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PERINATAL CARE: PLANNING FOR APPROPRIATE EQUIPMENT

Report on a Course

Trieste, 9–20 October 1995

1996

EUR/HFA targets 7, 8

TARGET 7

HEALTH OF CHILDREN AND YOUNG PEOPLE

By the year 2000, the health of all children and young people should be improved, giving them the opportunity to grow and develop to their full physical, mental and social potential.

TARGET 8

HEALTH OF WOMEN

By the year 2000, there should be sustained and continuing improvement in the health of all women.

ABSTRACT

The widespread introduction of sophisticated technology in neonatal/perinatal care in many countries without adequate assessment has resulted in weakened impact, increased costs, diversion of resources and a dehumanized approach to health care. The Bureau for International Health of the Istituto per l'Infanzia in Trieste, Italy, arranged a course to help decision-makers and planners evaluate the appropriateness of equipment for their perinatal care needs and to plan its purchase, use and maintenance. The course showed the need for technical support and the dissemination of relevant information in the area of perinatal care. The Bureau's staff will develop and publish documents and training materials and publish a newsletter including summaries of important research, information on centres and suppliers and assessments of technology and its use.

Keywords

PERINATAL CARE
APPROPRIATE TECHNOLOGY
EDUCATION
EUROPE

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Course Report

Perinatal Care: Planning for Appropriate Equipment

Trieste, 9 - 20 October 1995.

Introduction

The experience from many countries in the use of biomedical equipment shows that there has been a widespread introduction of sophisticated technology without:

- previous assessment of effectiveness;
- adequate clinical engineering support;
- adequate training of staff;
- evaluation of costs;
- careful planning of the needs;
- assessment of possible and more appropriate alternatives.

As a result, the impact, if any, has been far less than expected, costs are increasing (while budgets are shrinking), there are frequent breakdowns (and there is no way to fix them), resources are diverted from more important priorities, and the overall approach to health care tends to be de-humanised. Perinatal care does not seem to be an exception

Objectives

With the above considerations in mind, the Bureau for International Health (BIH) of the Istituto per l'Infanzia in Trieste, Italy, decided to offer a course on "Perinatal Care: Planning for Appropriate Equipment" with the following general objectives:

1. To enable participants to evaluate what equipment for perinatal care is appropriate for their settings in terms of effectiveness, cost and applicability; and
2. To enable participants to plan the purchase, use and maintenance of appropriate equipment for perinatal care.

The specific objectives included:

A. The review of basic concepts and principles on:

- Sources of data and use of indicators in perinatal care;
- Evaluation of a screening test;
- Technology assessment;
- Effectiveness, cost/effectiveness and cost/benefit ratios;
- Health and social impact of technologies;
- Health service planning;
- Clinical Engineering;

B. The specific discussion on indications, use, manpower needs, maintenance, effectiveness and cost/effectiveness of:

- Obstetric ultrasound and cardiotocography;
- Incubators and other technology for thermal control of the newborn;
- Mechanical ventilation, respiratory support and oxygen administration;

including a comparative evaluation of different technologies and of non-equipment based alternatives.

C. The development of models for appropriate planning for the use of equipment at different levels of the perinatal care system.

The expected outcomes of the course were:

- An increased awareness about the implications of the use of technology;
- An increased awareness about the need for technology assessment;
- The development of criteria and recommendations for appropriate planning.

The desirable outcomes included:

- The development of a network for information about technology assessment;
- The development of collaborative research on technology assessment.

The course

The course took place as scheduled at "Le Beatitudini" with the timetable and programme of Annex 1 and Annex 2, respectively. The faculty included teachers from the BIH and the Istituto per l'Infanzia, as well as professionals from other institutions (Annex 3). Out of 41 applicants, 28 participants were selected, using geographical criteria, in order to have representatives from the maximum number of countries; of these, 24 actually attended the course (Annex 4).

A short questionnaire (Annex 5) was sent to each accepted participants before the course to gather data on perinatal care in different countries and settings that could be used for planning and decision-making exercises, and to explore their expectations. A total of 18 questionnaires from 15 countries were returned. The analysis of these data, summarised in Annex 6, confirms that the need for appropriate planning in perinatal care was correctly identified.

This need was met during the course by allocating time at the end of each module for a half day exercise on decision-making for each of the technologies presented and discussed. Three specific country situations were used in each of these exercises to make the discussion as close to reality as possible. The data participants sent or brought from their countries and the country profiles of WHO were used to prepare these exercises. The fifth module was completed by a longer full day exercise on planning for a specific technology (ultrasounds in obstetric, thermal control of the neonate, management of respiratory distress) in three countries (Romania, Bulgaria, Iran); summaries of the draft plans were presented and discussed in plenary. The exercises were used not only to review the topics and to introduce and practice principles of planning and decision-making, but also to bring about a consensus among participants on hot and unresolved issues; Annex 7 summarises the consensus reached on the use of ultrasounds in obstetrics, on the thermal control of the neonate, and on the management of birth asphyxia and respiratory distress.

Course evaluation

The course was considered successful by both teachers and students. These were asked to fill in, during the last day of the course, an anonymous evaluation questionnaire (Annex 8). Annex 9 shows a summary of the results, compiled on a total of 20 returned questionnaires. The need for decision-making and planning skills was once again stressed. All participants requested some kind of follow-up, ranging from simple correspondence, to a periodic newsletter with updates on perinatal care, to the collection of the course materials in a publication that would be widely circulated. These options will be carefully studied by the staff of the BIH in terms of feasibility.

This success is a clear indication that the course should be held again and should perhaps become an annual event. A decision in this sense at least for 1996 has already been taken. Some points must however be taken into consideration for an even better course:

1. It should be stressed that the course is directed to planners and decision makers. Clinicians are acceptable insofar as they have also planning and decision-making tasks; pure clinicians are not a target for this course. The course announcement was already clear on this point. Yet, a closer contact with the institutions to which potential applicants belong and with potential sponsors is needed to make sure the this point is not only understood but complied with.

2. Language is a second problem. Some of the participants were unable to take full advantage of lectures, discussions and exercises because of poor proficiency in English. Also this point was made very clear in the course announcement and during correspondence with applicants before the course. As this does not seem to be sufficient, some kind of certifications will be requested in future courses from the institutions to which applicants belong.

3. Participants to the course were from as many countries as possible. The advantages of this choice should be weighted against the possibility of accepting a more homogeneous group of participants, for example from a reduced number of countries with similar levels of development of the health care system. While heterogeneity allows comparisons and sharing of experiences, homogeneity would ensure that decision-making and planning exercises be more realistic and practical, with possible consequences on actual plans for perinatal care. The presence of groups of participants from the same country, as opposed to individual participants from as many countries as possible, would influence the course in the same direction. The institutions sponsoring the course should state which option they would prefer.

During the course, a number of critical points came out concerning the planning and use of equipment for perinatal care:

- It appears that professionals, even those working in leading institutions, are not aware of the information available on the effectiveness of different technologies and of the sources for this information (for example, the Cochrane Pregnancy and Childbirth Database and the textbook by Sinclair on Effective Care of the Newborn Infant); they generally overestimate the effectiveness and the ultimate impact on health to be expected from sophisticated technologies.
- Professionals often lack the basic knowledge needed for technology assessment. Sensitivity and specificity of a screening test, randomised clinical trials, effectiveness, cost/effectiveness and cost/benefit ratios are ill-defined concepts; as a consequence, no attempt is made for pre- and post-introduction assessment of newly available technologies.
- Most professionals do not fully realise the implications of an inadequate use (for insufficient maintenance and/or insufficient training of the operators) of technologies on their performance and their ultimate cost/benefit ratio. For example, they do not understand that a bad ultrasound scan may result in an increasing number of false positive and/or false negative findings.
- The quality of data on perinatal indicators available in many of the countries represented in the course (with the important exceptions of Slovenia, the Czech Republic and, to a lesser extent, other countries of Central Europe) is low. Data from different sources are inconsistent, and weight- and cause-specific neonatal mortality rates, which are essential for effective planning and identification of priorities, are almost completely lacking. Nobody gathers information on the use of equipment and technologies in perinatal care.

