

Academic or Non-academic Centers for Simulation Applied to Medical Education

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A Pubmed search, <http://www.ncbi.nlm.nih.gov/sites/entrez>, under “simulation and (medical (teaching or education or learning))” revealed an exponential growth of interest in simulation applied to medical education, quantified by the number of publications per year, since the first paper on “Disease-simulation techniques in rehabilitation teaching”, published by Bowker et al, in 1964¹. Indeed, the number of publications has grown from three papers, in the decade of 1960-69, to 48, 111, 709 and 2791 papers, in the decades of 1970-79, 1980-89, 1990-99 and 2000-2009, respectively. However, despite of the remarkable evolution on simulation techniques and technological development, many questions can still be raised on how medical simulation centers should be organized, namely if they should be academic or non academic organizations.

Academic centers are supposed to provide established teaching, learning and research activities. Moreover, they are also expected to produce translational research and delivery of specialized services to the society, in order to be considered modern, competitive and useful partners² rather than faltering³, unpopular and obsolete institutions, especially in medicine⁴. Academic centers are necessarily integrated in Universities, places where knowledge is produced and hopefully translated into positive transformation of medicine. These centers may have partnerships with other organizations, such as health institutions, and be integrated in academic health science systems². However, academic centers in general, and academic medical centers in particular, have the disadvantage of needing human resources with appropriate academic degrees, and career tenures, motivated to spend full time energies with teaching and research, generally much less stable and rewarding than clinical practice^{3,4}.

Conversely, non academic medical centers, which can also be integrated in universities, may have the advantage of being able to provide more focused teaching and learning,

without research obligations, and have specialized human resources committed to a not always attractive and prestigious medical academic career^{3,4}.

In this Commentary we present the experience of an emerging academic simulation centre from the Faculty of Medicine of the Porto University, <http://simulacao.med.up.pt>. The Porto Biomedical Simulation Centre was founded in December 2003, as a joint venture involving the Faculty of Medicine of the Porto University, the São João Hospital and the Institute of Biomedical Engineering, Porto, giving body to a long lasting, but scattered, experience in medical teaching and education using simulators, and to a more recent basic and translational research experience⁵. It occupies two permanent rooms with the possibility of sharing two to four other rooms of a contiguous experimental surgery service. It is equipped with low to high fidelity full-body simulators and mannequins, and part-body trainers serving multiple specialties: obstetrics and gynecology, pediatrics, pharmacology, and anesthesiology and intensive care. Video-recording and debriefing facilities are generally integrated into different programmed clinical scenarios, involving experienced clinical tutors, facilitators and live actor-patients, combined (or not) with simulators. Table 1 presents some of the outcomes produced by the centre between 2004 and 2009, evidencing the potential of an academic medical simulation centre, which is not only limited to basic BSc and MSc classes but also provides specialized training to healthcare professionals, basic/translational research, technological development, institutional divulgation and promotion, and provision of services to the community.

When deciding if medical simulation centers should be academic or non academic, their promoters should consider all the advantages and disadvantages of each option. Academic centers may need highly specialized human resources, but may benefit from student fees and human resources allocation. Furthermore, academic centers are conceived to provide basic and translational research

and special services to the community. Last but not least, academic centers may be important university agglutination vectors of creativity and inter-

disciplinarily, as well as of institutional promotion in society, a not less important issue, namely for foundational or private universities.

TABLE 1 - Quantitative outcomes of Porto Biomedical Simulation Centre between 2004-2006 and 2007-2009.

		2004-2006	2007-2009
Classes/Courses	BSc or MSc	161	331
	PhD	0	3
	Residents and Specialists	7	24
	Nurses and Paramedics	11	19
Students/Participants	BSc or MSc	956	1787
	PhD	4	4
	Residents and Specialists	24	128
	Nurses and Paramedics	107	88
Scientific production	Thesis (MSc/PhD)	0	3
	Peer-reviewed papers*	2	5
	Other full papers/Book chapters	0	1
	Abstracts/ proceedings	0	3
	Oral presentations/workshops	20	12
Technological development†	Products under development	2	1
	Technology transferred	1	0
	Prototypes demonstrations	5	0
Divulcation activities and services to the community	Press release (newspapers/TV/radio/newsletters)	11	9
	Involved participants in exhibitions, open-days, and fairs	622	1545
	Visiting researchers/professors	11	15
	Visiting students from secondary schools	136	205

* Indexed by PubMed/ISI/Scopus

† In collaboration with the Institute for Biomedical Engineering (INEB)

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