

THE IMPORTANCE OF COOPERATION BETWEEN NURSING AND CLINICAL MEDICAL LABORATORIES IN IMPROVING THE QUALITY OF HEALTH CARE

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Abstract

Clinical laboratory tests play an important role in health care today. Laboratory tests are becoming a foundation of evidence-based health care and clinical decision-making. They influence 60-70% of the decisions in health care and account for 10-15% of total health care costs. However, laboratory medicine's share of improved clinical outcomes is low, at only 1-2%. Thus, there is an urgent need for cooperation between nursing and clinical medical laboratories to improve the quality of health care. (Zima, 2017) Health care systems across the world need to provide safe, efficient, and high-quality health care for all citizens. Several efforts have been made to improve the performance of health care systems, but these have had limited success. While many stakeholders participate in and influence health care systems, the responsibility for health care quality and outcomes rests primarily with health care providers. However, the effectiveness of health care providers is often suboptimal. To improve this effectiveness, best practices have been identified where one clinical specialty uses laboratory medicine to significantly improve clinical outcomes. These innovative health care professionals have transformed the traditional standards of care to achieve exceptional outcomes that would not have been possible without the clinical laboratory. The key performance indicators (KPIs) for patients, payors, clinicians, and health systems all improved through the strategic engagement of laboratory medicine within the integrated clinical care teams. (Strain & H. Ravalico, 2021)

1.2 Keywords

Clinical laboratories, cooperation, healthcare, nursing, quality medicine Laboratories have always been an indispensable and integral part of medicine, especially in its domain of clinical pathology. Clinical laboratories represent a joint effort of various health professionals in service to patients and the community. Cooperation of clinical laboratories with medical and nursing professions improves the quality of health care and promotes laboratory medicine and laboratory services among other health professions. Special attention must be given to newly employed health professionals. Their integration into clinical laboratories is time-consuming, hence the need for

smoother transfer and cooperation with the educational institutions (Zima, 2017). The focus of this joint discussion is to review the importance and impact of cooperation between nursing and clinical medical laboratories on the quality of health care. It is pivotal to pay attention to this theme due to the constant emergence of new generation health professionals, which in turn challenges the existing models of education, training, and cooperation. Health care systems throughout the world share similar problems – shortage of health professionals and constantly evolving new technologies in medicine and health care. Furthermore, the recent global pandemic has also revealed and emphasized health care weaknesses and fragilities throughout the world (Strain & H. Ravalico, 2021).

1.3 1. Introduction

Medical laboratories play vital role in the health care systems. The laboratory results provide base for about 70% of clinical decisions including screening, diagnosis, therapy and management of the patients. Thus, the quality of laboratory services directly influences the quality of health care (Zima, 2017). On the other side, the laboratory results are often misused in the clinical practice due to the missing or inadequate cooperation between laboratory medicine and other clinical disciplines. That reduces the added value of laboratory results and could have negative effect on the quality of health care. A number of factors could contribute to this suboptimal situation, e.g. the education, culture, attitude, managerial aspects, organisational setup, professional societies, accreditation and regulation. However, the close and effective cooperation between clinical laboratories and clinics could improve the quality of health care significantly, especially in the current time of pandemics, financial limits and lack of health care professionals.

The aim of this article is to highlight the importance of the cooperation between nursing and clinical medical laboratories to ensure the quality laboratory services and better health care for the patients. Since up to 70% of the laboratory errors occur pre-analytically, the special attention would be paid to the cooperation between nurses and clinical laboratories focusing on the primary sample collection. The concepts of analytical quality laboratory services and of laboratory medicine as integral part of health care systems are briefly described in relation to the cooperation for better health care (Strain & H. Ravalico, 2021).

1.4 2. The Role of Nursing in Health Care

As the most numerous group of health care providers, nurses play a leading role in bringing care to the patient. Nursing care is a major component of a patient's hospital experience and has the greatest impact on patient safety and treatment outcomes. Nurses' ongoing interactions with patients allow them to monitor clinical presentations and ensure a continuum of care while treatments are delivered to the patient (Strain & H. Ravalico, 2021). Nurses screen patients for new test requests, collect specimens, and ensure they are transported in a timely manner for analysis. Nurses explain laboratory tests to patients, assist with specimen collection, and monitor quality control by ensuring proper identification and labelling of specimens. Nurses also provide laboratory professionals with clinical information necessary for the proper interpretation of test results. As patient advocates, nurses help ensure patient safety by following laboratory medicine policies and procedures to minimize errors during the preanalytical phase.

