ANNEX 1

TO THE ECHI-2 REPORT, JUNE 20, 2005

ABRIDGED VERSION OF THE ECHI-1 FINAL REPORT.

PART I

HEALTH INDICATORS FOR THE EUROPEAN COMMUNITY

Abridged version

I-1. Why EC health indicators?

The European Commission's Health Monitoring Programme

The European Commission's Health Monitoring Programme (hereafter called HMP) was established in 1997 to take forward the enhanced public health responsibilities of the EU in the public health field. It has as its objective *'to contribute to the establishment of a Community health monitoring system'*, in order to:

1. Measure health status, its determinants and the trends therein throughout the Community;
2. Facilitate the planning, monitoring and evaluation of Community Programmes and actions; and
3. Provide Member States with appropriate health information to make comparisons and support their national health policies.

The activities under the HMP have been set out under three 'Pillars':

- Pillar A: Establishment of Community health indicators;
- Pillar B: Development of a Community-wide network for sharing health data;
- Pillar C: Analyses and reporting.

Under these pillars, projects are funded in specific areas to realise HMP's goals (see *Annex 6*).

I-2. The ECHI project

European Community Health Indicators

This report presents the results of a project under the HMP called *'Integrated approach to establishing European Community Health Indicators'* (ECHI). As indicated by the title, the ECHI project was designed to address the core business of Pillar A. Its objective was formulated as:

'To propose a coherent set of European Community Health Indicators, meant to serve the three purposes formulated for the HMP, selected on the basis of explicit criteria, and supported by all Member States'.

The ECHI project group consisted of representatives from all MS, various international organisations and the Commission (*Annex 1*). It has defined the scope of the project as follows:

- First, to *define the areas* of data and indicators to be included in the system, following a set of explicit *criteria*;
- Next, to define *generic indicators* in these areas, again following these criteria;
- As a novel element, to imply a *high degree of flexibility* in the indicator set, by defining subsets of indicators, or 'user-windows', tuned to specific users; examples of such users are strategic planners, people involved in local health promotion actions, etc.

As to the use of the indicator list, the following was envisaged:

- To provide a guiding structure for the production of public health reports at (inter)-national or regional levels;

- To provide the logical framework for the development of the EUPHIN-HIEMS (Health Information and Exchange Monitoring System) electronic data exchange system being developed under the HMP, Pillar B;
- To identify data gaps and thereby help to indicate priorities for data collection and harmonisation, also as guidance for other projects under the HMP;
- To serve as a guiding framework for follow-up. The result of the project clearly is not a final stage and needs continuous elaboration and update. This can be taken up by the Commission's new Public Health Action Programme.

I-3. Which health indicators?

Prerequisites, criteria, backgrounds

Three general objectives of a European health indicator set have been defined by the HMP, i.e., *monitor trends throughout the EU*, *evaluate EU policies*, *and enable international comparisons*.

This calls for the explicit definition of a set of criteria. Thus, the indicator set should:

- Be *comprehensive*, i.e. the multi-purpose nature of the monitoring objectives require the coverage of all domains which are normally included in the public health field; in addition, the indicator set should be *coherent*, in the sense of *conceptual consistency*.
- Take account of earlier work in the area of indicator selection and definition, especially that by WHO-Europe, OECD and the Commission Services in Eurostat; thus *avoiding duplication of effort* and promoting cooperation between international organisations;
- Cover the areas in the Public Health field which Member States want to pursue (*MS policy priorities; also regions within MS may have their own health policies*); in addition, it should meet the needs of Community Policies (*Community policy priorities*);

In terms of the selection of indicators at the detailed level, the following prerequisites are formulated in addition:

- The actual selection and definition of indicators within a specific public health area should be *guided by scientific principles*.
- Indicators (and underlying data) should meet a number of methodological and quality criteria concerning e.g. validity, sensitivity, timeliness, etc. (*quality, validity, sensitivity and comparability*);
- The probability of changing policy interests calls for a *high degree of flexibility,* made possible by current electronic database systems.
- Selection of indicators should be based, to start with, on existing and comparable data sets for which regular monitoring is feasible, but should also indicate *data needs and development areas.*

