Future Direction of the IAEA Radiation and Tissue Banking Programme

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The Foundations of the IAEA Programme

Health care in Asia, Latin America and to a lesser extent Africa has been considerably improved through the IAEA programme to support tissue banks using radiation to sterilize the tissue grafts. These benefits can be summarised as follows:

- Making 222,580. Tissue grafts available for use in transplant surgery (in orthopedic reconstruction, treatment for cancer, trauma and high velocity impact damage), the treatment of burns, leprosy and intractable skin wounds and pressure sore ulcers.
- The cost benefits to the Member States as a result of having these grafts available, instead of having to import them can be valued at a minimum of 49.306,805 US$.
- IAEA now possesses a multi-million dollar asset in a training Curriculum in electronic form suitable for using on the Internet in English, Spanish and Korean.
- 296 doctors, tissue bank operators and associated users have been trained at an average cost of US$ 6,878 each.
- For the first time 81 have been trained to University Diploma level in Radiation and Tissue Banking using the IAEA/NUS Curriculum at a cost saving of 414,883US$ compared with the equivalent cost using conventional teaching to the same level.
- Using regular IAEA budgetary procedures the cost of preparing international level documents relating to Standards, Public Awareness and Radiation Sterilisation Guidelines would be about 165,500US$ more that expended in this Programme
- Latin America has benefited by producing indigenous grafts to a value of 24, 992 567 US$ and the 7 initial Tissue Banks supported by IAEA have inspired the start of 37 more by the end of 2001.
- At least 600,000 tissue allografts are now being sterilised by radiation due directly to the reverse technology transfer impact of the IAEA Programme

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The IAEA Programme for 2001-2002

The on-going programme is designed to produce:

- **Standards** for Tissue Bank operations, with guidance about suitable methods to ensure compliance with the Standards
- A **Handbook on Public and Professional Awareness** containing the information required to achieve Public Awareness of the need, benefits and procedures for tissue donation
- A **Code of Practice for Radiation Sterilisation of Tissues** to ensure the IAEA's continued international leadership in this new aspect of radiation technology
- **Training** of Tissue Bank Operators and clinical users of tissues using the one-year IAEA/NUS Curriculum in Asia (English) and Latin America (Spanish)

The following are the main innovations introduced in developing the IAEA Programme:

- **Co-ordinated Direction:** Adopting the principles of Thematic planning introduced by DDG/TC the operation of the IAEA Programme is now directed by a Steering Committee in which all Project Managers and Technical Officers are members. The Steering Committee is chaired by one of the Directors in the Department of Technical Co-operation.
- **Internet Training Delivery:** The valuable IAEA/NUS curriculum has now been placed in its own web site, interchangeably in both English and Spanish. Arrangements are now in place for a full launch in 2003. All the materials are also available in Korean language.
- **Securing an International Partner:** The USA based Musculo-skeletal Transplant Foundation (MTF) is the largest tissue bank in the world, providing 180.000 tissue allografts and 4000 donors annually. The associated academic network comprises some of the most prestigious surgical centres in the USA: Mayo Clinic, Cleveland Clinic, Case Western Reserve, the main New York University centres etc. MTF has now agreed a joint programme with IAEA, which will input at a cost value of at least US$ 91,500 to the IAEA Programme in Fellowship training in the USA, Expert input to upgrade IAEA-supported Tissue Banks and provide training by supplying material and experienced staff input.
- **Technical Advisory Committee:** All the Presidents of the Tissue Banking Associations in Asia, USA,

Latin America and Europe have agreed to serve on this Committee, which will provide the technical guidance on the direction and effectiveness of the IAEA programme.

The Proposed Outline Programme for 2003 – 2004

Whereas the existing practices have been adequate in many of the countries involved in the IAEA Programme, the International Standards, regulations, technologies, donor referral systems and radiation sterilization of tissues methodology have moved on. The emphasis of the 2003-2004 IAEA Programme is to ensure that these important new developments are effectively transferred to Member States. Otherwise, the participants in the IAEA programme would fall behind and form a second-class group.

Due to the newly established partnership with MTF, this updating can be achieved in a professional and cost-effective manner. The Agreement with MTF adds to the IAEA Programme those areas of expertise where IAEA does not specialize. The IAEA Programme has now the opportunity to link in education in the medical utilization of grafts and the linkage between Tissue Banks and hospital systems for setting up Donor Referral Systems, a necessary pre-requisite for donor supply.

The following are the ingredients in the IAEA Programme. Their inter-relationship is illustrated in Figure 1.

(a) Practical Application of the 2001 –2002 Output

This is one of the most important activities that needs to be supported by the IAEA Programme.

The organization of four regional workshops in each of Asia, Latin America, Europe and Africa centres to implement the output of the 2001-2002 IAEA Programme in:

- The IAEA Standards for Tissue Bank Operation
- The IAEA Handbook on Public and Professional Awareness
- The IAEA Code of Practice for Radiation Sterilisation of Biological Tissues.

(b) Professional Education

The IAEA Programme for 2003-2004 will continue supporting the training of tissue bank operators, doctors and managers from the participating countries.

Doctors: An omission in the IAEA Programme up to this time is professional education for surgeons who use the radiation sterilized tissue grafts. Very many have pursued the one-year Distance Learning Training at Singapore and Buenos Aires, and which have led them to start Tissue Banks using radiation sterilisation. With the support of MTF these key medical users will have an opportunity to gain fellowships to the USA, organised by MTF, and have direct medical experience in some of the major surgical centres in the world. It is an outstanding opportunity, and enabling those who gain fellowships to organise comparable training in their own country.

