

5.C. Oral session: Digital tools in healthcare settings

Evaluation and cost estimation of laboratory tests overuse through a CCDSS in a university hospital

Doriana Vallonef

D Vallone¹, A Tamburrano¹, C Carrozza², A Urbani², A Cambieri³, N Nicolotti³, M Sanguinetti⁴, P Laurenti¹

¹Section of Hygiene, Università Cattolica Del Sacro Cuore, Rome, Italy

²Unit of Biochemical Chemistry and Clinical Molecular Biology, Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy

³Hospital Health Management, Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy

⁴Department of Microbiology, Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy
Contact: dvmedi@gmail.com

Computerized Clinical Decision Support Systems (CCDSS) are information technology-based systems that use specific patient characteristics and combine them with rule-based algorithms. The aim of this study is to conduct a survey to measure and assess the over-utilization rates of laboratory requests and to estimate the monthly cost of inappropriate requests in inpatients of the “Fondazione Policlinico Universitario A. Gemelli IRCCS” Care Units.

This observational study is based on the count of rules violations for 43 different types of laboratory tests requested by the Hospital physicians, for a total of 5,716,370 requests, over a continuous period of 20 months (from 1 July 2016 to 28 February 2018). Requests from all the hospital internal

departments (except for Emergency, Intensive Care Units and Urgent requests) were monitored. The software intercepted and counted, in silent mode for the operator, all requests and violations for each laboratory test among those identified.

During the observation period a mean of 285,819 requests per month were analyzed and 40,462 violations were counted. The global rate of overuse was $15.2\% \pm 3.0\%$. The overall difference among sub-groups was significant ($p < 0.001$). The most inappropriate exams were Alpha Fetoprotein ($85.8\% \pm 30.5\%$), Chlamydia trachomatis PCR ($48.7\% \pm 8.8\%$) and Alkaline Phosphatase ($20.3\% \pm 6.5\%$). All the exams, globally considered, generated an estimated avoidable cost of 1,719,337€ (85,967€ per month) for the hospital.

This study reports rates (15.2%) similar to other works. The real impact of inappropriateness is difficult to assess, but the generated costs for patients, hospitals and health systems are certainly high and not negligible.

Key messages:

- It would be desirable for international medical communities to produce a complete panel of prescriptive rules for all the most common laboratory exam.
- That is useful not only to reduce costs, but also to ensure standardization and high-quality care.