I-4. Applying the criteria

Comprehensiveness and conceptual consistency

Health is a broad issue and the eventual health indicator set should constitute a balanced collection, covering all major areas within the field of public health. Based on the HMP's Annex 2 and many other sources and considerations, the main categories of indicators were proposed as in the box below:

Main categories for the ECHI indicator set

1 Demographic and socio-economic factors
- 1.1 Population
- 1.2 Socio-economic factors

2 Health status
- 2.1 Mortality
- 2.2 Morbidity, disease-specific
- 2.3 Generic health status
- 2.4 Composite health status measures

3 Determinants of health
- 3.1 Personal and biological factors
- 3.2 Health behaviours
- 3.3 Living and working conditions

4 Health systems
- 4.1 Prevention, health protection and health promotion
- 4.2 Health care resources
- 4.3 Health care utilisation
- 4.4 Health expenditures and financing
- 4.5 Health care quality/performance

Taking account of earlier work

As a precursor of the HMP, a study was carried out by the 'Working Party on Community Health Data and Indicators', chaired by the Danish Ministry of Health. In this study, an inventory was made of data available at WHO-Europe, The Commission and OECD. This effort was followed up by WHO-Europe (with Commission support) in 'ICHI': International Compendium of Health Indicators. In addition, the current updating of WHO's HFA 21 indicators, the 2000 version of OECD health indicators and the developments in the Commission's data collection at Eurostat have been closely taken into account.

Coverage of Member States and Community focus of interests

Member States' health policy priorities
Increasingly, EU Member States, or regions within MS, have formulated priority areas or targets for their health policies. From these sources, a short list of items appears to occur very frequently:

- Increase the number of healthy years lived, by tackling the main causes of death, ill-health and functional limitations (including physical and mental health aspects);
- Reduce health inequalities, by means of health policies but also by social policies;

- Improve effective health promotion and disease prevention especially aiming at lifestyle and at young people;
- Improve the quality and accessibility of care, including community care;
- Improve the quality of life and participation of the elderly.

Besides national governments, sub-national (regional) authorities very often have responsabilities as well as explicit policies in health.

Meeting the needs of Community Policies

In the first EU 'Framework for action in the field of Public Health' (1993), eight action programmes were proposed (AIDS and other communicable diseases, cancer, drug dependence, pollution-related diseases, injuries, rare diseases, the Health Promotion Programme and the Health Monitoring Programme). Recently, a new Programme of Community Action in the Field of Public Health has been proposed. Basically, three 'strands' of action have been addressed:

- Improving health information and knowledge;
- Responding rapidly to health threats;
- Addressing health determinants.

Another source is the publication 'Priorities for public health action in the European Union', which states the following Community priorities: Social gradients, alcohol, illicit drugs, tobacco, health surveillance, quality of health care, mental health, environment and food/nutrition.

Scientific principles and quality aspects

In working out the indicator selection, quantitative principles such as the size of a health problem, its total costs, or the degree of preventability of the problem have served as criteria. This particularly applies to the selection of cause-specific mortality, of disease-specific morbidity, and to the selection of indicators in the area of health determinants.

It is evident that in the actual operational definitions of the indicators, we should meet certain quality criteria. In the Danish Ministry of Health Study, nine such criteria were formulated. In short, an indicator should measure what we think it measures (validity), be sensitive to changes over time or by place, be comparable between countries or regions, to mention the three most important aspects.

Flexibility and the continuous improvement of indicators and data collection

Basically, flexibility means that a system of data and indicators should never be fixed, and is never final. Policy interests change, scientific views and electronic tools evolve, with associated shifts in data collection activities.

Many indicators currently in use reflect the availability of more or less comparable data sources. In some areas, however, data are not readily available in many Member States, even though the need for fully comparable information is strongly felt. These areas deserve extra efforts in R&D. They include, a.o. (not exhaustive):

- Disease-specific morbidity at population level.
- Integrated measurement of generic health status (functional limitations, health-related quality of life, composite health measures).
- Health inequalities.
- Determinants of mental health, social determinants of health.
- Increased comparability of health care data.

- Indicators of the performance of health (care) systems.

Below we will address another aspect of flexibility.

I-5. Flexible approach to indicators: User-windows.

