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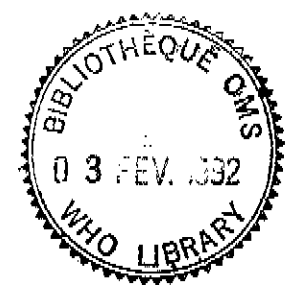
CONSULTATION ON FIELD STUDIES FOR RISK FACTOR ASSESSMENT

**CONSULTATION ON FIELD STUDIES FOR RISK FACTOR ASSESSMENT**

**Report on a WHO Consultation**

**Bristol, United Kingdom  
29 October - 1 November 1985**

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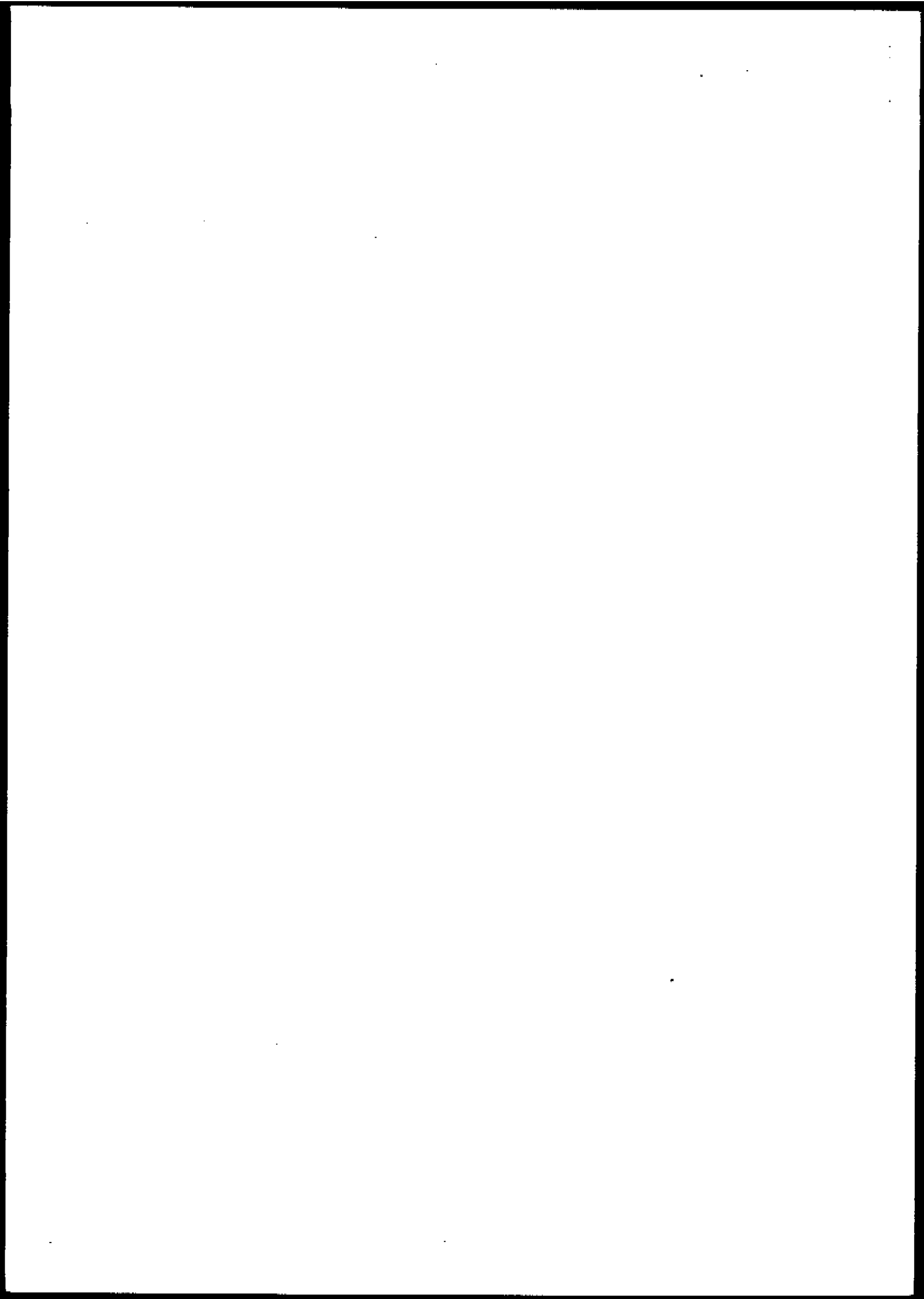
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## 1. Introduction

Following the Moscow 1985 Consultation on long-term cohort studies for risk factor assessment, the WHO Regional Office for Europe held a second consultation in Bristol in the United Kingdom between 29 October and 1 November 1985.