The course participants acknowledged the existence of these problems and of the relative training needs, and suggested that technical support and dissemination of relevant information would be extremely useful.

Future developments and conclusion

In view of these considerations, the staff of the BIH will undertake two initiatives, starting with resources already available and looking forward to receiving some technical and financial support from other agencies:

- The development and publication of documents and training materials, including instructions for group work and exercises, based on the experience of the course; this will probably happen after a second experience with the course.
- The publication of a newsletter on perinatal care, including summaries of important research, information on centres and suppliers, and reports of experiences on technology assessment and use. This would be initially distributed to the course participants and later to a larger network of institutions and professionals engaged in perinatal health care.

In conclusion, the staff of the BIH believes that more attention should be given to planning for perinatal care technology by ministries of health, other health care institutions, and agencies such as WHO, UNICEF, and the World Bank. Emphasis is currently given in official documents (e.g.: the 1993 World Bank report "Investing in Health", and the "Mother and Baby Package" of WHO) to basic care that should be universally and equitably accessible to everybody. While this is correct, it is also true that resources for basic care in all countries could be made available by better planning of intermediate and sophisticated care, available only in a few centres in low income countries and more widely in middle-income countries, but in any case expensive and subject to more rational distribution and use. Publications on the topic of this course, to set principles for better decision-making and planning, and providing examples, would certainly be beneficial.



Dr Giorgio Tamburlini
Course Director



Dr Adriano Cattaneo
Co-ordinator of the BIH

ANNEX 1

Agenda for the course "Perinatal care: planning for appropriate equipment", Istituto per l'Infanzia, Trieste, Italy, 9 to 20 October 1995.

First week (9-13 October):

Day	9	10	11	12	13
a.m.	<p>Introduction, objectives, agenda, country profiles (GT, 60')</p> <p>Perinatal indicators (UV/RG, 60')</p> <p>Validity of screening (MC, 60')</p>	<p>Echography: history, development and use (MR, 60')</p> <p>Validity and safety, manpower needs (MR/AB, 60')</p> <p>Technical features, maintenance, manpower needs, market (PG, 60')</p>	<p>CTG: validity and safety, manpower needs (AB, 60')</p> <p>Technical features, maintenance, manpower needs, market (FW, 60')</p> <p>Effectiveness, impact, feasibility, cost, C/E and C/B ratios, alternatives (MW/AB, 60')</p> <p>Visit to the echography and CTG unit of the Istituto per l'Infanzia (MR, 180')</p>	<p>Decision-making, and factors affecting it, for echography and CTG in different settings: exercise in small groups (AC, MW/GT/MR, 180')</p>	<p>Technical features, maintenance, manpower needs, market (SP, 90')</p> <p>Different thermal control technologies, including the KMM: effectiveness, safety, cost, C/E and C/B ratios, feasibility (RT/RD, 90')</p>
p.m.	<p>Effectiveness, safety, feasibility, impact (MW, 60')</p> <p>Cost, C/E and C/B ratios (AC, 60')</p> <p>Clinical engineering: an introduction (DB, 60')</p>	<p>Effectiveness, cost, C/E and C/B ratios (MW, 90')</p> <p>Other technologies and relative appropriateness (MW/AB, 45')</p> <p>CTG: history and use (AB, 45')</p>	<p>Visit to the echography and CTG unit of the Istituto per l'Infanzia (MR, 180')</p>	<p>Hypothermia: definition, frequency, severity, consequences (RD, 60')</p> <p>Incubators, heated mattresses and other technologies for thermal control (FU/RT, 120')</p>	<p>Different thermal control technologies, including the KMM: effectiveness, safety, cost, C/E and C/B ratios, feasibility (RT/RD, 90')</p> <p>Visit to the neonatal unit of the Istituto per l'Infanzia (UV, 90')</p>

Second week (16-20 October):

Day	16	17	18	19	20
a.m.	Decision-making, and factors affecting it, for thermal control of the neonate in different settings: exercise in small groups (UV, RT/RD/FU, 180')	Technical features, maintenance, manpower needs, market (TA, 60') Effectiveness, safety, impact, C/E and C/B ratios of: ventilators (MO, 60') methods for neonatal resuscitation (RT, 60')	Decision-making, and factors affecting it, for technologies addressing respiratory problems in neonates and young infants in different settings: exercise in small groups (MO, AC/RD/FU, 180')	Exercise in small groups: draft plan for perinatal equipment in three model settings (GT, AC/RT/ME, 180')	Continuation of the exercise in small groups: finalization of the draft plans for the three model settings (GT, AC/RT/ME, 90') Presentation and discussion of the draft plans of the three working groups (GT, 90')
p.m.	Respiratory problems in neonates and young infants: incidence and mortality (UV/GT, 90') Ventilators, CPAP, tube and mask, oxygen: use, safety, manpower needs (FU/AC/RT, 90')	Effectiveness, safety, impact, C/E and C/B ratios of: oxygen administration (AC, 90') Visit to the intensive care unit of the Istituto per l'Infanzia (UV, 90')	Ethical aspects of perinatal technology (MC, 60') Principles of planning: needs, resources, priorities, objectives, work-plans (AC, 120')	Technology assessment: evaluation of problems, hypothesized approaches, implementation, process and impact (ME, 90') Exercise in small groups: finalization of the draft plans for the three model settings (GT, AC/RT/ME, 90')	Continue as above (GT, 90') Questionnaire for the evaluation of the course (30') Evaluation of the course, certificates and closing ceremony (GT, 60')

Perinatal care: planning for appropriate equipment.

Istituto per l'Infanzia, Trieste, Italy, 9 - 20 October 1995.

Faculty:

Teresa dell'Aquila (TA), Alberta Bacci (AB), Diego Bravar (DB), Adriano Cattaneo (AC), Marina Cuttini (MC), Riccardo Davanzo (RD), Murray Enkin (ME), Paolo Giribona (PG), Marcello Orzalesi (MO), Stefano Polvi (SP), Mariangela Rustico (MR), Giorgio Tamburlini (GT), Ragnar Tunell (RT), Fabio Uxa (FU), Umberto de Vonderweid (UV), F  b   de Wet (FW), Marsden Wagner (MW).

First module: principles and definitions.

1. Duration: 60'. Coordinator: GT.

- A. brief introduction of participants and facilitators, explanation of the objectives of the course, description of the course agenda, administrative information;
- B. overview of the health system profiles of the countries from which participants come, obtained before the course through a short questionnaire, with specific reference to availability and use of perinatal technology.

2. Duration: 60'. Coordinators: RG, UV.

- A. most commonly used indicators in perinatology;
- B. sources of data, definitions, potential error and bias;
- C. range of values in different countries and settings;
- D. use of indicators in technology assessment and the planning process.

3. Duration: 240'. Coordinators: MC, MW, AC, DB.

- A. validity of a screening test: sensitivity, specificity, predictive value, reproducibility, effectiveness;
- B. assessment of the effectiveness and safety of perinatal technology through randomised controlled trials; feasibility, health and social impact of technologies;
- C. cost of technologies; cost/effectiveness and cost/benefit ratios;
- D. clinical engineering: an introduction.

