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Combining POCD tools with India's digital health platforms and national registries

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Over the next ten years, POCD is expected to become an integral part of India’s digital health ecosystem

India’s healthcare system continues to face rising disease burdens alongside limited access to timely diagnostic services. In many rural and peri-urban communities, people wait far too long for a diagnosis.Point-of-care diagnostic tools, or POCDs, provide a practical way to move testing from distant laboratories directly into the community settings where clinical decisions are made.

POCDs are diagnostic tests conducted at or near the site where the patient is receiving care and can deliver results within minutes or hours instead of days. Research summarized by Pai and colleagues shows that POCDs reduce the time between the onset of symptoms, diagnosis, and the start of treatment, enabling faster and more effective patient care. This closes one of the biggest gaps in healthcare delivery.

According to IMARC Group's industry analysis, the global market for point-of-care diagnostics was worth around $53 billion in 2024 and is expected to quadruple in the next ten years. This is mostly due to the use of these tests in infectious diseases and the growth of digital connection.

The value of POCD in India goes beyond just business growth numbers. It has the ability to fix a long-standing systemic

inequity where reliable diagnostics are still only available in certain areas and for certain people. Konwar and Borse's study of the Indian healthcare system says that those who live far from metropolitan laboratories have to wait longer for or miss diagnoses of tuberculosis, maternity difficulties, and common non-communicable diseases because they have to rely on transportation and reporting lag. POCD devices fix this problem by making testing available at health sub-centers, mobile clinics, and village outreach initiatives.

The Value Of Public Health Goes Beyond Just Testing Individuals

From a public health perspective, POCD tools serve as instruments for population disease management rather than as standalone clinical equipment. The World Health Organization's global health estimates show that infectious diseases are still one of the top causes of illness and death in low- and middle-income nations. Quick diagnosis is important not only for the recovery of each person but also to stop the spread of the disease in the community.

Hospitals benefit as a whole when diagnostic decentralization moves screening volumes away from tertiary hospitals. According to study by Varghese and colleagues on the use of POCD in Indian public programs, huge groups of low-risk patients are well cared for in primary care systems, which keeps them from having to go to the hospital and frees up space for specialized care.

Making Decisions At The Front Line Of Care

One of POCD's best contributions to making healthcare more efficient is allowing local decision-making. Healthcare professionals utilizing rapid testing equipment can take action at the same patient visit instead of waiting for lab results to come back days later.

Uses in National Health Priorities

India has included POCD in its main programs for controlling diseases and improving the health of mothers. Molecular platforms are used in tuberculosis programs to find cases in the community. According to studies using the AideSmart platform, maternal and lactation support programs use multiplex POCD to test for HIV, hepatitis B, hepatitis C, syphilis, trichomoniasis, and anemia.

Accredited Social Health Activist personnel are in charge of running things. According to evidence from Raghu and colleagues' cardiovascular risk screening campaigns, smartphone-based POCD solutions let ASHAs collect clinical information during home visits, do tests on the spot, and submit results right away. These platforms combine direct outreach with referral decision pathways, making it easier for groups of people who have not always had access to institutional healthcare to get the care they need.

POCD has grown beyond managing infectious diseases to managing diseases that don't spread from person to person. Thodika and colleagues have shown that mobile diagnostic clinics that include POCD testing for blood glucose, hemoglobin, and cardiovascular risk can be used for large-scale, low-cost community screening. These mobile machines connect testing with instant counseling, which cuts down on the time it takes to find out if you have a disease that is usually only found in clinics.

Validation, Precision, and Functional Dependability

POCD's quickness is its best feature, but precision is what keeps it real. Regulatory standards in health systems around the world call for multi-layered validation to make sure that decentralized operations don't affect reliability. Heidt and his colleagues say that validation includes checking for analytical accuracy, assessing clinical performance in real-world situations, and checking how easy it is for people to use the product.

In India, where tests are generally done by nurses, ASHA workers, or the patients themselves instead of professional laboratory technologists, human-factors validation is very important. Regulatory guidance from device oversight agencies stresses the need for training and simulated-use testing to cut down on operator mistakes.

