



ROLE OF PHYSICIANS-NURSES AND LABORATORY IN FOLLOWING UP THE TEST RESULT FOR AMBULATORY PATIENT

Dr. Hanaa Mohmmedzakary Juharji^{1*}, Dr. Miaad Kamal Bin Yahya², Dr. Sultan Moraya Alqahtani³, Fahad Salah Abass Aboalinain⁴, Ayman Mousa Rasheed Almutairi⁵, Jameel Mahmoud Maash⁶, Mania Abdulmoain Hamid Alghadali⁷, Mosa Salem Mosa Alzahrani⁸, Adel Sonidah Al-Mkati⁹, Ghalib Ayed Safer Alotaibi¹⁰, Adel Sadi Al-Omairy¹¹, Afnan Saleh Alhajjajy¹²

Abstract:

Delayed or incomplete test result follow-up, which can result in missing or delayed diagnosis, is a significant concern in the outpatient context. There is a strong correlation between delayed follow-up of test results and negative patient outcomes, including higher death rates. Additionally, a significant number of medical malpractice lawsuits are attributed to this issue. However, making enhancements is challenging due to the intricate nature of the test result follow-up procedure. An investigation was conducted at an academic medical facility to assess the safety culture of test result follow-up. This was done by analyzing qualitative and quantitative data on patient safety and quality of treatment. The aim was to assess the evidence that quantifies the degree to which physicians, nurses, and laboratory personnel follow up on test results for ambulatory patients, and the resulting effect on patient outcomes. The lack of follow-up on test findings for hospital patients is a significant issue. The presence of adverse effects on patients due to the failure to act on crucial findings, along with the progress in the capabilities of clinical information systems, provides a compelling argument for the necessity to investigate potential remedies. These treatments should encompass measures such as online validation of outcomes.

^{1*}Family medicine consultants, Osfan primary healthcare

²Senior Registrar Orthopedic Surgery, King Abdulaziz hospital - Makkah

³Resident doctor, Osfan primary healthcare

⁴laboratory Specialist, Director of Al-Jamoum Health Sector in the Executive Administration of the Health Cluster in Makkah

⁵AFIF GENERAL HOSPITAL, Specialist laboratory

⁶Specialist -Nursing at Aleskan health center

⁷Technician-Nursing at Aleskan health center

⁸Nurse tech at King fahad hospital

⁹Nurse technician, Hrad PHC

¹⁰Nurse technician In medical supply supply chains

¹¹Nurse technician at Alqubaeia PHC- Makkah

¹²Laboratory technician at Heraa General Hospital

***Corresponding Author:** - Dr. Hanaa Mohmmedzakary Juharji

*Family medicine consultants, Osfan primary healthcare

DOI: 10.53555/ecb/2022.11.7.42

Introduction:

The World Alliance for Patient Safety has recently recognized inadequate test result monitoring as one of the primary factors that contribute to dangerous patient care. Neglecting to pursue test results heightens the likelihood of overlooked or postponed diagnosis. This might result in less than optimum clinical results, which may have legal consequences [1].

Healthcare professionals, including clinicians, nurses, and clinical laboratory personnel, are worried about the lack of organization in their test management methods, which has led to significant inconsistencies. According to claims, the utilization of information technology can enhance this process by making it safer, simpler, and more organized, hence decreasing the likelihood of overlooking findings [2]. However, there is a scarcity of data about its practical effectiveness. The procedure of overseeing the follow-up of diagnostic and radiological test findings is intricate. The process involves the interchange of information among patients, physicians, nurses, and laboratories using a combination of information systems, including as paper-based, telephone, and computer systems, and encompasses a range of rules and procedures [2,3]. The lack of follow-up on test findings is a significant safety concern that has been recognized as a serious issue in outpatient settings. The existing methods and processes are characterized by a lack of uniformity and organization, and both physicians and patients recognize the need for improvement in this regard. The testing procedure in ambulatory settings is intricate and may be categorized into three main phases: pre-analytic, analytic, and post-analytic. Each phase encompasses many procedures and involves several individuals, including doctors, patients, office and laboratory workers, and nursing professionals [4,5].

Review:

The majority of primary care offices do not utilize electronic health records, and the majority of them communicate with numerous laboratories, frequently without internet connectivity. Physicians face additional challenges due to the increased number of tests and the time-consuming process of following up on them. Neglecting to provide subsequent attention can result in missed or postponed diagnoses, which adversely affect the quality of patient treatment and may potentially have legal consequences for healthcare institutions and practitioners [6].