Second module: ultrasounds in obstetrics.

1. Duration: 60'. Coordinator: MR.

- A. brief definition and history of echography;
- B. current uses of echography in obstetrics (both appropriate and inappropriate);
- C. frequency and severity of the conditions for which echography is currently used (mortality and morbidity in different settings in both pregnant women and newborns).

2. Duration: 60'. Coordinator: MR.

- A. validity of echography (sensitivity, specificity, predictive value, reproducibility) for different uses and in different settings, and factors that may influence it;
- B. manpower needs (qualification and training), actual and potential influence of staff on the validity of echography;
- C. potential risks and damages of echography, and factors that may influence them.

3. Duration: 60'. Coordinator: PG.
 - A. technical features and technological compatibility of equipment and accessories;
 - B. needs for maintenance, for spare and replacement parts, and for running materials;
 - C. manpower needs (qualifications and training) for maintenance and to ensure the maximum of durability;
 - D. main manufacturers, prices, and characteristics of the market.

4. Duration: 90'. Coordinator: MW.
 - A. review of randomized clinical trials on echography;
 - B. effectiveness and impact of echography on the health of women and children; potential contribution to reduction of mortality and morbidity in different settings;
 - C. cost/effectiveness and cost/benefit ratios of echography in different settings.

5. Duration: 45'. Coordinator: MW.
 - A. other interventions and technologies available and used for the problems addressed by echography;
 - B. effectiveness, safety, feasibility and cost of these interventions and technologies as compared with echography;
 - C. appropriateness of different interventions and technologies (including echography) in different settings and populations.

6. Duration: 45'. Coordinator: AB.
 - A. brief definition and history of cardiocography;
 - B. current uses of cardiocography in obstetrics (both appropriate and inappropriate).

7. Duration: 60'. Coordinator: AB.
 - A. frequency and severity of the conditions for which cardiocography is currently used (mortality and morbidity in different settings);
 - B. validity of cardiocography (sensitivity, specificity, predictive value, reproducibility) for different uses and in different settings, and factors that may influence it;
 - C. manpower needs (qualification and training), actual and potential influence of staff on the validity of cardiocography.

8. Duration: 60'. Coordinator: FW.
 - A. technical features and technological compatibility of equipment and accessories;
 - B. needs for maintenance, for spare and replacement parts, and for running materials;
 - C. manpower needs (qualifications and training) for maintenance and to ensure the maximum of durability;
 - D. main manufacturers, prices, and characteristics of the market.

9. Duration: 60'. Coordinators: MW, AB.
 - A. review of randomized clinical trials on cardiocography;
 - B. effectiveness and impact of cardiocography on the health of women and children; potential contribution of cardiocography in reducing mortality and morbidity in different settings;
 - C. cost/effectiveness and cost/benefit ratios of cardiocography in different settings;
 - D. other interventions and technologies available and used for the problems addressed by cardiocography;
 - E. effectiveness, safety, feasibility and cost of these interventions and technologies as compared with cardiocography;
 - F. appropriateness of different interventions and technologies (including cardiocography) in different settings and populations.

10. Duration: 180'. Coordinator: MR.
 - A. A practical session during which the participants will visit the echography and CTG unit of the Istituto per l'Infanzia to see the equipment and to discuss the technical and managerial complexities related to its use and maintenance.

11. Duration: 180'. Coordinator: AC. Facilitators: MW, MR, GT.
 - A. After a short introduction, the participants will split into three groups and will consider all the factors that may influence a decision about what technology should be adopted in a health system to address a series of problems. The working groups will use as models three countries with different levels of skills and resources and with different health systems. At the end of the group work, the participants will discuss their reports in plenary.

Third Module: thermal control of the neonate.

1. Duration: 60'. Coordinator: RD.
 - A. definition of hypothermia and its prevalence in different settings;
 - B. the consequences of hypothermia (morbidity and mortality) in different settings;
 - C. the frequency and severity of hypothermia in low birth weight infants (prematurity and IUGR) in different settings.

2. Duration: 120'. Coordinators: FU, RT
 - A. the use of incubators and other technologies (heated cot, heated room) in different settings;
 - B. manpower needs (qualification and training) for proper use of incubators and other technologies;
 - C. potential risks and damages of incubators and other technologies, and factors that may influence them;
 - D. the use of waterfilled heated mattresses. an account of the experience accumulated in different settings.

3. Duration: 90'. Coordinator: SP.
 - A. technical features and technological compatibility of equipment and accessories;
 - B. needs for maintenance, for spare and replacement parts, and for running materials;
 - C. manpower needs (qualifications and training) for maintenance and to ensure the maximum of durability;
 - D. main manufacturers, prices, and characteristics of the market.

4. Duration: 180'. Coordinators: RT, RD.
 - A. effectiveness of the different methods of thermal control and their contribution to reduction of mortality and morbidity in different settings;
 - B. cost/effectiveness and cost/benefit ratios of different technologies in different settings;
 - C. the kangaroo-mother method: review of the literature and of the randomized clinical trials, effectiveness, cost and benefits;
 - D. appropriateness of different technologies (including the kangaroo-mother method) in different settings and populations.

5. Duration: 90'. Coordinator: UV.
 - A. A practical session during which the participants will visit the neonatal unit of the Istituto per l'Infanzia to see the equipment and to discuss the technical and managerial complexities related to its use and maintenance.

6. Duration: 180'. Coordinator: UV. Facilitators: RT, RD, FU.
- A. After a short introduction, the participants will split into three groups and will consider all the factors that may influence a decision about what technology should be adopted in a health system to address the thermal control of the neonate. The working groups will use as models three countries with different levels of skills and resources and with different health systems. At the end of the group work, the participants will discuss their reports in plenary.

Fourth module: respiratory distress and oxygen therapy.

1. Duration: 90'. Coordinators: UV, GT.
- A. definition of birth asphyxia, apnoea and respiratory distress syndrome and their incidence in different settings;
- B. neonatal morbidity and mortality caused by respiratory problems in different settings;
- C. epidemiology of pneumonia in young infants and children in different populations.

2. Duration: 90'. Coordinators: FU, RT, AC.
- A. the use of ventilators and continuous positive airway pressure (CPAP) for the management of respiratory distress;
- B. the tube and mask method for neonatal resuscitation;
- C. different methods of oxygen administration in young infants and children;
- D. manpower needs (qualification and training) for proper use of ventilators, CPAP and oxygen equipment;
- E. potential risks and damages of ventilators, CPAP and oxygen administration, and factors that may influence them;

3. Duration: 60'. Coordinator: TA.
- A. technical features and technological compatibility of equipment and accessories (ventilators, CPAP, oxygen sources: central supply, cylinders, concentrators);
- B. needs for maintenance, for spare and replacement parts, and for running materials;
- C. manpower needs (qualifications and training) for maintenance and to ensure the maximum of durability;
- D. main manufacturers, prices, and characteristics of the market.

4. Duration: 210'. Coordinators: MO, RT, AC.
- A. effectiveness, safety and impact on neonatal mortality and morbidity of ventilators; cost/effectiveness and cost/benefit ratios in different settings;
- B. effectiveness, safety and impact on neonatal mortality and morbidity of different methods of neonatal resuscitation, including any information available on cost/effectiveness and cost/benefit ratios in different settings;
- C. effectiveness, safety and cost of different methods of oxygen administration, including information on the feasibility in different settings.