Nurses' roles in laboratory medicine must be clearly defined to avoid duplication or omission of responsibilities between nursing and laboratory staff. Collaborative models of care delivery

improve the quality of health care by ensuring complementary roles for care providers (Ghiyasvandian et al., 2015). In this model, care delivery is shared between various providers who each deliver care in areas where they have expertise. Joint training is often necessary to clarify the roles of health care team members and avoid redundancy in care-delivery activities, which can compromise patient safety. Research shows that newly trained nurses make the best partners for laboratory medicine in implementing collaborative care models.

2.1. Patient Care and Advocacy

The laboratory's role in patient care is divided into important advocacy points for patients, nursing, and laboratory professionals. Choosing the appropriate laboratory test ensures accurate results and is key to good patient care. Testing location options have advantages and disadvantages for patients, nursing staff, and laboratories. Patients wish for comfort, convenience, and privacy. Nursing staff prefer familiar environments, while laboratories ensure efficiency. These competing priorities require cooperation to ensure high-quality patient care (Zima, 2017). Patient safety is the non-negotiable right of every patient. Laboratory tests are the most frequent clinical pathway in patient care. An extensive range of tests, several sample types, and laboratory systems must be integrated to ensure safe testing. Organizing, analyzing, and clearly describing processes is essential for all caregivers involved. The distribution of testing responsibilities between clinical and specialized laboratories is usually based on the availability of particular instruments and methods. Unclear testing responsibilities must be avoided to reduce unnecessary delays in patient care. Considerable changes in population health, societies, and healthcare systems impact laboratory testing. Rapid technical advancements create new testing options. Transforming laboratory testing strategies to accommodate change is everyone's responsibility. All health professionals must understand their impact on healthcare and accept responsibility. Proposed new laboratory testing strategies promote change and improvement in knowledge and processes, and ensure better patient care and advocacy (Strain & H. Ravalico, 2021).

2.2. Health Promotion and Disease Prevention

Health systems must prioritize health promotion, disease prevention, and early detection of diseases to provide better care with limited resources. Improving community health helps decrease hospitalizations and care costs while increasing care accessibility. Healthcare professionals play a crucial role in health promotion and disease prevention in communities. Laboratory medicine is an underutilized resource for health promotion and disease prevention (Strain & H. Ravalico, 2021). Clinical laboratories can assist with outreach programs by developing low-cost laboratory tests that address specific community health needs. Community health improvement plans can identify community health needs based on hospital patient data. The laboratory can then suggest low-cost tests to screen at-risk populations, improving health care quality and potentially generating revenue. Clinical laboratories can also assist in recruiting patients for health care provider outreach programs. Further, laboratory outreach programs can provide population screening in local communities, such as schools and community centers. For ongoing outreach programs, laboratory professionals can help educate patients about the laboratory's role in health care, proper specimen collection, and disease awareness.

Growing and aging populations, rising healthcare costs, and increasing chronic diseases challenge the sustainability of health care services globally. Thus, health care must focus on providing better

care under limited resources. The quality of health care services is vital to achieving better outcomes. Community health improvement plans identify community health needs, which typically require hospitals to lead. However, hospital-centric health care is unsustainable due to rising costs and limited access in rural communities. Instead, the focus should be on improving community health, as healthier communities decrease hospitalizations and care costs while increasing care accessibility. Many populations at risk for chronic diseases remain undiagnosed, indicating a gap in health care services. Health care professionals play a pivotal role in health promotion and disease prevention in communities.

