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Improving communication skill training in patient centered medical practice for enhancing rational use of laboratory tests: The core of bioinformation for leveraging stakeholder engagement in regulatory science

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Abstract:
Requests for laboratory tests are among the most relevant additional tools used by physicians as part of patient's health problem-solving. However, the overestimation of complementary investigation may be linked to less reflective medical practice as a consequence of a poor physician-patient communication, and may impair patient-centered care. This scenario is likely to result from reduced consultation time, and a clinical model focused on the disease. We propose a new medical intervention program that specifically targets improving the patient-centered communication of laboratory tests results, the core of bioinformation in health care. Expectations are that medical students training in communication skills significantly improve physicians-patient relationship, reduce inappropriate use of laboratorial tests, and raise stakeholder engagement.

Keywords: bioinformation, communication skills patient centered medicine, laboratory test results dissemination, stakeholder engagement, regulatory science

Background:
Regulatory science is defined by the Food & Drugs administration as the "*development and use of new tools, standards, and approaches to more efficiently develop products and to more effectively evaluate product safety, efficacy, and quality*". It is becoming, together with the translational research-translational effectiveness transaction, the centerpiece of the evidence-based health care strategy for fostering innovation and integration of laboratory test results into clinical decision-making. Laboratory test requests are one of the tools used by physicians to investigate a large amount of health problems. About 70% of medical decisions, among diagnostics, treatments and monitoring are supported mostly by laboratory tests. The purpose of laboratory tests and their outcomes are rarely explained satisfactorily to the patients, the caregivers, and other stakeholders. In brief, the lack of adequate information, compounded by the overestimation of complementary laboratory investigation is an important issue in medical practice, because it reveals a counter-productive situation where an overrating of exams co-exists alongside with a poor medical-

patient relationship and with sub-par communication skill. As a consequence, the doctor rely less on the best available evidence, and under-utilize diagnostic reasoning, which in and of itself may lead to an increase error rate in diagnosis. Stakeholders are, and feel misinformed, non-participants in the evidence-based patient-centered process of care, and are overall disengaged. Taken together, these elements increase risk, decrease benefit and increase costs to the patients, in brief, and as shown in **(Figure 1)**, improving the patient-centered communication of laboratory tests results is at the very the core of bioinformation in evidence-based health care because it ensures effectiveness of diagnosis and treatment and stakeholder engagement **[1-3]**.

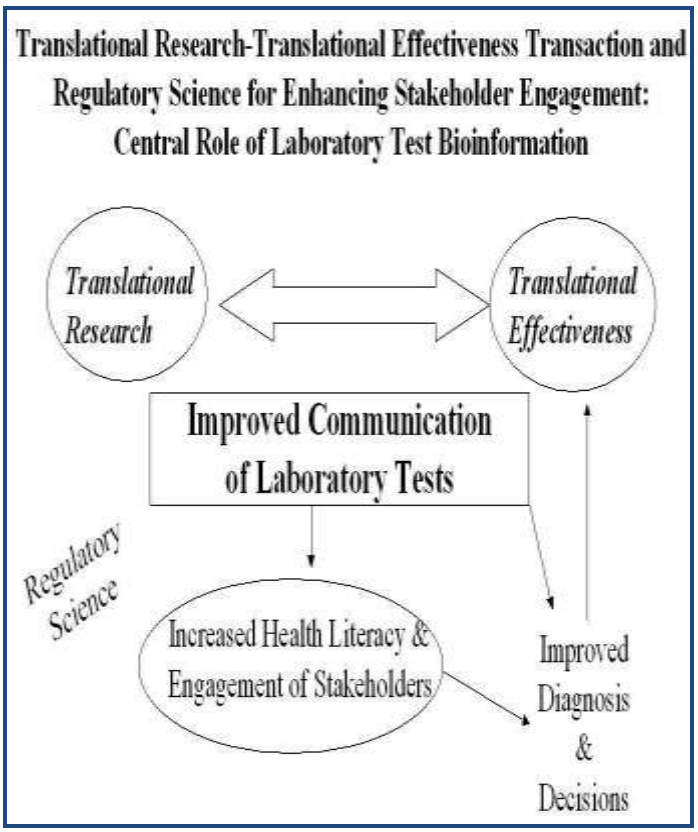

Figure 1: Translational Research-Translational Effectiveness Transaction and Regulatory Science for Enhancing Stakeholder Engagement: Central Role of Laboratory Test Bioinformation
The figure shows a schematic representation of the central importance of improved bioinformation of laboratory tests rational and results in the translational research-translational effectiveness transaction and for increasing health literacy and leveraging stakeholder engagement in regulatory science.