5. Duration: 90'. Coordinator: UV.
- A. A practical session during which the participants will visit the intensive care unit of the Istituto per l'Infanzia to see the equipment and to discuss the technical and managerial complexities related to its use and maintenance.

6. Duration: 180'. Coordinator: MO. Facilitators: AC, RD, FU.
- A. After a short introduction, the participants will split into three groups and will consider all the factors that may influence a decision about what technology should be adopted in a health system to address the problem of respiratory failure in neonates and young infants. The working groups will use as models three countries with different levels of skills and resources and with

different health systems. At the end of the group work, the participants will discuss their reports in plenary.

Fifth module: planning, monitoring and evaluation.

1. Duration: 60'. Coordinator: MC.

- A. ethical aspects to be considered when deciding to introduce a new technology into perinatal care;
- B. experience of the EURONIC project on ethical decisions in neonatal intensive care.

2. Duration: 120'. Coordinator: AC.

- A. the planning cycle;
- B. the determination of needs and the establishment of priorities;
- C. the definition of general and specific objectives;
- D. the assessment of resources: manpower, materials, money, time;
- E. the workplan.

3. Duration: 180'. Coordinator: GT. Facilitators: AC, RT, ME.

- A. The participants will be asked to start drafting a plan for appropriate technology in perinatal care (echography, cardiotocography, thermal control of the neonate, management of respiratory failure) in three different settings:
 - a country with a relatively high GNP and level of development of the health system;
 - a country with an intermediate GNP and level of development of the health system;
 - a country with a relatively low GNP and level of development of the health system.
- B. Baseline information for each model country will be provided. Each working group will be assisted by a facilitator. During this first part of the exercise emphasis will be on planning.

4. Duration: 90'. Coordinator: ME.

- A. technology assessment: identification of problems and etiological factors;
- B. research evaluation of approaches to solving the problem;
- C. community implementation of the selected approaches;
- D. evaluation of process: has the approach really been implemented?
- E. impact: has it really reduced the problem?

5. Duration: 180'. Coordinator: GT. Facilitators: AC, RT, ME.

- A. The participants will complete their draft plan with the support of the facilitators. During this second part of the exercise emphasis will be on monitoring and evaluation.

6. Duration: 180'. Coordinator: GT.

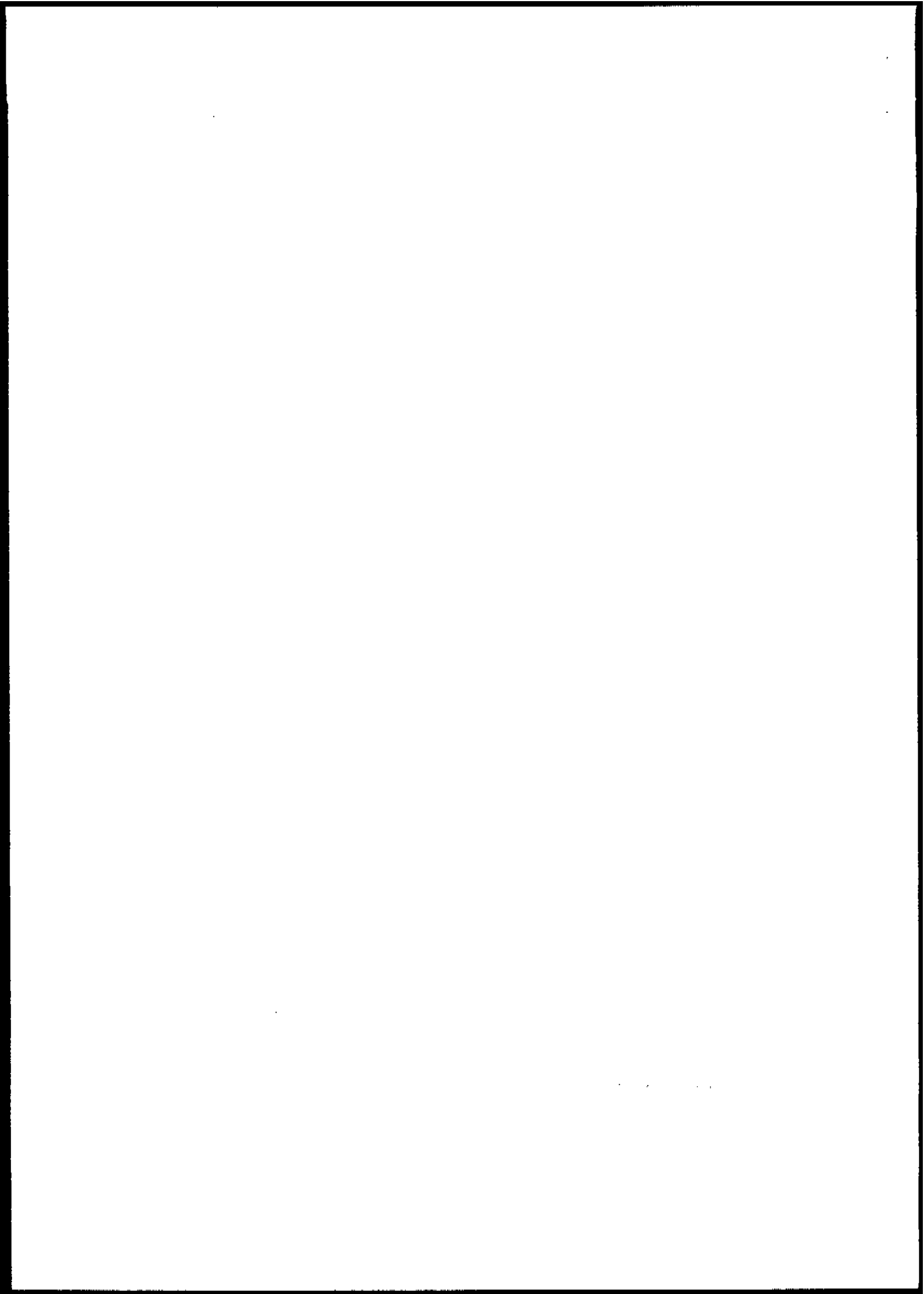
- A. The participants will have the opportunity to present their draft plan in plenary and to discuss all the doubtful points, referring to what was presented and studied in the preceding days, with all the other participants and the facilitators.

7. Duration: 30'. Coordinator: GT.

- A. A short questionnaire will be filled in by each participant for the evaluation of the course.

8. Duration: 60'. Coordinator: GT.

- A. evaluation of the course;
- B. certificates;
- C. closing ceremony.



