

Robots in surgery: from the laboratory towards health care

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Traditionally, health care has not been technology-based but strongly funded on personal direct relations. Recently, the logic medicine and industrial strategies have made strong pressures over this field with an increasing interest in the use of automated and semi-autonomous systems in health care activities. In these incremental processes of technological development, advantages and disadvantages can be recognised, where a technology assessment is needed, particularly when the complexity of working systems is increased.

It seems that we are facing a new phase of technological innovation apparently industry driven. The adoption of surgical robotics can also be driven by patient demand, reduction of surgical errors, augmenting surgical capabilities and enabling robots and minimally invasive technology systems (Gomes, 2011: 262). These drivers can also be considered advantages for adoption of robotics in the medical activities.

The recent introduction of robots in medical sector is characterised by a technology-push approach (Stassen et al., 2001: 117) which should be analysed at least on three levels:

The medical practise and logic of technology: What are the advantages and disadvantages of these technologies? Are there multi-optional paths with respect to other treatments?

The actor's perspective: Who benefits from this technology? Who is strongly supporting it? Are there any skill changes or new occupational structures emerging?

Ethical dimension: The societal expectations towards public service health sector imply a critical view on speeding up processes. It also implies a perspective on social inequality processes and technology access inequalities. The increasing introduction of advanced technologies in surgery should specifically reflect the normative dimension of human-machine interaction, for example, when the use of robots become a surgery standard, which consequences are understandable for the veto right for patients? (Decker, 2012; Christaller et al. 2001).

Our research aims to analyse the implications of the development of this market-driven rationality applied to health sector, including not only an innovation management approach, but also a technology assessment one. The increase in operational automation, needs a better understanding of the communication procedures being developed among and between the healthcare teams (Datteri and Tamburrini 2009), as well as to understand how the institutional frameworks will determine the use of robots and the competences of the healthcare groups. Finally, one needs to know more about the relation of users with health institutions when technical rationality dominates. The technology development with robots in medicine is no longer exclusive of research institutes. Robots and other technical systems manufacturers assume the new challenges and have straight relations with health organisations.

Our hypotheses are:

- 1) the technology-based instruments in medicine are embedded in traditional discourses and cognitive structures;
- 2) the investment interests from private health institutions are highly intertwined with those of large financial groups;
- 3) the acceptance processes are influenced by marketing strategies, by ethical principles that can be reframed by vested interests and a technology-push promoted by several actors. A similar challenge can also be evident when the public health service adopts a similar strategy.

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