Lacking awareness of the magnitude of the issue,

several professionals may underestimate its scope and hence neglect to implement any measures to enhance the procedure. Receiving feedback on medical mistakes is crucial to counteract excessive trust in decision-making about diagnostic precision. Ambulatory settings bring unique obstacles for efficient test management, in addition to the ones already encountered in acute care settings [7].

Test management is the exchange of information among many stakeholders in healthcare, including physicians, nurses, clerks, laboratory personnel, and patients. Research indicated that the methods used to follow up on tests differed among people and practice contexts. Non-physician personnel, such as nurses and practice managers, were also included in the follow-up phase of the test [8].

Multiple studies have shown a lack of clear directives about the individuals responsible for notifying patients of their findings, as well as the appropriate methods and timing for doing so. In 2007, Singh et al. [9] shown that they had decreased rates of missed abnormal imaging findings compared to other studies. They attributed this to the implementation of standardized methods and procedures for following up on abnormal test results, along with the use of an electronic notification system for test results.

Three studies assessed the efficacy of an automated warning system in promptly notifying healthcare providers about abnormal radiology and laboratory test findings [9,10]. Despite certain limitations that may restrict generalization, such as the distinct attributes of the predominantly male veteran population in the Veterans Affairs (VA) system, the use of the VA's in-house electronic medical record (EMR) system, and the absence of pre-EMR data for comparison, the findings indicate that the rates of loss to follow-up were lower compared to sites that do not utilize information technology. Nevertheless, despite the presence of the advanced electronic alarm system, a certain percentage of findings were still overlooked: 4% (45 out of 1017) of critical imaging findings, 11% of alarms for abnormal imaging (both recognized and unacknowledged), and 6.8% of defined abnormal laboratory tests. In the study conducted by Singh et al. [10], it was found that 10.2% of alerts were not acknowledged by physicians, meaning that they did not click on or open the message within two weeks of receiving it. The study also showed that there was no significant difference in timely follow-up between acknowledged and unacknowledged

alerts, with rates of 6.4% and 10.1% respectively ($P = 0.13$).

Only two studies documented comprehensive electronic test management systems, in which tests were requested and results were reported electronically, without any reliance on paper. The incidence of missing findings was substantial in both of these trials, although one could contend that the technology accentuated the issue, rendering it more apparent and quantifiable. The prevalence of high rates was observed in hospitals that exclusively relied on paper-based systems, as well as in those that employed a combination of paper and electronic systems [11]. No correlation was found between the used system and the magnitude of unreported test findings. Additional research has indicated that the utilization of hybrid paper and electronic clinical information systems is linked to mistakes and duplications, whereas fully electronic systems exhibit less errors [11]. An analysis of outpatient test results found that using a partial electronic medical record (a combination of paper-based progress notes and electronic test results, or vice versa) was linked to a higher likelihood of failing to inform patients about clinically significant results. This was compared to not having an electronic medical record at all (odds ratio = 1.92, $p = 0.03$), or compared to having an electronic medical record that included both progress notes and test results (odds ratio = 2.37, $p = 0.007$) [12]. An assessment of an electronic results management system in paediatric ambulatory care revealed that practices that fully implemented the electronic system experienced improvements in efficiency, reliability, timeliness, and provider satisfaction. However, some practices that only partially implemented the system reported decreased efficiency and an increased risk of losing test results [13].

Two studies examined the relationship between patients' perception of their clinician's promptness in responding to their test results and physician response time and response rate. The studies revealed notable disparities in both response time and response rate between physicians who were highly rated and those who were poorly rated. Physicians with higher ratings had quicker reaction times and addressed a greater number of messages compared to physicians with lower ratings. Physicians exhibited a higher level of responsiveness to regular-priority test findings compared to high-priority test results. It is hypothesized that this might be attributed to the extended duration required to formulate a management strategy for the high-priority messages, resulting in their prolonged presence in

the physician's In Basket. Another potential scenario is that the physician acknowledges the message using a communication mode that is not recorded in our system (such as a phone call to the patient) and subsequently revisits the message at a later point, once the plan has been finalized. Further inquiry is required to have a deeper understanding of this matter [14,15]. It is necessary to build alternative approaches for managing test results. One such approach involves use electronic triggers to detect patients who have not received follow-up. Nevertheless, electronic warnings alone are insufficient for resolving test result management. Institutions should also establish comprehensive processes for the follow-up of test results across the whole institution. Several suggestions have been put up about the handling of test results. Nevertheless, obtaining empirical evidence to substantiate shifts in safety culture within the ambulatory context might pose a challenge. The data sources identified in this study offer significant insights into the patient safety culture at an academic medical institution [15].

