France

The AFIB (French Association of Biomedical Engineers) aims to promote, at all levels, reflection, action and training on the themes of clinical and/or biomedical engineering. AFIB members are mainly engineers working for public or private health establishments, design offices and other institutions. The biomedical (or clinical) engineers are responsible for applying and implementing medical technology to optimize healthcare delivery.

The 24th annual meeting of the Association of French Biomedical Engineers, which have just ended, have shown the vitality, openness of the French clinical engineering and its integration into the French health system. Focused on “Artificial Intelligence at the heart of biomedical engineering”, the speakers, many of whom are doctors, medical or university professors, officials, members of the Ministry of Health, scientists, put forwards how the new technologies could improve healthcare and how the biomedical engineers could manage it.

It’s also a place to discuss about the application of laws, rules and regulations, standards and guidelines.

Each year, the association also closely monitor technological developments of healthcare devices by missions made by his members in anesthesia, medical imaging, surgery, biology, radiotherapy. These works are published and presented during the annual meeting.

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1. **State of Clinical Engineering (CE) - Health Technology Management (HTM) – Body of Practice (BOP)**

   In 2015, Afib published a very complete guide to its practices (BOP) containing 44 practical sheets that describe in concrete terms the missions and actions of French biomedical engineers.

   This guide ("Valuation of the biomedical engineering profession") describes:

   - the engineer's main tasks (Prepare, develop and execute the facility's medical equipment plan),
   - those for managing the biomedical service as part of the institution's programme, as well as its specific missions (technological and regulatory monitoring, material vigilance; clinical research and innovation)
   - its role as advisor to the management and medical teams, to cooperate with other hospital experts (pharmacists, computer scientists, technical services, quliticians),...

2. **How would you suggest to show the Value of and from having CE-HTM program.**

   Thanks to their high-level training, French biomedical engineers are recognized by

   www.ced.ifmbe.org
medical learned societies, with whom they carry out joint technology watch missions (imaging, anaesthesia, operating room, dialysis, etc.).

Many physicians make presentations in their field at the annual AFIB Biomedical Days (the Congress).

These collaborations between doctors and medical teams - biomedical engineers are frequently found at the hospital level, thus showing that doctors recognize biomedical engineers as their peers in the service of patients.

3. **Example of success stories where CE supported patient outcomes**

With clinical engineering at work throughout hospitals, all patients benefit more or less from equipment that works properly and whose performance is controlled. Advising doctors to define the right equipment in relation to the need remains the strong point of the profession in France.

4. **CE Education program available (levels and content) – Body of Knowledge (BOK).**

Many universities train biomedical engineers. The University of Compiègne is the oldest, has been training clinical engineers for France and some African countries for more than 35 years, at Master level.

- "The training is based on the multidisciplinary nature of the teams present to provide the knowledge and know-how relating to the management of biomedical technologies. Project workshops and case studies help to develop the skills and competencies required by healthcare professions:

  - understand the impacts of technological innovations in health care institutions and health-related organizations;

  - design, organize, operate and maintain medical technology platforms for the benefit of the patient;

  - integrate innovative processes, both at the level of the medical device and at the level of the health system within the health territories;

  - contribute to communication, interaction and cooperation between the different actors in the health system

  - contribute to ensuring the quality and safety of medical devices through compliance with relevant regulations throughout the life cycle.

An important place is given to the interventions of specialists from the world of health professionals and industry.
It should also be noted that French clinical engineers have a "Guide to Good Biomedical Practices", which is regularly updated.

5. CE Association/Society and Credentialing/Certification program if available

French clinical engineers are grouped within the AFIB (French Association of Biomedical Engineers) which has about 400 members out of the 600 or so biomedical engineers working as clinical engineers. This association is more than 30 years old!

About twenty Biomedical Services are or have been certified ISO 9001. Faced with a disaffection of services with regard to ISO 9001, AFIB is developing, with AFNOR and the association of biomedical technicians, a label to qualify the level of good practices in services.

Afib members participate in technology watch missions by attending international congresses renowned in their medical speciality, in association with learned societies.

AFIB is a force for proposals and innovation: it finances, for example, a study on 3D printing of spare parts.

6. CE major challenges (think of 3 subjects)

- the recognition by the Ministry of Health of the professional skills of biomedical engineers at their true level
- sufficient continuous training of clinical engineers to remain competent in rapidly evolving technologies

7. What is the most important action you will support to increase CE recognition

Develop the ability of biomedical engineers to work with physicians to become their scientific consultants and not just buyers or maintainers.

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