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### Challenges for Research in Radiology: Research Management in an Academic Radiology Department

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**Research is essential in the field of radiology, for many different reasons. Not only is it a crucial factor in concretising the future development of the medical imaging industry, by exploring new technologies, applications, and extending the scope of the science, but by influencing daily clinical work by generating new information which can then be translated into practice. Also, it contributes significantly to the cohesion of the radiological profession by ensuring that radiologists continue to perform their roles and tasks better than non-radiologists. In a nutshell, it appeals to the curious nature of mankind, and as a by-product, happens to improve healthcare!**

#### Challenges for Research in Radiology

In university hospitals across the world, where resources are concerned, the general case is that both clinical work and teaching and education are prioritised significantly over research. But why, since it is research in radiology departments that is the foundation of its clinical and teaching work, does it often receive mere budgetary scraps? Is it simply the lack of immediate, day-to-day financial rewards seen in research programmes? Are financial planners unable to see the long-term benefits for the science?

In fact, there are clearly many complex answers to this question. Number one is the ever-increasing deficiency in human resources, which makes it difficult to balance the demands of clinical, teaching and research aims. This is coupled with increasing hurdles to performing research, including gaining Institutional Review Board (IRB) approval, respecting patient confidentiality, the use of animals in research, funding, space and equipment provision and finally, and most damning of all, the financial rewards of clinical work exceed those of research, which does not cover its true costs.

#### What is Needed for Research?

The fundamental elements necessary for constructing a well-balanced research programme include people, money and ideas, underpinned by strong leadership and vision. Research entails considerable hard work and effort, and is a business in the same manner as clinical work, that must be well-managed in order to generate financial income, as well as prestige for the scientist and the department in which he or she is working. It requires not just scientific exploration but also financial investment, a clear structure and long-term vision so that its achievements can be quantified, and it must generate output in the form of publications, scientific presentations, etc.

#### Managing the Process

There is a clear process to good management of a research programme. This is:

- Allocate resources;
- Start small;
- Provide research infrastructure that optimises investigator efficiency and improves job satisfaction;

- Develop a research strategy with clearly defined goals and structures;
- Define and monitor processes; and,
- Build in an incentive system that rewards good output.

Other factors in ensuring a well-managed, successful research programme, entail having a culture in which research is prized and not viewed merely as a drain on clinical and teaching efforts in the department. A research infrastructure should not only facilitate research, but also contribute to the culture. It is therefore essential to consider and plan well not just for the required space and equipment needed by the programme itself, but for key personnel, such as:

- Technicians (perform research exams)
- Trial Nurses (perform clinical trials, interface with patients, handle forms)
- Animal Handlers
- Data Managers, Biostatisticians (study design, data analysis, help publish)
- Grant Managers (accountant)
- Grant Facilitators

A Grant Facilitator's role is to identify potential sources of funding, select those most aligned with the investigator or project, read the grant for content and perform feasibility studies. He or she must also read carefully through the grant for language, correct errors/inconsistencies, organise signature collection prior to submission and get IRB approval.

#### **Strategic Planning**

It is essential to have a clear vision of where you are going, a long-term view of your end goal. Strategic planning includes elements such as:

- SWOT analysis (strengths, weaknesses, opportunities and threats)
- Environmental scan
- Formulate mission and vision
- Define goals to achieve mission
- Develop actions and strategies to achieve goals
- Monitor actions

#### **Solutions for Research**

Finally, to summarise the elements which will go a long way towards guaranteeing the success of a research programme in a department of radiology, one must create a culture in which research is valued, ensure good training of principal investigators, dedicate "protected time" from clinical obligations for researchers, start small, build up the research infrastructure, develop a strategic plan, manage research and reward good quality output. In this way we can ensure the foundations of the future of radiology.

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