Case in point:

Reduction of the consultation time, based on the productive logic model, leading to

Less time to listen and to talk with patients; Absence or minimal physical examination; Less time to think and to discuss the diagnostic hypothesis; Lack or less time to show patients the benefits of the tests asked and how to prepare for them; Less time to clarify the doubts of patients about their expectations.

Consultation based on disease, rather than patient-centered, characterized by

Less value to listen; Not sharing the decisions; Imposing medical management for the patient; Unequal physician-patients relationship; Low patient adherence to medical guidance for lack of trust.

Absence or minimal reflection by physicians on his/her own practice

Lack of professional experience; Erroneous replication models; Inability to self-criticism; Low qualification; Low adherence to permanent education programs.

Increased chance of laboratory errors, pre-analytical and analytical, by the negligence of the doctor and misinformation of the patient (i.e., decrease health literacy)

Omission on the guidance for medical laboratory tests; Transfer to the laboratory for any information concerning exams.

Greatest impact on service management and relevant expense

Reduced cost-effectiveness; Increased overall risk and burden on patient and stakeholders; In brief, five key dimensions can be recognized to differentiate the practice of clinical care focused on the person of the biomedical model of care as part of the Biomedical Model **[4].**

1) Biopsychosocial perspective – addresses the patients' tri-axial diagnostic process, and considers the importance of opening a "hidden agenda" for the patient, where they take care of a dysfunctional state and not just a physical illness; ***2) Patients as a subject*** – considers the patients' biography as well as their individual experience with the disease. "*You must understand the signs and symptoms found by the physician and patient dissatisfaction, shown by and a manifestation of their individual conflicts and problems*" **[5]**; ***3) Shared strengths and responsibilities*** – the conflict between the medical and patient autonomy is central to the physician-patient relationship; ***4) Therapeutic alliance*** – the doctor must act so that the patient perceives the relevance and effect of the proposed treatment and agree to the objectives outlined, always considering the affective and cognitive characteristics of the patient; ***5) Physician as a subject*** – The biomedical model focuses on the diagnosis and treatment, based on the "medicine of a subject", i.e., the physician. On the other hand, the patient-centered model involves a two-subject medicine model: the physician and patient.

In this context, Faria et al. (personal communication) examined the model of care clinical scenario performed in the outpatient medical education level, and observed that the information about laboratory tests were among the most neglected issues in the bioinformation-dissemination process.

Discussion:

Inappropriate use of laboratory tests has been the subject of studies around the world due to impact to both patient and health care system. In relation to the patient, this practice may increase the chance of occurrence of false positive results, and diagnostic errors, generating unnecessary worry and discomfort, as well as new demands to be investigated. Regarding the health care system, this situation generates a greater transfer of funds to laboratory that could have been used in other health sectors **[6,7,8].** Inappropriate use of laboratory tests is related to several factors, including: unnecessary tests ordered; lack of proper instructions to the patient before the collection of material for the execution of the

test; repeated examinations at intervals not recommended, and use of medications that alter the outcome of examinations; It is important to reinforce that the appropriate use of laboratory tests depends on both the patient and the doctor. Therefore, the quality of physician-patient communication is fundamental both for the patient's improvement and for the health service. In this context is essential for the physician to know the expectations and feelings of the patient regarding their problem. Moreover, during the discussion of the problem is important to make all the information clear and accurate **[9]**. The decision about treatment should be shared between patient and doctor in an equal process **[10].** Our findings to date confirm the results of others that curricular interventions that aim to help students to practice medicine patient centered are needed to improve the medical care [**11**], in large part because of increased active stakeholder engagement [**12**]. These interventions should encourage students to reflect on their practice with their mentors.

Conclusion:

Taken together, our observations indicate that educational interventions related to the model of care in medical school may improve the dissemination of information to the patient and stakeholders, with the inference that there will be an associated increase in health literacy [**13**]. The new medical intervention program we describe here specifically targets improving the patient-centered communication of laboratory tests results, and contributes to a more effective and rational utilization of bioinformation dissemination in patient-centered medical practice. When put into place, the program we advocate for improving medical students training in communication skills is expected to optimize cost-effectiveness and stakeholder engagement in evidence-based health care, because it informs and expands the traditional Joanna Briggs Institute (JBI) model of evidence-based health care [**14**].

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