1.5 3. The Role of Clinical Medical Laboratories in Health Care

Health care is a complex and costly system that consists of various components that are interrelated and connected. Tight cooperation between the various components is essential for the smooth operation of the health care system, as unintended problems in one component can easily transfer to other components (Zima, 2017). A similar scenario is common in certain countries where health care systems are slowly being privatized, which causes a financial burden on the government. In such countries, clinical medical laboratories are often viewed as a separate entity and not as part of the overall health care community, despite the fact that they greatly influence health care outcomes. The clinical medical laboratory is an integral part of the health care system and the second largest health care provider group after nursing, and the largest provider group in some countries (Strain & H. Ravalico, 2021). With rapid advancements in laboratory medicine and a growing number of laboratory tests, there is an increase in demand for health care services. A clinical medical laboratory is a workplace that detects, examines, and analyzes specimens taken from patients for the purpose of providing information essential for the diagnosis, prevention, or treatment of a disease. Clinical medical laboratories can be classified as pre-analytical, analytical, and post-analytical, based on the five phases of laboratory medicine. With the advancement of technology, it is now possible to have point-of-care and bedside clinical medical laboratory services, which can greatly influence the turnaround time, the length of hospital stay, clinical decision making, and the overall patient outcome. This shift in laboratory medicine provides an opportunity to enhance the tight cooperation between nursing and clinical medical laboratories, and a cooperative model is proposed.

3.1. Diagnostic Testing

Although laboratory medicine is often seen as a behind-the-scenes operation, it is integral to health care. Without laboratory data, clinical medicine is blind. Well-designed laboratory tests enhance clinical decision-making, improve patient outcomes, and trim health care costs by avoiding unnecessary procedures and hospitalizations. Although preanalytical errors are often visible in the patient's medical record, postanalytical errors are most problematic. Basically everything that occurs in the laboratory is postanalytical and it is vital that clinicians recognize when tests have been ordered, especially complex tests. Misinterpretation has caused difficulties in reimbursement for and the viability of some advanced tests. Clinicians should remember that results must be interpreted in the clinical context, ideally having seen the patient and taken into account all relevant laboratory data (B. Freedman, 2015). Cross-sectional studies found that the quality of test ordering and interpretation improved with more laboratory experience. Laboratory staff must be proactive, ensuring that every physician ordering a test has received enough training and offering additional explanation when necessary. Laboratory clinicians should be present at patient care meetings,

making them more effective by keeping test results clear and relevant. Care teams that include laboratory clinicians will enhance patient outcomes and cost-effective care.

During the past 40 years the laboratory has developed many complex tests, ranging from determination of free testosterone to proteomic analyses. All involve the careful integration of sampling, sample handling, assay design, data analysis, and interpretation. Many were designed to answer specific clinical questions. During the design phase it becomes clear how much is unknown about the clinical question being pursued. Physician input is vital and in retrospective assays often need to be redesigned accommodating new clinical findings. It is often assumed dissemination of results is straightforward, but test interpretation is rarely included in physician training (L. Kaul et al., 2017). There have been numerous high-profile instances where laboratory results have been misapplied and care jeopardized. To avoid this, tests developed by research laboratories should be fully validated and interpreted by clinical laboratories.

3.2. Quality Assurance and Control

Clinical Medical Laboratory (CML) is an important health care institution providing clinical laboratory services requested by Health Care Practitioners (HCPs), particularly nursing and clinical medical laboratory services, to patients who are largely dependent on health care for maintaining their wellbeing. Cooperation between nursing and CMLs is crucial in improving the quality of health care. So far, limited attention has been paid to the cooperative efforts from nursing and CMLs in improving and assuring the quality of the services rendered (Zima, 2017). So far, health care policy providers have not adequately focused attention on the cooperation between nursing and CMLs in maintaining the quality of health care, and as such, the applied policies have not explicitly mentioned the cooperation. There is a need to highlight and propose the need for greater cooperation between nursing and CMLs. Quality Assurance (QA) policies should focus attention not only on nursing but also on the cooperation between nursing and CMLs in improving the quality of health care. Quality Control (QC) should also be emphasized on the cooperative actions between nursing and CMLs in maintaining the quality of health care services.

