

Editorial

A Managerial View of Translational Medicine

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Translational Medicine principal goal is to speed the development of new compounds of medical protocols and/or treatments to improve patient's quality of life. In order to achieve this purpose, translational medicine calls for a synergy between epidemiology, basic research and clinical trials, and is strongly based upon innovation management and research development in medicine. For this reason a managerial view of translational medicine is particularly prolific in terms of insights for researchers and clinicians who place efforts to improve health service [1].

Recently there is a growing awareness about the role translational medicine for the improvement of patient outcome [2,3]. Reducing human disease and mortality is, in fact, the end purpose which translational medicine is generally and commonly recognized to be oriented to [4,5].

Despite the importance of translational medicine for the patient, indeed translational medicine has a wider view, since it produces different values for different actors looking at various aspects of this medical approach [6]. For academics, it represents the chance to confirm and validate novel concepts or to find new ones out with the hope they could turn into effective clinical applications and be relevant to human disease [7]; for patients as well as for clinicians, it refers to the need of accelerating the capture of the biomedical research benefit, wishing the gap between "what we know and what we practice" to be bridged [6,8]; for those who invested in, translational medicine provides financial returns [9].

Hence translational medicine is characterized by a variegated list of benefits and stakeholders; nevertheless it seems possible to identify a unifying purpose, capable of complying with the expectations and needs of all involved actors [6] once we higher the level of observation and analyze its beneficial effects on society. The ultimate goal of translational medicine, in fact, may be identified in the development of new treatments and insights for the improvement of health across populations [10-12]. This implies that translational medicine (also called translational research) not only aims to produce values and bring them to the patient. Its essence lies in validating the potentiality of novel discoveries whereas enhancing the success, feasibility and efficiency of discovery validation. In other words its ultimate goal

lays in identifying in the process of clinical testing to human disease (through direct observation) what the obstacles are [13,14] and allowing basic scientists as well as physicians to share their expertise to identify and compare the challenges at the interface between basic and clinical investigation, proposing integrated and integrating solutions to increase the efficiency of the process [9].

The scientific phase of the research and the applied one both equally contribute to reach the common purpose of translational medicine -which is claimed to be finding alleviation to human suffering [6]. As confirmed by Littman [6], "translational research should be seen as enabled by ongoing efforts in basic and clinical research and not competing with them". Translational medicine draws results about disease by clinically testing the viability of novel hypothesis [6,7]. Such hypothesis may reveal to be wrong or irrelevant to the care purposes. Currently, the problem is that if "in times of abundance, efficiency may not be the highest priority, and scientists might have the chance to indulge the luxury of speculative adventures in the world of the unknown in these times of restricted funding opportunity, it behooves us to select our scientific challenges parsimoniously by constantly confronting our intuitions with the reality of human pathology" [7]. In other words, application criteria must ensure positive results in a framework of appropriateness, financial sustainability, interventions equity and integration.

Hence translational medicine success encompasses not only scientific and operational, but also financial, ethical, social, regulatory and legislative contingencies [6].

Translational medicine success is directly correlated to innovation since innovation and technology transfer affect health services, linking the quality of care to continuous improvement and to translational medicine prolific research contexts. Innovation in health contexts results from both scientific and technological progress and often is strictly depending on their reciprocal inferences. In fact, health innovation is the result of both biomedical research (genomics, neuroscience, molecular oncology, etc) and technology (medical diagnostics, biotechnology, health informatics, electronic devices, etc.). Consider, e.g., the following innovation advances in health fields:

- Proteomic;
- Biomolecular-diagnostic;
- Pharmacogenetics;
- Diagnostic imaging [15].

Technological developments in these mentioned fields are able to characterize and deeply transform the results of medicine as well as the processes of care. At the same time innovation and technology transfer determine strong implications on health services and consequently managerial, organizational [16] and operational needs of modern health systems, with a relevant impact on both health and costs. Currently, it is technology transfer and integration

to make the healthcare systems smarter [17] – that is – with better, faster and more detailed information within the actors involved in, reducing errors and inefficiencies in the transfer, allowing the system to capture, manage and turn data into relevant information in real time. Thanks to ICT (Information and Communication Technology) platforms, including people, processes and knowledge, alignment of scope is created as well as reduction of coordination and transaction costs between involved actors [18].

This last aspect is very important if we consider that the provision of health services requires the active participation of various factors, including institutional actors (local health authorities, hospitals, districts, nursing homes, municipalities, volunteer associations) which are responsible for the care and the provision of services; other national and local agencies of planning and control (Region, State, local entities) which collaborate in the support and delivery of services; actors who are currently in charge of the medical and scientific training (Public Administrations, professional associations, scientific societies, trade unions of category and Universities), citizens, providers of goods and services of health organizations; others.

Each mentioned actor participates in health creation and dissemination by exchanging resources and information.

The work all actors do, aimed to affirm a collective orientation as the recognition of health as a public value, necessarily requires the involvement and awareness of such heterogeneity of actors as health system stakeholders. Involved and engaged actors contribute, by sharing their resources, to the creation of public health through the sharing of goals and pathways, transforming the paradigm of clinicians and doctors from passive recipients of patients' needs to pro-active actors engaging with patients for their benefit [19].

These numerous actors involved in translational medicine success, appear to be interconnected in value co-creation networks, in which value and service for the patient (and the other actors) is the outcome of joint activities within the same system. In this perspective, patients, clinicians, private and public hospitals, pharmaceutical industries, institutions are source and contributors to the system's performance. This latter, indeed, depends on the ability to establish wise and profitable relationships among each mentioned actor who, being satisfied by the system's outcomes, easily releases the possessed resource to the system, strengthening its sustainability.

Accordingly, we may posit that, in a more stringent service logic, the final value of health is co-created through shared activities [20-22] embedding all actors of the healthcare networks.

In other words, the logic of service leads to a concept of health as a service system, as heterogeneous configuration of actors, value propositions and exchange of information, resources and knowledge [23] that takes place within a dynamic network, through relationships and interactions, in order to create and sustain collective health as the end shared benefit.

Translational medicine contexts are, as mentioned, demanding contexts in which organizations ought to pursue continuous improvement and change and this, in systems terms, implies that health systems are open and strongly dynamic. Effectively these traits stimulate the search for homeostatic dynamics as a response to external change. As the world is becoming smarter, systems

ought to become people-centric, information-driven, e-oriented, and reciprocal and collective satisfaction should encourage actors to cooperation and innovation. Health Service systems may hence be seen, adopting a systems perspective, as contexts in which co-creation takes place, where systems shape themselves into networks proposing shared and diffuse value for all involved actors. In order words to fulfill such a demanding goal a service logic should pervade each organization, favoring diffuse and reciprocal resource sharing, thus characterizing interactions among actors. According to this view, service may hence be interpreted not as a generous and cultural attitude. Indeed, service may be identified as a cultural attitude, as a logic, as the enabler and fundamental base of health systems, capable of valorizing experiences and translational medicine initiatives for all involved actors benefits [24-26].

As a final consideration we observe that systems theories offer interesting insights and contribute to the understanding of value co-creation exchanges in health networks. According to systems theories, in fact, service logic may be the enabler of harmonic interactions and satisfactory exchanges among involved actors. More efforts are needed in these directions and we hope future research on systems theories contributes to health network understanding, and to the underpinning of translational medicine performance will pursue these challenges.

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