Applying the above criteria has resulted in a quite extensive indicator list. Yet, it is limited for each of the areas covered. It is anticipated that the system will be used by many different users, for many different purposes. This may require specific subsets from the total array of indicators. These subsets are named *'user-windows'*. Technically, a modern database systems (like HIEMS) should allow this sort of use. Specific user perspectives could be: (i) areas of health policy interest; (ii) thematic entries such as age groups, (iii) disease groups with their determinants and costs, etc. Examples are:

- *Cockpit information;* to have a quick view on the major trends in public health, including recent relevant signals, for medium or long-term policy strategies;
- *EU priority list;* to follow developments for specific EU policy areas or targets, programmes or projects; this user-window can be shaped as a guide or tool for EU action;
- *The WHO/HFA21 indicator set*; to follow this list of indicators for the countries of the EU;
- *Health and services for mother and child*; to focus on reproductive health, health of children and family structure.

Three of these examples have been implemented, by way of illustration, in *Section I-8*. More examples have been mentioned in *Chapter II-5* and worked out in *Annex 7*.

The user-window concept is a more flexible approach of the original idea of 'core indicators'. Yet, policy development as well as focusing R&D activities need the formulation of priorities. We may in fact move in two divergent directions simultaneously:

(1) Choose a user-window named 'EU-priority list' as a set of 'core indicators', to focus on a *limited set of issues* thought the most important in EU public health policy and therefore as a priority focus for work on data harmonisation;
(2) At the other extreme, consider the entire 'multi-purpose' indicator set or whatever user-window not as a fixed entity as such, but mainly as a reflection of data collection activities. This implies that we are defining comparable data sources rather than indicators.

I-6. Future implementation, use and maintenance of EC health indicators

Thinking of the appropriate follow-up for this project, we may quote the newly proposed EU Public Health Action Programme now under discussion, stating (version of May 15, 2000): *'…. a comprehensive health information system …. , based on the establishment of **agreed Community-wide indicators** for health status …. health determinants ….. interventions …. costs ….'*. These quotations provide the grounds for the further development and future use of the indicator list proposed in this report.

The presently proposed indicator list (see *paragraph I-7* and *part II, Table II-4.1*) is by no means definitive. It sets a framework for further development, for a consistent arrangement of databases and for focusing further work, but much of its implementation and preparation for actual use still has to follow.

For this follow-up, we envisage that projects under the HMP and related initiatives should work together on the operationalisation and harmonisation of selected indicators. More important is what lays behind: the collection of the underlying data in a comparable manner, i.e. the definition of comparable data sources and data collection methods. All this work should be co-ordinated closely with the Commission's Services at Eurostat, with WHO/Europe and OECD. In order to support this process further, the ECHI project group has submitted a proposal to the HMP to continue the work on an EU Health Indicator list for another two years.

For the longer term, the maintenance of a system of indicators and data on health requires an infrastructure which has continuity and expertise. The new Public Health Action Programme mentions the 'development of a Community network to undertake analysis and reporting' (page 33). This idea has recently been endorsed by the European Parliament, although there is still much debate on this issue. In fact, it seems mandatory to think of a centralised, or at any rate co-ordinated body or facility with responsibility for the overall field of data collection prioritisation, data evaluation, analysis and reporting. This facility should have professional expertise and authority, but at the same time be a light and flexible structure. It should develop an agenda determined by the needs of the Commission and the Member States.

I-7. The proposed list of EC health indicators;

This list gives the *generic* names of the indicators. *Part II* of this report gives more details such as comments on age/gender/SES/etc. stratification, on similarities with existing indicators, possible data sources, or specific problems. It also addresses possible operationalisation.

Class 1. Demography and Socio-economic situation

These indicators provide a general picture of the situation in a country or region, and a frame of reference for many of the other health indicators. Moreover, the population data provide e.g. the denominator for calculating many other indicators.