The Moscow consultation had been attended by 11 temporary advisers who had experience of cohort studies in their own countries. As a result of that consultation, a draft outline of a design had been agreed. The aim of the consultation in Bristol was to develop some of the recommendations and ideas of the Moscow meeting and to discuss details of the protocol for longitudinal cohort studies.

The Bristol meeting was attended by participants from Greece, Italy, Norway, the United Kingdom and the USSR (listed in Annex 1). The Regional Office for Europe was represented by Dr A. Romensky.

The consultation was opened by Dr A. Romensky, who conveyed to the group the greetings of the Regional Director for Europe, Dr J.E. Asvall. Participants were welcomed by Professor David Baum, Professor of Child Health at the University of Bristol.

Dr Jean Golding, United Kingdom, was elected as Chairman, and Dr Mary Haslum, United Kingdom, as Rapporteur.

Many European countries have expressed an interest in this investigation. The aim of the consultation therefore is to design a protocol suitable for use in any member country.

## 2. Aims of the study

The Bristol meeting had, as a remit, the discussion of the detail of the cohort studies and did not address or challenge the major objectives that had been agreed at Moscow. These therefore, continue to be:

a) to determine the social, psychosocial, biological or environmental factors associated with causes of morbidity in the infant and child (including low birthweight) and to assess whether the same factors are predictive to a similar degree in each country;

b) to monitor the overall prevalence of chronic illness, impairment, disability and handicap in the different countries of Europe.

Within these objectives are a large number of specific research questions which may be addressed. Some of these are listed below:

1. Is maternal stress during pregnancy related to a poor outcome? In particular, does the measure of anxiety using a life-events scale predict spontaneous onset of pre-term labour?
2. Apart from stress, what other social, psychosocial or environmental characteristics are significantly associated with the onset of pre-term labour?
3. Is maternal stress in pregnancy related to poor neonatal temperament, to poor mother-child interaction or difficulty in establishing breast feeding?
4. What are the social, psychosocial or environmental factors related to fetal growth retardation?
5. Does the neonatal temperament differ between the infants who had been growth retarded, those delivered pre-term and the rest of the population?
6. Are maternal attitudes to health care associated with adverse outcomes of pregnancy or with neonatal problems?

7. In what ways do surviving infants of low birthweight differ from the rest of the population in their health and development? Are there differences between infants who are at low birthweight because they were growth retarded from those who were low birthweight because delivered pre-term?
8. What social, psychosocial or environmental factors are associated with severe maternal pre-eclampsia in pregnancy?
9. What are the effects on the developing child of a history of severe maternal pre-eclampsia? In particular, does the child himself have a high blood pressure?
10. How does the social support system influence the health of the mother? Is lack of strong social support linked with maternal pre-eclampsia, low birthweight, pre-term delivery, neonatal or post-neonatal morbidity?
11. What social, environmental or biological factors are associated with the development of obesity of the child?
12. What is the prevalence of acute and chronic lower respiratory disease in childhood? Does this vary from country to country? What associations are there with maternal smoking in pregnancy, parental smoking in infancy, neonatal respiratory distress, or type of housing?
13. Do the prevalence rates of impairment, disability and handicap in childhood vary with different social circumstances of the parents?
14. Are there any indications of adverse effects of ultrasound, amniocentesis or other obstetrical or neonatal diagnostic or treatment interventions on the health of the child?
15. Are children who are living with a single parent at decreased risk of being healthy and developing normally? Can this be statistically "explained" by factors such as stress and environmental conditions?
16. What are the social, psychosocial or environmental factors that best predict the ultimate well-being of the child?
17. Is there any detectable positive or negative effects on the health and development of the child if he/she is left in a creche in early infancy while his/her mother is at work?
18. What is the incidence of sudden unexpected infant death in the different countries of Europe?

### 3. Study design

In order to collect information in a prospective manner, and to look therefore at the antecedents of perinatal factors, it is important that the study is started during pregnancy. After considerable discussion, the Bristol meeting agreed that the contact with the mother should be at around 20 weeks of gestation. This timing would be the latest on which to obtain data prior to the onset of labour of all infants who might be in the survey. It was also considered to be the optimum time to administer the psycho-social stress schedules, and hopefully would ensure that most women attending for antenatal care were included. It was recognized that a number of countries (e.g. Greece) may find difficulty in contacting the women before delivery, but wherever possible, it should be seen as an essential part of this cohort study.

