTAL BURDEN OF RANDOM VARIATION, SELECTION AND INFORMATION BIAS GIVING THE OBSERVED VARIATION IN EPIDEMIOLOGICAL RESULTS

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Aim: to study the combined effect of random variation, selection bias and information bias on the observed distributions of answers in a questionnaire based study

Methods: In 1992 five random samples each of 1.000 women aged 35-49 years were drawn from the Central person register by Statistics Norway and mailed a questionnaire as part of a methodological study on questionnaire design and responderate. The responderate varied from 58.6% till 69.4%. Both the total (brutto) samples and those answering, netto samples, were matched in Statistics Norway against the fertility and educational registers. The observed distributions in the five samples of women were compared with the distributions in the brutto and netto samples.

Results: Comparing the observed distribution with the "true" values from the central person register gave no indications of better validity for higher responderates. Comparing the observed estimates of the distributions with the "true" population values could give a false impression of representativity concealing the combined effect of selection and information bias.

Conclusion: due to the combined effect of random variation, selection and information bias that can be either agonistic or synergistic in different samples, subgroup analysis in epidemiology should be used only as indications of effects.

PREDICTION OF STUDY RESULT FROM AN EARLY LOOK AT CASE-CONTROL DATA BY ESTIMATING PREDICTIVE COVERAGE PROBABILITY

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When initial data have been collected in an analytic case-control study, the following questions may be of interest: 1) How many more cases and controls should be included in order to attain desirable statistical inference? 2) Should the study be continued or not? The author introduces the *predictive coverage probability (PCP)*, i.e. the probability that the predicted final 95% confidence interval for the odds ratio (OR) covers a specific value or range of values. PCP estimates are obtained by repeatedly ($N=10,000$) simulating the remaining data with respect to the “current belief” distribution (a Bayesian concept) of the OR, given by the available data. Such estimates provide helpful information when deciding remaining sample size or early stopping. For example, consider the following situation. Based on initial data from 50 cases and 50 controls, the estimated PCP of *any* OR strictly below 2.0 *but not* 2.0 or above became 55% and 72% for the total sample sizes of 100+100 and 200+200, respectively. An investigator who judges it important to find clear evidence for that the exposure effect, if present, is weak, corresponding to an OR less than 2.0, may then consider continuation of the study with a total sample size of 200+200 rather than 100+100. There may well be concerns about an early look at case-control data, e.g., that knowledge of the interim result may lead to stopping according to desirability of result or somehow alter data collection procedures. Such concerns stress the importance of adherence to a study protocol.

SENSITIVITY AND UNCERTAINTY ANALYSIS IN COST-EFFECT MODELS

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Background: Cost-effect analyses used to evaluate interventions are normally based on many uncertain parameters. It is important to quantify the uncertainty in the resulting cost-effect ratio (cost per saved life). The objective is to present a modeling framework that allows the estimation of confidence intervals, and a sensitivity analysis. We are interested in the role played by different sources of uncertainty, and on the precision needed in different types of parameters in order to reach fairly precise results or a robust conclusion.

Methods: We use a stochastic Markov model that follows individuals from birth through disease to death, and derive equations for the steady state number of individuals in each stage. From these we calculate the cost-effect ratio. This ratio has two sources of uncertainty: the parameters, and the stochasticity governing how subjects will be distributed over stages.

To estimate the effect of the parameter uncertainty, we quantify the uncertainty in each parameter by a distribution, and use a Latin hypercube sampling scheme to estimate the effect on the cost-effect ratio. To estimate the effect of the population uncertainty, we observe that the number of subjects in each stage follows a multinomial distribution, from which we draw subjects. The sensitivity of each parameter is defined as the correlation between the parameter and the cost-effect ratio.

Results: The contribution from the population uncertainty may be large for a rare disease, but may be negligible compared to the parameter uncertainty for common diseases.

Conclusions: This is a general and efficient method of uncertainty and sensitivity analysis.

DAUGHTERS OF DIABETIC PREGNANCIES AND THEIR REPRODUCTIVE HISTORIES

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We evaluated whether there are differences in fertility, pregnancy complications, and reproductive outcomes between daughters of diabetic and non-diabetic pregnancies using linked generation data from the Medical Birth Registry of Norway. We examined the diabetic status of mothers of all female births registered between 1967 and 1982 (n=459,310), and offspring's survival, childbearing, and reproductive outcomes through 1998. Daughters of diabetic pregnancies were less likely to survive (89.5%) than those born to non-diabetic pregnancies (97.4%) (χ^2 , p-value < .05). The percent childbearing, the average number of children born by 1998, and daughters' maternal age were similar between the two groups. Non-diabetic daughters whose mothers were diabetic during pregnancy had a greater risk for a stillbirth delivery (RR=3.6, 95% CI=1.9–6.9), and preeclampsia (RR=1.8, 95% CI=1.1-2.6), and a non-significantly greater risk for delivering a large-for-gestational-age infant (RR=1.4, 95% CI=1.0-1.8) compared to non-diabetic daughters with no maternal history of diabetes. Daughter's risk of having a stillbirth infant was higher among those whose mother had diabetes with preeclampsia (OR=4.9; 95% CI=1.3-18.1) and in those whose mothers had diabetes alone (OR=2.6; 95% CI=1.2-5.6). The analyses adjusted for daughters' health status during pregnancy (diabetes, eclampsia, preeclampsia, placental abruption, and placental previa), and mother's preeclampsia. The greater prevalence of large-for-gestational age infants among daughters' of diabetic pregnancies suggests that there may be undiagnosed diabetes in this group. Diabetes during pregnancy has historically been associated with stillbirth deliveries and is a risk factor for preeclampsia/eclampsia. In our data, maternal diabetes, as well as other complications, had a transgenerational association with the daughters' risk of stillbirth deliveries and preeclampsia. Women born to a mother with diabetes during pregnancy may represent a high-risk group needing enhanced prenatal care.

ASSOCIATION BETWEEN BIRTH WEIGHT AND THE RISK OF CHILDHOOD TYPE 1 DIABETES IN A POPULATION BASED COHORT STUDY

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Aim: Associations of birth weight and gestational age with the risk of type 1 diabetes in case-control studies have been inconsistent. The aim of the present study was to assess these associations in a large cohort study.

Methods: The cohort of all live births in Norway in the period 1984-1998 was followed up for a maximum of 15 years (a total of 5646812 person-years) by record linkage of the Medical Birth Registry with the National Childhood Diabetes Registry. Altogether 1105 cases of type 1 diabetes were identified within the cohort. Birth weight and gestational age were used as exposures. Stratum-specific incidence rates ($\times 10^{-5}$ person-years) with 95% confidence intervals (CI) were calculated.

Results: The incidence rate (IR) of diabetes increased almost linearly with birth weight. Among children with birth weight 1000-2499g the IR was 13.9 (95% CI: 9.79-19.59). Among children with birth weight 4000-4499g the IR was significantly higher (IR=22.9, 95% CI: 19.93-26.35). The trend persisted after stratification by gestational age.

Conclusion: We found a positive association between birth weight and the risk of type 1 diabetes, and this was consistent over strata of gestational age. This supports the hypothesis that increased intra-uterine growth rate is positively associated with the risk of type 1 diabetes.

FAMILIES WITH A MALFORMED INFANT: IS GROWTH OF SIBLINGS AFFECTED?

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Background / aim: Infants with congenital malformations have in general lower birth weight than infants without malformations. Also, it is known that preterm delivery and growth retardation recur in sibships. The aim of the study was to compare birth weight of siblings to malformed infants with corresponding birth order siblings in families without malformed infants.

Material / method: Data, including information on congenital malformations, were from the Medical Birth Registry (MBR) in Norway from 1967 to 1998. Births were linked to their mothers through the unique personal identification number, providing sibship files with the mother as the observation unit. The study was based on 209,423 sibships with at least three siblings and 551,478 with at least two siblings (singletons). We grouped the sibships as follows: no congenital malformations in any of the births (n = 195,035); a malformation in the first birth (n= 5243); in the second birth (n=4448); in the third birth (n=4010); a congenital malformation in two births (n=190 - 245). (Similarly for families with only two siblings.)

Results: In sibships where one or two births had a congenital malformation, the mean birth weights of unaffected siblings were equal to the mean birth weights of corresponding birth order infants in sibships without malformations.

Conclusion: The results suggest that the etiology of birth defects is specific to the defects.

Families with an increased risk of congenital malformations do not appear to have an increased risk of adverse birth outcome associated with low birth weight.

PREPREGNANCY BODY MASS INDEX AND PREGNANCY OUTCOME.

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Background: Obesity is an increasing health problem in the Nordic countries. However, only few studies have evaluated the association between maternal pre-pregnancy weight and the risk of adverse pregnancy outcome.

Objective: To evaluate the association between maternal pre-pregnancy body mass index (weight in kilograms divided by the square of the height in meters) and late foetal death (stillbirth after 28 weeks of gestation), neonatal death (day 1-28) and post neonatal death (day 29-1 year).

Methods: We invited all Danish-speaking women who were booking for delivery at Aarhus University Hospital in the years 1989 to 1996 to participate in the study. Information on medical and obstetric history and a number of potential confounders was obtained from self-administered questionnaires. Valid information on height and weight was available for 24,512 pregnancies (96%). The women were categorised in four groups according to WHO standard recommendations of body mass index (BMI): underweight defined as BMI<18.5, normalweight as BMI 18.5-24.9, overweight as BMI 25-29.9 and obesity as BMI 30+.

Results: The relative risk among obese versus normalweight women was 2.46 (95% CI: 1.5-5.3) for late foetal death, 2.58 (1.2-5.7) for neonatal death and 0.63 (0.1-4.6) for postneonatal death. We found no statistically significant association in either of the other weight groups with any of the three outcomes. Finally, adjustment for a number of potential confounding factors did not change the conclusions.

Conclusions: Obesity increased the risk of late foetal death and of neonatal death. No association was found between obesity and postneonatal death.

