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**Editorial**

## **Linking Scientific Advancements to Workforce Education and Training in Pharmacy**

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The past one hundred years have seen momentous advancements in the discovery, purification, manufacturing, distribution and utilization of medicinal agents. An explosion of knowledge has driven these advancements in scientific efforts in universities, national laboratories and private research endeavors around the world. We have come to a time when very few disease problems are not first treated with drugs, biologicals, vaccines and/or other agents emanating from this scientific revolution. Now the discovery of the human genome and its constituents as well as new knowledge about nano-particles portends even greater capacity for drug development and assuring the efficacy and efficiency of medications.

These events have stimulated global conversations around a myriad of issues including among many, the following: how do we assure access by all the world's people to these discoveries? How can we mount eradication efforts of specific disease for which vaccinations and or medicinal treatment modalities exist? How do we finance (as individuals or governments) the access and distribution of these agents? How do we assure the quality and safety of

the drug supply at global, national, regional, local and personal levels? The readers can likely add many more questions!

I'd like to suggest that another major issue relevant to the burgeoning growth of the pharmaceutical sector is the numbers, scope, quality and competence of a workforce that can effectively and efficiently manage the drug supply. This workforce ranges from technical support staff, through a variety of levels of pharmacy clinicians and highly skilled scientists. The range of sites and locations where this workforce becomes employed is also of critical concern. And of course, the capacity of states and nations to educate and train this workforce at all levels that are required is a considerable challenge.

Assuring the integrity of the drug supply is also of critical concern. Issues of drug quality, counterfeit medicines, critical shortages of drugs and drug labeling/packaging are among several important challenges that many countries are facing at present. While some progress is being made in defining the skills and competence required to assure supply chain integrity and optimal functioning, yet, there remain many challenges. If we are to keep the patient safe and to have the patient

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achieve optimal outcomes of drug therapy, supply chain integrity remains a quintessential goal of our health care systems.

Identifying the various levels of competence and skills required of pharmacy practitioners remains a priority responsibility of schools of pharmacy in our worldwide network of universities. Given the issues outlined above, it falls on the leadership and faculty of our schools of pharmacy to carefully analyze the national needs for pharmacists at all levels and thus to determine an appropriate curriculum for education and training. Along with classroom instruction is the need to consider clinical practice under the tutelage of qualified clinical practitioners. Preparing a qualified workforce of pharmacists, as well as future scientist's calls on our universities to progressive in their thinking and committed to meeting the challenges of an ever-evolving health care system in which drugs play a prominent role.

With my kindest regards,

**Prof. Dr. Henri R. Manasse**

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