The cohort study should comprise all births in one or more defined geographic populations. Both livebirths and fetal deaths occurring after 20 weeks gestation should be included. At the Moscow meeting, it was suggested that a minimum of 5 000 births would be required in each country, but the Bristol meeting thought that this should be considered further at the next meeting.

Ideally, the study area should comprise both urban and rural components. It was also recommended that the study areas should have a reasonably steady population, with little migration into or out of the areas. For those infants who are lost to follow-up, certain minimum information should be collected, such as whether alive at birth, and if alive whether suffering from any impairment, disability or chronic disease. Ideally when the child was traced to other areas, health workers there should be asked to administer and complete the study questionnaires.

When a fetus is still born or an infant or child has died, it is important that the reasons for the death be obtained. Ideally, a paediatric pathologist should be asked to undertake all stillbirth, infant and childhood necropsies in the study area for the duration of the project. In the absence of a post-mortem, the circumstances surrounding each death should be elicited together with hospital findings (where relevant). A short questionnaire to collect information from clinicians and pathologists was considered at the Bristol consultation. There was some discussion as to whether one should not identify the births and deaths from vital records, but it was pointed out that where detailed studies had been carried out in many parts of Europe (e.g. Northern Ireland, the Netherlands, Greece), from 10% to 30% of deaths were found to have been omitted from the vital records. Therefore it would be most important in each area, to independently ascertain the stillbirths and deaths and obtain as much information as possible on each. In addition, however, it would be valuable to link this information with copies of the vital record certificates.

The importance of standardization of methodology was also recognized. Thus, although the actual expertise of the persons responsible for interviewing the mother and abstracting information from the notes might vary, it would be important nevertheless that these persons be trained in interviewing techniques as well as able to undertake neurodevelopmental and other assessments. In each country maternal self-completion questionnaires should be answered by the mother and only if she specifically requests assistance should the study personnel get involved.

In principle, the questions asked in each country should be identical. There are various areas where such comparability would be meaningless (e.g. social and educational classifications). It had been agreed that there should be a minimum data set which each country should collect and a number of options thereafter which countries could implement if they wished. Nevertheless, it was agreed at the Bristol meeting that great care should be taken over the formulation of questions in order to make them as clear and unambiguous as possible, and that every effort should be made to restrict the size of the questionnaires.

In order to ensure complete comparability of the analyses, the consultation recognized the potential value of a central survey office. Such an office would receive copies of the data as they were generated. It would be responsible for editing and cleaning the data using standard procedures and would then carry out identical analyses on each set of data, feeding the results back to the individual countries and preparing results for joint publication. It was noted, however that WHO had no funds for such an undertaking and that it could only take place if extra funding could be obtained, possibly through collaborating centres.

If such a funding were to be obtained, individual countries would still have the opportunity to analyse their own data in whatever way they saw fit. If the central survey office did not materialize, then each country would be responsible for producing the standard tabulations and analyses necessary for a joint report.

#### 4. Confidentiality

There are legal requirements concerning confidentiality and informed consent in a number of countries. It will be the responsibility of the study coordinator in each country to respect their particular legal requirements concerning informed consent and confidentiality and to organize the study within the law.

On the other hand, there is the problem of confidential ethics within the study itself. We are asking the mother to divulge sensitive information to the research team. It is most important that this information is kept confidential and never divulged to anyone who knows the mother. In particular it is vital that her own health workers are not informed.

When the results are prepared data should never be produced that would enable a particular mother to be identified. Nevertheless, it is important that results should be communicated to both the mothers and the research workers, not only in order to ensure their full cooperation over a prolonged period of time, but also because this is the least we can do to show our appreciation of their cooperation.

## 5. Protocol design

It is proposed that it be mandatory to collect specified information at the following times: (a) during pregnancy at about 20 weeks gestation; (b) 2-3 days post-partum; (c) when the child is 6 months of age; (d) at 12 months of age; (e) at 3 years of age; (f) at 7 years of age; and possibly thereafter at 11 and 15. Participants, if they wish, may contact the mother and child more frequently, but such information would only be included in the local analyses.