LOWER MORTALITY AMONG WHOLE GRAIN BREAD EATERS IN MEN AND WOMEN IN THE NORWEGIAN COUNTY STUDY

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Mortality is reduced among whole grain eaters in the United States. We examined this issue in Norway, where 4 times as much whole grain is consumed as in the United States. 20,658 men and 20,516 women in the second wave of the Norwegian County Study (Finnmark, Sogn og Fjordane, Oppland) in 1977-83 (aged 35-56 years) and were followed for mortality until 1994. We combined self-report of type and number of bread slices (white, light whole grain, heavy whole grain) to form a whole grain bread consumption index, with range 0.05 (1 slice of bread per day, made with 5% whole grain) to 5.4 (9 slices of bread per day, made with 60% whole grain). Whole grain bread eaters were less likely to be smokers, were more physically active, were thinner, were less likely to have cardiovascular symptoms, had lower serum cholesterol, and ate less total and saturated fat as a proportion of energy intake than white bread eaters. After adjustment for age, energy intake, serum cholesterol, blood pressure, smoking, body mass index, physical activity at leisure and work, and history of cardiovascular symptoms and disease, hazard rate ratios (HRR) for total mortality were inverse and graded across whole grain bread index quintiles (Q5 vs. Q1 HRR: 0.70, 95% confidence interval 0.61 -0.82 in men and 0.72, 0.56-0.92 in women). Protection by whole grain intake against chronic disease is suggested in Norway, where consumption of whole grain is much more common than in the United States.

BODY MASS INDEX AND TOTAL MORTALITY ACCORDING TO PHYSICAL ACTIVITY IN NORWEGIAN MEN

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This study explores whether leisure time physical activity influences the relationship between BMI and total death.

28,203 men (35-49 years) (87.1% of invited) attended a cardiovascular screening in three counties during 1974-78. Height and weight were measured and information on physical activity, smoking and history or symptoms of CVD was taken from a questionnaire. The file was matched with the Cancer Registry and the Death Registry of Norway. Follow-up was until death, emigration or 31 Dec 1992, whichever came first. Men who reported symptoms or history of CVD or diabetes were excluded, leaving 22,304 for the present study. During follow-up 1,909 men died. Relative risks (RR) were estimated by Cox proportional hazards regression.

Adjusted for age, physical activity was inversely related to total death. Obese men had a significantly higher mortality than non-obese men at all levels of physical activity. There was a U-shaped relationship between BMI and mortality in men with sedentary physical activity and a J-shaped curve in those with moderate activity. In the most active men, the upturn in mortality at the lowest levels of BMI was not present. The main conclusions did not change when smoking were adjusted for.

High physical activity did not eliminate the excess mortality in obese men in this study.

INCREASE IN WEIGHT IN ALL BIRTH COHORTS IN TROMSØ, NORWAY. A PROSPECTIVE STUDY - 1974-1994.

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Obesity is a risk factor for a number of chronic diseases. We investigated the change in mean body mass index (BMI, kg/m²), the proportion with low body mass index (< 20 kg/m²) and the proportion who are obese (BMI > 30 kg/m²) in a large population examined up to four times during the 20 year period 1974-1994/95. The population consisted of men and women who attended one or more of the four surveys of the Tromsø Study. Cross-sectional analysis, in 1994/95 including 26743 subjects aged 25-85 years revealed that in most age groups, the mean body mass index exceed 25 kg/m². The age-and sex adjusted body mass index in subjects aged 25-49 increased 1 kg/m² in men and 0.9 kg/m² in women. In a longitudinal design, we followed 3541 men who had attended all four screenings (1974-1994/95) and 4993 women who attended the three last screenings (1979/80-1994/95). Mean body mass index in subjects aged 20-49 years at baseline increased 2.0 kg/m² and 2.4 kg/m² in men and women, respectively. The pattern of the increase in differs between men and women. The mean body mass index increased in every examined birth cohort during 15 to 20 years of follow up. Primary prevention of further increased body weight should be a priority.

A COMMUNITY-BASED EPIDEMIOLOGICAL SURVEY OF FEMALE URINARY INCONTINENCE. THE NORWEGIAN EPINCONT STUDY.

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Objectives: The aim of the study was to assess the prevalence of any urinary leakage in an unselected female population in Norway, and to estimate the prevalence of significant incontinence.

Methods: The EPINCONT Study is part of a large survey (HUNT 2) performed in the Nord-Trøndelag county in Norway during 1995-97. The survey covered many topics, using questionnaires and clinical and laboratory tests.

27936 (80%) out of 34755 participating community-dwelling women aged 20 years or more answered our questions about frequency and severity of urine loss, type of incontinence, the duration and impact of symptoms, and whether a doctor had been consulted. A validated severity index was used to assess severity.

Results: 25% of the participating women had urinary leakage. Nearly 7% had significant incontinence, defined as moderate or severe incontinence that was experienced as bothersome.

The prevalence of both any and significant incontinence increased with increasing age.

Half of the incontinence was of stress type. The fraction of severe UI was 17% (stress UI), 28% (urge) and 38% (mixed). 47% of the women with mixed incontinence were bothered by their condition (urge group 36%, stress 24%).

Conclusions: Urinary leakage is highly prevalent among adult women. 7% have significant incontinence and this group should be regarded as potential patients.

ASTHMA WITH AND WITHOUT ECZEMA OR HAY FEVER.

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The objective was to analyze differences in twin resemblance for types of asthma (with versus without eczema or hay fever) among Norwegian twins.

Material and methods All twins born from 1967 through 1979 were identified through the Medical Birth Registry. Pairs for which both twins were alive with residences in Norway (N=12700) were sent a questionnaire in 1998. The response rate was 69% and included 3300 pairs.

Results Preliminary results are consistent with previous findings indicating that genetic effects account for variability in developing asthma. However, there does not appear to be differential resemblance for type of asthma between identical (MZ) and fraternal (DZ) twins. The prevalence of asthma with eczema or hay fever was 3.7% compared to 4.6% without. The intraclass correlations for asthma with eczema or hay fever were 0.63 in MZ and 0.17 in DZ twins, and for asthma alone were 0.71 in MZ and 0.20 in DZ twins. There was a 32% chance of developing asthma with eczema or hay fever and 45% chance for developing asthma alone among MZ twins whose co twin had a history of the same type of asthma. Among DZ twins these chances were 5% and 9%, respectively.

Conclusion These results suggest no difference in the magnitude of genetic effects for liability to both types of asthma. However, the extent to which types are etiologically distinct is unknown.

HORMONE REPLACEMENT THERAPY AND HIP FRACTURE RISK – THE EFFECT MODIFICATION BY TOBACCO SMOKING, ALCOHOL INTAKE, PHYSICAL ACTIVITY AND BODY MASS INDEX.

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To examine the overall effect of hormone replacement therapy (HRT) on hip fracture risk and the effect modification by behavioural habits and body mass index, data on 6,159 postmenopausal women was analysed. Information on use of HRT, medical history, behavioural habits, and anthropometric data was assessed at the baseline visit. During a follow up period of 13 years, 363 hip fractures were identified. Women who reported current use of HRT had a lower risk of hip fracture as compared to women who were non-users (relative risk (RR) =0.71, 95 percent confidence interval (CI) 0.50-1.01). Use of HRT was associated with a lower risk of hip fracture in former and current smokers (RR=0.55, 95 percent CI 0.22-1.37 and RR=0.61, 95 percent CI 0.38-0.99, respectively), but not in never smokers (RR=1.10, 95 percent CI 0.60-2.03). HRT was also associated with lower risk of hip fracture among alcohol drinkers (RR=0.36, 95 percent CI 0.14 to 0.90) and among sedentary women (RR=0.42, 95 percent CI 0.18-0.98), but not among non-drinkers (RR=0.99, 95 percent CI 0.61 to 1.61) and physically active women (RR=0.92, 95 percent CI 0.42-2.04). There was no evidence of interaction between use of HRT and body mass index. The results suggest that history of behavioural habits offers important information concerning the probable degree of protection against hip fracture afforded by HRT.

SELF-PERCEIVED HEALTH AND SELF-REPORTED ILLNESS FOR WOMEN AND MEN. THE NORD-TRØNDELAG HEALTH STUDY

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Aims: to describe differences between men and women in relation to self-perceived health and illness and to identify special groups according to demographic variables and variables associated with satisfaction, to see whether ill-health is greater in certain groups than in the population as a whole.

Sample: The project was based on data, collected using a self-administered questionnaire, from the Nord-Trøndelag Health Study 1995-97. The sample comprised 66 000 adult men and women 20 years and older, representing 71 % of the population.

Results: The proportion of women who reported that their health was good or very good (70%) was slightly lower than for men (75%) in all age groups. The proportion of women who reported that they had suffered from certain illnesses and other conditions was generally higher than for men, for example for psychiatric problems (for which one had sought help), headache, and pain or stiffness in muscles and joints. Self-reported prevalence for most conditions increased with age. In particular, participants who had felt lonely or very lonely during the last two weeks showed higher proportions of poor self-perceived health and self-reported illness. The differences between smokers and non-smokers were small.

Conclusions: Although we found differences in self-perceived health and illness according to gender, the differences between people who were lonely and those who were not were greater.

MORTALITY AND TEMPERATURE IN OSLO, NORWAY, 1990-1995

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Study objective: To explore the associations between temperature and mortality in a western society with a cold climate and adequately insulated and heated dwellings.

Design: An ecological design linking data on daily mortality from the Norwegian Death Register with daily temperatures, relative humidity, wind velocity and air pollution in Oslo, Norway, 1990-95.

Participants: All inhabitants of Oslo (ca 500 000).

Main results: At temperatures below 10⁰C, a 1⁰C fall in the last 7 days average temperature increased (statistically significant) the daily mortality from all diseases by 1.4%, respiratory diseases 2.1%, and cardiovascular diseases 1.7%.

Above 10⁰C, there was no statistically significant increase in daily mortality, except for respiratory mortality, which increased by 4.7% per 1⁰C increase in the last 7 days average temperature.

Conclusions: The increase in mortality related to low temperature starts at lower temperatures in Norway than in warmer regions of the world, but at higher temperatures than in regions with even colder climate. Both physiological and behavioral adaptation to the local environment could explain this. Well insulated and heated Norwegian dwellings are not sufficient to prevent all cold related mortality.