The quality of health care is extremely important for the wellbeing of people in society. Health care institutions generally provide health care services to health care seekers (patients) suffering from health problems. The quality of health care services is defined by the levels of health care institutions, and as such, the health care services provided by higher level health care institutions are expected to be of better quality than the health care services provided by lower level health care institutions. A greater attention on the cooperative action from nursing and CML to the concerned health care policymakers is required to improve the quality of health care services at the health care institutions of the lower levels. Nursing is a vital health care profession playing a crucial role in providing nursing care services to patients admitted at health care institutions. In addition to providing nursing care services, nurses largely depend on other clinical services, namely Clinical Medical Laboratory (CML) services, in diagnosing patients' problems for providing appropriate nursing care services. CML is a health care institution and an integral part of the health care system providing clinical laboratory services to health care institutions.

1.6 4. Challenges in Health Care Quality

Understanding the challenges in health care quality is critical to dealing with and preventing these problems. In 2000, the Institute of Medicine published a report entitled “To Err Is Human: Building a Safer Health System” (Afsar-Manesh & A. Martin, 2012). According to conservative estimates, as many as 98,000 Americans die each year as a result of medical errors. Since then, research and policy initiatives have focused on how to improve the quality of health care in the United States. The Institute of Medicine defines health care quality as providing patients with appropriate services in a technically competent manner, with good interpersonal skills, free of underlying risks, and provided in a manner that is timely and efficient. Similarly, the World Health Organization emphasizes that every person has the right to “the highest attainable standard of health.” However, despite considerable progress, the U.S. health care system still struggles to meet these quality goals.

One classic example of a problem with care quality is sepsis, which is one of the most common causes of death in hospitals and other health care facilities. The National Institute of General Medical Sciences notes that people with sepsis wrongly perceive it as viral flu. According to the Sepsis Alliance, each hour of treatment delay increases mortality by 7 percent. Dawn of Hope notes that a hospital in Los Angeles failed to administer antibiotics to an afflicted patient for eleven hours, resulting in death. MediCal states that health care facilities are punished with payment reductions for similar errors. With the advent of electronic health records (EHRs), clinical decision support (CDS) systems became an attractive solution for improving care quality (Strain & H. Ravalico, 2021).

1.7 5. The Need for Collaboration Between Nursing and Clinical Medical Laboratories

The advancing frontline of healthcare delivery involves numerous disciplines working together to create a patient-centered approach, developing and implementing standards of care that generate measurable, reproducible, and excellent outcomes in a prudent and sustainable manner. Nursing and clinical medical laboratory disciplines working collectively is a natural partnership that would ensure patients receive the best, safest, and most effective care possible in all circumstances-is essential in purpose, training, and character. Despite the perceived closeness, this partnership remains widely underdeveloped at the local level, with few examples of successful integration in the clinical arena (Strain & H. Ravalico, 2021). Such union and understanding have become even more critical in the context of the COVID-19 pandemic, where new pathways of care involving infectious disease screening and advanced technologies rapidly and profoundly reshaped healthcare delivery. As new models of care are developed and the focus on best practices becomes paramount, the opportunity for nursing and clinical medical laboratory disciplines to come together to improve the quality of care should be embraced. Reconciliation is needed on how each profession perceives, values, and prioritizes its discipline in the healthcare pathway. Bringing these perspectives together is vital to ensure future excellence in health outcomes.

With the expansion of healthcare service delivery, clinical medical laboratories have moved from a commodity service to becoming integral players in the clinical care team. This has created an opportunity for pathologists and leaders of clinical medical laboratories to promote the value of laboratory medicine and clinical medical laboratories in care pathways. As healthcare teams reform clinical pathways of care to ensure safety and efficacy in service delivery, the point-of-

view examination of care processes through new discipline prisms will identify new opportunities for enhanced professional integration. Examination of the care processes through the discipline prisms of an allied health profession and a clinical medical laboratory profession is particularly advantageous, as both professions involve scientific intervention and have similar developmental trajectories. Formation, growth, and maturity require pre-professional training, postgraduate professional development, professional accreditation, and registration with national governing and auditing bodies to ensure integrity and excellence in service delivery based on strict professional codes of conduct.

1.8 6. Benefits of Cooperation in Health Care Quality Improvement

One of the basic conditions for quality health care is continuous cooperation between all health care providers. Medical laboratories as a part of the health care system have the most important role in diagnosis and treatment monitoring, but also in risk assessment and prevention of diseases. Cooperation between clinical medical laboratories and other components of health care is relatively well established and members of other health care professions are included into laboratory quality management systems. Nursing medical laboratories can greatly contribute to the improvement of the quality of health care services and the quality of laboratory services as well. However, cooperation with this part of health care is not sufficiently recognized (Zima, 2017).