The first survey at 20 weeks gestation should include information on past obstetric history of the mother, her contraceptive practices, whether this pregnancy had been planned or unplanned and whether it was wanted or not. Other obstetric and biological information to be collected is listed in Annex 3. At this interview, it is important to measure psycho-social stress, by means of a life-events questionnaire, to assess the attitudes towards health care during pregnancy and breast-feeding, to assess the social support that the mother feels that she has, as well as standard questions on the environment and her educational and social background.

Two or three days post-partum, details will be collected concerning the obstetric history of pregnancy, the medical history of the mother, drugs she has taken and the history of labour and delivery. In addition, information on the child during the first 3 days will be collected. At the same time the mother will be given a psycho-social life-events questionnaire and a number of attitudes of the mother to her obstetric history during this pregnancy will be recorded.

At 6 months the mother will be interviewed to ascertain details of feeding, social situation, major signs and symptoms in the child, details of hospital in-patient and out-patient attendance. The interviewer will measure the length and weight of the infant and carry out simple tests of development. The mother herself will help fill in a questionnaire on the infant's temperament and on her attitude to the child. She will also be asked to fill in a questionnaire measuring psychosocial stress by means of the life-event questionnaire.

Information to be collected at later stages of the child's life was not fully discussed at the Bristol consultation although it was noted that Dr Ignatyeva kindly produced a list of items (included in Annex 3). It was, however, agreed at the Moscow meeting that:

a) When the child is 3 years old the child will be given simple tests of neurological development, and the child's height and weight will be recorded. The mother will be asked for details of social and environmental changes, the ages at which the child started to do various things such as walk unaided, a history of signs and symptoms, accidental injuries, inpatient and outpatient attendances. The mother herself will answer a questionnaire on the child's behaviour and her own health and attitudes.

b) At the age of seven, mother, teacher and research interviewer will be involved. Both mother and teacher will fill in questionnaires on the child's behaviour using the list of questions developed by Rutter. The health worker will test the child's vision and speech, measure the height, blood pressure and pulse rate. Possibly, also, a lung function test will be carried out. The teacher will supervise the child in answering a series of tests to ascertain the child's intellectual ability and intellectual attainment. The health worker will also interview the mother in regard to the social history of the family, the medical history and current disability of the child, etc. There will also be an attitudinal questionnaire for the mother to complete.

c) The cohort study will be ongoing, and continue to monitor the health and well-being of the child. At the age of 11, educational tests will identify those children with specific learning difficulties, motor-coordination tests at 7 and 11 will identify those with minimal brain dysfunction, comparison of the vision test results at 7 and 11 will show the number of children who develop such problems over time, etc.

## 6. Specific points concerning questionnaires

Wherever possible questions will be used that have already been tested, replicated and validated. Most such questions, however, will be unlikely to have been already tested or validated in each of the study countries. It is important, therefore, that translation, testing and validating be carried out as soon as the instruments are ready for piloting.

### 6.1 Impairment, disability and handicap

The WHO experimental classification of impairments, disabilities and handicaps was published in 1980. Currently, WHO has a special project for improving this classification system which in its present form is acknowledged to be too unwieldy and difficult to use. It was suggested that the great contribution of the 1980 publication had been to formalize and publicize a model for impairment, disability and handicap and suggested relationships between them. Whilst the definition of handicap would always be difficult because of the dynamic nature of perceived disadvantages in relation to society and the environment, if the new WHO definitions of impairment and disability was to be used in the context of a cohort study, a statistical definition could be applied to the performance of an activity "in the manner or within the range considered normal for a human being" (ICIDH WHO 1980, p. 28). There were then considerable possibilities for examining the disabilities associated with particular impairments.

It was suggested that an appropriate way to examine 'disability' in very young children might well be with the use of developmental tests. The results of these could be used both as outcomes for risk factors identified in pregnancy and the neonatal period and also as predictors themselves of later disabilities. Items taken from the Denver Development Screening Test or the Bayley Test were suggested as the most likely candidates for this. Many of the items are already used in the studies reported by Dr Ignatyeva and are common to the Denver and Bayley tests.

Impairment should be recorded in the study whenever the child is contacted.

Developmental testing should be carried out at ages six months, one year and three years.

In assessing handicap in the very early stages of life it seemed sensible to focus on the mothers' ability to cope with an impaired and disabled child and to assess the mother/child relationship in the follow-up studies at 6 months, 1 year and 3 years.

If the study was on cohorts of about 5 000 children, the numbers of the most severe impairments would be too small to warrant inter-country comparisons. The focus of comparisons would have to be on the milder and commoner impairments and disabilities.

