



HAL
open science

Further Perspective on the Need for Medical Innovation and Data Overload from a Laboratory Results Viewpoint

Roy Malka

► **To cite this version:**

Roy Malka. Further Perspective on the Need for Medical Innovation and Data Overload from a Laboratory Results Viewpoint. *Annals of Clinical and Laboratory Research*, 2022, Further Perspective on the Need for Medical Innovation and Data Overload from a Laboratory Results Viewpoint, 10 (08), pp.1-2. 10.36648/2386-5180.22.10.427 . hal-04109013

HAL Id: hal-04109013

<https://hal.science/hal-04109013v1>

Submitted on 29 May 2023

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

Further Perspective on the Need for Medical Innovation and Data Overload from a Laboratory Results Viewpoint

Roy Malka*

Department of Systems Biology,
Harvard Medical School, Boston, Israel

Received: 04-Aug-2022, Manuscript No. IPACLR-22-12797; **Editor assigned:** 08-Aug-2022, PreQC No. IPACLR-22-12797(PQ); **Reviewed:** 22-Aug-2022, QC No. IPACLR-22-12797; **Revised:** 24-Aug-2022, Manuscript No. IPACLR-22-12797(R); **Published:** 31-Aug-2022, DOI: 10.36648/2386-5180.22.10.427

*Corresponding author:
Roy Malka

Description

Laboratory results are essential and highly utilized tools in the practice of medicine in all care settings. To improve decision-making over the years more and more tests are done by patients. Some of the tests provide full decision-making without a healthcare provider e.g., in the case of diabetics and Continuous Glucose Monitors (CGMs) [1] and their predecessors, the fingertip glucose measures that are used frequently to establish insulin shot dosage; in the more modern tools, urine dipstick analysis, obtained at most prenatal visits is done via a kit where the dipstick is analyzed using a standard smartphone via a designated mobile application [2].

Medical laboratories have a lot of focus on analytical quality, and rightly so. When we come a year after year to our annual checkup, it is essential that changes in lab results will not occur due to a drift in some equipment calibration. However, the current challenges are around laboratory results interpretation. In most traditional numerical lab results the interpretation is based on a reference interval [3]. Malka, et al. demonstrate an approach to using a reference region that accounts for the combination of two parameters (e.g., Red Blood Count (RBC) and the Mean Corpuscular Hemoglobin (MCH) content) [4]. In addition, the regions are divided by the equal-probability line (contour) for 5-year mortality, which is more accurate than each of the two traditional univariate reference intervals Malka et al. 2020.

The approach taken by Malka, et al. is pointing to two missing elements from current reference intervals: (1) we are ignoring rich informative physiological dependencies between measured quantities; (2) we are using a tool with no clear predictive power. As a result, it is frequent to observe healthy individuals have at least one abnormal result for a routine set of tests (with 13 measurements or more, it is expected to have >50% of individuals to false positive if the measurements are sufficiently independent). There are many potential undesired results to this situation, in particular its potential contribution to physician data overload and burnout.

Cadamuro, et al, provide a more comprehensive review of the challenges in interpretation. They propose that current laboratory results should aim to answer clinical questions. The answers can

be different depending on the patient medical context e.g., acute vs. chronic or depending on whom asks the question: e.g. the provider's specialty. Other answers may have a trend effect e.g., hemoglobin for anemia, or HbA1C for management of diabetics, that would be relevant to assess over the past few years [4].

However, it is clear that unfiltered data presentation is a major challenge in medicine overall and not just in laboratory medicine. Presenting many lab results that do not support any specific decision may be as counterproductive 'decision support' as not presenting essential information. In fact, these issues are highly associated with some of the challenges in health IT [3] Glaser 2020. It is not surprising that even an experienced ICU team is practicing medicine differently under a heavy load [5]. Park, et al. suggest rising the team's awareness of the situation of overload. Naturally, increasing awareness is a good start [4]. However, as an entrepreneur, I believe in the power of technology to reduce overload burdens, especially those associated with data overload. This approach was successfully implemented in the program described in Scirica, et al. where technology is utilized to dramatically increase the number of patients with cardiovascular risks that were shown to improve lipid and hypertension control via virtual management. They were able to accomplish that by adapting the vital measurements to the patient context and to the decisions that need to be made [6]. In a way Scirica, et al. demonstrate how powerful the proposal of Cadamuro, et al, to aim for an answer to clinical questions can be [5-7].

✉ roymalka@gmail.com

Department of Systems Biology, Harvard
Medical School, Boston, Israel

Citation: Malka R (2022) Further
Perspective on the Need for Medical
Innovation and Data Overload from a
Laboratory Results Viewpoint. Ann Clin Lab
Res. Vol.10 No.8:427

Conflict of Interest

The Author is an enterpenur building a company providing health-IT tools for effecient care delivery.

References

1. Damiano ER, McKeon k, El-Khatib Firas H, Zheng H, Nathan David M, et al. (2014) A comparative effectiveness analysis of three continuous glucose monitors: the Navigator, G4 Platinum, and Enlite. *J Diabetes Sci Technol* 8: 699-708.
2. Burke AE, Katrina MT, Mika G, Yonatan A (2019) Feasibility and acceptability of home use of a smartphone-based urine testing application among women in prenatal care. *Am J Obstet Gynecol* 221: 527-528.
3. Glaser J. (2020) It's time for a new kind of electronic health record. *Harvard Business Review*.
4. Park J, Zhong X, Yue D, Amelia B, Brain WP (2022) Investigating the cognitive capacity constraints of an ICU care team using a systems engineering approach. *BMC anesthesiol* 22: 1-13.
5. Scirica BM, Christopher PC, Naomi DL, Thomas AG, David Z, et al. (2021) Digital care transformation: Interim report from the first 5000 patients enrolled in a remote algorithm-based cardiovascular risk management program to improve lipid and hypertension control. *Circulation* 143: 507-509.
6. Cadamuro J, Andreas H, Axel U, Alexander M, Josep MB, et al. (2021) Presentation and formatting of laboratory results: A narrative review on behalf of the European Federation of Clinical Chemistry and Laboratory Medicine (EFLM) Working Group "postanalytical phase"(WG-POST). *Crit Rev Clin Lab Sci* 58: 329-353.
7. Malka R, Carlo B, Ron C, John MH. (2020) Non-parametric combined reference regions and prediction of clinical risk. *Clin Chem* 66: 363-372.