To improve cooperation, it is necessary to determine deficiencies, obstacles, and possible ways of overcoming them. Clinical medical laboratory directors and heads of laboratory departments must provide and create a system in which the nurses' role will be clearly defined, and which will stipulate their participation in the laboratory quality management system. Nurse cooperation will be the most efficient if they take active part in laboratory quality management systems. It is indisputable that the legislative framework requires the involvement of all health care personnel in the laboratory quality management system. Compliance with the prescribed legislative framework must be checked by a medical laboratory accrediting body.

1.9 7. Examples of Successful Collaboration Initiatives

Many organizations have embarked on successful collaboration initiatives between nursing and clinical medical laboratories to address the issues mentioned earlier. One such initiative took place at Emory Healthcare. They decided to consolidate nurse phlebotomy and outreach services from three hospitals and a free-standing outpatient surgery center into a system-wide service. The outcome was better patient care with a more quality-focused operation. In the first year, there were over 75,000 opportunities for nurse phlebotomy services, and although outreach efforts were curtailed during the pandemic, there were nearly 10,000 off-site specimen collections. Currently, the program has thirteen nurse phlebotomists and six stat technologists who provide on-site testing in critical care areas and bedside specimen collection, saving patients transportation for testing (Strain & H. Ravalico, 2021). In the second service initiative, Emory University Hospital Midtown Clinical Laboratory partnered with Emergency Department personnel to create a point-of-care glucose testing service that involves nurse-operated testing. The laboratory procured the testing meters, trained educators who trained the nurses, and provided oversight essential for high-quality testing. Nursing was provided a different meter for in-line testing during cardiopulmonary resuscitation (CPR) at the very start of the initiative. In the first year, over 1,000 glucose tests were

performed on patients while receiving active CPR, with average turnaround times under two minutes, resulting in better patient care. Currently, there are ongoing discussions about translating a similar service for cardiac arrest patients in the out-of-hospital setting with Emory Healthcare's mobile intensive care unit team.

1.10 8. Best Practices for Effective Collaboration

Clinics are the essential backbone of community health care systems. Growth in population brings increased demand for health care, and enhanced value-based health care requires the continual advancement of health care systems. These improvements are more readily achievable with innovation in laboratory tasks (Strain & H. Ravalico, 2021). Health care is undergoing transformation from volume- to value-based systems, with goals to enhance health care quality and outcomes while managing costs. Value-based health care involves integrating data to track and improve performance for patients, payors, clinicians, and health systems. Clinical laboratory leaders have unique insights, capabilities, and data to help drive the transformation of health care systems and improvement of health care outcomes.

Clinical laboratories are typically the second largest department in a health care system. They generate and control vast streams of clinical data, interpreting and reporting millions of laboratory results annually that inform patient care plans. Laboratory results improve patient outcomes, quantifiably impacting various performance indicators. When strategically engaged as essential, integrated members of clinical care teams, clinical laboratories can drive compelling change in clinical practice and health care systems, enhancing their value proposition and assuring their future relevance. However, this potential is frequently underappreciated or unrealized, limiting the impact of laboratory results on patient care pathways and health care systems. With the unprecedented changes occurring in health care, the need for integrated engagement of laboratory medicine for health care excellence has never been greater.

1.11 9. Technological Innovations Facilitating Cooperation

The emerging innovations in technology, healthcare delivery, artificial intelligence, and big data analytics provide unprecedented opportunities to make laboratory medicine an essential component of the clinical care team, thus paving the way for future healthcare excellence (Strain & H. Ravalico, 2021). Collaboration between laboratory medicine and nursing services is crucial in achieving better patient outcomes through the strategic use of laboratory results and services. Nurses play a pivotal role in the patient care continuum, and involving laboratory medicine in nursing-led healthcare pathways can enhance the quality of clinical care. This integration can take various forms based on local needs, such as focusing on critical care patients, nursing-led models of care in clinics or wards, or re-engineering pathways for specific diseases. Pathologists and laboratory leaders are encouraged to champion the integration of laboratory medicine into nursing-led clinical care pathways for the benefit of patients and health systems (O. S. Afolabi, 2009). There are good examples of healthcare teams where laboratory medicine and nursing services cooperatively tackle complex medical issues in the best interest of patients. These teams achieved outstanding results, earning awards widely viewed as the gold standard for healthcare excellence. Ideally, laboratory medicine should be involved in designing nursing-led or other clinical care pathways from the outset to ensure the proactive use of laboratory results and services.

