

Internal medicine through a scientist's eye

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Introduction Disciplines are known to evolve with time but, notwithstanding this, much effort should be made to preserve their basic values. In fact, this “adaptation to change” should ensure a better expression for such values and, ultimately, should yield a new and richer level of operation.

In my own discipline, physiology, we have recently witnessed an overriding emphasis on the molecular approach—a reductionist trend that viewed the whole-body physiology as an inconclusive relic of the past. Now, things have changed and a virtuous overlapping of molecular and system analyses prevails. Indeed, it has been realized that key questions on fundamental mechanisms may only be answered with such merging of intents.

In a reductionist world, internal medicine is experiencing comparable difficulties for being too complex and, in the end, too “comprehensive”. Hence, on one hand, we are witnessing the increasing impact of subspecialties, and, on the other, an impending distance of the clinic from the molecular/cellular area. However, *mutatis mutandis*, the situation may be corrected, at least in part, by adopting measures that have been implemented with physiology where the translational exchange of information between the cellular and organ domains has become active and mutually enriching. After all, internal medicine is the counterpart of physiology insofar as it deals with the whole body response to pathological insults with the attendant interaction, typically complex and ever changing, among its parts. Indeed, in a modern framework, physiology and internal medicine should advance in parallel, using a similar vision and mode of operation.

Against this background, one may ask the following question when searching for a better design for internal medicine: What should be the actual finality for any corrective measure and, by extension, which actions should be taken to meet the chosen objective?

Internal medicine: a new model of operation As it stands, internal medicine is a composite mosaic

of subdisciplines in the search of a new dimension. Its strength, originating from a comprehensive assessment of the patient response to illness, is also its weakness without an equally extensive molecular correlate for organ dysfunction—a correlate that affords a dynamic picture of changes that take place in the cellular/subcellular domain across the body. When integrated, the information from these two sources should be important not only conceptually in ensuring a mechanism-based advance of knowledge, but also practically in paving the way to therapies that are better adapted to the individual patient and are auspiciously free from troublesome side effects. Without doubt, implementation of this new approach, which dovetails with that taken with physiology, appears as a formidable task due to the multiplicity of organs involved, each with a distinct biomolecular arrangement, and to the diversified presentation of disease. Still, the idea is worth pursuing when considering its many potential rewards. Any such undertaking, on the other hand, would not come at the expense of individual subspecialties. On the contrary, subspecialties may benefit from this broader perspective and may, in fact, further flourish within the fabric of a strong and vibrant internal medicine. Accordingly, one could envision the subspecialties as a true extension of internal medicine and not as separate entities potentially competing with it. In that light, internal medicine and individual subspecialties would become genuinely complementary in the approach to problems, with the former providing the broad picture in a better qualified perspective and the latter presenting a deeper disciplinary insight.

A path to change Shortcomings in the operation of internal medicine cannot be resolved with a quick move since their prime cause may be found in the declining presence of the physician scientist figure. A problem common to every branch of clinical medicine but acquiring particular prominence with internal medicine due to its peculiarities and the new arrangement being proposed here. Accordingly, for a solution, a larger complement of qualified physicians needs to be formed, with appropriate measures being already taken at the admission stage into medical school.

The selection process, together with the subsequent formative curriculum, should in fact identify students with some distinctive attributes. Specifically, critical thinking intertwined with a refreshing capacity to marvel, innate curiosity, and tenacity along with the willingness to take risks. A sense of beauty would not do any harm, too; in fact, it would be an added bonus when considering that this particular attribute permeates every facet of research. All these traits could be consolidated in an MD/PhD joint program, which at present is sorely underexpressed. In other words, such a curriculum would aim at promoting a love for science in all medical students and would be also capable of identifying the most apt within the group for an MD/PhD

path or for a path leading to the two degrees in sequence. The ultimate aim would be to generate the following three kinds of medical graduates, with their relative number being tailored to the specific needs: 1) full-time scientist with a medical background; 2) clinician scientist, well at ease in managing a laboratory; and 3) clinician with the mindset of a scientist.

Collectively, these diverse figures of a physician should be able to meet the demands of the proposed renewal of internal medicine, while ensuring a better integration of basic research with clinical activities in the medical field at large.

Concluding remarks Despite some perceived sense of inadequacy, internal medicine occupies a central place in the management and prevention of disease. A closer and properly qualified linkage between research and clinical activities is viewed as the means to strengthen its identity and special mission. The path being traced for such renewal presents opportunities along with challenges. Our task should be to exploit the former with a firm sense of purpose.

Note The opinions expressed by the author are not necessarily those of the journal editors, Polish Society of Internal Medicine, or publisher.