USING POPULATION BASED REGISTERS ON HIV AND AIDS IN DENMARK, NORWAY AND SWEDEN TO ESTIMATE INCIDENCE RATES, PREVALENCE AND UNDIAGNOSED HIV

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Background: Denmark, Norway and Sweden established both HIV and AIDS registers to monitor the HIV epidemic. Data from the registers can be used to estimate the number of new HIV infections over time, incidence rates, prevalence and undiagnosed HIV.

Methods: A Markov model backcalculation approach was used. Death or emigration prior to the onset of AIDS and effects of treatment was included in the models.

Results: Significant differences in incidence rates and prevalence of HIV among men having sex with men for the study periode 1977 to 1995 were found between the Scandinavian countries when information on diagnosed HIV was incorporated. (Ellen J. Amundsen, Odd O. Aalen, Hein Stigum, Anne Eskild, Else Smith, Malin Arneborn, Øyvind Nilsen, Per Magnus. Backcalculation based on HIV and AIDS registers in Denmark, Norway and Sweden 1977-95 among homosexual men. Estimation of absolute rates, incidence rates and prevalence of HIV. Accepted January 2000 of Journal of Epidemiology and Biostatistics). The epidemic among intravenous drug users peaked in all three countries in 1985-86. HIV incidence rates were significantly lower in Norway and Sweden than in Denmark in the period 1987 to 1996.

Conclusion: HIV registers in addition to AIDS registers have so far improved the surveillance of the HIV epidemic. The introduction of the potent antiretroviral treatment in 1996, which for many HIV infected persons effectively postpone or make the AIDS diagnosis irrelevant, reduces the usefulness of today's registers. The central health authorities in Scandinavian should seriously consider nominal reporting also to the HIV registers.

IMPACT OF A QUALITY CONTROL SYSTEM – THE NORWEGIAN ARTHROPLASTY REGISTER 1987 - 1999

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The Norwegian Arthroplasty Register started registration of hip replacements in 1987. In 1994, registration was extended to include insertion of all types of artificial joints. The main purpose of the register is to identify inferior implants as early as possible. The quality of an implant is mainly evaluated based on the time period from implantation to revision (when the implant is removed or exchanged).

Annually about 6,000 primary and revision total hip replacements are performed in Norway, and information on about 70,000 implants has been registered so far. The compliance to the register is higher than 95 % for hip implants.

After a few years follow-up, specific types of cement used to fix the hip implant to the bone and several types of uncemented prostheses (fixed by other methods than cement) were shown to be associated with an increased risk for revision. The use of these products was then abandoned in Norway, which was reflected in improved overall results for hip implant surgery.

Recent studies have focused on the importance of long-term surveillance of hip implants as groups of implants with initially satisfactory survival results have been shown to deteriorate more rapidly with longer follow-up.

The register has contributed to a reduced number of revisions of hip implants, which has not only benefited the patient, but also the society through reduced expenses.

STROKE AND ATRIAL FIBRILLATION: A FOLLOW-UP STUDY OF THE EFFECT OF ANTICOAGULATION

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Background: Randomised trials have documented a 68% stroke risk reduction with coumarin treatment in atrial fibrillation patients.

Aim: We estimated the effect of coumarin treatment on stroke risk in atrial fibrillation patients identified in a pharmacoepidemiological prescription database.

Data sources: The population based Pharmacoepidemiological Prescription Database (exposure to anticoagulation) covering the population of Northern Jutland, The Danish National Hospital Discharge Register (patients with atrial fibrillation). The Danish Central Person Register (vital status and emigration).

Patients and methods: 2,699 men and 2,425 women, aged 60-89 years, with an incident hospital diagnosis of atrial fibrillation during the period 1991-1998 and with no previous diagnoses of stroke or valvular heart disease. Exposure to coumarin treatment was defined as date of prescription +90 days. Patients were followed until the first stroke diagnosis, death or the end of 1998. Effect of coumarin treatment was estimated by Cox regression analyses in men and women adjusted for age, other medications and cardiovascular comorbidities.

Results: Cumulated exposure to coumarin treatment were 1544.2 years of 6132 years of follow-up in men, and 904.8 years of 5696.7 years under risk in women.

Stroke incidence rate were 28/1000 person-years in men, and 33/1000 person-years of follow-up in women.

Cox regression analysis: Adjusted incidence rate ratio (RR) of stroke during coumarin treatment (95% confidence interval).

	RR	95% CI
Men	0.6	(0.4-1.0)
Women	1.0	(0.6-1.6)

Conclusions: A stroke risk reduction with coumarin treatment was seen in men, but not in women. We cannot exclude residual confounding and bias due to misclassification of comorbidity.

SEXUAL ACTIVITY A TRIGGER OF MYOCARDIAL INFARCTION

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Is sex dangerous to the heart? In order to answer this question controlled studies are essential. For physicians advising patients, or the public, it is important to know whether there is an elevated risk - and if so - how large it is. The only controlled study published so far on this topic was made in Boston and established sexual activity as a trigger of myocardial infarction.

The aim of our Onset study was to study sexual activity as a trigger of non-fatal myocardial infarction and potential effectmodification by physical fitness. The study was conducted within the Stockholm Heart Epidemiology Program and used the case-crossover design, where each case serves as his/her own referent. A total of 699 patients with first time non-fatal myocardial infarction were interviewed.

During one hour after sexual activity the relative risk of myocardial infarction was 2.1 (95% CI 0.7-6.5). The trigger risk was higher for patients living a physically inactive life, RR=4.4 (95% CI 1.5-12.9), than for those who were more physically fit, RR=0.7 (95% CI 0.1-5.1).

Our conclusions are that sexual activity should be considered as one of many factors which may trigger a myocardial infarction. The absolute risk is however small and the risk can be reduced by physical training.

OCCUPATIONAL MORTALITY - THE DANISH EXPERIENCE 1970-1995

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The Danish register on occupational mortality now holds information for a period of 25 years. Starting point is the census population in 1970 and the registration of deaths from 1970-1995. Occupation and industry is reported at the 1970-census and from 1981 the information is obtained from the Danish labour force registers. Furthermore, from various registers we have information on family type, marital status, housing standard, unemployment and various social security benefits. From an overall viewpoint the data offers a unique possibility to analyse not only occupational mortality for various periods but also first possibility to look at the time trends in differential mortality.

We shall present an overview of the differences in occupational mortality in Denmark through the period relating this development to the Danish discussion on the resent (unfavourable) trend in Danish mortality. We shall, furthermore, give data for the most significant causes of death related to the trend mentioned. At last we shall present mortality figures for the other socio-economic variables contributing to a broader view on social class mortality differences.

UNEMPLOYMENT AND CAUSES OF HOSPITALIZATION IN FINNISH MEN

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Aim: To study severe morbidity of unemployed Finnish men.

Material and methods: Hospital discharge register data of 20-64-year-old Finns in 1996 were linked with demographic information from the 1995 Population Census, including the number of months employed in 1995. There were 96329 hospitalizations among male employees. Diagnostic classifications were based on the ICD-10. Poisson regression analysis was used.

Results: Unemployed men had only a slightly higher age-adjusted overall rate of hospitalization as compared with those in stable employment. In certain diagnostic groups, however, differences were clear. The hospitalization rate ratio due to mental disorders was 5.3 (95% CI 5.0-5.7) among men unemployed for 12 months (11 % of hospitalizations), 6.0 (5.6-6.4) among men unemployed for 7-11 months (8 %), and 2.5 (2.4-2.7) among men unemployed for 1-6 months (15 %), when age, education, marital status, and living area were accounted for. Differences were seen also in accidents and poisoning, inflammatory diseases, and gastrointestinal diseases. In cardiovascular disorders and tumors differences between employment categories were small, and in musculoskeletal disorders to the opposite direction: the rate ratio was 0.5 (0.5-0.6) among those unemployed for 12 months in comparison to the stably employed. The results were largely independent of occupational sector.

MALE AND FEMALE ALCOHOL CONSUMPTION AND EARLY EMBRYONAL LOSS

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Aim: We studied the association between female and male alcohol intake and the risk of spontaneous abortion including early pregnancy loss detected by human urinary chorionic gonadotropin (hCG).

Methods: After nation-wide mailing to some 50,000 members of four trade unions, 430 couples with no previous reproductive events were enrolled when birth control was discontinued and followed until a clinically recognised pregnancy, or for six menstrual cycles. Alcohol intake was reported in a monthly questionnaire. The women collected first morning urine specimens daily during 10 days from the first day of bleeding in each menstrual period.

Results: A total of 186 pregnancies occurred; 131 resulted in child birth, and 55 in spontaneous abortion (34 detected by urinary hCG). Women with spontaneous abortion had a higher intake of alcohol and had partners with a higher intake than women who delivered. Depending on the level of exposure and the factors adjusted for, female alcohol intake was associated with two to three times the adjusted odds of spontaneous abortion compared with no intake; male intake with two to more than seven times the adjusted odds. Only the odds ratio for male intake of 10 drinks or more per week compared with no intake was statistically significant.

Conclusion: Both male and female alcohol intake during the week of conception increased the risk of spontaneous abortion, including biochemically detected pregnancy loss.

ALCOHOL IN PREGNANCY AND THE RISK OF SPONTANEOUS ABORTION

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We evaluated the association between alcohol intake during pregnancy and spontaneous abortion in a combined follow-up and register based study.

Subjects and methods: Participants were 25,198 women attending routine antenatal care at our Department from 1989 till 1996. During the first trimester women were asked to fill in two self administered questionnaires, which together with birth registrations provided information on concurrent alcohol intake and other lifestyle factors, maternal characteristics as well as obstetrical risk factors. Questions on alcohol intake provided the basis for categorization into four groups. Information on spontaneous abortions ($n=324$) was obtained from various Danish registers and checked in the medical records.

