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THE ISRAELI CHERNOBYL HEALTH EFFECTS STUDY (ICHES)

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The explosion of the nuclear power plant in Chernobyl in 1986 is considered one of the biggest nuclear catastrophes ever to have happened. More than 400,000 immigrants from the former USSR arrived in Israel since 1989, among them some 50,000 from areas with possible radiation exposure. The ICHES study includes all immigrants from 14 regions which showed signs of radiation exposure who responded to our call to register and provided detailed exposure and health data. Two control groups were established to control for selection bias and to serve as a baseline. Among the first 2,000 respondents a high incidence rate of self-reported malignant and benign tumors diagnosed after 1986 is evident. This increased rate is not limited to known radiation exposed tumors.

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ON THE ESTIMATION OF LONG-TERM RELATIVE SURVIVAL RATES

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The relative survival curve should ideally give an estimate of cancer patient survival where the lowering effect of causes other than the cancer of the patients has been eliminated. However, for age-heterogeneous patient groups this curve tends to increase due to selection operating among the patients. The elimination of selection bias can be achieved by weighting the age-specific curves. Statistical modelling is very important for the oldest age groups in order to control random variation. Several examples are given based on real patient data.

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AN EPIDEMIOLOGIC STUDY ON LUNG CANCER
IN TURKEY: EVALUATION OF 4508 CASES.
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The material originates from the period 1977-1992. 4508 cases of lung cancer -3978 males (88.24 %) and 530 females (11.76), mean age 55 years (20-90)- were evaluated as to: 1.Diagnostic source 2.Histopathologic types 3.Age and sex 4.Site of tumor 5.Differentiation 6.Cigarette smoking. Cigarette smoking was found to be a striking etiologic factor as were environmental and occupational conditions. The tumor occurred preferentially in younger individuals (before the 4th decade) and was detected in advanced stages. Upper lobes were the most frequent site of tumor. Squamous cell carcinoma overweighed regardless of sex and age, as did adenocarcinoma in females. Acinary adenocarcinoma and adenosquamous cancers were predominantly of high grade. Squamous and small cell carcinomas were significantly linked to nicotine abuse. Obviously, environmental and occupational factors are adopting increasingly carcinogenic properties, and smoking habits lead to rising incidence of lung cancer. Thus, combatting these factors and intense informational work, especially for the youth, becomes mandatory.

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DO WE KNOW THE COSTS INVOLVED IN THE PREPARATION AND ACTIVATION OF A NEW TRIAL IN THE HOSPITAL ?

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The decision to participate, or not, in a specific trial is in the majority of hospitals determined by the scientific interest and the feasibility to perform the trial along the guidelines described in the protocol. Although participation in a trial may have substantial resource implications for the hospital, very often little information is available on this issue.

This investigation aims to identify the hospital cost of trial participation, which estimates are based on the actual trial participation process at the Oncology Department of the University Hospital in Leuven. By detailing each of the activities associated with trial participation, all of the equipment, people and material contributing to clinical trials can be identified. In assessing the costs of trial participation, all, but only, the additional resources required for the trial have been incorporated.

It is estimated that the initial expenses to establish a trial office (i.e. purchase of equipment) amount to almost 30,000 ECU. This is a fixed cost for the hospital, that does not depend on the number of trials. These equipment costs are not only made for the purpose of trial preparation, but are likewise necessary for the trial implementation and follow-up. Neither does it include the wage cost for the data manager, and/or research nurse since these costs will be attributed to each of the activities involved in the trial participation (preparation - implementation - follow-up).

The "variable" costs of trial preparation are estimated at over 2500 ECU per initiated trial. This is the cost for the workload (by medical doctors, nurses, data managers, ...) and materials (phone calls, copies, ...) that are required for the trial preparation process only. Ongoing research is dealing with the variable costs (i.e. material and workload) of trial implementation and follow-up and, in a first stage, will focus on the cost of Phase I-II trial patients.

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CANCER IN SWEDEN DERIVED FROM FALLOUT AFTER THE CHERNOBYL ACCIDENT

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Thyroid uptake of ¹³¹I was measured in 130 volunteers following the nuclear power plant accident at Chernobyl in April 1986. Ninety of these volunteers had been travelling in different parts of eastern Europe at the time of or immediately after the accident while 40 persons were permanently in Sweden. Also, 28 additional healthy volunteers, living in Sweden, were chosen for a longterm follow-up of the time-course of ¹³⁴Cs and ¹³⁷Cs whole body uptake. The highest levels of ¹³¹I were found in persons having visited Poland (mean value 3.27 kBq 3.68 SD, extrapolated to April 27) while persons that stayed in other parts of eastern or northern Europe showed significantly lower levels (p<0.01). The total deposition of cesium radionuclides over Sweden was about 4.25 PBq, but whole body burdens were barely detectable immediately after the accident. They increased gradually throughout the observed period. After twelve months ten farmers from a high fallout area in central Sweden had reached mean values of 5.17 kBq (3.18 SD) of ¹³⁴Cs and ¹³⁷Cs. In other studies, a mean value of 9 kBq in this area was found, yielding an internal radiation dose of 0.3 mSv/year. Four non-farmers from the Stockholm area showed significantly lower levels, (0.74 kBq ±0.17 ;, p<0.05).

The collective radiation dose to the 8 million Swedes as a result of the fallout is estimated to be 6000 man-Sv between 1986 and 2036, corresponding to about 300 extra tumors over and above the normal incidence of 2 million tumors during the same time. The reduction in collective dose achieved by food hygiene and other measures, at a price of about 75 mill. USD, was about 50 man-Sv, corresponding to almost 15 million USD per cancer case prevented.

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RISK FOR MEDICAL PERSONNEL HANDLING ANTINEOPLASTIC DRUGS

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The therapeutic use of antineoplastic drugs have unfortunately increased throughout the world together with the growing problem of cancer. Antineoplastic drugs are categorized in Group I, known carcinogenes and it is essential to protect all personnel handling those drugs bearing in mind the long-term long level exposure which is the case with nurses in oncology departments. We have studied 73 shift nurses exposed to antineoplastic drugs. The control group consisted of 42 shift nurses who to our knowledge were never exposed to genotoxic agents in their working environment and were nonsmokers. None of the exposed nurses were working in the biological safety cabinets, but were using personnel protective devices. Results analysed by Mann Whitney Wilcoxon test showed that exposed nurses had significantly increased number of sister chromatid exchange (SCE) (P<0.0001) compared to controls. Then we analysed if smoking habit had influenced the results and found that number of SCE did not differ significantly between exposed smokers and nonsmokers. The SCE analysis were carried out on 50 metaphases per subject.