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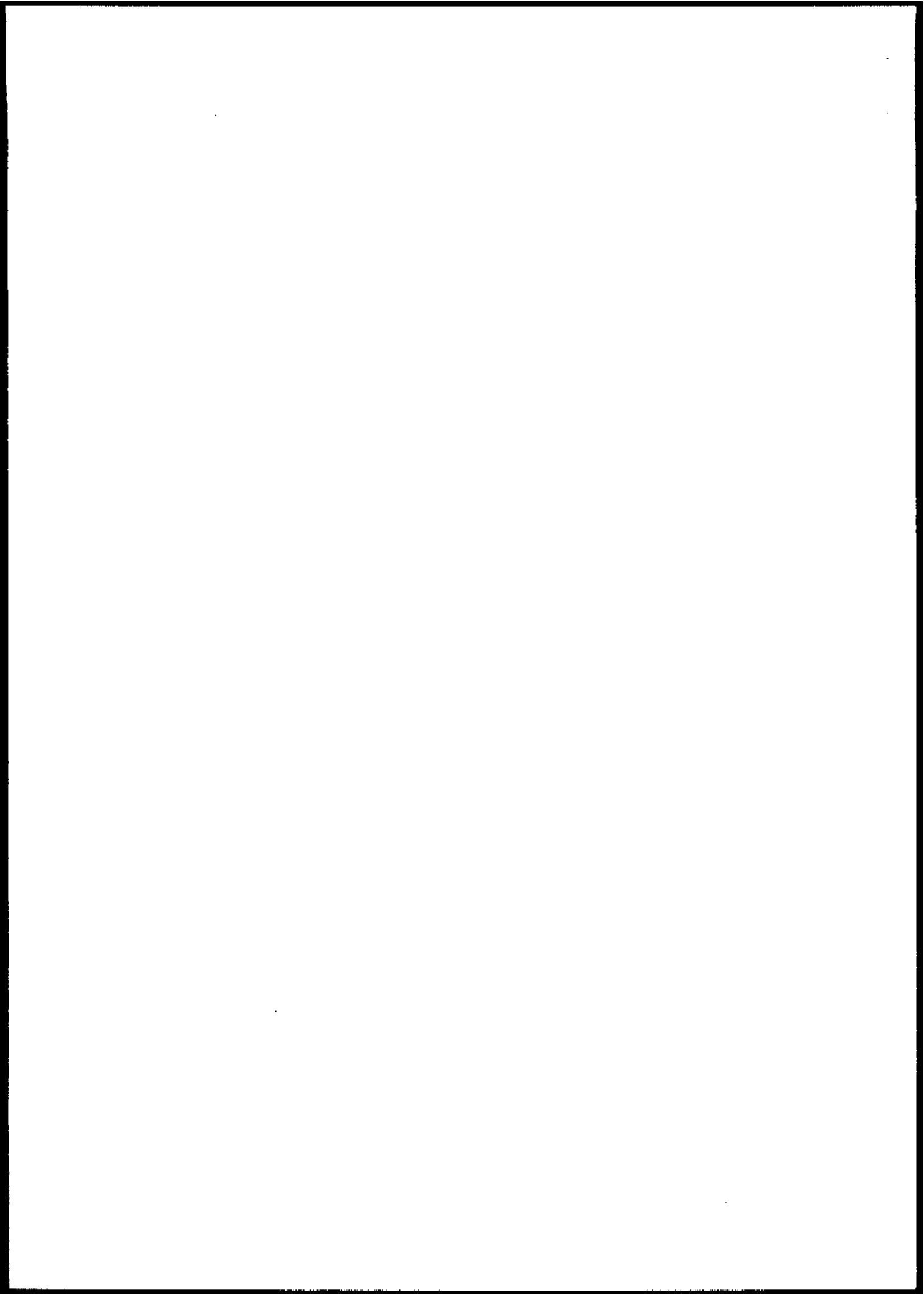
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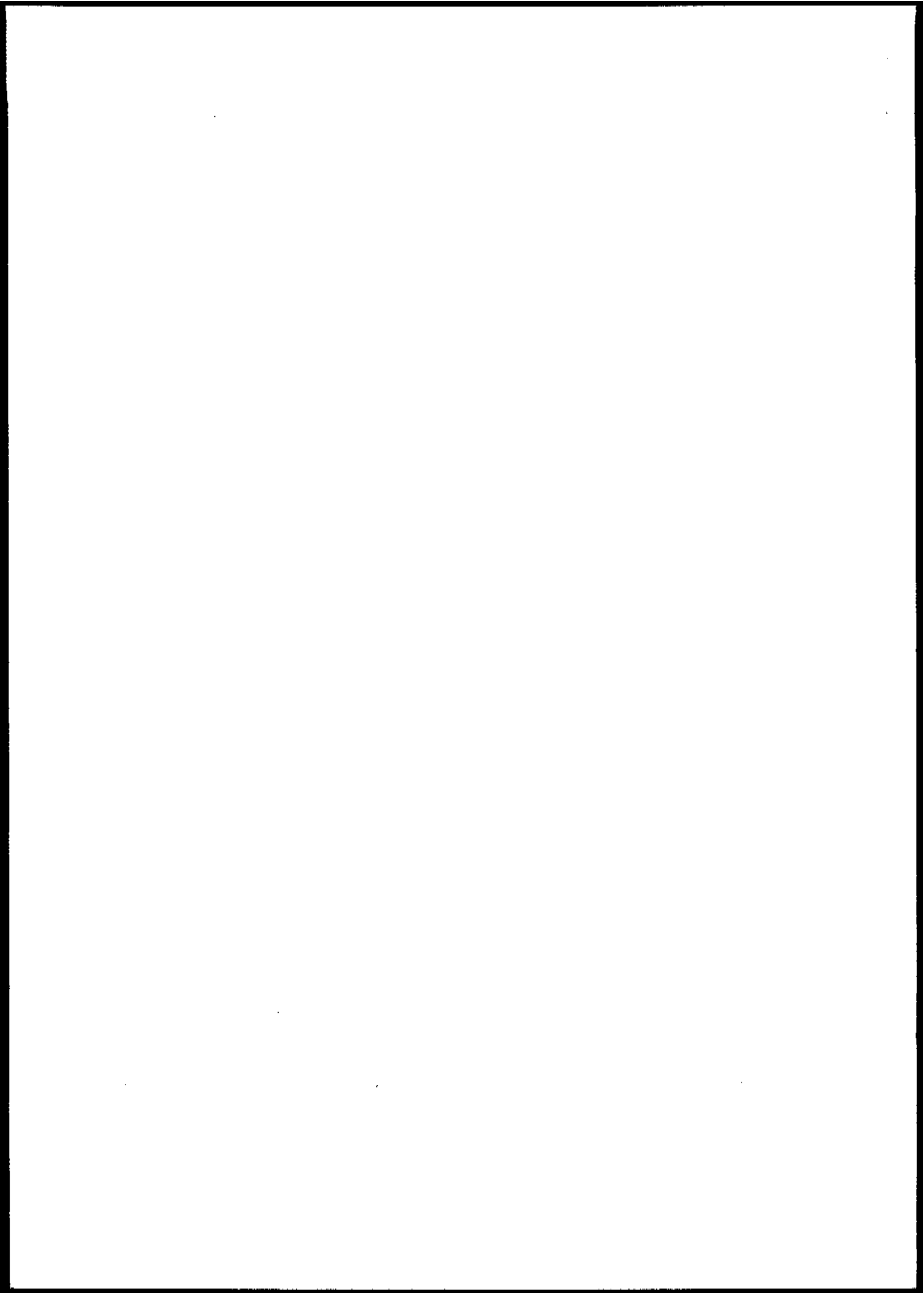
ANNEX 4

List of participants:

Name	Qualification	Address	Country
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Sevda Alizade Chief Doctor Maternity Hospital N° 5	Ob/Gyn	Sabail str. 29 Baku 370003 Tel 99412 910435 Fax 99412 938278	Azerbaijan
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Jachym Kucera Member of the Steering Committee Czech Neonatological Society	Neonatologist	Institute for the Care of Mother & Child WHO CC for Perinatal Medicine Podolske nabr. 157 Praha 4, Podoli 14710 Czech. Rep fax: 0042.2.61213851	Czech Republic
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**Perinatal care: planning for appropriate equipment.
Questionnaire for participants.**

Please complete the following questionnaire and send it back to: **Dr Giorgio Tamburlini, Bureau for International Health, Istituto per l'Infanzia, Via dell'Istria 65/1, 34137 Trieste, Italy.** We should receive it not later than **20 September 1995** (send it both by air mail and by fax: **+39 40 3785 402**, if possible). Please report 1994 data, if available; otherwise, specify the year. The information you provide will be used during the course: we would like to use real data for exercises and group discussions. Moreover, it will be interesting for the participants to compare their data and opinions with those from other countries.