Results: For women drinking ≥ 5 drinks/week the risk ratio (RR) was 2.72 (95% CI: 1.69-4.37) compared with intake of <1 drink/week. The increase in risk was due to an increased risk during weeks 9-11 (RR=8.05 (4.57-14.17)) whereas no risk was apparent after 12 weeks of gestation. Adjustment for women's smoking habits, caffeine intake, age, prepregnant body mass index, marital status, occupational status, educational level, and parity in either a logistic regression model or a Cox regression model with late entry did not change the conclusion.

Conclusion: Alcohol intake of ≥ 5 drinks/week substantially increased the risk of spontaneous abortion during weeks 9-11 but not later in pregnancy.

IMPACT OF BIRTH OUTCOME ON SUBSEQUENT FERTILITY IN NORWAY, 1967-1997

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Birth outcome influences the continuation rate (probability of another birth). We quantified the impact on continuation rates of experiencing offspring death, birth defects, having children of the same gender, or multiple births. The main objective was to assess the covariate influence of these factors in studies addressing reproductive effects of environmental exposures.

Data were provided in the Medical Birth Registry of Norway. Records including all births (≥ 16 gestational weeks, 1967-97) were established for mothers ($n=618,071$) with a first birth during 1967-92. Parity-specific continuation rates were computed in strata according to maternal reproductive history. Adjusted continuation ratios were estimated in Poisson regression models. Following offspring death, the continuation rate was increased by 29%. The continuation rate among live births was not influenced by a birth defect, but was 12% higher among mothers with 2-6 children of the same gender compared with mothers with daughters and sons. The continuation rate was almost halved after live multiple births compared with live singleton births. Among all 753,402 subsequent births in the population, only small proportions could be attributed to a wish to substitute for a loss (0.8%) or to wish children of both genders (1.7%).

The study factors had marginal total impact on the continuation rate in Norway, being unlikely as confounders in environmental studies even under extreme assumptions. However, previous reproductive outcome may modify environmental exposure effects and should therefore not be disregarded.

FACTORS ASSOCIATED WITH DRUG USE IN EARLY PREGNANCY IN PAROUS SCANDINAVIAN WOMEN

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This study analyses the influence of maternal health and socio-demographic characteristics on the consumption of analgesics/antipyretics, antihistamines, and anti-infective agents in 1945 parous pregnant Scandinavian women.

Data come from the NIH (USA) Study of Successive Small-for-Gestational Age Births. The women at the three study sites (Bergen, Trondheim, and Uppsala) were interviewed about health status and drug use in early second trimester.

No significant association was found between the three drug categories and maternal socio-demographic variables (age, parity, marital status, body weight, smoking, and education or occupation). Significant associations were found between analgesic/antipyretic use and defined symptoms (e.g. "pain") and diseases (e.g., influenza/cold or genitourinary infection).

Unexpectedly, use of analgesic/antipyretic and anti-infective drugs differed significantly between the study sites in what was presumed to be a homogenous study population. As expected, genitourinary and general infections (influenza/cold) were strongly associated with use of anti-infectives, as was the use of antihistamines and nausea or genital infection.

In this pharmacoepidemiologic study, negative maternal health events were the primary reasons for use of analgesics/antipyretics, anti-infectives and/or antihistamines in early pregnancy. Sociobiological factors were not related to the three drug categories when controlled for health conditions. Difference in use of analgesics/antipyretics, anti-infectives and/or antihistamines between study sites in Norway and Sweden may be of methodological or cultural origin, or spurious.

CIGARETTE SMOKING AND THE INCIDENCE OF LUNG CANCER AMONG A COHORT OF YOUNG NORWEGIAN WOMEN

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The relationship between cigarette smoking and lung cancer was examined in the “Women, Lifestyle, and Health Study” cohort. Altogether 106 216 Norwegian women aged 30-49 years participated in the study by returning a mailed questionnaire. The questionnaire concerned information on social conditions, reproductive history, dietary habits, alcohol and coffee consumption, and aspects of living habits, such as OC-use and cigarette smoking. The questionnaire elicited information on current and previous smoking history as well as if the women were living together with a current smoker. The women were followed for the development of lung cancer by linkage of their personal identification number with the information in the Norwegian Cancer Registry. Altogether 68 incident cases of lung cancer were identified during the period from 1991-1997. The overall incidence rate per 100 000 women was 10.7 per year during follow-up. The relative rate for smokers compared with never having smoked was 2.78. The Cox proportional hazards regression model will be used for simultaneous evaluation of the effects of several potential confounders of the association between smoking and the incidence of lung cancer. The age adjusted incidence rates of lung cancer among women who have never smoked, among ex-smokers, and among current smokers will be presented. Statistical trend tests for the number of cigarettes smoked per day (never, 1-14, and >14 cigarettes,), years of smoking, pack-years of smoking, and age started smoking will be calculated and presented.

DOES INCOME INFLUENCE THE SURVIVAL OF CANCER PATIENTS

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All incident testis, breast, colon and melanoma of skin cancers in the period 1985 to 1987 were identified from the Danish Cancer Register and followed up for deaths until the end of 1996. A population based control group was selected among the Danish population on 1st of January 1985. The study group consisted of 15942 (4001 men and 11941 women) cases and 96840 controls (33936 men and 62904 women).

The cancer data was cross-linked to registers in Statistics Denmark, including information on the person's taxable income, marital status and identity of spouse.

Each cancer case was classified into one of 5 income groups formed by the age and sex specific income of controls using the average of the income 2 to 5 years before diagnosis.

Analysis was restricted to cases 30-59 years of age at the time of diagnosis. For women the analyses were stratified on "family" status (living alone or with a partner) and the "family" income was used for those women living with a partner.

Analysis used Kaplan-Meier plots of survival and Poisson regression of death rates.

In general the analyses showed a lower survival for those in the lower income groups and a tendency of better survival with higher income group.

SEROPOSITIVITY TO STIS: COMPARISON OF ESTONIAN AND FINNISH WOMEN

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Clinically often asymptomatic sexually transmitted infections (STIs), human papillomavirus type16 (HPV16), herpes simplex virus type-2 (HSV-2) and *Chlamydia trachomatis* are weaker or stronger risk factors of cervical cancer. The purpose of our study was to compare the seroprevalences of HSV-2, HPV16 and *C. trachomatis* by age between fertile-aged women in Estonia and Finland - countries with similar ethnical background and remarkable difference in cervical cancer and venereal disease incidences.

Sera were donated by pregnant women who attended on screening for congenital diseases in Tallinn, Estonia in 1996-97. From 3,055 stored sera 1,823 belonged to women without previous full-time pregnancies. Among them 1,466 gave birth and sera from 858 women were randomly selected for the present study. 473 consecutive sera from primiparous women, who attended on screening for congenital diseases in 1996 in Helsinki, were identified from the Finnish Maternity Cohort.

For identification of type-specific IgG antibodies against HPV16 or HSV-2 and *C. trachomatis* the standardised enzyme-linked immunosorbent assays and the micro-immunofluorescence method was used, respectively. Overall seroprevalences were estimated, observed percentages of seropositives were plotted against age and a regression line was calculated (ordinary least square) comparatively for both countries.

Overall, seroprevalences for HSV-2, HPV16 and *C. trachomatis* were 11.8%, 26.1% and 20.2% for Estonian; 13.7%, 39.7% and 17.8% for Finnish pregnant women, respectively. The relationship of different seroprevalences and age were similar in both countries.

There are no major differences between seroprevalences and spread of mostly asymptomatic stis between estonian and finnish fertile-aged women.

AN INVESTIGATION OF ETHNICITY AND MAMMOGRAPHIC DENSITIES

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Breast cancer incidence is higher among Caucasian and Hawaiian than among Japanese and Chinese women. Mammographic density, the radiologic appearance of the breast, is related to breast cancer risk. This project explored the hypothesis that women from high risk ethnic groups are more likely to have high levels of densities than women at low breast cancer risk. In a cross-sectional design, 514 pre- and post-menopausal women were recruited at mammography screening clinics and completed a self-administered questionnaire. We used a computerized method to measure the dense and the total breast areas. Student's *t*-tests and multiple linear regression were applied for statistical analysis. Breast size as measured on the mammographic images was 50% larger for Caucasian/Hawaiian than for Japanese/Chinese women. Whereas the mean dense areas were 15% smaller in Japanese/Chinese women than in the Caucasian/Hawaiian group, the percent densities were 20% higher in Japanese/Chinese women. A model containing body mass index, age, menopausal status, and parity explained 40% of the variance in percent densities, but these covariates did not account for all ethnic differences. These results suggest that the area of dense tissue in the breast is smaller in Japanese/Chinese than in Caucasian/Hawaiian women. However, because of their smaller breast size, the percent of the breast occupied by dense tissue in Japanese/Chinese women appears to be greater than in Caucasian/Hawaiian women even after adjustment for covariates.

COORDINATED CERVICAL CANCER SCREENING IN NORWAY. IMPACT OF INVITATION

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A coordinated screening program was introduced in 1995, registering all spontaneous and cytological smears after invitation from women 25 to 69 years. All women without a smear within the preceding three-years are invited. The program doesn't interfere with women complying with the 3 year recommended interval. Two categories of women are thereby invited; those with a smear taken approx 3 years ago, and those without a smear. The aim is to examine if there is a difference in morphology between these categories of women.

Since 1992, every smear in Norway is registered in Cancer Registry using a standardised case-report-form. Among the information stored are personal identification number, age, morphology, and time of smear.

In 1995-97 there were 1 118 868 women aged 25-69 years with either a smear or an invitation, whereof 816 151 women with a smear. This yield a three-year coverage of 72.9 % of women aged 25-69 years. 665 137 invitation were sent, of which 362 420 women had a smear. 191 458 of these women had no previous smear.

The morphology on smears taken for the first time in more than 3 years were 1,45 (1.35-1.55) times more likely to have CIN 2 or CIN 3, and 5.54 (4.19-7.32) times more likely to have invasive cancer than women complying with the recommend 3 year interval. As the morphology distribution of the women complying with the program are similar to those with spontaneous smears, the coordinated program has lead to an earlier diagnosis, and hence better prognosis.