1.12 10. Training and Education for Interdisciplinary Collaboration

One potential solution to improve interdisciplinary collaboration between nursing and clinical medical laboratories is to implement training and education programs focused on the importance of cooperation. These programs could be integrated into existing nursing and laboratory curricula or offered as optional seminars. In this context, an overview of current nursing and laboratory training and education programs is provided, along with suggestions for additional elements that could be incorporated to enhance interdisciplinary cooperation and teamwork. Experiences presented here could also be useful in planning and developing training and education programs in other areas of health service delivery, as well as research and academic institutions. While these suggestions are directed towards improving cooperation and collaboration between nursing and clinical medical laboratories, many aspects may be appropriate for involving other health care professionals (Watson, 2015).

1.13 11. Barriers to Collaboration and Strategies to Overcome Them

Numerous barriers to effective collaboration between nursing and clinical medical laboratories exist. A key obstacle is the lack of well-defined structures and systems for cooperation, with many facilities relying on informal arrangements and personal relationships (Strain & H. Ravalico, 2021). This can lead to fragmented communication and misunderstandings regarding each department's roles, responsibilities, and activities. In particular, there is often uncertainty among nurses about how to effectively utilize laboratory services to improve patient care. These challenges are exacerbated by high workloads and competing priorities that can limit engagement in collaborative activities. Differences in professional training and education also contribute to misunderstandings and a lack of appreciation for each other's roles in the healthcare team. Furthermore, laboratory personnel often have limited opportunities to gain insight into the nursing profession, and vice versa, due to separate physical locations and work settings (Jantzen & J. Ford, 2012). To address these barriers, proactive steps can be taken to enhance collaboration. Organizing joint departmental meetings, seminars, and workshops can facilitate open discussions about working methods and areas for development. Promoting informal social gatherings can also help build personal relationships and break down hierarchical structures that may inhibit communication. Additionally, involving nursing and laboratory representatives in the planning and evaluation of new equipment and projects can help ensure a collaborative approach from the outset. Shared professional development and educational opportunities, such as co-supervised student projects, can enhance mutual understanding and appreciation for each other's professional contributions to patient care.

1.14 12. Ethical Considerations in Collaboration

By solving the current problems of health service delivery and mutual cooperation, it is possible to save costs, energy, resources, personnel time and work within health services. This is especially true in the public health sector, where health services must be delivered to the population with limited budgets. Health service delivery has become somewhat more time consuming, complicated and complex. Group decisions on the minimum time level needed for good health service delivery become more difficult, as many more actors are involved. Misunderstandings and conflicts can arise. Dealing with these possible problems before they occur is necessary.

The aim here is to find solutions to dilemmas in the current co-operation between nursing and clinical medical laboratories; to create theories, principles and methods that can be applied or developed to applied systems for co-operation between nursing and clinical medical laboratories in order to ensure better quality health care services. These theories are also applicable to planning other co-operation processes in complex systems. If co-operation between clinical medical laboratories and nursing is seen as complex systems, the health care system as a whole can be seen as a complex system comprising many co-operating complex systems, each with their own goals, principles and limits. It is possible to implement theories, principles and methods one by one to create smooth co-operation from nursing to clinical medical laboratories or to any other complex systems that are mutually co-operating in achieving goals (Nurmi et al., 2017).

The goal of each single complex system, e.g. a clinical medical laboratory or a nursing ward, must be planned to be in co-operation with each other to create a desired goal for the whole complex system. Planning such co-operation processes should be the focus from the very beginning of creating a new complex system or extending the current one; this saves effort and energy. If the goals of the whole complex system, e.g. the health care system, are not widely shared and obvious to everyone, there will be problems and misunderstandings. This currently happens between clinical medical laboratories and nursing. The basic goal of these theoretical deliberations on complex systems is to outline how to see co-operating complex systems as complex systems themselves and how to create smooth co-operation between them.

