

Maximizing Patient Care and Reducing Mortality Through Expanded Investments in Laboratory Medicine Including a Comprehensive External Quality System

General Directorate of Allied Health Services
Ministry of Health, Palestine

Quality is vital across all facets of healthcare. The importance of quality assurance in laboratory medicine can be directly related to patient outcomes, reduced waste, enhanced client satisfaction, and appropriate care.^{1,2} Quality systems have long been neglected in developing countries including primary healthcare centers as well as hospital laboratories. Most fail to meet the most basic requirements needed to support healthcare, leading to ineffective healthcare delivery and disease surveillance.³ This is in direct contrast to developed countries whereby recognition of quality assurance (QA) is not only paramount within laboratory medicine, but also transformative to clinical care.

The General Directorate of Allied Health Services in the Palestinian Ministry of Health in collaboration with the Palestinian Medical Technology Association (PMTA), and the General Directorate of IT in the Ministry of Health worked to implement a comprehensive quality management system (QMS), leading to laboratory accreditation to international standards. The three-year integrated approach included the development and implementation of expansive quality measures for documentation, training, and operations across 200+ governmental laboratories (14 hospital laboratories and 193 primary healthcare laboratories). This integrated clinical care project required a complete overhaul of medical resources with substantial investments to staffing, laboratory services, and diagnostic equipment across departments (hematology, microbiology, histology, cytology, microbiology, chemistry, and immunology). The subsequent expansion of in-house testing enabled higher confidence across the care continuum and improved health.

This partnership among laboratory medicine, IT, Quality, Procurement, and Human Resources improved health quality across the country, leading to decreased maternal and infant mortality, enhanced staff satisfaction, increased revenue with reduced risk, and enhanced reputation within the health system with ISO 15189 accreditation.



PATIENT



CLINICIAN



HOSPITAL
ADMINISTRATION



PAYOR

KEY PARTNERS / STAKEHOLDERS



Osama Najjar
MS, Clinical
Laboratory Sciences

General Manager of Allied
Health Professions



Lana Nazzal
MS, Applied Statistics

Lab Health Administration



Dirgham Yaseen
BSc, Laboratory Medicine

President of the Scientific
Committee



Nidal Alawneh
MS, Clinical
Laboratory Sciences

Quality Manager



Ali Alhelou
MS, Computer Sciences,
MS, Health Informatics

IT General Director

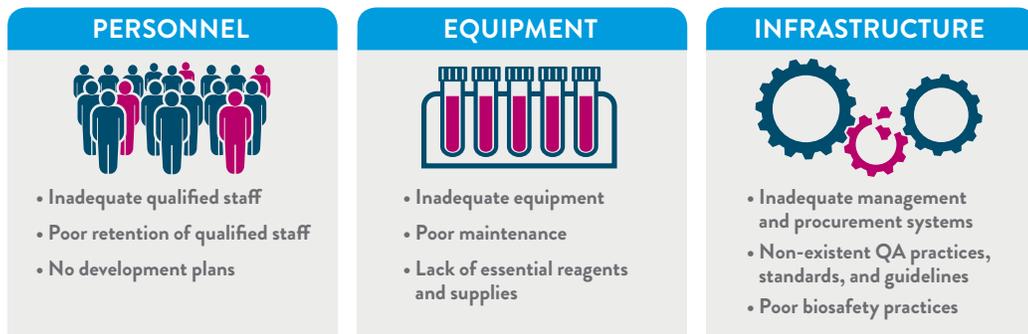
SITUATION ANALYSIS

MAXIMIZING PATIENT CARE AND REDUCING MORTALITY THROUGH EXPANDED INVESTMENTS IN LABORATORY MEDICINE INCLUDING A COMPREHENSIVE EXTERNAL QUALITY SYSTEM

- Laboratory errors can occur at alarming rates^{4,5}
 - Pre-analytical phase 32-75%
 - Analytical phase 13-31%
 - Post-analytical phase 9-31%
- Not all countries have mandatory quality systems or medical laboratory accreditation⁶
- Quality assurance in developing countries has notoriously been neglected, leading to gaps in care

