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EEC Concerted Action Project – European Congenital Anomalies and Twins (Eurocat)

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The European Economic Community (EEC) is promoting a network of locally funded centers in the nine EEC countries, surveying a total of approximately 140,800 births per year for selected congenital malformations and multiple births. The objectives and aims of the study are explained and some of the methods to set guidelines detailed.

Key words: Twin registers, Congenital malformations, European Economic Community

INTRODUCTION

In the early 1970s the Committee of Medical Research of the European Economic Community (EEC) decided to conduct some medical research by "concerted action projects." These were to be funded from the research budgets within each member country, but coordination of them was to be funded by the EEC. Several working groups were set up to suggest topics for concerted action, and the Special Advisory Working Group on Epidemiology, Biostatistics and Clinical Trials put forward plans for a study on the registration of congenital abnormalities in twins. This study was coordinated by an epidemiologist and supporting staff.

OBJECTIVES

A panel of expert advisers drawn from nine countries defined the objectives:

1. To measure the incidence of specific malformations and to study differences in time and between countries;
2. To investigate the etiology of rare malformations;
3. To study survival patterns of malformed children in different countries;
4. To provide reliable data for genetic counselling;
5. To promote rapid collection of data for "early warning" monitoring;
6. To investigate possible connections between malformations and childhood cancers.

It was proposed that the study should at first be confined to parts of each country where expertise already existed and a population in a defined geographic area could be studied.

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First, a feasibility study was set up to investigate the studies already going on in each country – to define the criteria by which the individual studies could be made comparable, and to lay down criteria for admission to the study. This feasibility study showed great differences between the existing studies in various countries, and in order to make existing studies comparable some specific aims were put forward. Each area should attempt to achieve these aims, or to show why they were not reached in the event of failure. After a review of the centers meeting these standards, a number of areas were selected (Table) that surveyed a total of approximately 140,800 births per year.

It is intended that each study area will serve as a model for how internationally comparable methods could be achieved in each country.

SPECIFIC AIMS

The broad outline of aims is as follows:

1. Abnormalities in all fetuses from spontaneous abortions and from therapeutic abortions should be studied. Particular study should be made of mid-trimester spontaneous abortions and where termination of pregnancy is carried out because of diagnosed or suspected abnormality of the fetus.
2. All children born alive or dead should be examined for anatomical and biochemical abnormalities.
3. Children which die after birth should be examined for abnormalities.
4. A proper registry of abnormal live children should be maintained to allow follow-up for studies of prevalence of handicap and to allow family studies so that proper measurement of risks can be available for genetic counseling. Geographic studies should be carried out to monitor the population and to detect possible environmental effects. Studies of birth cohorts should be carried out to record malformations found after birth and death.
5. Abnormalities to be studied initially are:
   a. Anomalies of the central nervous system;
   b. Anomalies of the limbs;
   c. Down syndrome;
   d. Anomalies of the kidney parenchyma;
   e. Facial clefts;
   f. Eye malformations;
   g. Ano-rectal atresia and imperforation;
   h. Multiple malformations;
   i. Cardiac malformations;
   j. Hypothyroidism.

METHODS

In order to standardize the methods, and thus make the observations comparable between the countries, working parties will be set up in several areas to establish guidelines. These will promote the development of the following skills:

1. Making reliable diagnosis;
2. Pediatric pathology;
3. Biochemistry of fetus and newborn;
4. Maintenance of person registers and their uses;

TABLE. Centers Included in the First Phase of Eurocat and Approximate Annual Births

Belgium		Germany	
W. Flanders (Bruges)	3,000	Frankfurt	10,000
Hainaut (Charleroi)	14,000	Italy	
Denmark		Lazio (Rome)	6,500
Funen (Odense)	6,000	Firenze (Pisa)	4,000
Eire		Luxembourg	4,000
Greater Dublin	10,000	Netherlands	
Galway	5,000	Groningen	10,000
France		United Kingdom	
Yvelines (West Suburban Paris)	17,000	Northern Ireland (Belfast)	26,000
		Liverpool	10,000
NW Finistere (Morlaix)	1,300	Greater Glasgow	12,000
Total 140,800			

5. Follow-up field work for health care surveys;
6. Provide working guidelines for genetic counsellors.

The following actual steps are already being taken:

1. Coding:
   a. Develop a five-digit extension of the ninth revision of the International Classification of Disease for recording the congenital malformations;
   b. Develop a sixth-digit extension for identification of syndromes;
   c. Develop a single independent digit for classification of the type of inheritance (available from the senior author).
2. Working party on diagnosis of zygosity at multiple births.

Other projects to aid diagnosis are:

1. To compare children with particular malformations using photographs and drawings;
2. Compilation of a book to assist nurses, midwives, and medical staff in recognizing malformations.

The working party on diagnosing zygosity in multiple births reached the following conclusions:

1. Zygosity should be determined by using membranes and blood groups;
2. A short guide on how to examine the placenta and membranes should be prepared for obstetricians and midwives;
3. Proformas for recording vital biological and zygosity data will be provided;
4. Tables showing relative probabilities of twins being DZ or MZ, according to their maternal parameters and genetic markers, will be provided together with directions for use in each administrative region of the nine EEC countries.

An operational study is being undertaken into the most economical and efficient way of establishing twin registries from birth. If this proves feasible, then future coordination of twin registers is likely to become a study in its own right, as well as providing the basis for attempts to distinguish environmentally induced teratogenic effects from those due to genetic influences.