Baseline Country Survey
Biomedical Engineering Survey

Essential Health Technologies
Health Systems & Services/WHO

Working Group Developing Countries/IFMBE

Clinical Engineering Division/IFMBE

Universidade de Campinas - UNICAMP - Brazil

Saide Jorge Calil
WHO supported this survey to attend one of the objectives of the Gates Project

“Development of tools to support countries to integrate the prioritized needs into national policies, action plans and programs taking into account burden of disease data”
Objectives of this survey

1. Identify and quantify Biomedical/Clinical Engineering Instructional Units among WHO Member States that may help to train people on technology management (graduation, under-graduation and technical training).

2. Identify Biomedical and Clinical Engineering Societies, Associations or Groups that deals with medical equipment technology and management among WHO Member States.

3. Identify people that can help as a “contact person” between his/her country and WHO for matters related to the Biomedical/Clinical Engineering training activities.
How was the survey implemented?

Survey activities - grouped and developed in two phases

- **PHASE I**
  - Group the countries according to the six regions used by WHO (African, Eastern Mediterranean, European, Americas, South East Asian, Western Pacific)
  - Conduct a Worldwide web search to identify Biomedical Engineering Instructional Units and Societies
How was phase I implemented?

- Search on the Annals produced by the World Congress 2009 - International Federation of Medical and Biomedical Engineering (IFMBE)

- Direct contact (email) with CEs around the world with the help of the Clinical Engineering Division (CED/IFMBE)

- Result of Phase I: around 429 contacts
Keywords used for the survey

- Medical Engineering
- Clinical Engineering
- Health Technology
- Health Technology Management
- Medical Equipment
- Biomedical Equipment
- Medical Devices
- Biomedical Devices
Activities of Phase II

- Develop and implement a questionnaire and place it at a Website specially designed for worldwide E-surveys

- Explain and ask for help in every WHO meeting were the survey was being presented

- Contact previously identified people during Phase I (contact people) within Instructional Units and Biomedical Engineering Societies asking for help to respond the survey
Activities of Phase II

- Develop a second web survey using the translation of the keywords into different languages and with different characters (Ex: Arabic, Cyrillic, etc.) using Google translator.

- Double checking, selection, organization and grouping of all collected answers
Results

Filtering out all Instructional Units with no relation with Health Technology Management (Engineering Schools, Medical Schools, Biomedical Engineering Schools and so on)

36% of additional contacts were identified, completing a total of 584 contacts in 90 countries (53% of WHO Member States)
Kind of Contacts

- Total world: 595
- Teaching unit: 466
- Association: 115
- Others: 14
Percentage of countries with identified Instructional Units / countries (6 WHO regions)
Number of countries with and without Biomedical/Clinical Engineering contacts related to mortality rate
Trend to higher mortality rate for countries with no Instructional Units of Biomedical/Clinical Engineering
The project resulted in a list of Biomedical Engineering Societies and Instructional Units around the world.

The results are now online and the contact lists for each country can be accessed as PDF files at:

http://who.ceb.unicamp.br/
Biomedical/Clinical Engineering Teaching Units Worldwide Survey

Project Design and Support
- Department of Essential Health Technology - World Health Organization (WHO)
  Project Coordination: Center for Biomedical Engineering - University of Campinas (UNICAMP) - Brazil

Development
- Center for Biomedical Engineering - University of Campinas (UNICAMP) - Brazil
- Clinical Engineering Division / International Federation for Medical And Biological Engineering (CED/IFMBE)
- Working Group Developing Country/International Federation for Medical and Biological Engineering (WGDC/IFMBE)
- EU - TEMPUS IV Project on CReBME (Curricula Reformation and Harmonisation in the field of Biomedical Engineering)
  TEMPUS Project Coordination: University of Patras, Greece
THAILAND

Teaching Units:
1. Bio Medica Engineering Center Chiang Mai University

Dr. Sansanee Auephanwiriyakul

sansanee@eng.cmu.ac.th
"Room 702,
30th Anniversary Building Faculty of Engineering,
Chiang Mai 50200
Thailand
Tel: (+66) (0)-5394-2083- Ext 11

2. Department of Biomedical Engineering of Mahidol University
Thank you for your patience

Saide Jorge Calil - calil@ceb.unicamp.br

http://who.ceb.unicamp.br/