A CANCER REGISTER STUDY AMONG MALE PULP AND PAPER WORKERS

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We have earlier in two case-referent studies found an increased risk of brain tumors in male sulfite and sulfate mill workers respectively. This study used the Swedish Cancer-Environment Registry 6070 which links data from the National Cancer Registry 1971-1990 and employment data from the National Census 1960 and 1970.

Methods. The cumulative cancer incidences 1971-1990 in male pulp and paper mill workers born 1906-1940 were compared with the corresponding incidences for economically active men, also standardized for region. The study was restricted to those working 1960 as well as 1970 in the process and/or with maintenance.

Results.	Pulp mill workers (n=4,183)			Paper mill workers (n=6,102)		
	OBS	SIR	95% CI	OBS	SIR	95% CI
Cancer						
Stomach	59	1.4	1.0-1.7	49	0.9	0.7-1.2
Lung	52	0.9	0.7-1.1	88	1.0	0.8-1.2
Pleural mesotheliomas	7	4.3	1.7-8.8	8	2.5	1.1-5.0
Gliomas	15	2.2	1.3-3.7	13	1.1	0.6-1.9
Lymphomas	22	1.0	0.6-1.5	39	1.2	0.9-1.6
Leukaemias	12	0.7	0.4-1.3	31	1.3	0.9-1.8
Testis	2	1.3	0.2-4.8	7	2.6	1.1-5.4
Male breast	3	4.7	0.97-14	1	0.7	0.0-3.8

Conclusions. Male pulp mill workers had a higher incidence ratio of gliomas compared to other working males, but this was not observed among paper mill workers. The risk of pleural mesotheliomas was increased probably due to asbestos exposure.

BURNOUT IN EMPLOYEES WORKING WITH INFORMATION TECHNOLOGY.

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Burnout was in the eighties a problem mainly associated with workers in social or hospital environments. During the last decade burnout has been a problem in mostly all types of works. Employees (N=152) working with information technology came during 1999 (February to December), to our industrial health care, for a health survey. A validated questionnaire "Burnout" (Pines, et al, 1981) was used. This was translated to Swedish by Norberg & Åkerlund. The response rate was 90 %. As most of the questionnaires were answered anonymously, very few age and sex data exist. However, it is mostly young males, highly educated, who works in the referred companies.

Our results are 1.5 % of burnout, 14.6 % in the risk zone. According to the questionnaire 83.9 % had no signs of burnout.

The corresponding figures for a hospital survey (surgery) in Stockholm (Lindgren & Forsberg, 1997), were 12 % of burnout, 35 % in the risk zone. Most of our companies, working with information technology, have during 1999 started a programme to reduce the stress situation. This means that the figures for year 2000 may be even lower. However, all figures higher than zero must be taken care off. Are certain personalities more vulnerable for burnout?

MORTALITY AMONG FEMALE INDUSTRIAL WORKERS

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Objective: Mortality studies have shown an inverse relation between social position and mortality, more pronounced among men than among women. A study of cancer incidence in the present group showed an excess of lung cancer, which was explained with assumed excessive smoking and an unexplained excess of cancer of corpus uteri. The aim of the present study was to investigate whether the mortality pattern among unskilled female industrial workers in Iceland reflects a social divergence.

Material and methods: The design was that of a retrospective cohort study. The cohort comprised 13 934 women who contributed to a pension fund for industrial workers in Reykjavík during the period 1970-1995. The follow-up time was 1975-1995. Mortality in the cohort was compared with that of the general female population. Standardized mortality ratios and 95% confidence intervals were calculated.

Results: Standardized mortality ratios for all causes of death were 1.15, for all cancers 1.05, lung cancer 1.06, breast cancer 0.95, and other gynecologic cancers 1.20. Standardized mortality ratios were significantly elevated for ischemic heart disease 3.12, and violent deaths 2.31.

Conclusions: The mortality pattern was in accordance with the results of other studies on women in a low social category. Because the group is burdened with various physical and chemical exposures at work, possible hazardous effects of these cannot be excluded.

RELATION BETWEEN HEALTH PROBLEMS AND SICKNESS ABSENCE: GENDER AND AGE DIFFERENCES -A COMPARISON OF LOW-BACK PAIN, PSYCHIATRIC DISORDERS, AND INJURIES

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Women have higher long-term sickness absence rates than men, and higher rates of most health problems. The rates vary with type of problem and diagnosis. The objectives were to examine if equal proportions of women and men had sickness absence when they had a given health problem, and if disparities were diagnosis specific. Prevalence of low-back pain, psychiatric disorders and injuries were assessed in random samples of two populations in Norway. Prevalence of long-term sickness absence for the same diagnostic categories was estimated for the same time period (1990). For injuries the prevalence ratios between a health problem and a sickness absence were equal for women and men. For psychiatric health problems, there was 1.7 more women than men behind each sickness absence. Low-back pain showed an intermediate gender ratio of 1.3, indicating that also for this condition women tended to have less sickness absence. Musculoskeletal and psychiatric health problems (fluctuating, chronic), may result in more gender biased, subjective, and random assessment of work ability than injuries (acute health problem).

INCIDENT THROMBOEMBOLISM IN THE AORTA, RENAL, MESENTERIC, PELVIC OR EXTREMITY ARTERIES AFTER DISCHARGE FROM THE HOSPITAL WITH A DIAGNOSIS OF ATRIAL FIBRILLATION

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Background: The impact of atrial fibrillation on risk of peripheral arterial thromboembolism is not known.

Methods: We analyzed the risk of thromboembolism (embolus and/or thrombosis) in the aorta, renal, mesenteric, pelvic or extremity arteries in patients discharged from Danish hospital with a diagnosis of incident atrial fibrillation relative to the risk of thromboembolism in these vessels in the Danish population. In a random sample of half of the Danish population, 14 917 men and 14 945 women, aged 50-89 years, were identified in the Danish National Hospital Discharge Register with a diagnosis of atrial fibrillation during the period 1980-1993. Patients were followed from diagnosis of atrial fibrillation until the first diagnosis of a thromboembolic event, death or the end of 1993. Risk of a thromboembolic event relative to the risk in the Danish population was analyzed using Poisson regression modeling.

Results: Patients with a hospital diagnosis of atrial fibrillation had an increased risk of thromboembolic events in the aorta, renal, mesenteric, pelvic, or extremity arteries (RR = 4.0; 95% CI, 3.6-4.6 in men and RR = 5.7; 95% CI, 5.1-6.2 in women) compared with the Danish population.

Conclusion: A hospital diagnosis of atrial fibrillation is an important risk factor for peripheral arterial thromboembolic complications.

SEASONAL VARIATION IN INCIDENCE OF ATRIAL FIBRILLATION

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Background: Cardiovascular events like acute myocardial infarction and stroke are seasonal distributed with a peak incidence during the winter months and a nadir during the summer.

Aim: We estimated the seasonal variation of incident atrial fibrillation.

Data source: The Danish National Hospital Discharge Register 1980-93.

Patients and methods: In a random sample of half of the Danish population, 30 330 patients aged 50-89 years were found with a diagnosis of incident atrial fibrillation. To evaluate seasonal distribution, we used a periodic regression model, in which the underlying regression equation had a cosinusoidal form within a 12-month period.

Results: A winter peak and a summer nadir were seen in incidence of atrial fibrillation in both men and women. Stratification by age did not affect seasonal variation.

Conclusions: The incidence of atrial fibrillation is highest during the winter. This may be explained by hemodynamic effects of cold exposure.

SEX DIFFERENCES IN 1-YEAR SURVIVAL AFTER MYOCARDIAL INFARCTION IN SWEDEN. DATA FROM THE NATIONAL AMI REGISTER.

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Women, particularly younger women, hospitalized with acute myocardial infarction (AMI) have poorer prognosis than men. A large proportion of AMI deaths, however, occur in the pre-hospital phase. We set out to analyze sex differences in out-of-hospital, 28-day and 1-year mortality in 353 905 cases of AMI occurring between 1987 and 1995 in Swedish men and women aged 30 to 89. Cases were identified via the national AMI register in Sweden.

Results: One in four AMI patients died before hospitalisation. At all ages, except in patients younger than 50, men had higher pre-hospital mortality. 28-day mortality in hospitalized patients ranged from 6 and 10 per cent in men and women younger than 50 to 43 and 40 per cent, respectively, among the oldest patients. The odds of dying within 28 days for women below 50 years, compared to men, was 1.84 (1.56-2.18) in hospitalized patients, and 1.31 (1.18-1.46) in all AMI patients. Hospitalised women below 70 had higher 28-day mortality than men. In the total AMI population above the age of 65, women had better prognosis with odds ranging from 0.83 to 0.89. After one year, women below 50 still had higher mortality; OR 1.31 (1.18-1.46). At all ages above 65, women had lower 1-year mortality.

Conclusions: Men at all ages, except below 50, have higher pre-hospital mortality than women, whereas hospitalised women below 70 have higher 28-day mortality. In the total AMI population only women below 50 have a consistently worse prognosis than men, whereas, at ages above 65, women have better prognosis.

GEOCODING OF ALL ADDRESSES IN DENMARK GIVES NEW OPPORTUNITIES FOR HIGH QUALITY “SMALL AREA” EPIDEMIOLOGICAL STUDIES

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It has until now been difficult to do epidemiological studies in small geographic areas in Denmark because the smallest administrative unit is the municipality which may have a population of many thousands and an extended area. This problem is about to be solved, which will create a unique opportunity to do epidemiological studies where *the study and reference populations may be selected fully independent of administrative boundaries or other pre-defined divisions of the population*. Results may be visualised in a geographic information system (GIS).

The 275 counties in Denmark has for some years been working on a project which has the aim to geocode all private and business addresses in Denmark. At present, almost all addresses has been geocoded and thus have a x and y co-ordinate indicating its exact geographic position. The information in the address register may be linked with The Central Population Register and health registers using the unique personal identification number (CPR) as the key.

The above tool will, when it is fully developed, make it possible to do studies on possible health effects of known exposures to environmental pollution in a geographic area or to investigate whether claimed accumulation of specific diseases are real. It will also make it possible to visualise for example differences in use of primary health care service between small geographical areas within a municipality.