1.1 Population

- Total population
- Median age of population
- % of population under 15 of age
- % of population age 65 and over
- Live births
- Aged mothers, teenage mothers
- Crude birth rate
- Total deaths
- Crude death rate
- Net migration
- Total fertility rate
- Annual in(de-)crease %
- Population by region
- Population by urbanisation level
- Population projections

1.2 Socio-economic factors

- Education attainment
- Education enrolment
- Literacy rate
- Population by employment type
- Population by occupational class
- Total labour force
- Total employment
- Total unemployment
- Population by ethnicity
- Population by household situation
- Population by income level/income distribution
- Gross Domestic Product (GDP)
- GDP Purchasing power parity

Class 2. Health Status

This section contains indicators on various aspects of the actual health situation of the population. Disease groups have been selected because of their substantial share in the total burden of ill-health or because of their reference to known risk factors or to identified activities in prevention and health care (e.g. avoidable mortality). In this context we have not used the term 'Health outcomes'. We prefer to reserve this term for situations where a clear link can be made to an intervention.

2.1 Mortality

2.1.1 Life expectancy & related indicators

- Life expectancy
- Chance of dying in age intervals

2.1.2 General mortality

- Crude death rate
- Standardised death rate
- Infant mortality
- Neonatal mortality
- Postneonatal mortality
- Perinatal mortality
- Inequality in deaths

2.1.3 Cause-specific mortality

- Numbers of deaths
- Crude death rates
- Standardised death rate
- Years of life lost (PYLL)
- PYLL fraction

Which causes of death (COD) to include? We propose (a) the 'main causes of death', in terms of size, using the European shortlist of 65 causes; and (b) a limited set of COD selected as relevant for certain risk factors or issues of prevention or health care.

2.2 Morbidity, disease-specific

- Incidence/prevalence of selected diseases/disorders

Which diseases/disorders should be selected for the indicator list? Getting comparable data on population incidence or prevalence of diseases/disorders is an important development area. Analogous to 'mortality', we propose (a) diseases that are responsible for a large share of the burden of ill health (large impact) in the population (based on Burden of Disease studies and WHO HFA list), and (2) a limited set of diseases selected as relevant for certain risk factors or issues of prevention and health care. Disease definitions should coincide with the causes of death, were applicable.

(a) Diseases/disorders of large impact

- HIV/AIDS
- Tuberculosis
- Sexually transmitted diseases
- All cancers
- Lung etc. cancer
- Breast cancer
- Cervix uteri cancer
- Colorectal cancer
- Prostate cancer
- Melanoma and other skin cancer
- Diabetes
- Dementia/Alzheimer
- Depression
- Generalised anxiety disorder
- Alcohol-related disorders
- Ischaemic heart disease
- Acute myocardial infarction
- Heart failure
- Cerebrovascular accident
- COPD (Chronic obstructive pulmonary disease)
- Asthma
- Decayed etc. teeth: DMF-12
- Musculoskeletal disorders
- Congenital anomalies
- Down's syndrome
- Road traffic injuries
- Occupational injuries
- Home/leisure injuries

(b) Diseases selected for other reasons

- Communicable diseases in vaccination schemes
- Water- and foodborne diseases
- Alcohol-related traffic accidents
- Occupational disease
- Creutzfeld-Jacob disease

2.3 Generic health status

- Perceived health
- Chronic disease general
- Functional limitations

- Activity limitations
- Global activity limitations indicator
- Short-term activity restrictions
- General mental health
- General quality of life
- Absenteeism from work
- Appropriate inequality measure

2.4 Composite measures of health status

- Disability free life expectancy
- Other health expectancies

Class 3. Determinants of health

This group contains all factors determining health, outside the health care system. It includes (i) the 'personal and biological factors'; (ii) health behaviours (lifestyle factors) and (iii) living and working conditions, more to be viewed as the wider environment. For all these categories of determinants, selection criteria have been: their importance in determining a substantial share of (ill-)health; the degree to which they can be influenced, and the cost-effectiveness of the interventions involved.