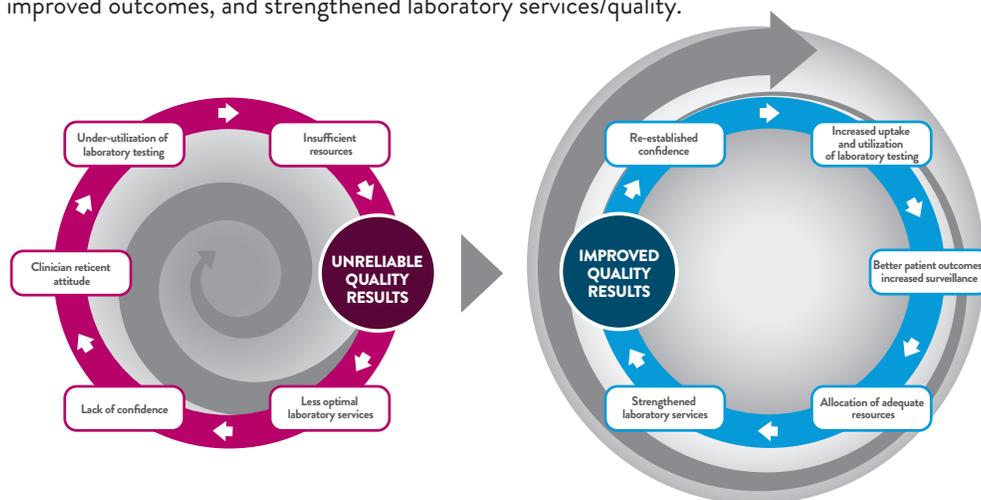
DISCOVERY

Not unlike other developing countries, laboratory services in Palestine have been neglected. Poor laboratory management and inefficient procurement processes at primary healthcare centers and hospital laboratories have compromised the quality of service and associated confidence that stakeholders had in our care.



HYPOTHESIS

Improving quality can break a vicious cycle whereby physicians lack the confidence in laboratory test results, even if laboratory facilities exist in their practice. When inadequate resources are allocated to laboratory services, less-than-optimal quality-assured results follow, leading to further neglect of laboratory systems. In contrast, improved quality re-established confidence, intake of services, improved outcomes, and strengthened laboratory services/quality.



PARTNERS

Implementation of a quality system requires a multi-disciplinary team. Critical partners for the care initiative at Palestine Laboratory Services and Allied Health Services involved procurement, human resources, laboratory medicine, quality, and IT. Collectively this team developed and implemented the 4-phase action plan over three years. In doing so, basic training of personnel with continuous professional development was upgraded and strengthened, conditions of laboratory service were improved, and internal and external quality control processes were initiated.

EQAS



MAXIMIZING PATIENT CARE AND REDUCING MORTALITY THROUGH EXPANDED INVESTMENTS IN LABORATORY MEDICINE INCLUDING A COMPREHENSIVE EXTERNAL QUALITY SYSTEM

SUCCESS FACTORS

EXECUTION

With funding provided by the Palestine Ministry of Health, the integrated clinical care team executed a patient centric 4-phased action plan that introduced new and modern technologies, incorporated advanced laboratory testing in-house (replacing send-outs), and improved overall laboratory infrastructure. With all facets of testing, operations, and processes falling under the quality management system, high quality outcomes and improved care followed, as well ISO 15189 accreditation.

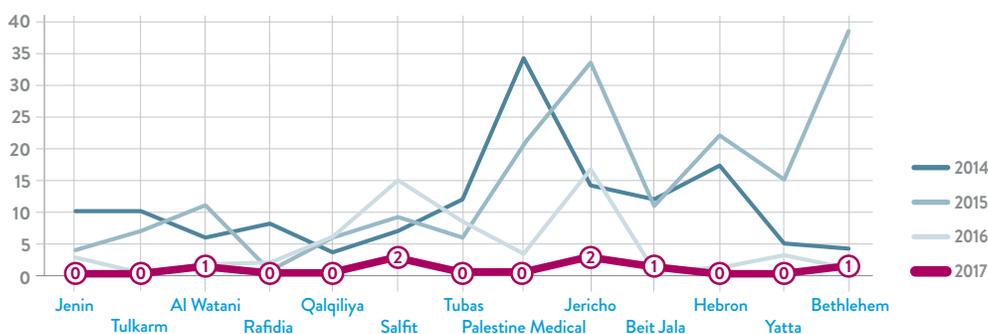


- A quality driven culture drives quality outcomes
- Quality outcomes can drive increased confidence and expanded healthcare services
- Sustainable quality over time requires internal and external quality management systems
- ISO 15189 provides a standardized accreditation framework for error reduction and continuous improvement for laboratories across the globe