### 6.2 Psychosocial stress and maternal support

Maternal stress is thought to have a pronounced effect on the outcome of pregnancy. Stress itself is difficult to measure, and one has to rely on measuring events or situations which are likely to be stressogenic. In tandem, however, information on the support the mother has, should also be collected as support is seen as a means of buffering against stress. Both, however, involve fairly new areas in the science of measurement.

Stressful events and situations have been identified for mothers during pregnancy in several countries, using questions derived from Holmes and Rahe (1967) rating scale. It is proposed that a simplified version of this be derived and tested in various countries prior to the next consultation.

The conceptualization of social support has two main elements, the perception that there are a number of 'available others' to whom one can turn in times of need, and the degree of satisfaction the mother has with support available. The second element appears to be more important than the first. Many questions on social support however, are culture bound, and it is important to derive questions that can convey the same concepts in different cultures.

### 6.3 Maternal attitudes

No appropriate attitude scale is available. Attitudes in pregnancy may be either focussed on health care or on the pregnancy itself. There is much interesting information to be gained from cross-cultural comparisons of such attitudes in pregnancy. It was suggested that there should be a restricted number of mandatory questions on attitudes to breast feeding and health care which would be asked both at the 20th week and after delivery. The option would also be given for the use of more fully developed and sensitive attitude scales. Questions on attitudes to health care should be preceded by questions concerning the mothers' actual experience of obstetric care during pregnancy and delivery. A different set of attitudes will be elicited from the mother when the child is 6 months of age.

#### 6.4 Chronic and acute disease

Acute diseases are important but do not form a major focus of the present study. Children admitted to hospital with acute disease will be identified, however, since information on hospital admissions will be ascertained.

Chronic diseases, though difficult to define, are important. To start to derive suitable unambiguous questions, it was first resolved that a list of chronic diseases be produced appropriate for children up to the age of 3 and restricted to relatively common conditions. The diagnoses on the list will be accompanied by definitions which include symptoms and take account of the information likely to be available. The list would be produced initially by consultation with paediatricians in Norway and then modified by consultation with paediatricians in other countries.

Information on accidental injuries requiring medical attention should also be ascertained. Not only do accidents contribute to both chronic illness, and disablement, they are major causes of mortality and hospital admission in childhood.

#### 6.5 Childhood temperament

The standard battery of questions on temperament in young babies have the advantages of providing information on their behaviour, such as sleep/wake patterns or behaviour at the breast, and also in combination yielding a temperament scale with many possibilities for cross cultural comparisons. The Carey Infant Temperament Questionnaire will be tested to ascertain whether it is appropriate for use in this study.

#### 6.6 Social and environmental factors

Suggestions for social and environmental variables were considered in the light of cross-cultural differences. Discussion of the educational qualifications and social group of the parents produced interesting intercountry differences among the participants at Bristol. It was eventually suggested that each country would have to resolve the problems in their own way but an attempt should be made for each country to define such social variables with five categories, preferably in an ordered manner, and for data from these categories to be brought together between two or more countries wherever possible.

Marital status of mother should be expanded to include the possibility of a single mother living with a partner and conversely a married women living on her own.

The questions on accommodation were bound to be country specific. Questions on income were too difficult to ask and there would be little meaning in intercountry comparisons. Individual countries would have to develop their own indices of standards of living.

#### 6.7 Medical history of mother and father

There were several reasons for considering these items to be important. Firstly, there is the genetic relation between various disorders in the parents and the child (e.g. asthma, febrile convulsions). Secondly, if a parent is chronically ill, there is evidence that both the mother's care of and attitude to the child and the behaviour and development of the child will change.

In addition, during pregnancy it is important to ascertain those mothers who have a chronic illness and the treatment that they are receiving for that illness. In particular, it will be important to identify those mothers who are taking specific drugs with a view to identifying any adverse outcome on the fetus.

Thus, information on specific maternal chronic disorders will be taken at the 20 week pregnancy interview. It was considered that the medical history of the father was best ascertained from the father himself. This could take place later in the child's life. It would, nevertheless, be important to ascertain at each interview whether mother or father has been ill during the preceding period of time, especial attention being paid to psychiatric illness.

#### 6.8 Drugs in pregnancy

As described in section 6.7, drugs given for chronic illness will be ascertained as part of the medical history. In addition, however, there are a large number of other drugs taken for reasons other than chronic illness. These will have been taken from habit, for prophylactic reasons, for minor conditions or acute episodes.