3.1 Personal and biological factors

3.1.1 Biological (risk) factors

- Body mass index
- Low birth weight
- Blood pressure
- Serum cholesterol
- Nutritional status indicators

3.1.2 Personal conditions

- Coping ability
- Sense of mastery
- Optimism
- Knowledge/attitudes on health issues

3.2 Health behaviours

3.2.1 Substance use

- Regular smoking
- Smoking in pregnant women
- Former smoking
- Amount smoked
- Alcohol use: non-drinkers
- Alcohol use pattern
- Total alcohol consumption
- (Il)licit drug use
- Road traffic accidents involving alcohol

3.2.2 Nutrition

- Energy from food
- % energy from fat
- % energy from sat. fatty acids
- % energy from protein
- Consumption of bread/cereals
- Consumption of fruit excl. juice
- Consumption of vegetables excl. potatoes
- Consumption of fish
- Consumption of micronutrients
- Breastfeeding
- Contaminants

3.2.3 Other health-related behaviours

- Physical activity
- Sexual behaviour
- Induced abortions
- Traffic behaviour
- Other health promotion behaviours?

3.3 Living and Working conditions

3.3.1 Physical environment

- Outdoor air
- Housing
- Drinking water supply
- Sewage system
- Ionising radiation
- Noise

3.3.2 Working conditions

- Physical workplace exposures
- Mental workplace exposures
- Accidents related to work
- Occupational diseases

3.3.3 Social & cultural environment

- Social support
- Social isolation/networks
- Life events
- Violence

Class 4. Health systems

This group includes indicators on the health services system, as well as on prevention and health promotion. In some areas indicator definition is tentative only.

4.1 Prevention, health protection and health promotion

4.1.1 Disease prevention

- Vaccination coverage
- Screening for breast cancer
- Screening for uterus/cervix cancer
- Screening for blood pressure/ cholesterol levels
- Prenatal screening
- Neonatal screening
- General preventive examination
- Integrated children's health monitoring

4.1.2 Health promotion

- Campaigns on health behaviours
- Mental health promotion

4.1.3 Health protection

- Regulations on public smoking
- advertising restrictions
- Average price of cigarettes
- Regulations on alcohol and driving
- Regulation on seat belts, cycle helmets
- Regulations on food safety and quality
- Regulations on air/water quality

4.2 Health care resources

4.2.1 Facilities

- Hospital beds total
- Hospital beds acute care
- Hospital beds private in-patient
- Psychiatric care beds
- Nursing/elderly home care beds

4.2.2 Manpower

- Health services employment
- Physicians employed
- Nurses employed
- Midwives employed
- Dentists employed
- Pharmacists
- Paramedical professions
- Hospital staff ratio: acute care
- Nurses staff ratio: acute care

4.2.3 Education

- Number of physicians graduated
- Number of nurses and midwives graduated
- Number of pharmacists graduated
- Number of dentists graduated

4.2.4 Technology

- No. of units of specified equipment

4.3 Health care utilisation

4.3.1 In-patient care utilisation

- Beddays: in-patient/acute care
- Occupancy rate: in-patient/acute care
- Average length of stay: in-patient/acute care
- Discharges; total, by disease group

4.3.2 Out-patient care utilisation

- Out-patient contacts

4.3.3 Surgical operations

- CABG (Coronary Artery Bypass Grafting)
- PTCA (Percutaneous Transluminal Coronary Angioplasty)
- Hip replacement
- Knee replacement
- Cataract operation
- Caesarean section
- Others?

4.3.4 Medicine use/medical aids?

- Medicine use total
- Use of specific groups of medicines
  - Peptic ulcer drugs
  - Diabetes drugs
  - Cholesterol/triglyceride reducers
  - Cardiac glycosides
  - Anti-arrhythmics
  - Antihypertensives
  - Diuretics
  - Beta blocking agents
  - Systemic antibacterials
  - Analgesics
  - Benzodiazepine derivatives
  - Psychoanaleptics
  - Antiasthmatics
- Use of medical aids

4.4 Health expenditures/financing

4.4.1 Health care system

- Key indicators for the structure/financing of the national health care system
- Insurance coverage
- Distribution of household expenditures on health

4.4.2 National expenditure on health

- Total/public/private expenditure on health
- Total/public/private expenditure on personal health
- Total/public/private expenditure on collective health

4.4.3 Expenditure on medical services

- Expenditure on in-patient care (total/public/private)
- Expenditure on out-patient care (total/public/private)
- Expenditure on ancillary services (total/public/private)
- Expenditure on home care services (total/public/private)

4.4.4 Medical goods dispensed to out--patients

- Expenditure on pharmaceutical goods and other medical non-durables
- Expenditure on medical appliances/other durables

4.4.5 Total health expenditure by age group

- Expenditure (%) 0-64 (m/f)
- Expenditure (%) 65-74 (m/f)
- Expenditure (%) 75+ (m/f)

4.4.6 Health expenditure by fund source

- By government/ social security/ own pocket, etc.