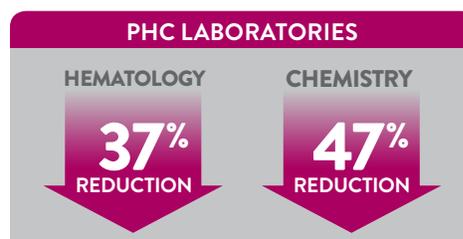
PROOF OF VALUE

All Public Healthcare (PHC) and hospital laboratories saw improved year over year error reduction across hematology and chemistry.

ANNUALIZED ERRORS BY HOSPITAL SYSTEM FOR CHEMISTRY



ANNUALIZED PERCENTAGE ERROR REDUCTION



SPOTLIGHT ON STAKEHOLDER SUCCESS



PATIENT

DECREASED MORTALITY

Maternal Mortality Rates declined by 9.8 deaths/100,000 live births over three years (15.7, 13.8, 5.9/100,000 live births in 2015, 2016, 2017 respectively).

Infant Mortality Rates declined by 0.2 deaths/1,000 live births between 2015-2017 (10.9, 10.5, 10.7/1,000 in 2015, 2016, 2017 respectively).

Under five Mortality Rates declined by 1.8 deaths/1,000 over three years (13.9, 12.2, 12.1/1,000 in 2015, 2016, 2017 respectively).

INCREASED CONFIDENCE

“Implementation of a comprehensive external quality system and investment in laboratory infrastructure has significantly increased the confidence patients have in the healthcare system. This has resulted in a significant increase in the number of patients who now seek out care at our institutions.”

– Hamdi Alnabolsi, MD, General Director of Hospitals, Ministry of Health



CLINICIAN

INCREASED CONFIDENCE

“With a near doubling of the test menu, I can better serve my patients.”

– Osama Attalah, MD, Head of Surgery Department, Ramallah Medical Complex, Ministry of Health

Lab medicine test volumes increased from <4 million per year in 2015 across 13 hospitals to almost 10 million tests in 2018.



HOSPITAL ADMINISTRATION

ENHANCED REPUTATION

Accreditation of four medical labs according to ISO 15189, with the remaining seven expected for accreditation according to ISO 15189.

ENHANCED STAFF SATISFACTION

“Improvements in infrastructure, staff and staff training, as well as equipment have made a significant difference in day-to-day work life, with drastically improved satisfaction of the laboratory staff.”

– Lana Nazzal, MS, Applied Statistics, Lab Health Administration

IMPROVED HOSPITAL ADMISSIONS

Reduced number of hospital admissions from >380,000 admissions in 2015 to approximately 245,000 admissions per year in 2017 (388,196 admissions in 2015, 226,943 admissions in 2016, and 244,854 admissions in 2017).

Reduction in the total number of hospitalization days from >930,000 in 2015 to approximately 525,000 in 2017 (938,249 days in 2015, 498,179 days in 2016, and 525,215 days in 2017).

OPTIMIZED RESOURCE UTILIZATION

Increased the bed occupancy rate by 8.8% between 2015-2017 (Occupancy rate was 88.2%, 91.9%, and 97% in 2015, 2016, and 2017 respectively).

REDUCED LENGTH OF STAY

Reduced average length of stay by 0.7 days in three years across 13 hospitals (Average length of stay was 2.9 days, 2.2 days, and 2.2 days in 2015, 2016, and 2017 respectively).

INCREASED REVENUE

Over a three year period (2015-2017) laboratory services show revenue of \$12,393,987 USD compared to the former three years (2012-2013-2014) which was \$7,484,265 USD.⁷



PAYOR

REDUCED RISKS

10-fold annualized error reduction in hematology and chemistry across all 13 hospitals, with 12 of 13 sites with <4 medical errors in 2017, resulting in fewer downstream costs (total number of errors annually = 19 across all sites in 2017 vs. 190 in 2014).

“The external quality system, and broad menu has had a significant, positive impact on reducing the risk associated medical errors across all 13 hospitals in our network.”

– Abdelraouf Sleem, Director of Strategic Planning and Quality in Ministry of Health

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