This questionnaire has been completed by:	
Name:	
Title:	
Position held:	
Country:	

Part I: general information and indicators.

Please report national data if available; you may <u>also</u> or <u>only</u> report local data, i.e. from your region or institution.				
		Year	National	Local
Population				
Percentage of pregnant women receiving prenatal care:				
Percentage of pregnant women receiving prenatal care by:	doctor (Ob/Gyn/GP)			
	nurse/midwife			
	other attendant			
Average number of prenatal visits per attended woman:				
Percentage of pregnancies examined by ultrasonography:				
Number of deliveries:				
Percentage of caesarean section:				
Maternal mortality ratio (maternal deaths / live births x 100,000):				
Main causes of maternal death (%)	Hemorrhage			
	Eclampsia			
	Illegal Abortion			
	Infection			
	Others			

Birthweight (gr.)	Stillbirths (N°)	Livebirths (N°)	Deaths 0-6 days	Deaths 7-28days
1000-1499				
1500-1999				
2000-2499				
2500 and over				
Total				

		Year	National	Local
Main causes of neonatal death (%):	Prematurity			
	Asphyxia			
	Infections			
	Others			
Percentage of births attended by:	doctor (Ob/Gyn/GP):			
	nurse/midwife:			
	other birth attendant:			
Percentage of births not attended by trained professionals:				

Part 2: perinatal equipment.

Where are the following technologies used in your country?

Technology:	National hospital or tertiary level of care only	Also in secondary care hospitals	In all hospitals
Ultrasonography			
Cardiotocography			
Incubators			
Ventilators			
Oxygen therapy			

A. Ultrasonography

When ultrasonography is used in obstetrics, is it used:

- routinely [] if so, how many times per pregnancy on average:
- only for special indications [] (specify)

What are the major problems you find with obstetric ultrasonography? (0 = no problem; 1 = minor problem; 2 = major problem)

- training of staff is not sufficient to ensure a good utilization of technology 0 1 2
- there are frequent breakdowns due to lack of maintenance and spare parts 0 1 2
- the cost is high and the resources could be better used elsewhere 0 1 2
- the effectiveness is low: this technology does not improve quality of care 0 1 2
- other problems 0 1 2

Any other comment?

B. Cardiotocography

When cardiotocography is used in obstetrics, is it used:

- during pregnancy during labour and delivery both
- and is it used:

- routinely only for special indications

(specify)

What are the major problems you find with obstetric cardiotocography? (0 = no problem; 1 = minor problem; 2 = major problem)

- training of staff is not sufficient to ensure a good utilization of technology 0 1 2
- there are frequent breakdowns due to lack of maintenance and spare parts 0 1 2
- the cost is high and the resources could be better used elsewhere 0 1 2
- the effectiveness is low: this technology does not improve quality of care 0 1 2
- other problems 0 1 2
- 0 1 2

Any other comment?

.....

C. Technology for thermal control of the neonate

Do health professionals in your country take the temperature of newborn babies:

- routinely to all neonates
- only to low birth weight or sick neonates

Are they aware of the Baby Friendly Hospital Initiative?

- yes no don't know

Which methods are used for thermal control of the neonate? (0 = never used; 1 = sometimes used; 2 = most often used)

Method	Tertiary care	Secondary care	All hospitals
Incubator			
Radiant warmer			
Water filled heated mattress			
Kangaroo mother (skin-to-skin)			
Heated room			

What are the major problems you find with thermal control of the neonate? (0 = no problem; 1 = minor problem; 2 = major problem)

- training of staff is not sufficient to ensure a good utilization of technology 0 1 2
- there are frequent breakdowns due to lack of maintenance and spare parts 0 1 2
- the cost is high and the resources could be better used elsewhere 0 1 2
- the effectiveness is low: this technology does not improve quality of care 0 1 2
- other problems 0 1 2
- 0 1 2

Any other comment?

.....

D. Respiratory care and oxygen

What kind of respiratory care is used in your country for neonates and young infants? (0 = never used; 1 = sometimes used; 2 = most often used)

Method:	Tertiary care	Secondary care	All hospitals
Mechanical ventilation through endotracheal tube			
CPAP through nasal prongs or pharyngeal catheter			
Oxygen administration only			

What sources of oxygen are used in your region/district/hospital? (0 = never used; 1 = sometimes used; 2 = most often used)

Source of oxygen:	Tertiary care	Secondary care	All hospitals
Central supply			
Cylinders			
Oxygen concentrators			
Other (specify)			

What methods are used for oxygen administration in your region/district/hospital? (0 = never used; 1 = sometimes used; 2 = most often used)

Method:	Tertiary care	Secondary care	All hospitals
Headbox			
Facemask			
Nasopharyngeal catheter			
Nasal catheter			
Nasal prongs			
Other (specify)			

What are the major problems you find with respiratory care and oxygen therapy? (0 = no problem; 1 = minor problem; 2 = major problem)

- training of staff is not sufficient to ensure a good utilization of technology	0	1	2
- there are frequent breakdowns due to lack of maintenance and spare parts	0	1	2
- the cost is high and the resources could be better used elsewhere	0	1	2
- the effectiveness is low: this technology does not improve quality of care	0	1	2
- other problems	0	1	2
.....	0	1	2

Any other comment?

.....

Part 3: your expectations.

Please, list your main expectations from this course:

- to be updated about indications and use of specific equipment (specify).....
- to learn methods of technology assessment
- to be able to better plan technologies for perinatal care
- to learn methods to evaluate costs and benefits of perinatal technologies at different level
- to be able to train other health professional on technology assessment
- others.....