The Medical Office of Health, Vejle County, Denmark, has made models based on genuine data from the above mentioned registers, which will be presented.

WHAT FRACTION OF THE INCIDENCE VARIATION DOES THIS COVARIATE EXPLAIN?

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The question above may be asked by someone used to regressor x "explaining" some fraction of y -scale variation. It might also be phrased: How far does x enable us to identify high-incidence strata for a focussed preventive effort? The question is subtle because, in incidence contexts, there is no variate y (thus no distribution of y given x) but only a kind of propensity, viz. an x -conditional rate, for each value of x . We look into desirable properties that a fractional measure of explained variation, $R\{x\}$, should have: When the incidence is constant over x , $R\{x\} = 0$. If x_2 is uniquely determined by x_1 , then $R\{x_2\} < R\{x_1\}$, as x_2 cannot supply information not already contained in x_1 . Also, R must be unaffected by a change of time unit (multiplying all rates by a constant). As to the fraction jointly explained by covariates (x, w) , suppose that, regardless of the value of x , w explains the same fraction, r , of the variation that remains unexplained within stratum x : it is then natural to stipulate that the overall fraction unexplained decreases to that same degree, i.e. $1 - R\{(x, w)\} = (1 - R\{x\})(1 - r)$. Such natural desiderata delimit a circumscribed class of usable R -definitions. A less transparent direct approach is that of inquiring by what fraction an x -registry would reduce the cost of an (idealized) preventive programme. Either approach differs in philosophy from the aetiologic fraction and its variants.

ADJUSTMENT OF RELATIVE RISKS

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It is common to approximate relative risks (RR) by odds-ratios (OR). When incidence is high or when disease depends strongly on exposure this approximation is misleading. It has thus become usual to compute both crude OR and RR.

However when adjusting for confounding factors the preferred method is logistic regression and the adjusted measure of association is OR. In a logistic regression model we have $\text{logit}(p) = \log(p/(1-p))$ linear in covariates where p is the probability of disease. The model that leads to RR as risk measure is $\log(p)$ linear in covariates. This is a generalized linear model (GLM) with a log-link and the model may be fitted with software for GLM.

It is the purpose of this talk to point out that adjusted RR's may also be obtained from software for Cox-regression. One specifies the censoring times in Cox-regression program equal to a common values. In the place of event indicator one uses the indicator of disease and covariates are entered in the standard way. Ties handling is specified as the Peto (or the Breslow) method.

Although this leads to valid RR estimates reported inference will be conservative, that is the reported p-values will be too large and the confidence intervals too long. Methods for correcting p-values and confidence intervals will be presented. A two-step procedure that leads to valid inference is also presented.

UNIT FOR DIETARY STUDIES AT THE COPENHAGEN COUNTY CENTRE OF PREVENTIVE MEDICINE - A NEW LARGE DIET DATABASE AVAILABLE FOR NUTRIENT RESEACHERS.

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Diet is considered to have a great impact on the development of chronic diseases such as coronary heart diseases, cancer and obesity. Few prospective studies, however, can combine valid dietary information with register based health-outcomes. With the purpose of creating a large database for dietary information, The Unit for Dietary Studies was established in January 1999. The database is based on dietary data collected at the Copenhagen County Centre of Preventive Medicine (CCCPM) since the beginning of the 1970'ies. The dietary data has been collected using reliable and validated dietary methods and include repeated measurements on a substantial number of individuals. The database comprises nutrient and dietary information on 4,600 persons assessed by either 7-day diet records or dietary history interviews. Additionally, the database comprises food-frequency data on 8,500 persons (26-items FFQ). Finally, the database contains individual data on other life style factors and various background variables. During the follow-up time of approximately 78,000 person-years, 750 deaths have occurred among probands with dietary information, including 125 deaths from AMI, 75 deaths from stroke, and 300 deaths from cancer. In addition, 300 non-fatal cases of AMI and 200 non-fatal cases of strokes have been identified. Thus, already now there are good possibilities to analyse the influence of diet on total and cause specific mortality and on several chronic degenerative diseases with high incidence in the Danish population.

The Unit of Dietary Studies aims at initiating collaboration around diet databases and therefore invite nutrient researchers to use data from our diet database in future research projects. Please, contact us for further information! Please notice our addresses above.

INDUCED CHANGES IN COFFEE CONSUMPTION ALTERS AD LIBITUM DIETARY INTAKE

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Several studies describe a more atherogenic diet for heavy coffee consumers than coffee abstainers, but cannot distinguish whether this reflects different personalities or is an effect of coffee. Our hypothesis was that increased or decreased coffee consumption would lead to opposite changes in food habits.

214 healthy, non-smoking coffee-drinkers were randomised into three groups that were to consume no, 1-3 or 4+ cups of coffee daily for six weeks. The participants were asked to eat as usual. 95 men and 110 women completed a questionnaire regarding self-perceived changes in intake of 12 food categories and 7 drinks (1=decreased intake, 2=unchanged intake, 3=increased intake). The participants were rearranged into groups reflecting changes in coffee intake during the trial (1=abstainers, 2=decreased, 3=unchanged, 4=increased) and associations with changes in food intake analysed by Spearman rank correlation.

Both “Chocolate, sweets”(r = 0.179, p<0.05), “Cakes, sweet biscuits, pastry” (r = 0.306, p<0.001) and “Jam” (r = 0.198, p<0.05) showed positive associations with change in coffee intake.

Negative associations were found for “Dishes with fish” (r = - 0.204, p<0.01) and many of the drinks, including tea, juice, water and soft drinks.

An induced change in coffee intake seemed to alter ad libitum intake of several food items, demonstrating the importance of monitoring behavioural changes in trials. Furthermore, the recognised associations between health behaviours may have physiological explanations.

PSYCHOTROPIC DRUG-USE IN NURSING HOMES – ARE THE DIAGNOSTIC INDICATIONS GOOD ENOUGH?

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Objective - To describe psychotropic drug treatment in nursing home residents by diagnostic indications.

Method - Nursing homes in Bergen, Norway. Descriptive cross sectional study. Data were collected from the medical records and drug dispensing cards, and recorded on individual patient questionnaires.

Main outcome measures - patient data (age, gender, kind of ward), diagnoses (diagnostic indications for psychotropic drugs, main admission diagnoses), drugs (name, dose, scheduled or prn).

Results - Data were gathered from 23 institutions representing 1552 residents (86% of the Bergen nursing home population). 918 (59%) residents used at least one psychotropic drug.

Antidepressants were issued to every third resident, and neuroleptics to every fourth, respectively. Selective serotonin reuptake inhibitors (SSRI) were the psychotropic drugs most commonly prescribed (26% of all psychotropics). Tricyclic antidepressants made up for 19% of all antidepressants. Neuroleptics were the drugs most frequently prescribed for the non-psychotic behaviour symptoms agitation (80%) and restlessness (57%). Every third drug given for restlessness was a benzodiazepine.

Conclusions - Psychotropic drugs were used by two out of three residents, placing the frail olds with complex morbidity, e.g. dementia, at particular risk for adverse drug reactions. Neuroleptics were commonly given for behaviour symptoms, but the efficacy of such treatment has shown to be limited. Both diagnosis and drug treatment for behaviour symptoms should be challenged in the nursing home setting.

WITHDRAWING LONG-TERM DRUG THERAPY AMONG PATIENTS IN GENERAL PRACTICE. A PROSPECTIVE, MULTIPRACTICE STUDY

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Objective- To investigate cessation of long-term drug therapy in general practice.

Methods- A postal inquiry was sent a random sample of 1500 general practitioners (GPs) inviting them to join the study demanding two enclosed questionnaires to be completed, one of which in relation to their next patient in whom they withdrew any long-term drug regimens.

Material- 442 GPs joined the study, 349 of whom recruited one patient according to the inclusion criteria. This presentation is based on data regarding the 349 patients from the 349 GPs.

Results- Prior to drug cessation the patients (mean age 64, 62% females) were taking on average 3.1 different drugs (range 1-12). 71% of all the discontinued medications were cardiovascular drugs. In 48% the medication had been issued for hypertension. Most discontinued regimens had originally been initiated by this doctor (43%), by hospital doctors (23%), or some other physicians (31%). The patients proposed to discontinue the drug in 19%, the GPs in 75%. The GPs judged the decision to stop the treatment as problematic (medical reasons; GP-patient relationship) in 15% of all cases. In 49% of the cases the drug was withdrawn due to lack of present indication, or risk for adverse drug reactions. In 34% the therapy was stepped down before complete withdrawal.

Conclusion- That hypotensive drugs comprised almost half of all drugs that were discontinued, suggest that this treatment relatively often is initiated on questionable indications.

PRESCRIPTION OF ACID SUPPRESSANT DRUGS AND CISAPRIDE IN THE TWO MOST SOUTHERN MUNICIPALITIES IN NORWAY

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Objectives: To describe prescriptions on presumed licensed diagnostic indications of acid suppressant drugs and cisapride for a well defined population, and analyse them with regard to patients characteristics, verified (endoscopic) diagnoses and therapeutic guidelines.

Setting: Lindesnes and Mandal Municipalities (17105 inhabitants).

Design: Retrospective retrieval of all prescriptions issued to the inhabitants in 1994. Search through all the archives of endoscopy units and roentgen laboratories in the region for information on diagnostic procedures and final diagnosis leading on to the prescriptions for these patients.

Results: A total number of 1128 prescriptions (87905 DDDs) were issued to 441 patients (2.6% of the population at risk; mean age 63 years; 55% men), and more commonly for the elderly (for 11.3% of those aged 80 years or more).

Diagnostic procedures were documented for 93.9% of the patients (upper endoscopy in 404, 91.6%). Diagnostic indications for prescribing were reflux oesophagitis (47.9%), duodenal ulcer (23.6%), gastric ulcer (12.5%), and dyspepsia with negative endoscopic findings (12.4%). The drugs issued were H₂-receptor antagonists (58.5%), proton pump inhibitors (31%), and cisapride (10.4%). 8.3% of the patients were long-term users of an NSAID.