For the purposes of this study, it will be necessary to focus attention on chronic ingestion. This must include iron and vitamin preparations. It was suggested that it would be valuable to know whether the drugs were self-prescribed or prescribed by a doctor. Dr Pello has suggested a format for these questions and these are currently being tested.

#### 6.9 Health behaviour during pregnancy

Questions on health behaviour during pregnancy are potentially important. Items may include sexual activity during pregnancy, work during pregnancy (supplemented with one on posture during work), alcohol consumption, and the consumption of tea and coffee.

Questions on smoking were considered essential. It would be necessary to establish the pattern of smoking before and during pregnancy to permit the identification of mothers who were regular smokers but changed their pattern of smoking when they became pregnant. It is also important to include questions on the father's smoking.

#### 6.10 Obstetric factors

The obstetric factors to be collected in the 20th week and postnatal interviews were reviewed at length and a set of questions were drawn up. The importance of asking questions about obstetric interventions which could influence maternal stress during labour and delivery was emphasized.

Much information about labour and delivery can be collected from clinical notes. It was reported that the mothers' report of obstetric factors usually agreed with information in the clinical notes, and that where records were unavailable maternal recall would probably be adequate.

#### 7. Funding and publication

The Moscow consultation had agreed the following points:

1. The consultants felt very strongly that they would like details of the funding of such a cohort study before committing themselves to such a study: in particular, they felt unwilling to put immense effort into translating, testing and validating the various questions prior to knowing the answer to this question. The representatives of WHO indicated that although they would be able to fund the various meetings that would be necessary and that some funds may be available for piloting, the costs of the main study would have to be borne by the countries themselves.
2. It was thought that each country cooperating in the study should own their data, i.e. it would not belong to WHO.
3. It was felt that publications derived from the study should include the names of all the contributors. There was a divergence of opinion as to whether each country could be free to publish its own results prior to the study report, but on the whole it was felt that this would encourage further analyses, reward enterprise and should not be discouraged. Publication of the results from one country would be very unlikely to bias the results from another. Nevertheless it would be important for all studies to enroll cohort members within approximately the same time period, so that results from one study did not appear before the next study started.

#### 8. Immediate priorities

Members of the Bristol consultation agreed to carry out pre-pilot studies of the various instruments designed. Dr Golding was asked to develop these questionnaires together with Dr Dragonas. The obstetric questionnaire will be agreed with Dr Pello.

Pre-piloting will take place in Greece, Italy, USSR, United Kingdom and Norway. It is expected that several alterations will be made as a result of the pre-pilot. A full report of the pre-pilot studies will be presented to the next consultation.

Dr Golding is also aiming to produce for the next meeting a detailed list of items and information to be collected and reasons why their collection is thought to be important to the study.

9. The future consultation

It was suggested that this meeting be held in the summer. Its purpose should be to finalize the overall design and make recommendations for piloting investigations, including instructions to field workers, timetables, data processing and initial statistics.

The provisional agenda for the next meeting should be:

- a) The role and impact of the investigation in relation to the WHO regional target of "health for all";
- b) discussion of methods of sampling and optimal size of the cohort;
- c) discussion of draft questionnaires and methods of data collection developed at the Bristol consultation for the pregnancy, delivery and 6 month contacts;
- d) recommendations for piloting of these questionnaires;
- e) consider further the 12 month and 3 year questionnaires with special reference to positive health indices;
- f) discussion of coding, data processing, editing and initial statistical tabulations.

It was suggested by the Bristol consultation that much of the detailed discussion at the next meeting could profitably be carried out in sub-groups (e.g. paediatric, obstetric and psychometric).

Annex 1

LIST OF PARTICIPANTS

TEMPORARY ADVISERS

- Professor T. Bjerkedal  
University of Oslo, Department of Preventive Medicine, Oslo, Norway
- Dr Thalia Dragonas  
Foundation for Research in Childhood, Athens, Greece
- Dr Jean Golding (Chairman)  
Department of Child Health, University of Bristol, Bristol, United Kingdom
- Dr Mary Haslum (Rapporteur)  
Department of Child Health, University of Bristol, Bristol, United Kingdom
- Dr R.K. Ignatyeva  
All-Union Semasko Institute for Research on Social Hygiene and Public Health, Ministry of  
Health of the USSR, Moscow, USSR
- Dr Laura Pello  
Via Val Leventina 6, Milan, Italy

