Journal of Evaluation in Clinical Practice ISSN 1356-1294

ESSAY

To learn about a hospital's quality, one should look beyond its doors

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Introduction

The demonstration of clinical medicine's 'goodness' [1] is at crossroads again [2]. While in the past three decades quality-improvement methods have shown significant amelioration in the processes of care [3,4], outcomes of care remain often elusive to quantify [5,6]. In an era of accountability to audiences beyond individual patients, the definition of outcomes attributable to clinical care may require revisiting.

Perhaps Donabedian's seminal work towards the scientification of quality of care provides the necessary framework for the classification of outcomes. Indeed, Donabedian divided outcomes into three groups as immediate, intermediate and long-term outcomes [7], paving the way for the necessity of a longitudinal view in outcomes measurement.

The purpose of this essay is to revisit Donabedian's classification and explore if clinical medicine's true outcomes require a scope beyond the walls of a hospital (or doctor's office) to measure goodness of care based on populations.

Can clinical medicine and public health remain apart when it comes to outcomes of care?

The traditional model of clinical medicine is often confined to the concept of an episode (although family doctors may still be there for the entire family over time). Within that episode, limited in time and place, the best science, via the doctor's experience or practice guidelines, is expected to be provided. In most situations, some form of peer review is in place to maximize the goodness of the episode management (Fig. 1).

The traditional model of public health differs in its application but not in spirit. The focus is to prevent (or manage when prevention has been inadequate) health issues affecting populations. There is much tradition about disease management among populations, and they have expectations from the public-health system which serves them. Yet, the extent of behavioural risks populations are willing to take (smoking, diet, sexual practices, among others) are in part consequent to the trust populations have towards their health system to restore health [8] as well as their belief sets in unavoidables (e.g. destiny) [9,10] (Fig. 2).

While there are similarities between these sometimes parallel well-being improvement/disease management social services, the models shown in Figs 1 and 2 cannot fully address the issues medicine and public health now face. Indeed, accountability through quantification [11] of what is being carried out and what impact it has had upon patients or communities is an integral dimension of health care's responsibility and increasingly demanded by patients and communities (including payers of care). Yet, lack of resources (technology, nurses, doctors) and lack of incentives for better health or better practices are not expected to render accountability an immediately adopted responsibility by health systems when the traditional services run in parallel as in Figs 1 and 2. Among the reasons for accountability sometimes lagging on the priority list is the incomplete science of outcomes measurement, hence, the inability of care providers to demonstrate what impact the care provided has had upon the health status of patients or populations. Consequently, an enabler for the rapprochement between clinical medicine and public health may be the emphasis on outcomes, a requirement for accountability. If so, clinical medicine, with its primary focus on episodes, and public health, with its focus on what befalls upon groups of people, can build the much needed continuum as shown in Fig. 3, allowing the identification of true impacts of care on populations – Donabedian's long-term outcomes. This can be done while paying special attention to the environment where populations live, adopt risky behaviours, and apply their traditions and beliefs about well-being and disease. For example, along with infectious waste management, communities expect that processing resources, such as fuel, be used parsimoniously. An extreme example may be to consider electronic record-keeping not only necessary for timely, reliable and complete information about patients but also as a minimizer of errors, hence, additional cost not to mention less use of paper, benefiting trees' longevity. That environmental consciousness is seen as yet another dimension of accountability where patients and communities join efforts with the health-care system to preserve or restore their environments. Finally, epidemiological methods on investigation and aetiology determination will help set priorities for the health-care system by identifying the nature and extent of the burden of disease and risk for disease in populations served by the clinical medicine dimension of Fig. 3. The true risk of disease cannot be identified through encounters with persons already ailing but through the understanding of healthy populations' behaviours. From the dedication of appropriate resources to the formula of its environmental consciousness, the health-care system through its continuum would become best designed for effectiveness (measured through outcomes) and accountability.

Can clinical medicine show accountability about safety without linkages to public health?

Accountability has become a more tangible concept and an expected practice since the global focus on safety of care [12]. Indeed, 'dys-safety' is often sensationally obvious [13–15]. In contrast, demonstration (i.e. through measurement and purposeful communication) of safety resembles, similar to two drops of water, the demonstration of quality. Therefore, the past decade's

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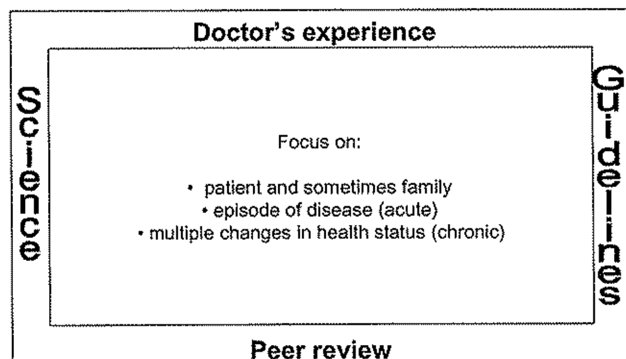

Figure 1 Traditional model of clinical medicine.

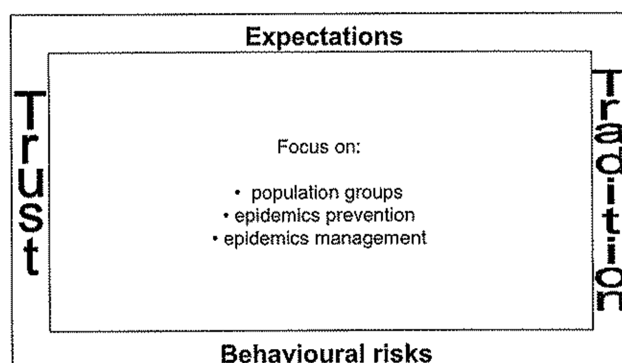

Figure 2 Traditional model of public health.