Conclusion:

These grievances exemplify the patient's encounter and have previously been utilized in enhancing the quality of care. Almost all hospitals possess an electronic safety reporting system to document and analyze near misses and errors. This system allows healthcare personnel to submit safety issues for investigation, tracking, and trend analysis. With the growing adoption of electronic health record (EHR) systems, it is now feasible to directly monitor safety. One such metric is the percentage of aberrant test findings that are promptly examined. While these sources have been utilized separately in the past for the purpose of enhancing quality and conducting research, there has not been a comprehensive examination of how they might be effectively combined and what the specific advantages and disadvantages are for each source of information.

References:

1. World Alliance for Patient Safety *Summary of the Evidence on Patient Safety: Implications for Research*. Geneva: World Health Organization, 2008
2. Bates DW, Leape LL. Doing better with critical test results. *Jt Comm J Qual Patient Saf* 2005; 31:66–7
3. Roy CL, Poon EG, Karson AS, et al. Improving patient care. Patient safety concerns arising from test results that return after hospital discharge. *Ann Intern Med* 2005; 143:121–8

4. Cram P, Rosenthal GE, Ohsfeldt R, et al. Failure to recognize and act on abnormal test results: the case of screening bone densitometry. *Jt Comm J Qual Patient Saf* 2005; 31:90–7
5. Park HI, Min WK, Lee W, et al. Evaluating the short message service alerting system for critical value notification via PDA telephones. *Ann Clin Lab Sci* 2008; 38:149–56.
6. Callen J, Paoloni R, Georgiou A, et al. The rate of missed test results in an emergency department. *Methods Inf Med* 2009;37–43.
7. Choksi V, Marn C, Bell Y, et al. Efficiency of a semiautomated coding and review process for notification of critical findings in diagnostic imaging. *Am J Roentgenol* 2006;186:933–6
8. Schiff GD, Kim S, Krosnjar N, et al. Missed hypothyroidism diagnosis uncovered by linking laboratory and pharmacy data. *Arch Intern Med* 2005;165:574–7
9. Singh H, Arora HS, Vij MS, Rao R, Khan MM, Petersen LA. Communication outcomes of critical imaging results in a computerized notification system. *J Am Med Inform Assoc.* 2007;14(4):459–466. doi: 10.1197/jamia.M2280.
10. Singh H, Thomas EJ, Mani S, Sittig D, Arora H, Espadas D, et al. Timely follow-up of abnormal diagnostic imaging test results in an outpatient setting: are electronic medical records achieving their potential? *Arch Intern Med.* 2009;169(17):1578–1586. doi: 10.1001/archinternmed.2009.263.
11. Callen J, Paoloni R, Georgiou A, Prgomet M, Westbrook J. The rate of missed test results in an emergency department: an evaluation using an electronic test order and results viewing system. *Methods Inf Med.* 2010;49(1):37–43.
12. Singh H, Naik AD, Rao R, Petersen LA. Reducing diagnostic errors through effective communication: harnessing the power of information technology. *J Gen Intern Med.* 2008;23(4):489–494. doi: 10.1007/s11606-007-0393-z.
13. Piva E, Sciacovelli L, Zaninotto M, Laposata M, Plebani M. Evaluation of effectiveness of a computerized notification system for reporting critical values. *Am J Clin Pathol.* 2009; 131(3):432–441. doi: 10.1309/AJCPYS80BUCBXTUH.
14. Plebani M. Interpretative commenting: a tool for improving the laboratory-clinical interface. *Clin Chim Acta.* 2009; 404(1):46–51. doi: 10.1016/j.cca.2009.03.012.
15. Couchman GR, Forjuoh SN, Rascoe TG, Reis MD, Koehler B, Walsum KLv. E-mail communications in primary care: what are patients' expectations for specific test results? *Int J Med Inform.* 2005;74(1):21–30. doi: 10.1016/j.ijmedinf.2004.08.005.