WORLD HEALTH ORGANIZATION

Regional Office for Europe

- Dr A. Romensky (Secretary)  
Statistician, Epidemiology and Information Support
- Mrs Myriam Andersen  
Secretary, Epidemiology and Information Support

Annex 2

Working papers and published papers considered at the Bristol meeting

Background material

1. Report on the Consultation on Long-Term Cohort Studies for Risk Factor Assessment, Moscow, 10-14 June 1985

Working papers by participants of Bristol meeting

From Professor T. Bjerkedal (Norway):

2. Identification and classification of chronic disease, impairment, disability and handicap in children

From Dr T.G. Dragonas (Greece):

3. Psychosocial stress and social support
4. Temperament
5. Mother's attitude to pregnancy, health care and her report of father's attitude to pregnancy
6. Attitude of mother to child at three months of age
7. The exploration of need for health education of Greek women during the perinatal period

From Dr J. Golding (United Kingdom):

8. Questionnaire on stillbirths and deaths to cohort
9. WHO protocol for the development and field testing of techniques for monitoring physical growth and psychosocial development

From Dr M. Haslum (United Kingdom):

10. Experience gained from a long-term cohort study of the assessment of morbidity, impairment, disability and handicap

From Dr R.K. Ignatyeva (USSR):

11. Complex assessment of child health in prospective cohort child health and development study in the USSR
12. Proposals on supplementing the list of information to be collected within the framework of international prospective child health and development study

From Dr L.C. Pello (Italy):

13. Obstetric factors in cohort studies on child morbidity

Working papers sent by participants of Moscow meeting not present  
at the Bristol consultation

From Dr Kopczynska-Sikorska (through Dr Z. Brzezinski) (Poland):

14. Variables concerning the social and environmental background variables to be measured in the 12 month old child in the cohort studies

From Dr G. Gacs, K. Joubert & E. Gardos (Hungary):

15. Questions to be asked during pregnancy and labour

From Dr Muresan (Romania):

16. Study of health state of pregnancy woman and 0-2 years old child

From Dr Rubin (Denmark):

17. Statement on developmental assessments  
Copy of Denver developmental screening, basic psychological test
18. Symptoms included in infectious disease survey

Published papers tabled

Carey, W.B. (1970) A simplified method for measuring infant temperament. *Journal of Paediatrics*, 77(2):188-194

Georgas, J., Giakoumaki, E., Georgoulas, N., Koumandakis, E., Kaskarelis, D., (1984) Psychosocial stress and its relation to obstetrical complications. *Psychotherapy and psychosomatics*, 41, 200-206

Newton, R.W., Hunt, L.P., (1984) Psychosocial stress in pregnancy and its relation to low birthweight. *British Medical Journal* 288:1191-1194

Nuckolls, K.B., Cassel, J., & Kaplan, B.H. (1972) Psychosocial assets, life crisis and the prognosis of pregnancy, *American Journal of Epidemiology* 95(5):431-441

McDevitt, S.C. and Carey, W.B. (1977) The measurement of temperament in 3-7 year old children

Taylor, R.L. & Warren, S.A. (1984) Educational and psychological assessment of children with learning disorders. *Paediatric Clinics of North America* 31(2):281-96

Andre, M., Vert, P., Debruille, Ch., (1977) Diagnostic et évolution de la souffrance cérébrale chez les nouveau-nés ayant présenté des signes d'hypoxie foetale. *Arch. Franc. Péd.* 35:23-36

Vert, P., Deblay, M.F., André, M., (1982) Follow-up study on growth and neurologic development of children born to epileptic mothers. *Epilepsy, Pregnancy and the Child* Janz D. et al., (ed) Raven Press, New York. 433-36

Matisse, N., Marchial, E.M., Didier, F., Vert, P. (undated) Effets du tabac sur la croissance foetale et développement foeto-infantile. Evaluation en fonction du taux de thiocyanate sanguin (no ref)

André, M., Debruille, C., Vert, P., Grunenwald, O. (1981) Souffrance foetale aigue et déficiences mentales. *Arch. Franc. Pédiatr.* 38:525-31.