Conclusions: This study support that the prevalence of dyspeptic complaints demanding drug treatment increases with increasing patients' age. With minor exceptions we found that the prescribing practice for the different diagnoses is in accordance with established therapeutic guidelines.

INCREASING SOCIO-ECONOMIC GAPS IN CARIES. INCIDENCE DATA AMONG SWEDISH TEENAGERS FROM 12 TO 14 YEARS OF AGE.

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Aim - To assess if structural factors is associated to ongoing caries independently of earlier history of caries.

Subjects and methods - As part of a longitudinal study of preventive measures 3,375 Swedish 12-years-olds were examined for caries and answered a questionnaire during 1995. In 1997 participated 3,109 of the children in a repeated second examination and questionnaire. Baseline caries and incidence was computed. Information were collected from the questionnaire on socio-economic level, ethnicity and residential area. These structural variables influence on baseline caries as well as on 2-year incidence (increment) was analysed by means of Poission regression.

Results - The risk of having caries as 12-year-olds was greater for children from workers homes and immigrants as well as for residents in urban areas. The risk for new caries was most influenced by the earlier caries experience (RR 2.05-3.77). The social gradient was however, still visible when earlier caries experience was accounted for. Thus, the pattern found in the cross-sectional data from 1995 with more caries in youth from workers families prevails in the increment data while it does not for their residence area and ethnicity.

Conclusion - A social gradient prevails for dental caries although Swedish youth dental care has been provided without fees for the last 20 years. Thus, it seems that the preventive methods do not function to equal benefit of all children.

DECREASE IN DENTAL CARIES: TRENDS IN ATTACK DISTRIBUTIONS AND PROGRESSION IN THREE AGE COHORTS IN FINLAND

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A public dental health programme for the reduction of caries was started in Finland in 1972, and a follow-up study has shown a dramatic decline in fillings and extractions in three age cohorts (Virtanen 1998). The purpose of this retrospective cohort study was to analyse trends in attack distributions and caries progression in young subjects and to find whether the observed decline was a lasting one. The subjects, born in the 1960s, 1970s and 1980s (n = 1275) in three rural communities with similar socio-economic backgrounds, were monitored annually from their patient records. Attack distributions (caries, fillings and extractions) were analysed and surface-specific caries progression studied by the Kaplan-Meier techniques. The percentage of caries-free subjects increased significantly towards the younger cohorts at all ages, for instance, from 2% (1960 cohort) to 36% (1980 cohort) at the age of 15. The mean number of carious, filled or extracted permanent teeth per subject decreased gradually, being 9.3, 4.6 and 2.2, respectively, at that age. The differences between the cohorts in the rate and number of restorations on occlusal surfaces of molars, where most occurred, were statistically highly significant for both sexes. The caries decline lasted up to 18 years even in the youngest cohort, although a slight delay in filling placements was observed. A long-term trend from extremely high caries occurrence towards good oral health was observed.

WHAT IS THE PREVALENCE OF OSTEOPOROSIS ACCORDING TO WHO-GUIDELINES? THE NORD-TRØNDELAG HEALTH SURVEY

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In the second Nord-Trøndelag Health Survey, forearm densitometry was performed in 18265 men and women. Invitation to densitometry was based on different clinical and demographic selection criteria. A five-percent random sample of men and women above 19 years old, was also included, altogether 1506 women and 1270 men. The analyses are based on this sample.

WHO-guidelines define female osteoporosis as a value of bone density mass (BMD) 2.5 SD or more below the young adult mean BMD. There are not yet similar guidelines for a definition of male osteoporosis.

According to the definition of osteoporosis, about 4% of women in the age group 50-59 had BMD of distal radius within this limit. However, about 1/3 of the women aged 60-69 and about 2/3 of women above 69 years were osteoporotic (age-adjusted values). Among men, application of the same definition resulted in a prevalence of osteoporosis of 3, 15 and 33 percent in the age groups 50-59, 60-69 and 70+, respectively.

Increased fracture risk is a consequence of osteoporosis. Based on the results to be presented, we will discuss whether the rigid definition of osteoporosis proposed by the WHO-guidelines, is a suitable instrument in assessing fracture risk in women above 60 years.

BONE DENSITY AND THE ASSOCIATION TO REPRODUCTIVE AND LIFESTYLE FACTORS IN EARLY POSTMENOPAUSAL WOMEN.

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As part of the population-based health survey in the county of Nord-Trøndelag, 1995-97, forearm densitometry (SXA-technology) was performed in 18265 men and women. Regions of interest were distal and ultradistal radius. A total of 1652 women (30%) 50-59 years of age, randomly selected for densitometry, were eligible for analysis. Postmenopausal women with no history of hormone replacement therapy (N=893) represented main study subjects.

Lifestyle factors included self-reported smoking, alcohol and daily coffee drinking. Reproductive factors were age at menopause, menarche, parity, oral contraceptives, periods of amenorrhoea and several gynaecological surgical procedures. In addition, general factors, such as age, height and weight were included in the analyses. In both bivariate and multivariate methods, the strongest association to bone mass density (BMD), whatever site of measurement, was found for age, weight, time since menopause and a history of bilateral oophorectomy. Nulliparous women had lower BMD than parous, however, no linear relationship between parity and BMD was found. A history of hysterectomy was positively associated to BMD in multivariate analyses, stronger in ultradistal radius. Alcohol (positive), smoking and coffee (negative) were associated to ultradistal and distal radius BMD, respectively. Strong interaction between smoking and coffee was found in multivariate analyses of distal radius BMD. Estrogen effect and different sensitivity to the hormone in cortical and trabecular bone may explain most of the associations.

FINNISH ADMINISTRATIVE REGISTERS IN STUDYING CHILDHOOD HEALTH

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The increased routine collection of administrative registers has opened new possibilities for their use in health research. In this study the feasibility to create a valid register-based system for long-term health follow-up from birth until childhood was investigated. The 1987 Medical Birth Register was combined with five other national administrative registers containing health information, with regional registers on intellectually disabled and with the education register of the 38 municipalities in the largest province of Finland. Most of the data was collected until the child was seven years of age.

The use of administrative register data was feasible. The use of existing register data saved both time and financial resources compared to other data collection methods. The loss to follow-up was low: only 62 of the 60 254 children in the 1987 cohort were unidentified and 287 emigrated during the follow-up. Most of the health information, e.g. on mortality and on the cumulative incidence of long-term illness, diabetes, epilepsy and asthma, corresponded to the estimates given in other studies. Data on intellectual disabilities, on institutionalised care, on children taken into custody and on vision and hearing disorders were not reliable.

Variation in the content and in the quality of register information, the shortage of non-registered health variables and data protection questions complicate register studies. The risk of data protection violations can be diminished by creating and updating national legislation and ethical guidelines, by limiting the delivery of identifiable data and by introducing advanced encryption methods.

ON THE EPIDEMIOLOGY OF DUPUYTREN'S DISEASE

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Dupuytren's disease is characterized by fibrotic palmar nodules and finger contractures.

Dupuytren's disease is common in the northern parts of Europe. Altogether 244 elderly men were invited for evaluation of clinical manifestations and epidemiologic factors related to Dupuytren's disease. The participants were recruited from a previous study on Dupuytren's disease carried out in 1981/82, as a part of "The Reykjavík Study". Half of the study cohort had signs of Dupuytren's disease in the previous study in 1981/82, while the other half had no signs of the disease. The groups were matched for age and smoking habits. Of the invited participants 193 (79.1%) responded to the invitation. Of 101 men without Dupuytren's disease in the previous study 16 (15.8%) had developed contracted fingers or been operated at the follow-up evaluation. Of 75 men with milder symptoms (nodules/fibrous cords) in 1981/82 a total of 25 (33.3%) had developed contracted fingers ($P=0.007$). Disease manifestation before the age of forty was related to aggressive course ($P<0.001$). Of the Dupuytren's patients 13.9% were heavy drinkers or had been treated for alcoholism compared to 14.3% of the disease free participants. Family history of Dupuytren's disease was common. We conclude that the incidence of Dupuytren's disease is high in elderly men and this condition is progressive in nature. Furthermore, our findings do not support a positive association between alcohol abuse and the presence of Dupuytren's disease.

VIOLENCE AGAINST WOMEN IN DENMARK, PREVALENCE AND HEALTH CONSEQUENCES

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Introduction: In the recent decade, our knowledge about the prevalence of arbitrary violence in different societies has increased considerably. A number of national surveys have analysed the prevalence of violence against women. Globally, violence against women is considered to rank as number six of the most common causes of loss of healthy years among women. However, relatively few studies have analysed the magnitude of health service consumption due to acute and chronic sequels of violence against women. In general there has been little focus upon violence as a possible cause of chronic disorders among women. WHO has recently pointed to the need for improved health services to violated women in order to prevent chronic disorders. The aim of the present study is to add to the knowledge about the health burden of violence against women.

Method: In the Danish national register of hospital discharges all contacts due to violence are classified in accordance with the Nordic Classification of Injuries, and registered by the unique Danish personal number. This offers possibilities, nationally, to analyse specified types of violence and to evaluate person by person the amount of consequent contacts to health services by specific diseases (ICD-10). A total of 20.000 contacts to the national hospitals during 1995-1998 were analysed.

Results: Yearly, 2.8 per 1000 women aged 25-34 years were treated for acute sequels to violence, and 1.9 per 1000 for domestic violence. Significantly higher consumption of health services was found in the group of violated women than in the total female population. This was mainly due to psychiatric disorders and gynecologic diseases. The rate of induced abortions was higher among victims of violence.

Conclusion: The Nordic Classification of Injuries used in the registration of contacts to the national health care system offers unique possibilities to analyse the impact of violence on health. By identifying victims of violence in the Danish Register of Hospital Discharges it was possible to compare contacts among victims and all women in a four-year period, and thus to estimate the impact of violence upon health. Violated women present serious chronic health problems.