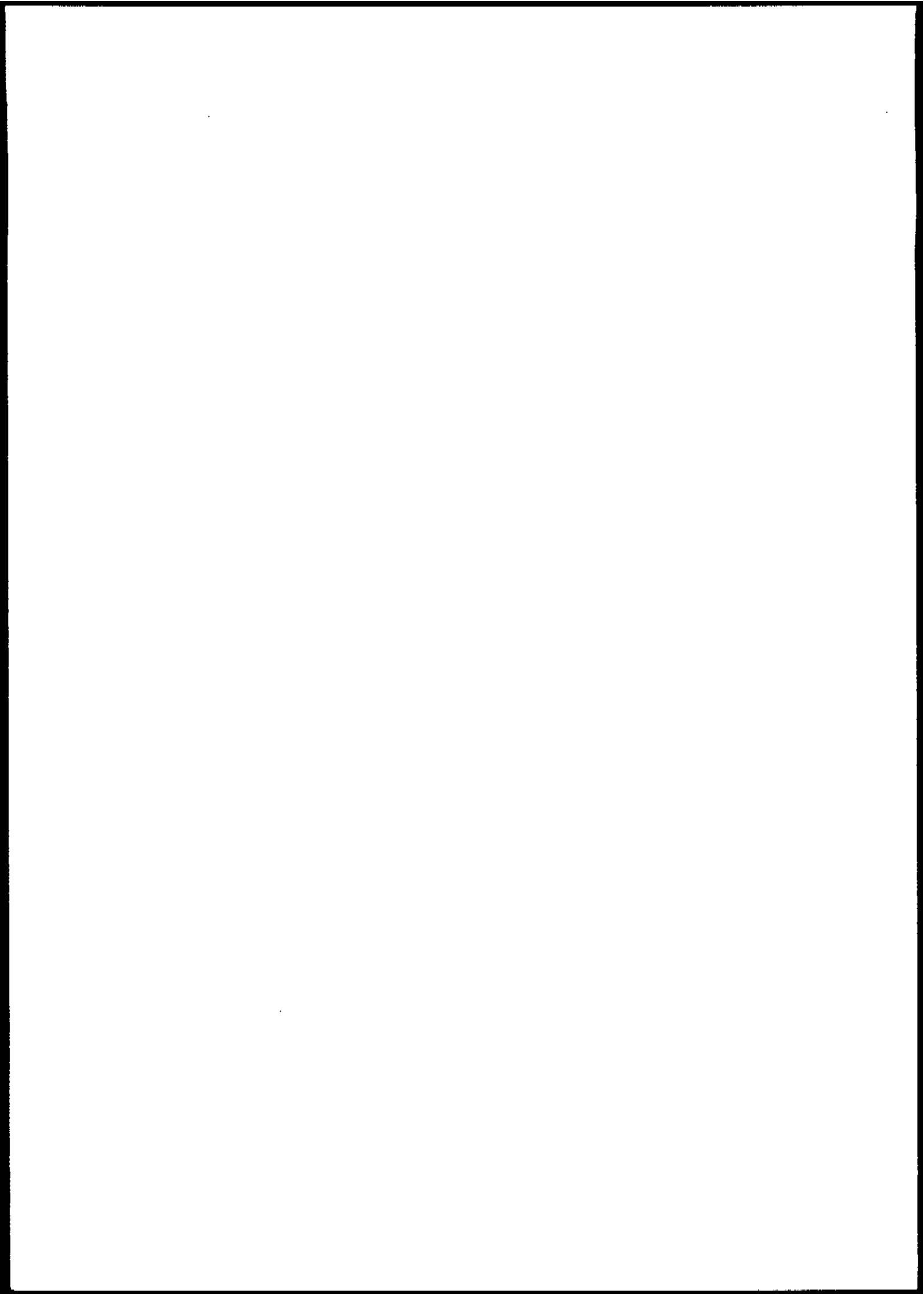
.....

Any other comment?

.....

.....

.....



Summary of the information gathered from the questionnaires filled in by 18 participants from 15 countries before the course.

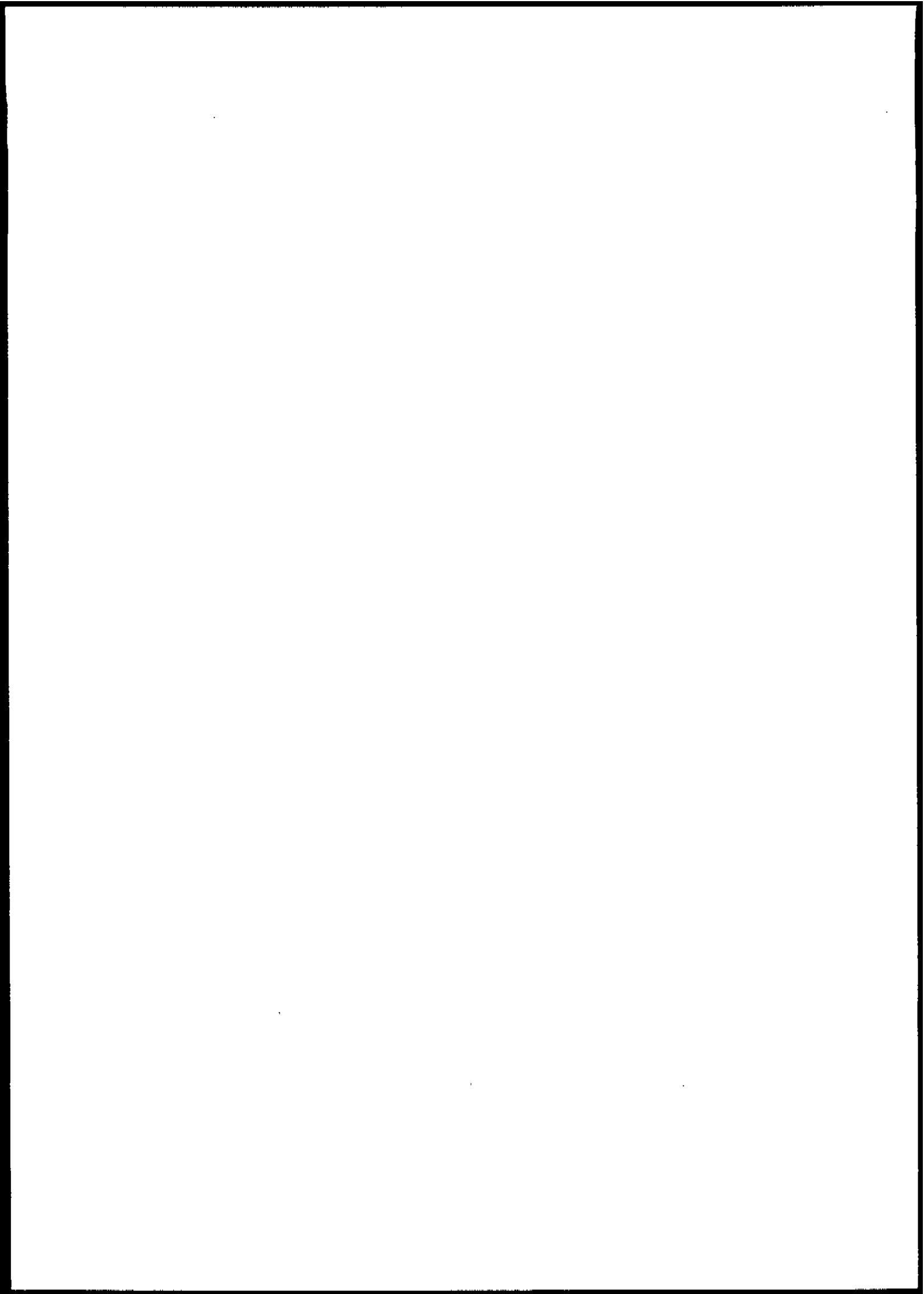
The questionnaire was meant to provide information on:

- National and/or local indicators on perinatal health (mortality and morbidity) and health care;
- Availability of equipment for perinatal care at different levels;
- Problems most often recognised in the use of this equipment.

In most countries, ultrasound scanners, cardiotocographers (CTG), incubators, ventilators, and sources and tools for oxygen administration are available not only at tertiary care level, but also in secondary hospitals (this is the case, for exempla, of ultrasound scanners and CTG) and sometimes in all hospitals (as is the case for incubators and oxygen therapy equipment). Only outside of Europe (Morocco, Iran, and, to a lesser extent, Tagikistan) the availability of equipment is limited to tertiary care hospitals

Only in a handful of countries (Moldova and Romania) is the number of ultrasound scans during pregnancy limited by criteria of risk. In most countries, and increasingly so as one moves from Central to Eastern Europe and to the Asian republics, several problems are detected regarding the use of equipment for perinatal care. The following list of problems ranks them by perceived importance and is consistent across all the countries represented in the course (the percentage refers to the number of respondents, out of 18, indicating a problem as the main one):

1. Inadequate maintenance and lack of spare parts: 46%
2. Inadequate training of the staff 30%
3. Questionable cost/benefit ratio 22%
4. Questionable effectiveness 14%



Summary of the consensus reached during group work on the technologies discussed during the course.

