‘prophylactic physiotherapy’, which might encompass interventions other than respiratory interventions. We found that the outcome of patients managed with a standardised clinical pathway, including nurse-led early upright positioning/mobilisation, was good and not further improved by the addition of targeted respiratory physiotherapy (in essence, deep breathing/coughing exercises). Interestingly, in patients undergoing major cardiac and upper abdominal surgery, there is also evidence that postoperative prophylactic physiotherapy beyond early upright positioning/mobilisation may be unnecessary [3].

Agostini et al. [1] noted the low incidence of PPCs in our study. The lack of a clear and universally accepted definition for PPCs means there is a wide variation in the reported incidence of PPCs; however, recently, Mason et al. [4] found a comparable low incidence of PPCs (6%) in patients following lung resection. We specifically aimed to investigate PPCs amenable to physiotherapy (e.g., sputum retention and atelectasis); indeed, Agostini et al. recently showed that the tool we used to diagnose PPCs performed well in its ability to identify them [5]. Our study [2] was the first to use this tool in a prospective blinded randomised control trial (RCT), and our low PPC incidence may, in part, reflect the methodological rigour of our study. Our low PPC incidence meant that in order to achieve sufficient statistical power to support a null hypothesis, a much larger sample than anticipated would be needed. The clinical utility (and ethics) of further recruitment, given the projected number needed to treat prevent one PPC, made continued recruitment unwarranted. The low PPC incidence, even in the control group, suggests that the standardised clinical pathway was effective without the addition of targeted respiratory physiotherapy.

Agostini et al. [1] rightly commented that we did not evaluate physiotherapy for treating patients with established PPCs, but our study clearly focused on the prevention of PPCs. No studies appear to have investigated the effectiveness of physiotherapy at hastening the recovery of patients with a PPC following any type of major surgery and thus there is no research evidence that these patients are most likely to benefit from physiotherapy.

We concur that further research is necessary to corroborate our results, but can see no reason, given our findings and those of previous studies [3], why these should pose ethical or equipoise dilemmas. However, if the incidence of PPCs in future studies is as low as ours, achieving adequate statistical power even with multicentre trials will be challenging.

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Letter to the Editor

Determinants of success of surgical innovation

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Vecht et al. should be commended for their timely review [1]. Unfortunately, their premise is erroneously based on the precept that the global scenario is represented by the ground reality in Western Europe, North America (minus Mexico), Australia, New Zealand, and partially Japan. They reached the corollary (p. 614) that ‘...the ideas which do not generate currency are less likely to get off ground.’

Several surgeons in many Asian, African, East European, and Central and South American countries are motivated to inventions and innovations for delivering better/equitable results at a sane cost. Even in the so-called West, several innovations sprang from the same motivations.

Perhaps the fundamental conflict lies in the definition of ‘success’ of an idea. The authors accent on the current vogue in interpretation as being a linear fruitful commercialization of an idea. During the past centuries, several commercially successful ideas have been discarded after a 'successful' stint while others, which originally failed to flourish, proved to be epochal later on. Examples abound.

Their review offers more on the nitty-gritty of commercialization than on the process of conception and validation of a good relevant idea. Lack of early commercial success per se may not invalidate an innovation. It may take several decades to penetrate mainstream practice, as the success of the pioneers may not be initially duplicated.

We do not minimize the importance of the steps of translation, but doubt the long-term validity of such recipes. Success/failure of the translational steps — as defined by the authors (p. 615) — does not enhance or detract from the inherent value or fundamental worth of the idea. There is no universal recipe for success of surgical innovations in the era of outsourcing of ideas, manufacturing and trials. The authors’ definitions of success and recipes for translation
do not address the majority of the patients of the world and ignore the influence of other determinants.

There will always be a trade-off between the quality of care and what is affordable. There will always be inequality among surgeons, centers, and locales. These factors will determine which innovation will do well and what will die in the arena of cardiothoracic and vascular surgery.

Value of an idea is different from its cost, worth, and price. Each of these ‘returns’ is again influenced by the aforementioned determinants, namely locale/s, time frame, changing epidemiology and changes in patient subsets, perceived ideas, local healthcare reimbursement policies, market volume, technologies in transition, and political and legal standards of individual country. Good business in one era in one country may not ensure good business or even satisfactory return in another era and/or in another country. Many commercially successful products of the current era offer little to the majority of the patients who are located in the nonaffluent parts of the world (Africa, Asia, Eastern Europe, and Central and South America). Niche products may not have global application, but can harvest a good profit and generate vibrant markets in selected milieu.

Reference


Reply to the Letter to the Editor

Reply to Ghosh and Raanani

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We appreciate Ghosh and Raanani for commenting on our manuscript [1,2]. They state that the global scenario is inadequately represented, merging this with a discussion of the motivation to invent and innovate (with frequent interchanging of these non-exchangeable terms). They then challenge the ‘success of an idea’, claiming we equate this to commercial success and after recognizing the importance of translation, ‘doubt the long term validity of . . . recipes’.

We highlight that invention and innovation are separate and should be considered as such. Whereas inventing refers to idea generation, innovation is about making these happen. Motivations to invent or innovate are separate principles and we do not contest the motivation to invent. This should not be confused with ‘drivers of innovation’. In quoting ‘the corollary’ out of context of the preceding sentence, ‘It is those ideas that generate currency, which . . . are more likely to get developed’ the intended message was misrepresented. Our view is that translation requires product development and this generally requires commercialization with inevitable financial repercussions. Not challenging the motivation to invent, this may confront the justification to innovate.

We accept that application of our thoughts in developing countries may be limited by the context of health-care inequalities and that a multitude of factors may confront the acceptance of frameworks or ‘recipes’.

We disagree with the proposed strategy of achieving efficiency and patient’s benefit through surgical innovation because, in our view, a knowledge-based economy reduces the gap between countries and the use of commercialization as a route for success will speed up the translational process. The vogue has been to focus on the process and not the idea. The assumption that a single universal factor drives success was flawed, so attempts have been made to uncover appropriate ‘success’ factors. Factors such as organizational culture, experience with innovation, and the multidisciplinary team have been shown to have a positive impact.

Innovation starts with seeking something novel and directing human and capital resources toward generating technical ideas, developing prototypes, and transferring into manufacture, distribution, and use. This strategy building requires planning, implementation, and effective integration of people, organizational processes, and action into a cohesive plan.

We believe that failed product innovation is a result of absence of critical success factors and approaches are required to tackle this. In fact, studies confirm that product development has not improved significantly, confounded by lack of customer feedback, extensive upfront homework, and products entering development phases lacking clear definition.

Products aimed at international markets from the outset fare better and this dimension is often missed. This means defining the market as an international one and designing products accordingly. The result is a global product (one version for the entire world) or glocal product (one product concept, one development effort, but several variants to satisfy different international markets). This implies adopting a transnational new product process, utilizing international cross-functional teams and market research.

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