1.15 13. Future Directions and Opportunities for Enhanced Cooperation

Laboratory Medicine and Healthcare Excellence – Till Death do us Part

Health, healthcare, and public health are the foundations of vibrant and prosperous communities. The COVID-19 pandemic starkly highlighted that the frontline of health is in the communities where people live, work, and play; where families and multigenerational households gather; where schools and businesses operate; and where frontline healthcare professionals strive to provide, maintain, and improve health. Uncontested laboratory medicine is at the heart of clinical care and the healthcare ecosystem. Pathologists and clinical laboratory leaders are charged with ensuring that laboratory medicine is excellent, effective, safe, and equitable every hour of every day for every patient; and that laboratory medicine continuously embraces innovations in technology, information, processes, and organization to improve health and healthcare. Partnerships require continuous effort, mutual appreciation, creativity, and a commitment to making things better (Strain & H. Ravalico, 2021). Like every marriage, the union of laboratory medicine and healthcare excellence has highs and lows, ebbs and flows, and requires work in order to thrive. Laboratory medicine and healthcare excellence need each other for survival, growth, and prosperity. Each is too complex and too important to be adequately understood and appreciated by those not intimately involved. Each is too rarely proclaimed and celebrated outside the respective communities. Each struggles with disengagement and indifference from some of the key players whose involvement is critical to excellence. Each is threatened by demographic changes in the workforce and by competing priorities and interests of some stakeholders. However, this marriage is vital to the health of our communities and to the future of medicine.

Over the past three years, the dedication, creativity, and tenacity of like-minded healthcare professionals have transformed laboratory medicine-led healthcare excellence best practices into

a compelling narrative that is a vital call to action. The groundwork needed to stimulate laboratory medicine to become an integral part of healthcare delivery and a better appreciation of its value has been established. Like-minded pathologists and clinical laboratory leaders have urged healthcare professionals to strategically engage laboratory medicine for value-based health care. Excellent best practices for improving healthcare outcomes have emerged from this engagement. Innovations in laboratory medicine have transformed clinical care pathways, standards of care, and population health management strategies normally driven by pharmaceuticals, interventional procedures, and other treatments. Highlights of these laboratory medicine-led healthcare excellence triumphs are summarized here. The developments underpinning the triumphs are spotlighted. The need for and benefits of the healthcare excellence laboratory medicine innovations and the critical considerations for their wider implementation are discussed.

Top-performing teams recognized for best practices from the UNIVANTS of Healthcare Excellence award program are reviewed. Innovative healthcare professionals transformed traditional standards of care to achieve exceptional outcomes; outcomes that would not have been possible without the clinical laboratory. Laboratory medicine-led innovations in healthcare delivery pathways re-engineered the clinical care teams to integrate clinical laboratory results and interpretations at the point of care and in real-time. These developments made possible novel approaches to population health management and laboratory medicine triage of patient care pathways. As a result, one-off screening for HIV and treatment refusal dropped from 54% to just 10%. New care pathways transformed infectious disease screening in pregnancy, ensuring that laboratory test results are available when the patient first attends care.

1.16 14. Conclusion and Call to Action

Maintaining high quality health care services is an essential requirement of a well-functioning health care system. Development of health care policies, planning and delivery rests with the health care providers and health care policy makers. Health care provision involves in combination several health care professions that co-operate with each other. Nursing is one of the most common and widely distributed health care professions. Clinical medical laboratories are another important health care profession that is highly relied on by many other professions. At present time, despite many countries have reached success in maintaining health care services, there are still countries that are struggling in the provision of health care services. The burden of disease is shifting from communicable disease to non-communicable disease that is often aggravated by co-morbidities and poor health care service provision. Action must be taken to improve the quality of health care services and better health outcomes, especially in low income countries. In countries where health care services are better, introduction of new health care technologies might result in better and safer health care service, patient outcome and satisfaction. Cooperation between nursing and clinical medical laboratories can play a pivotal role in provision of better quality health care services; hence, better patient outcome and satisfaction (Rusanganwa et al., 2024).

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