Hospital staff: The link between the tissue bank and the Donor Referral System depends on experienced hospital staff. With support from MTF a Module in this subject will be prepared and introduced into the IAEA/NUS Curriculum. Additional selected key individuals from this sector will be awarded fellowships to receive appropriate training in the USA.

(c) Internet Training

The completion of the following programmes, initiated in 2001-2002 will be completed and utilized globally.

- Constructing a website and placing the IAEA/NUS Curriculum (in Spanish, English and Korean language) in an appropriate structured interactive and language interchangeable mode.
- Identifying the linked server requirements and cyber methods for delivery of the material to students, with assessment pathways.
- Setting up and managing a global model for an International Centre, which can serve Regional and National Centres, so ensuring uniformity of the material and standards across the participating regions and countries.

(d) Tissue Demand Survey

Taking into account the new dimension of the IAEA Programme, the Steering Committee in its first meeting, suggested that a tissue demand market survey be conducted, with the support of the Tissue Bank Professional Associations, in all countries participating in the IAEA Programme with the purpose of identifying the potential needs of the existing tissue banks in training, tissues, etc.

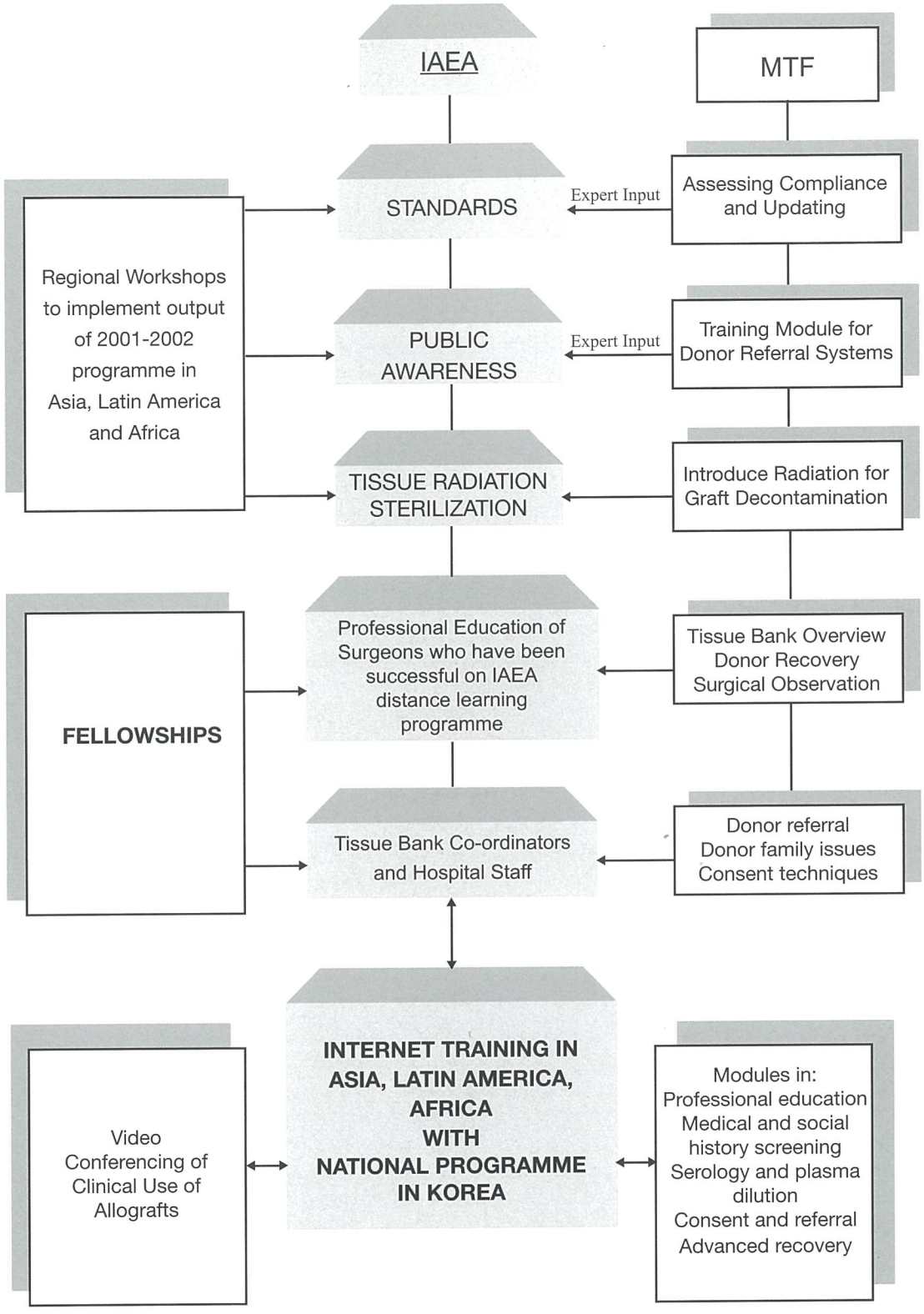

Figure 1. Programme for 2003-2004

The Model to be implemented during 2003 – 2004 is illustrated in Figure 2:

Figure 2. Model for 2003 -2004

****Note:** The curriculum is already available in Korean and the Cyber Centre at KAERI together with the Korean Association of Tissue Banking, and the Korean Musculoskeletal Association agreed to implement the training.