4.5 Health care quality/performance

4.5.1 Subjective indicators

- Perception of the health system
- Complaints

4.5.2 Health care process indicators

- Autopsy rate
- Waiting lists/times
- Number of surgeries-/interventions considered inappropriate
- Variations in numbers of specific surgeries/interventions
- Quality of blood products; amount of blood transfused

4.5.3 Health outcomes

- Avoidable Deaths
- Iatrogenic disease/death
- 30-days in-hospital mortality
- 28-day readmission rate
- Surgical wound infection
- Incidence of end-stage renal failure per 1000 diabetics
- Nosocomial Infections
- Antibiotic Resistance
- Cancer survival rates

I-8. Examples of user-windows

Example: 'Cockpit information'

The major purpose of this user-window would be the ability to get a quick glance *of the overall situation in the Community and the MS, with reference to medium- and long-term policy strategies. It could include alerts for issues likely to influence these strategies. This user-window requires a limited though comprehensive set of general indicators, covering all aspects of public health. It might also present a basic set for comparison with countries outside the EU (accession countries, other OECD countries, etc.). A proposal is presented below:*

- Population distribution
- Education attainment
- Unemployment
- Income variation
- Life expectancy at birth and age 65
- Infant mortality
- Cardiovascular mortality
- Mortality by external causes
- Perceived health, by SES
- General quality of life measure, by SES
- Selected health expectancy
- Body Mass Index, by SES
- Smoking prevalence
- Consumption of fruit/vegetables
- Housing
- Vaccination coverage
- Physicians per inhabitant
- Health expenditures as % of GDP
- Use of pharmaceuticals

Example: 'EU priority list'

This user-window is designed to follow developments for specific EU policy areas or targets. As it arises from the new EU policy, priority areas include: better information; reaction to threats; relevant determinants; health impact assessment (agriculture, transport, SES). Based on this, the present subset could be a mix of examples 2, and 4, with a few additions on communicable diseases. We propose:

- Fertility rate
- Population by urbanisation
- Education: attainment
- Unemployment
- Employment by ISCO class
- Income disparity
- GDP PPP
- Life expectancy
- Inequality in deaths, by a few main causes
- Injuries/deaths from road traffic accidents
- Occupational injuries/deaths
- Home/leisure injuries/deaths
- Perceived health by SES
- Absenteeism from work
- Body Mass Index
- Smoking prevalence
- Alcohol use
- Drug use
- Nutrition: energy from fat/protein
- Nutrition: consumption of bread/cereals; vegetables/fruit
- Physical exercise
- Housing
- Drinking water supply
- Sewage system
- Outdoor air quality
- Noise
- Emotional support
- Violence
- Occupational diseases
- Vaccination coverage
- Screening programmes
- Medicine use
- Health insurance coverage

Example: : 'Health and Services for Mother and child'

This subset, presented below, would serve the purpose of focusing on reproductive health, health of children, on the family situation, and on activities that relate to prevention and health services for children. Again we have not looked at the availability or operationalisation of these indicators.

- Median age of population
- % Population under 5, 18
- Aged mothers/teenage pregnancies
- Mean age at delivery (from live births by age of mother)
- Crude birth rate
- Total fertility rate
- Education enrolment
- Female employment (from total)
- Population by household situation
- Infant/neonatal/postneonatal mortality
- Perinatal mortality
- Chance of death in ages 0-5-14
- Selected communicable diseases (incidence, mortality)
- Congenital disorders, incl. mental handicap (incidence, mortality)
- Incidence of asthma in children (other?)
- Low birth weight
- Smoking in pregnant women
- Breastfeeding
- Sexual behaviour
- Induced abortions
- Social support/networks
- Life events
- Housing
- Vaccination coverage
- Perinatal/neonatal screening
- Integral children's health monitoring
- No. of midwives/specialised nurses
- Caesarean sections
- 30-days in-hospital mortality below 1 year of age