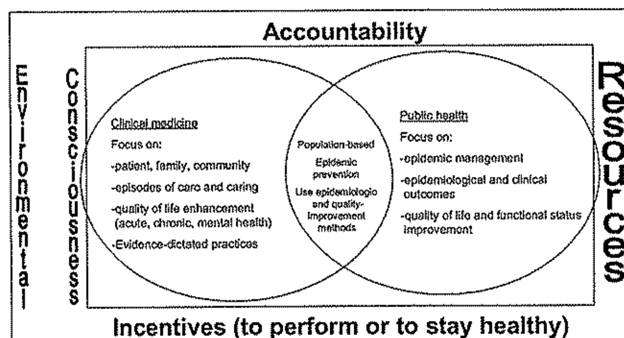

Figure 3 Proposed continuum model linking clinical medicine and public health.

experiences in measuring quality (and outcomes) should serve as a predictor of what accountability about safety entails.

Specifically, a conundrum may soon result for the safety movement [16] unless accountability about quality and safety includes quality of life and functional status as part of the accountability paradigm [17]. In other words, it is anticipated that clinical medicine would show an unprecedented rapprochement to public health and would do so on an ongoing, systematic way rather than ad hoc.

The good news is that the above linkage has already happened, perhaps without fanfare. Consider two resurgences of organisms challenging the pharmacological armamentarium of modern clinical medicine: methicillin-resistant *Staphylococcus aureus* (MRSA) and multi-drug-resistant pulmonary tuberculosis (TB) [18,19]. MRSA was first identified in 1964 as a hospital-acquired bacterium. Over four decades, it has metamorphosed to a 'healthcare-acquired' bacterium and now to predominately 'community-acquired' organism [20]. The epidemiology of MRSA prevalence, mode of transmission and clinical manifestations now can only be described as a public-health epidemic, where the organism is not confined to any population at risk but rather has become an equal-opportunity invader of lesions on children's arms to surgical wounds in hospitals adamantly resolute to irradiating the bacterium.

Pulmonary TB follows a similar trait of resurgence as an opportunistic infection, but this time in certain populations at risk (immunocompromised, multiple co-infections, inadequate nutritional intake, etc.). The diagnosis of active pulmonary TB is rarely complicated, yet non-active TB-positive carriers in society can only be identified through epidemiological survey and the potential burden of disease estimated accordingly. In the case of TB, 'treatment' is only started in a health-care setting, but any cure requires a follow-up of patients into the community [21,22]. The follow-up is crucial for carrying out the directly observed therapy which has shown to be efficient, affordable and highly effective (i.e. outcome-defined) treatment [23,24].

The MRSA and pulmonary TB prevention and management thus requires an indispensable, active and structured continuum between clinical medicine and public health – diagnosis and part of the treatment may take place in a clinical study, but the conditions originate in the communities, and the clinical manifestation, cost of treatment and the increased risk of organizational iatrogenesis (as a result of breaches in safe practices) make epidemiological research an integral part of clinical care's outcome evaluation.

The importance of a 'good life'

Good care without an attributable good life may not be seen as a good outcome. While the often suggested 'doing the right thing, at the right time, the right way, to the right person' [25] may not always result in an optimal outcome, patients, families and communities may not be satisfied with such prospects. Quality of life is expected to improve with good care, at least that is what patients expect. While expectations may not always be reasonable or justified, accountability requires a demonstration by the performers to the recipients [26]. It is rare that the recipient of a less-than-good outcome will be pleased by the contract of accountability [27] explicitly or implicitly agreed upon with the performer. Without quality of life and functional status-changes measurement, it is difficult to address long-term outcomes. In Donabedian's words, 'At the extreme, "health" can be broadly defined as to become synonymous with the "Quality of Life [28]" '.

Conclusion

This essay has revisited Donabedian's definition of 'outcomes' and explored how necessary it is today to employ both a clinical focus on the goodness of what has been done and what can be

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immediately observed/measured, and an epidemiological focus to measure the intermediate and long-term outcomes of clinical care.

The transition from 'eminence-based' [29,30] to 'evidence-based' practices is central to building an effective continuum of care and caring around distinct episodes of diseases. Yet, the expectations of patients, families and communities should not be ignored. Satisfaction with the care or with the improved quality of life is a function of the gap between expectation and happiness with the outcome(s) [31]. The role of the clinicians and the acute-care system as 'shapers of expectations' is among the necessary prerequisites for a reasonable evaluation of outcomes. Indeed, unreasonable expectations of outcomes, by patients or care providers, affect the accountability of the health-care system to those it serves. At the extreme, unreasonable expectation (e.g. that health will be fully restored and even improved) or unsustained promises (e.g. being the safest hospital) may doom efforts of accountability. At the other end, unless issues of safety are continuously addressed, high expectations of good outcomes may be temporarily fulfilled, awaiting a catastrophe such as unexpected return to operating room, antimicrobial-resistant infections because of imperfect aseptic practices or even mortality possibly resulting from wrong medication administration or even to the wrong patient.

In considering the relationship between clinical medicine and public health, it seems that the global 'safety movement' has paved the way to a continuum between the above clinico-social management of health (or disease). It may be grand time, therefore, for a more rational anticipation and response to the changing patterns of disease and the expectation of patients and communities. Most importantly, at our present crossroads, the co-ordination between quality, safety and accountability has become the unavoidable responsibility of health care, encompassing the spectrum of its services rather than its spectre.

Acknowledgement

The author thanks Ms Dana Bonistalli, Executive Assistant, Center for Performance Sciences, for her coordination and assistance during the preparation of this manuscript.

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