Annex 3

The following lists are a guide to the information to be collected:  
questionnaires for A, B and C

A. Information to be collected during pregnancy

Biological

Mother's and father's dates of birth  
Mother's height  
Mother's ABO and Rh blood group  
Number of previous pregnancies - and outcomes (number of previous spontaneous abortions, induced abortions, perinatal deaths, child deaths, low birth weight infants, etc.)  
Infertility and whether ovulation was induced  
Date and outcome of immediately preceding pregnancy  
Pre-pregnant weight  
Weight at booking  
Blood pressure at booking  
Medical history (diabetes, epilepsy, chronic heart disease, tuberculosis, etc.) with details of current treatment  
Haemoglobin level  
Date of last menstrual period (LMP)  
Duration of contraceptive pill use

Social

Marital status (single, first marriage, second marriage, divorced, etc.)  
If married, date of this marriage  
Education of parents  
Occupation of parents  
Income - amount spent on food, housing, etc.  
Number of persons in household (number of children and adults)  
Number of years mother has resided in study area

Psychosocial

Mother's attitudes to pregnancy, health care and her report of the father's attitude to pregnancy  
Stress - as related to life events  
Mother's social support system  
Mother's attitude to health care and her attitude to breast-feeding

Environmental

Mother's employment during pregnancy  
Area of residence (urban/rural; industrial/non-industrial)  
Housing - number of rooms, number of people  
Type of housing  
Sanitation  
Form of heating

Health behaviour

Diet, alcohol, tea, coffee  
Smoking of cigarettes  
Drug misuse including marijuana  
Sexual activity  
Exercise

B. Information to be collected at post-partum interview, and using clinical notes

Obstetric

Blood pressure with highest diastolic during pregnancy before labour  
Proteinuria during pregnancy  
Oedema  
Lowest haemoglobin in pregnancy  
Bleeding during pregnancy (including placenta praevia)  
Last weight during pregnancy (plus date)  
Number of ultrasound scans, x-rays, amniocenteses and other procedures  
Drugs in labour  
Onset of labour (spontaneous/induced/elective CS)  
Duration first stage  
Duration second stage  
Duration membrane rupture  
Presentation of fetus  
Method of delivery  
Complications of labour and delivery  
Diagnostic and therapeutic interventions during delivery (e.g. electronic fetal monitoring)  
Time and date of delivery  
Place of delivery  
Birthweight  
Sex  
Single or multiple birth (with birth order)  
Time to onset of regular respirations  
Apgar scores  
Neonatal problems and congenital malformations  
Neonatal diagnostic and therapeutic interventions  
Head circumference and crown-heel length

Psychosocial

Mother's attitudes to labour, delivery, obstetric interventions and breast feeding  
Life event questionnaire  
Mother's depression and mood  
Social support

C. Information to be collected by health worker at 6 months

Life events  
Infant's temperament  
Result of infant's developmental assessment  
Social support  
Attitude of mother to child  
Feeding of child  
Congenital defects and other impairments  
Major signs and symptoms which might indicate chronic illness  
Details of hospital admission  
Infant's crown-heel length, weight and head circumference  
Immunizations  
Maternal puerperal depression rating

D. Information to be collected at 12 months (for the past 6 months)

Life events  
Infant's temperament  
Result of infant's developmental assessment (and milestones)  
Attitude of mother to child  
Recognition of impairments or signs of chronic illness  
Hospital admissions  
Medication of infant and time of contact  
Weight, length and head circumference  
Immunizations and use of other health services  
Changes in social and environmental situation  
Mother's work pattern  
Who is taking care of child during day  
Separations of mother from infant

E. Information to be collected by health worker at 3 years

Changes in social and environmental situation of mother  
Mother's working pattern  
Child's behaviour and mother's attitude to child  
Child's temperament  
Social support  
Milestones (e.g. when child started to walk, etc.)  
Simple tests of neurological development  
Child's height and weight  
Arm circumference  
Head circumference  
Diet of child for 24 hour period  
Major signs and symptoms in the first two to three years  
Major accidental injuries  
Congenital defects noted  
Details of hospital inpatient and outpatient attendance (including treatment given)

Impairment, disability and handicap

Details of any medication that the child is on at time of contact  
Who is taking care of child during day  
Separations of mother from child - creche, etc.  
Use of health services

F. Information to be collected at age 7

Changes in social and environmental situation of the mother  
Child's behaviour (rated by mother and teacher)  
Tests of motor coordination  
Tests of intellectual ability  
Vision, hearing and speech tests  
Height, weight and arm circumference  
Blood pressure  
Lung function test  
Major signs and symptoms since the age of 3  
Major accidental injuries  
Details of hospital inpatient and outpatient attendance (including treatment given)  
Details of any medication the child is on at time of contact  
Use of health services  
Impairment, disability and handicap