The Real World of Regulation in India

Even though more pilots are being used, national rules for POCD procurement, validation, training, and scale-up are still not standardised. Agencies all across the world stress post-market surveillance, ongoing quality monitoring, and performance reporting. India's rules for medical devices include some parts of these frameworks, however there are still not enough national rules on how to integrate POCD into public health workflows.

Engel and colleagues found that when there are no nationally standardized certification procedures, clinicians do not trust each other since they are not sure how reliable the tests are. When gadget branding changes without similar quality standards, public trust also goes down.

Official Use in National Programmes

According to national operational standards, Ayushman Bharat's Health and Wellness Centres, also known as Ayushman Arogya Mandirs, clearly endorse the use of POCD for primary-level diagnostic services. More and more, testing for tuberculosis, anemia, diabetes, cardiovascular disease risk, and prenatal infections is done through POCD-supported workflows.

Land and colleagues' global response evaluations show that the widespread use of POCD antigen and molecular tests during the COVID-19 pandemic proved that decentralized countrywide testing strategies are possible. Emergency certification procedures enabled community clinics and residential users to conduct testing at an unparalleled scale.

This experience made POCD an essential tool for being ready for an outbreak. Decentralized diagnostics are increasingly a big part of emergency response planning frameworks.

Challenges

Even while POCD is becoming more legitimate, it still has operational problems that will not go away. In rural areas, infrastructure problems are the most common. Neogi and Engel's field tests show that deploying advanced devices is hard because of power outages, lack of room, and lack of storage.

Diagnostic routes continue to be disjointed. Engel's research showed that there are problems with the connections between screening, laboratory confirmation, referral, and starting therapy. These problems make it hard for POCD integration to reach its full potential. Patients frequently obtain favorable results without structured referral follow-up.

Cost limits make it even harder to grow. According to reviews by Thodika and Varghese, procurement costs, cartridge replacement costs, continuing maintenance, and calibration are all financial problems for basic health centers that don't have enough money.

Trust problems are still deeply rooted. Health workers often worry about the stability of calibration and the accuracy of results in devices that don't have recognized certification labels. When different brands of devices are used without consistent quality endorsements, community trust likewise goes up and down.

Proof of Public Health Impact

Field experience in India shows that it can lead to important results. Pant Pai's reviews of antenatal programs show that AideSmart-enabled POCD screening had a testing completion rate of over ninety percent and was accepted by everyone in the community. This made it possible to start treatment and referrals quickly. Thodika's mobile POCD clinic model proved that it was possible to do mass screening in areas that didn't have enough resources and that it was cost-effective.

These projects show that community diagnostics can help tertiary hospitals by doing a lot of early screening in primary care and saving specialist resources for more advanced illness management.

Policy Guidance

Meeting these goals will require sustained, coordinated action by the government at the national level. Policy reviews led by Pai and fellow researchers point to the need for standardized validation systems that clearly define procurement requirements, training protocols, post-market monitoring, and performance certification. Without these shared benchmarks, the reliability and quality of point-of-care testing remain uneven.

Equally important are investments in basic infrastructure. Field studies by Neogi and Engel underline how dependable electricity, stronger connectivity for rural health facilities, and reliable supply chains for consumables directly shape whether these diagnostic tools can function effectively on the ground. These fundamentals determine if point-of-care testing becomes part of routine healthcare delivery or remains confined to isolated pilot efforts.

Training programmes should teach health workers how to use digital consent tools and how to do their jobs in a way that is

ethical. Longitudinal cost-effectiveness research ought to inform future public spending, a priority highlighted by Varghese's health-economics assessment.

Looking Ahead

Over the next ten years, POCD is expected to become an integral part of India's digital health ecosystem. According to emerging clinical technology reviews discussed by Varghese, the integration of artificial intelligence will strengthen image interpretation, enable automated quality assurance, and support multi-disease testing through cloud-based analytics.

Smartphone platforms are likely to become routine clinical tools for ASHAs and auxiliary nurse midwives. Interoperability with ABHA databases will support the creation of lifelong digital health records for individuals. Integrated reporting systems will strengthen national registries by enabling better tracking of tuberculosis elimination targets, maternal health outcomes, and trends in non-communicable diseases.

Public-private partnerships are expected to make devices more affordable and speed up developments in ruralmanufacturing that are in line with how things work in India.

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