1. General

It was agreed that decisions and plans about the technologies being discussed should be made only within a more general framework of health policy resolutions, in which priorities are clearly identified. New technologies should not be introduced unless resources to operate and maintain them are available and sustainable. In particular, the professional and auxiliary staff should be identified and trained, supplies of consumable materials should be guaranteed, preventive maintenance ensured, timely repair provided, and transport secured for patients and materials. New activities should in any case be closely supervised and data should be gathered for periodic monitoring, before widespread use is allowed. National standard guidelines for the use of new technologies should be prepared and disseminated at this point.

2. Ultrasounds in obstetrics

Countries should carefully analyse their indicators on maternal, perinatal and neonatal mortality, and the respective breakdown by cause of death. Where possible, the same analysis should be extended to morbidity indicators. This will help decide whether echography and cardiotocography would be useful and which components of mortality and morbidity they would contribute to reduce, and by what proportion. In general, echography should not be used routinely, but only for women with risk pregnancies and for specific indications. Should a country decide to carry out routine echography on all pregnancy, this would be indicated at about 16 to 20 weeks of gestation for detection of major congenital malformation (provided termination of pregnancy is legally allowed) and at about 30 to 34 weeks for identification of intrauterine growth retardation. Cardiotocography as well should not be used routinely, but only in progressively selected women in labour and at secondary and tertiary levels. Most of these cases will only need an initial assessment, while few will undergo intermittent and perhaps continuous monitoring. Clinical monitoring of labour, aided by laboratory investigations, is the standard for all women in labour, including those submitted to cardiotocography.

3. Thermal control of the neonate

It was agreed that hypothermia should be first of all prevented. Simple technologies are already available for this purpose and are described in a WHO technical document, among them, rooming-in and early breastfeeding should be particularly stressed. When hypothermia occurs or is very likely, as in the case of low birth weight infants, the skin-to-skin method, associated with a warm room, is the technology of choice for most first level maternities and even at secondary and tertiary levels. Radiant warmers should be available for resuscitation and stabilisation of hypothermic neonates. Incubators, or better water filled heated mattresses, should be available for special care of hypothermic newborns at tertiary level (or even at secondary level if this is deemed necessary after a careful plan for regionalization of neonatal care). Once again, the need for trained staff, regular supplies, appropriate equipment (low reading thermometers), maintenance, supervision, monitoring, and reliable transport was stressed.

4. Management of birth asphyxia and respiratory distress

Emphasis should first be placed on prevention: interventions such as the use of steroids for premature labour, the use of the partogram for the management of labour, and the use of simple resuscitation procedures could significantly reduce the incidence and severity of birth asphyxia and respiratory distress. When these events occur, resuscitation should be carried out at all levels with bag and mask. This would be the only technology available at first level, where aspiration should also be ensured. Other methods such as the use of CPAP and of ventilation through a T-piece should be available at secondary and tertiary levels for referred cases (referral should occur before birth whenever possible). There should be very little need for intubation and mechanical ventilation, as the above-mentioned technologies would be sufficient for almost all circumstances, excluding very low birth weight infants. Intubation and mechanical ventilation, therefore, should be available only in neonatal intensive care units located in each country according to a plan for the regionalization of neonatal care. The regular supply of oxygen, drugs and other consumable materials is a prerequisite for any plan and intervention based on these technologies.

FINAL COURSE EVALUATION

International Course
“ Perinatal Care: Planning for Appropriate Equipment “

October 1995

To enable us to improve the course for the future, please fill out this questionnaire.

At the end of this course do you feel *confident (C)*, *fairly confident (F)*, or *not very confident (N)* of your knowledge and/or ability concerning the following objectives:

A. ACHIEVEMENT OF THE COURSE OBJECTIVES

- | | | | |
|---|-------|-------|-------|
| 1. To enable participants to evaluate what equipment for perinatal care is appropriate for their settings in terms of effectiveness, cost, applicability. | C [] | F [] | N [] |
| 2. To enable participants to plan purchase, use and maintenance of equipment for perinatal care. | C [] | F [] | N [] |
| 3. To review and discuss indications, use, manpower needs, maintenance, effectiveness and cost-effectiveness of the following equipment: | | | |
| 3a. Obstetric ultrasound | C [] | F [] | N [] |
| 3b. Cardiotocography | C [] | F [] | N [] |
| 3c. Incubators and other technology for thermal control | C [] | F [] | N [] |
| 3d. Mechanical ventilation, CPAP and oxygen administration | C [] | F [] | N [] |
| 4. To develop models for appropriate planning of the use of equipment at different levels of the perinatal care system | C [] | F [] | N [] |
| 5. To review some basic principles concerning: | | | |
| 5a. Data and use of indicators in prenatal care | C [] | F [] | N [] |
| 5b. Evaluation of a screening test | C [] | F [] | N [] |
| 5c. Technology assessment
(effectiveness, cost-effectiveness, cost-benefit, controlled trials) | C [] | F [] | N [] |
| 5d. Health service planning | C [] | F [] | N [] |

For each activity listed below, tick the box that best describes the value of the session to you according to the following:

- 1 = Poor
- 2 = Sufficient
- 3 = Good
- 4 = Very good

B. EVALUATION OF THE MODULES

1. Introduction:

1a. Presentation	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
1b. Supporting material	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

Comments:

2. Ultrasound and CTG:

2a. Presentation	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
2b. Supporting material	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
2c. Group work	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

Comments:

3. Thermal control:

3a. Presentation	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
3b. Supporting material	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
3c. Group work	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

Comments:

4. Respiratory problems:

4a. Presentation	1 []	2 []	3 []	4 []
4b. Supporting material	1 []	2 []	3 []	4 []
4c. Group work	1 []	2 []	3 []	4 []

Comments:

5. Planning:

5a. Presentation	1 []	2 []	3 []	4 []
5b. Supporting material	1 []	2 []	3 []	4 []
5c. Group work	1 []	2 []	3 []	4 []

Comments:

C. OVERALL EVALUATION OF THE COURSE

- Interest	1 []	2 []	3 []	4 []
- Usefulness	1 []	2 []	3 []	4 []
- Supporting material	1 []	2 []	3 []	4 []
- Relationship with teachers	1 []	2 []	3 []	4 []
- Relationship with colleagues	1 []	2 []	3 []	4 []

Do you think the course was appropriate for your country? _____

Which changes would you suggest for presenting this course in your country (apart from the language)? _____

What aspects discussed during the course do you think you could apply in your facility?

Further suggestions _____

Further criticisms _____

Other comments _____

Summary of the results from 20 questionnaires filled in for the evaluation of the course.

A. Achievement of the course objectives:

- About 60% of the participants felt fully confident about the achievement of the objectives;
- About 40% of the participants felt fairly confident;
- The objectives that scored the lowest in terms of achievement were those related to screening and planning.

B. Evaluation of individual modules:

- About 65% of the participants assigned the maximum score (4) to all modules;
- About 35% of the participants assigned a score of 3 on average to all modules;
- The lowest scores were assigned to the module on ultrasounds in pregnancy by the neonatologists, and to the module on thermal control by the obstetricians.

C. Overall evaluation (score 0 to 4):

- Interest: 3.8 on average (and never under 3)
- Usefulness: 3.6 on average (and never under 3)
- Supporting materials: 3.5 on average (1 under 3)
- Relationships with teachers: 3.5 on average
- Relationship with colleagues: 3.4 on average (2 under 3)

D. Free comments:

- Most comments were very enthusiastic and encouraging;
- There was some request for training of this kind in the countries;
- There were suggestions for better selection of the participants, in particular regarding language proficiency and role within the national perinatal care system;
- The need for better data collection and appraisal was recognised;
- The course organisers were praised for their efforts on logistics.