EFFECT OF TOBACCO, ALCOHOL AND OTHER SUBSTANCES ON MORTALITY IN DENMARK. VARIATION WITH SEX AND REGION IN 25 YEARS 1973-1997

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Deaths related to tobacco, alcohol and other substances are defined from the Cause of Death Register. In absolute numbers most deaths are related to tobacco and the smallest amount to other substances. Deaths related to alcohol and other substances appear in younger age groups than the tobacco related does. In some age groups the tobacco related deaths comprise 30% of all deaths and in some age groups the alcohol related comprise 20% of all deaths. In the 1990s 12-14 years of life are lost for each of ca 11.000 tobacco related deaths. For the alcohol related deaths 20 years of life are lost for about 2500 deaths. For other substances men lose 36 years per death and women 30 years for about 500 deaths. The standardised lifetime risk of dying from tobacco related causes for men is $\frac{1}{4}$ in the whole period. For women there is a marked increase. The standardised lifetime risk of dying from alcohol and other substances is nearly constant in the period. The risk is higher in Copenhagen than in the other part of Denmark. More than half of the men in Copenhagen can expect to die from a cause related to tobacco, alcohol or other substances. The figures will be compared to figures from other countries and figures calculated with other methods.

MORTALITY AFTER TOTAL HIP REPLACEMENT. 10 YEARS FOLLOW-UP OF 39543 PATIENTS IN THE NORWEGIAN ARTHROPLASTY REGISTER.

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We have studied the mortality for patients after an operation with a total hip replacement (THR). Survival curves for THR patients were compared with survival curves for the Norwegian population with a similar composition of gender, age and year of birth. To compare the mortality for the THR patients with the Norwegian population (with a similar composition) a standardised mortality ration (SMR) was used. Further we have used a regression model (Cox) to compare the SMR's for different patient categories.

Of the 39543 patients registered with a primary THR in the period 1987 to 1997 6201 were dead. 323 of these died within the first 60 postoperative days. THR patients had an increased mortality the first 60 postoperative days, compared to the population (SMR=1.39), while they had a reduced mortality for the complete follow-up (SMR=0.81). For the complete follow-up the mortality (SMR) was highest for young THR patients. THR patients with rheumatoid arthritis, femur fracture and the diagnosis group "others" had, for the complete follow-up, an increased mortality compared to THR patients with primary osteoarthritis.

We have found an increased mortality the first 60 postoperative days after a THR for all patient categories. The mortality for the complete follow-up was reduced for patients with a THR compared to the Norwegian population with a similar composition of gender, age and year of birth.

SOCIAL DIFFERENCES IN HEALTH CARE CONSUMPTION

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The total health care consumption in the Region of Skåne has been tabulated. It includes all in-patient and outpatient contacts during 1998. All contacts have a person number written in cipher code and could therefore be linked to individuals. The costs of care were calculated for every contact and also gave the total cost for every individual. To this register a population register of the inhabitants in the region, 1 117 000 persons, was linked. Sociodemographic and socioeconomic data for every individual were added to the register with information of sex, age, place of living, date of death (if any), marital status, country of birth, status of employment, income, education and type of dwelling.

For patients with certain chronic diseases the file also included data which made it possible to investigate the pattern of contacts over time.

The specific purpose of this data set is to arrange material for the allocation of resources to the different districts in the region, depending on the population structure in each district. But the material can also be analysed in order to give information of differences in health care consumption and indirect of health care needs in the sociodemographic and socioeconomic groups.

For patients with specific diseases it is also possible to study the outcome related to different hospitals. This is done with a multi-level approach (separately reported).

PHYSICAL ACTIVITY AND BLOOD PRESSURE: IS THERE A U-SHAPED RELATIONSHIP? THE TROMSØ STUDY

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Background: A possible undefined upper limit has been suggested of the dose-response curve between physical activity and cardiovascular risk factors. We examined the effect of physical activity on blood pressure.

Methods: In a population-based study, 5220 men and 5869 women, aged 20-49 years at entry, took part in 2 surveys (1979-80, 1986-87) with assessments of leisure time activity and blood pressure. Our study is restricted to 3602 subjects who sustained their physical activity at both screenings. In the analyses, adjustments were made for age, smoking, coffee and fat intake.

Results: Overall, there was a general decrease in systolic and diastolic blood pressure with increasing level of physical activity. When stratifying by age, the same decrease was observed among the younger ones (20-39 years). However, among men aged 40-49 years, there was a U-shaped relationship, as no decrease was found in systolic blood pressure among vigorously active subjects. Mean values for systolic blood decreased from 132.7 mmHg among sedentary subjects, to 131.5 mmHg among regular active ones, and finally increased to 133.5 mmHg among those performing hard activity. Similar, but less marked findings were seen among women in the same age group. This age-related U-shaped relationship was not observed for diastolic blood pressure.

Conclusion: For some risk factors there may be a threshold effect or a U-shaped relationship to physical activity.

MORTALITY AMONG MALE AND FEMALE SMOKERS IN SWEDEN

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Background: It is still unclear if men and women are equally susceptible to the hazards of tobacco smoking. Studies with a representative selection of national populations are scarce. The objective of this study was to examine smoking-related mortality among men and women in Sweden.

Methods: In 1963 a smoking habit survey was conducted among 55,930 individuals, aged 18-69 years, randomly selected from the 1960 Swedish census population. Cause of death has successively been collected for the deceased through 1996.

Results: After adjustment for age and place of residence positive associations were found between cigarette smoking and mortality from ischaemic heart disease, aortic aneurysm, bronchitis and emphysema, cancer of the lung, upper aerodigestive sites, bladder, pancreas in both men and women, but not for cerebrovascular disease. When the effect of amount and duration of the cigarette consumption was considered no gender differential in relative mortality rates was observed for any of the studied diseases.

Conclusions: Women and men seem equally susceptible to the hazards of smoking, when the differences in smoking characteristics between the genders are accounted for.

Keywords: Tobacco, smoking characteristics, gender difference, cancer, cardiovascular mortality, respiratory mortality

MORTALITY IN RELATION TO EARLY RETIREMENT IN DENMARK: A POPULATION BASED STUDY

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Objectives: To examine whether health is an important predictor of retirement in Denmark or whether retirement leads to negative changes in health. Mortality for persons using two publicly financed retirement schemes, Early Retirement Pension (Førtidspension) and Post Employment Wage (Efterløn), was investigated. The Early Retirement Pension could be gained mainly on health reasons, while the Post Employment Wage could be gained by anyone insured for a long time in an unemployment insurance fund.

Design: Data from statistical registers on employment and retirement each year in the period 1986-1996 was linked to the National Death Register 1986-1996.

Setting and subjects: The population of Denmark, born in 1926-1936.

Main outcome measures: Standardised mortality ratios and relative risks of death by time since retirement.

Results: Early Retirement Pensioners had a high mortality immediately after retirement. In Post Employment Wage earners the relative risk of death increased with time since retirement.

Conclusion: The Early Retirement Pension is mostly used by persons with a high risk of death. The increasing mortality with time since retirement of the Post Employment Wage earners is consistent with an adverse effect on health of retirement itself, but may also be due to a ceased health selection after retirement.

ALLERGIC DISORDERS IN AN AREA POLLUTED BY NICKEL REFINING. A NORWEGIAN-RUSSIAN POPULATION-BASED STUDY.

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Air pollution is a matter of great concern in the Norwegian-Russian border area owing to large emissions of nickel and sulphur dioxide (SO₂) from nickel refineries in the Russian cities of Nikel and Zapolyarny. Our study was undertaken to investigate possible health effects from the pollution on both sides of the border, knowing that the exposure is much higher on the Russian side.

Cross-sectional studies with a common protocol were implemented among adults aged 18-69 years in Sør-Varanger (Norway, n=3671), Nikel (n=1788) and Zapolyarny (n=1943) in 1994/95. The screening included a questionnaire, spirometry, urine sampling, blood sampling and nickel allergy testing. S-Phadiatop®, a screening test for IgE-mediated allergy, was measured in 2356 blood samples from Sør-Varanger and 708 from Nikel/Zapolyarny.

Phadiatop results and self-reported lifetime incidences of allergic diseases were distributed as follows;

[Sør-Varanger (reference) vs. Nikel/Zapolyarny (RR, 95% CI, adjusted for sex and age)]:

Positive Phadiatop	20.7% vs. 27.5%	RR=1.33 (1.16-1.53)
Asthma	8.4% vs. 8.6%	RR=1.02 (0.87-1.19)
Hayfever	28.4% vs. 26.1%	RR=0.85 (0.80-0.92)
Atopic dermatitis	16.8% vs. 11.5%	RR=0.66 (0.59-0.74)

Despite the extensive SO₂-pollution on the Russian side, self-reported asthma was evenly distributed in Norway and Russia. Although Norwegians reported hayfever and atopic dermatitis more often, atopy as diagnosed by Phadiatop was more frequent in Russia. No strong conclusions could be made about the air pollution as a possible risk factor for allergic disease.

COMORBIDITY FOR IRRITABLE BOWEL SYNDROME: A TWIN STUDY

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Background: Little is known about the etiology of Irritable Bowel Syndrome. A higher prevalence of various extra-intestinal manifestations such as bladder dysfunction, fibromyalgia, pain, depression and anxiety has been observed in cases with Irritable Bowel Syndrome than in controls. Thus, we sought to evaluate further the associations of Irritable Bowel Syndrome with a number of common, complex disorders, in both a case-control and a co-twin control design.

Methods: A sample of 850 pairs of twins, age 18-85, was randomly sampled from the population based Swedish Twin Registry. A total of 1,321 individuals (78%) participated in a computer assisted telephone interview, which included background information and diagnostic questions for most common complex disorders. Through a diagnostic algorithm, 72 unrelated cases of Irritable Bowel Syndrome and 216 age and gender matched controls were identified for case control analyses. Fifty-eight twin pairs discordant for IBS were evaluated in co-twin control analyses.

Results: The expected association with fibromyalgia was not confirmed. The magnitude of most associations decreased in the co-twin control analyses. The only factor maintaining significance in both case-control and co-twin analyses were renal problems.

Conclusions: Comparisons of co-twin to case-control findings suggest that the associations found in case-control analyses are mediated to a certain extent by genetic and familial-environmental influences in common to the disorders.

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