

International Educational Programs for the Future: Challenges and Opportunities

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A letter from a colleague...



- “I am writing to you to ask you if you could sent us (Comisión Académica) some comments about the **bachelor degree in Medical Physics**. As you know this is a **4 yrs degree** where the last year is spend most of the time at a hospital as a first clinic experience.
- You know my **concerns about this bachelor degree**, especially about the rather soft stress in physics and radiation physics, the **lack of "true" medical physicists at the hospitals** here that could "guide" the residence for the last year, and finally the **pressure of the radioterapists in order to promote this degree as a final degree** adequate in order to have a job at a hospital.”

A letter from a colleague...



- “I received, without asking for, comments from the **IAEA**, that goes in the right direction (I would say), but they are somewhat negative ones. The point is that **they do not understand that it is very difficult for us to start with the master degree both because we do not have experts** (we have just nuclear and particle physicist with some interest and expertise in the subject) **and also we do have very few physics students!** As I told you we are exploring with this degree a way to attract people for a scientific education in medical physics instead of research as we actually do nowadays... with no success!”
- “By the way, we are starting in August and we now have more than 20 people that already filled the forms!”

A letter from a colleague...



- “I also find that the many people from the IAEA staff they are not academic nor people with some research background and this puts some limitations in some of the statements they support... Anyway, they point out some drawbacks we certainly have and I hope we could cope with them in the future. In any case **our success will be just to have some people with a bachelor degree and a background in physics and maths and, besides, interested in MP!** I am aware that we cannot, nor we pretend to, do in 4 yrs the same as the rest of the world does in 6 or 7 yrs in order to have a clinical MP!”

A letter from a colleague...



- **“You know very well the situation here and in the region and you are in a excellent position in order to evaluate this program and sent us some advice.**
- “If you have some time it will be very useful for us to have your opinion (or the officiel AAMP opinion if you like!).

You can find in the attachments the document (in spanish..) and I can translate it if you need.

- **I know you are frequently in a hurry but you made impact on the physicians and your comments will be very useful!”**

A letter from a colleague...



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I know you are frequently in a hurry but **you made impact on the physicians and your comments will be very useful!**”

A letter from a different colleague...



- “La SMF acaba de publicar un artículo de difusión que escribí hace unos meses motivada por la posible creación de una **"licenciatura en física médica"**. En el pasado Congreso Nacional de Física intenté explicar públicamente en 3 minutos mi postura, **que era y es contraria a la idea**. Este artículo intenta lo mismo, pero en 8 páginas.

Afortunadamente, los proyectos existentes en octubre fueron, o abandonados, o modificados. El proyecto de la Fac de Ciencias fue replanteado y se espera abrir **una nueva carrera llamada Física Biomédica** en 2014.

Espero que la decisión de reconsiderar la decisión original y no insistir en una "licenciatura en física médica" evite **que otras universidades del país y la región caigan en el error de buscar atajos...**

- Las responsabilidades que conlleva la **práctica profesional del físico médico requieren de bases sólidas en física antes de buscar la especialización**. En este caso particular, es la vida del paciente, la inversión y la calidad del servicio de Salud, y el respeto por la formación que brinda la carrera de Física aunada a la especialización de la maestría, lo que estaba en juego.”

Hmmm...



- **What to do?**
 - The problem of education is complex within ANY country, but the problem of **international education is at least 196-times harder** (strong dependence on economical, health and educational policies)
- **How to most effectively help in international education?**
 - Many standardized approaches (IAEA, IOMP, EFOMP, ALFIM...), but how to customize?
- **Why to even help educating in medical physics?**
 - This always has a positive feedback
 - Improvement of present and future outcomes
 - Teachers also learn and grow personally

A bit of my (relevant) history...



- Through the years I became “frustrated” with the **medical physics inequality** - the level of the cutting-edge science I have been doing vs what I observed traveling around (e.g., Cuba, Honduras)
- Decided to **increase my efforts** on helping spreading medical physics around the world
- But when in the field I realized I didn’t know **HOW?**
- Unique opportunity during my **sabbatical:**
 - Half spent at FUESMEN, Mendoza, Argentina
 - Half spent at Harvard, Boston, USA

Lessons that I learned?



- Medical physics training has **three distinctive states**:
 1. State of **Absence** – no medical physics
 2. State of **Enlightenment** – need for *hybrid* medical physics training programs
 3. State of **Advancement** – need for distinct *clinical* AND *academic* medical physics training programs
- Each step has **different driving forces**:
 - Regulatory bodies (Enlightenment)
 - Universities (Advancement)
- **Thresholds**:
 - Distinctively different approaches for different states
 - Identification of appropriate places to help is essential
 - Sometimes improvement is only an organizational issue

Lessons that I learned?



- **Advancing to the next step** requires at least TWO of the following:
 - **Critical mass**
 - **Right environment and resources**
 - **Local champions/driving forces**
- **Variables and dependences:**
 - **Critical mass:** good educational policies
 - **Right environment and resources:** good socio-economical policies
 - **Local champions/driving forces:** high level universities
- **How to create lacking prerequisites?**
 - **Critical mass:** diffusion at the level of graduate programs
 - **Right environment and resources:** interacting with authorities
 - **Local champions/driving forces:** identifying suitable leaders

Lessons that I learned?



- There is nothing you can do **WITHOUT a strong local champion, but that is often the hardest task:**
 - Often the first people that you meet are not the right ones (Sadly, many potential local champions use their skills to enrich themselves and make a business of this, not to help others)
 - Need to be sincerely altruistic (and give back what society gives or has given to them!)
 - Need to be the right personality match
 - Need to be influential enough to get things done (often conflicting with the first issue)
 - **Building trust**

Lessons that I learned?



