Editorial

Introducing *Critical Care*'s ongoing reviews of science

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Abstract

The explosion in biomedical research and the use of computers to access and disseminate ideas has increased our knowledge but has also strikingly shortened the time for new concepts to move from initial basic science discovery to clinical application. In fact, there are more new discoveries than anyone can reasonably stay abreast of. *Critical Care* has therefore launched a series of articles, using the knowledge and judgement of experts at the leading edge, to bring the most exciting novel basic science concepts with the greatest potential for clinical impact to our readership.

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Three billion DNA base pairs, 50,000 genes, twice as many splice variant mRNA transcripts and a further magnification of possible protein products due to post-translational processing (let n be the number of different products) lead to $n!$ (n factorial; e.g. $7! = 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$) possible interactions. This explosion in biomedical information, coupled with the use of computers to access and disseminate ideas, has increased our knowledge but has also strikingly shortened the time for new concepts to move from initial basic science discovery to clinical application.

Sequencing of the genome means that a review of DNA sequences, measuring mRNA expression and interrogation of protein products, are frequently the genesis of new biomedical discoveries. However, $n!$ possible interactions means that usually there is a long way to go between discovery and clinical application, but parallel evolution in the field of bioinformatics identifies patterns. As a result, from $n!$ possibilities, exciting new probabilities emerge. We should like to bring these probably important pathways and concepts to the early attention of translational researchers and the body of clinicians with whom they collaborate.

In essence, each new discovery represents a solution looking for a problem. On the other hand, we as clinicians face myriad clinical problems looking for solutions on a daily basis. Thus, it is often the clinician who makes the crucial link between interesting concept and potential clinical application, but this link can only be made when critical care clinicians are aware of the possibilities. However, there are more new discoveries than anyone can reasonably stay abreast of. *Critical Care* has therefore launched a series of articles, using the knowledge and judgement of experts at the leading edge, to parse the explosion of possibilities down to the most exciting novel basic science concepts with the greatest potential for clinical impact.

Part of our motivation is to stimulate thought at the interface of basic and clinical science. Furthermore, in the past clinicians often conducted clinical trials without really understanding the science or mechanisms involved. As a result, many unsuccessful trials were forced to take a step back. The concept of 'science reviews' is needed not only to educate the field of critical care but also to help with improving clinical trials and eventually therapeutics.

It is important that we make it clear that this is a service to the clinical readership. Our goal is not information overload but rather to help identify the key concepts that, when assimilated by clinicians, may actually lead to improved clinical care. We plan to have detailed or complex reviews accompanied by a commentary from a leading clinician in the field for perspective and 'guidance'.