Clinical and Translational Imaging (2021) 9:399–401
https://doi.org/10.1007/s40336-021-00438-9

LETTER TO THE EDITORS

Humbug in a nuclear medicine department?

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Received: 23 April 2021 / Accepted: 25 May 2021 / Published online: 7 June 2021

Keywords Nuclear medicine department · Lean management · Transformational projects · Skepticism · Critical thinking · Project management · Organizational behaviour

Dear Editor,

The paper "Lean approach in improving performance and efficiency in a Nuclear Medicine Department" by Burroni et al. [1] introduced "lean management" and considered its use in such a department.

"Lean" is a production method associated with the Japanese car manufacturer Toyota, where it originated in the 1930s. In that context, the method was considered successful. It was studied, got its present name "lean" in 1988, and has been proposed to improve areas far from car-making. The idea behind "lean" is not shockingly original: "doing more with less." To "improve performance and efficiency," it uses "lean tools" with curious names such as "spaghetti diagrams," "takt times," "Gemba walks," etc. However, for the positive transformation to happen, the tools must be accompanied by the staff's indoctrination: "the staff must embrace the changes and make them their own" [1].

Burroni et al. reviewed the literature and concluded that "the rational usage of resources and process optimization would reduce waste and improve quality in Nuclear Medicine departments" [1].

Indeed, waste in the healthcare system—administrative, operational, and clinical is a well-known fact [2]. We fully endorse the idea that optimization of processes can save resources and are grateful to Dr. Burroni and co-authors for bringing up the issue of efficiency in the context of a nuclear medicine department. Yet, we suggest taking a critical look at the potential of transformational projects to benefit such a department.

What is this "Lean?". Stepping back, we see that it is just another "great approach to transform an organization to a better one"—next to Six Sigma, Kaizen, TQM, BPR, MBO, etc. These organization-wide transformational projects exploit "The Quest" story plot: there we find a bold, charismatic leader, a highly cohesive team, (magic) tools, a powerful adversary in organizational inefficiencies, and the Holy Grail of a revamped organization.

The loaded language used to communicate these projects' advantages should not surprise us: these projects are themselves products usually sold by consultancies to organizations. Hence, the language aims at prospective clients.

Unfortunately, the outcomes of these projects do not always match the promises. There is no exact failure rate for organizational transformations—the widely referred 70% might be not substantiated [3], yet, the odds of failing are high.

They are high even for autonomous organizations, in which senior management has ultimate decision power. A nuclear medicine department, in its turn, is never autonomous—it is a complex system embedded into works of other complex systems. In addition, in many of the exchanges, the nuclear medicine department follows the orders. Many inefficiencies the department has, it inherits from its stakeholders—government agencies tasked with nuclear safety and supervision of the pharmaceutical sector, from a hospital it belongs to, from a university with its demands, policies (and politics), from labor unions, boards, councils, committees, and foundations. It is hard to eliminate the inefficiencies from the subordinate position.

Next, the basic assumption of any transformational project is the existence of a single direction, the arrival at which is measurable, and towards which the team "must pull harder." In a nuclear medicine department—there

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hardly is any "single direction." The actors—clinicians and nurses, Ph.D. students, postdocs, technicians, engineers, physicists, etc.—have different, sometimes contradicting, goals of their work. No magic trick can "align" all these goals to some super-goal.

This multidirectionality and the department's embeddedness decrease to zero the chances of transforming it with one standard approach. Such a department's optimal work is possible when executives are people with knowledge, cognitive complexity, soft skills, and character matching their decision-making level. These executives can remain flexible within rigid, sometimes contradicting, demands of the environment. Other actors must be knowledgeable and, also, aware of the environment's constraints.

Did the reviewed literature prove "the effectiveness of lean methodologies in various health care settings" [1] ? Not really.

The systematic reviews highlight the poor quality of implementations and abstain from any recommendations apart from suggesting to perform more robust scientific studies. "studies to date have been mostly of low quality, and future studies need to be of a higher quality" [ref 15]. "We consider the methodological flaws within these studies as the greatest challenge to understanding the true effect of the [quality improvement] interventions it was not possible to statistically account for methodological quality when presenting findings" [ref 14]. "The literature is dominated by simple observations without statistical analysis." [ref 13] "The results of the studies could not be pooled in a meta-analysis due to a high level of heterogeneity" [ref 15]. "This review is unable to make formal recommendations on the use of lean and six sigma methodologies in improving specified outcomes in surgical practice" [ref 14]. "It is not possible to make evidence-based recommendations for different indications, as different studies implemented different aspects of various methodologies to varying extents and in different contexts" [ref 13].

Did the case reports demonstrate the success? For instance, the authors [1] consider it "necessary to recognize an epochal change in the ways of thinking and working in the health sector," citing the case of implementing lean at Virginia Mason Medical Center (VMMC)—"their lean journey in 2001" [ref 10]. The past twenty years can help us analyze the result of this "journey," and at [4], we find that in 2021 the majority of the parameters the "Lean journey" aimed at improving were "no different than the national rate." In several, VMMC was worse than the US average. Burroni et al. [1] admitted that "the results were not as exciting as at the beginning." right, not exciting at all.

Rico et al. 2015 [ref 21] did find a reduction in FDG infusion times, but the PET scanner use did not change, while per-patient costs increased (pp.379–380). The net value of the project's outcome remained unclear. Therefore, the case reports, if analyzed further, are ambiguous at best.

For a picture to be complete, though, we must remember that all projects cost. Not only money spent on services of "efficiency dealers," not only time spent to meet, learn and practice—the moral costs might be more critical in the long run. Unfulfilled promises breed cynicism in the staff, and any next "journey" will have a lower probability of success.

Should we then insulate our departments from potentially beneficial changes and begrudgingly accept the waste and inefficiencies? We think not.

In our opinion, the field would greatly benefit from essential yet universal education in organizational theory and project management. Much work in departments is project-based, yet employees rarely know how to approach a project, build a simple schedule, or depict their routine processes to analyze and improve them. Of all the tools management can readily offer, they would use partly discredited techniques like brainstorming or useless in non-commercial environments, like SWOT analysis. This ignorance means the inability to benefit from existing knowledge and the failure to dismiss humbug easily. In our experience, this ignorance disappears in 20–30 h of interactive instruction.

However, before such universal education is possible, a nuclear medicine department can still improve performance—simply by eliminating unnecessary processes. Exactly as cited Vegting et al. [ref 4] did in their internal medicine department. The study has the word "lean" in the title and none of the "Naruto tools" in the execution. The authors saved 350 thousand euros in a year by analyzing their current situation and reducing the unnecessary diagnostic tests. Subtracting, not adding, might be the best optimization.

In addition, if we want to add—to implement some very best method? It is possible, of course. However, when dealing with "enchanters, charmers, consulters" and other wizards of the corporate world, we must remain skeptical to both the ends and the means, always demand proofs, and ask for a detailed itinerary of any "epochal journey."

Precisely this approach has created modern science in general and nuclear medicine departments in particular.

Funding The article received no funding.

Declarations

Conflict of interest The author owns the company AATE Consulting Group Oy, which provides teaching and consulting services on project management and organizational behavior.

Human and animal rights This article does not contain any studies with human or animal subjects performed by the any of the authors.

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