- Connect with the **best centers**:
 - Not necessarily the most-known centers!
 - Give priority to the non-profit centers
 - Easy to connect academically
 - Easy to leverage local expertise
 - By definition oriented into the future
 - Help creating “**centers of excellence**”

Lessons that I learned?



- Not everyone **needs to repeat all the mistakes** we have made:
 - If we were to re-invent radiotherapy, what would be the highest priority advances (*Test*: order cobalt, linac, MLC, IMRT, IGRT, particles according to the priority)
 - Shortcuts (skipping non-essential steps – do we really need to learn all “2D-3D-IMRT-IGRT”?)
 - Forward looking training programs needed to catch up in the future
 - **Don't teach the past, teach the future!**

Lessons that I learned?



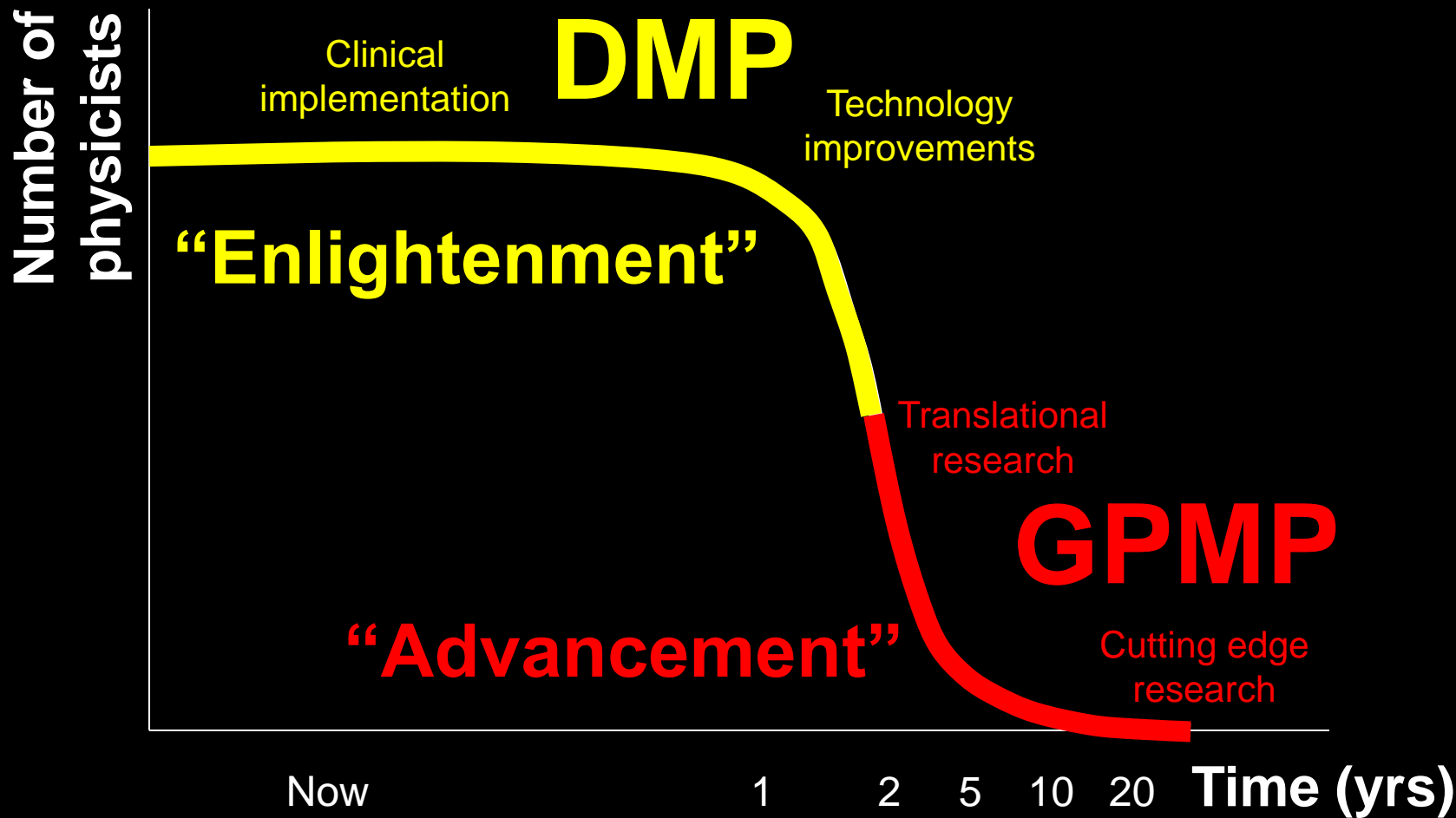
- Each country requires a **different approach**:
 - Example: the same problem (creating a PhD program in different countries) required the same “guiding principles” (genotype), but very different “specific programs” (phenotype)
 - Need to know the local (university, hospital, state) and regional (cultural) environment
 - Socio-economic issues like relationship between relative costs of material and human resources strongly affect feasibility
 - Need for **personalized international education**

WG FUTURE (AAPM)



- **Charge:** To initiate, coordinate and lead activities to **secure sustainable growth and improvement** in the long-term future environment for **high quality** research and academic training of physicists in medicine
- **Goals:**
 - To prepare a strategic plan and coordinate activities for **improvement of research environment**
 - To prepare a strategic plan and coordinate activities for **improvement of academic training and educational environment**

Training program structure



Recommendations (personal view)



- Figure out what **YOU** are the best at and how **YOU** can add the most value
- Decide at **which level** you want to help: (1) absence, (2) enlightenment, (3) advancement
- Identify a strong and honest **local champion**
- Help creating **centers of excellence**
- Don't teach the past, **teach the future**
- Need for **personalized international education**

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And the most important is... “Mate”!

