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RECOMMENDATIONS

Training guidelines for surgeons intending to become robotic surgeons

Currently, training guidelines for surgical robots provided by industry are insufficient and only cover technical elements focused on product utilization. Some manufacturers are organizing seminars or specialty oriented courses, aimed at developing competency in complex procedures. It is now known that this training is often too short, without a structured curriculum and importantly, without assessment, and don't lead to the development of the required competencies.

It is the role of scientific societies, the surgical specialties colleges and universities to develop training courses adapted to the needs of surgeons and their surgical teams as well as to control their quality. It is important that partnerships with industry continue and the use of well-equipped training centers have to be developed while focusing on competency based education and clinical expertise. Training in robotic surgery has to be integrated into initial surgical training as well as being made available for senior surgeons. It comprises several steps:

1. The fundamentals of surgery is an essential prerequisite of all universities and schools of surgery and falls within their core competencies; Key elements include

- Basic surgical principles.
- Development of fine surgical movements through the use of microsurgery and simulators.
- Learning minimally invasive surgery through laparoscopy, whose mastery is essential before beginning robotics.

2. Basic training in the use of surgical robots should be the responsibility of teaching centers equipped with robotic systems and simulators. This training, which is not specialty specific, should aim at the following objectives

- Learning the basic functionality of the overall system: this non-medical technical training can be supervised by industry technicians or by specially trained personnel.
- Developing basic skills on simulators and the robotic system in a dry lab.
- Initial pre-clinical applications using a robotic surgical system in a wet lab environment supervised by expert surgeons.

This phase of training should include a competency assessment at the end of the course that has been validated by national, or international, bodies, on key recognized criteria.

Given the characteristics of robotic surgery, (primarily the distance introduced between the surgeon and the operative field and the time needed to master the system) it is desirable that all professionals involved in the surgery are given access to both practical and theoretical training.

3. Training that is specialty and procedurally focused should be carried out by centers who have both the relevant robotic surgical equipment and relevant training expertise. This training will focus on the use of the robotic systems within the specific pathological context of each specialty. This training is aimed at surgeons who have completed the two first steps. The training should be broken down into two steps.

- A pre-clinical component - using simulation, e-learning, clinical case observation, dry & wet lab
- A clinical component –focusing on a progressive assisted approach, proctored by experts and if possible using a robotic system with dual console.

This phase should also include a competency assessment validated by the relevant surgical specialties college and university bodies.

4. Robotic surgeons need to ensure that their skills and capabilities are kept up to date and should be aware of the following:

- Their own learning curve.
- Ensuring they maintain a regular robotic case load
- Keeping their knowledge and personal skills regularly updated.

No process of re-certification currently exists within the French medical system. Surgeons should be able to maintain their skill levels by relying on training programs that leverage simulation techniques.

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