DOW DIAGNSTIC REFERNCE & RESEARCH LABORATORY (DDRRL MEDICAL)

DOW UNIVERSITY OF HEALTH SCIENCE

STRATEGIC PLAN

(2024 – 2027)

Pioneering Excellence | Inspiring Innovation

To Heal | To Educate | To Discover

بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

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DIRECTOR'S MESSAGE

I am pleased to extend a very warm welcome to everyone on behalf of my extremely talented and dedicated team at the Dow Diagnostic Reference & Research Labs (DDRRL). At the DDRRL we value the critical role that accurate and timely diagnosis plays in decision making by clinicians. We take pride in providing high quality diagnostic testing and delivery of reliable results.

At the DDRRL, we are committed to the highest quality of diagnostic standards. Our diagnostic services are regularly inspected by International Accreditation bodies including the PNAC as per the ISO15189 stream. We incorporate rigorous quality control measures using cutting edge technology and the highest precision tools available. Our facilities are run by highly qualified and skilled staffed, and we are equipped with state-of-the-art facilities offering high throughput diagnostic services.

The DDRRL central lab based at Ojha campus is fed by >50 collection points from all over Sindh and from selected cities of Baluchistan (including three STAT labs at Hyderabad, Quetta and Sukkur). The diagnostic menu is catered to by 5 diagnostic units equipped with state-of-the-art machinery and highly skilled human resources.

At the DDRRL, we believe in our existence as a collaborative unit in the larger health care niche of the country. We continuously engage ourselves in various collaborative projects fostering an environment of teaching, training and services. Our aim is to contribute to improvement in health care services, leading to improved patient care.

With strongly supportive leadership and highly dedicated team members, I envision the DDRRL to be a pre-dominant diagnostic facility committed to changing and saving lives.

Prof. Dr. Muhammad Asif Qureshi
MBBS (Dow), PhD (Glasgow-UK), Postdoc (Germany), CHPE
Director Medical Lab, DDRRL

EXECUTIVE SUMMARY

The Dow Diagnostic Reference & Research Laboratory (DDRRL) was established in December 2006 at the Dow University of Health Sciences (DUHS) Karachi to provide diagnostic services and carry out research in the field of Health Sciences. The DDRRL serves as a diagnostic facility which provides reliable, high quality diagnostic laboratory facilities of international standards to all socioeconomic sectors of the population at affordable costs and reference facilities to other laboratories.

DDRRL houses state-of-the-art equipment with fully qualified technical staff and provides the diagnostic services of Chemical Pathology, Histopathology, Microbiology and Molecular Pathology. Moreover, the Laboratory provides research facilities to the students and staff of Dow University of Health Sciences (DUHS) and other universities in Pakistan.

At present, there are >50 collection points (including 3 STAT laboratories) in various cities of Sindh and Balouchistan. Samples from all collection points are fed to either the main lab at Ojha campus Karachi or to one of the STAT labs. The DDRRL offers a wide range of diagnostic menu including >350 diagnostic tests.

The DDRRL is committed to providing the highest standards of diagnostic reporting, which is evidence based and in line with international standards.

ABOUT DDRRL MEDICAL

Dow Diagnostic Research and Reference Laboratory (DDRRL) was established in October 2007 to provide reliable, high quality diagnostic services of international standards for routine and specialized tests at economical rates (i.e. approximately at 30% as compared to private rates), for all socio-economic segments of the population. The laboratory is the fastest growing lab in Pakistan, whose internal quality assurance is guaranteed by daily controls. DDRRL also has the provision of online electronic reporting and Image transfer facilities for all patients.

The DDRRL network has expanded to 50+ labs/collection points across Sindh and Balochistan with reliable in-person and home sampling facilities available also.

INTRODUCTION & OVERVIEW

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INSTITUTIONAL ORGANOGRAM
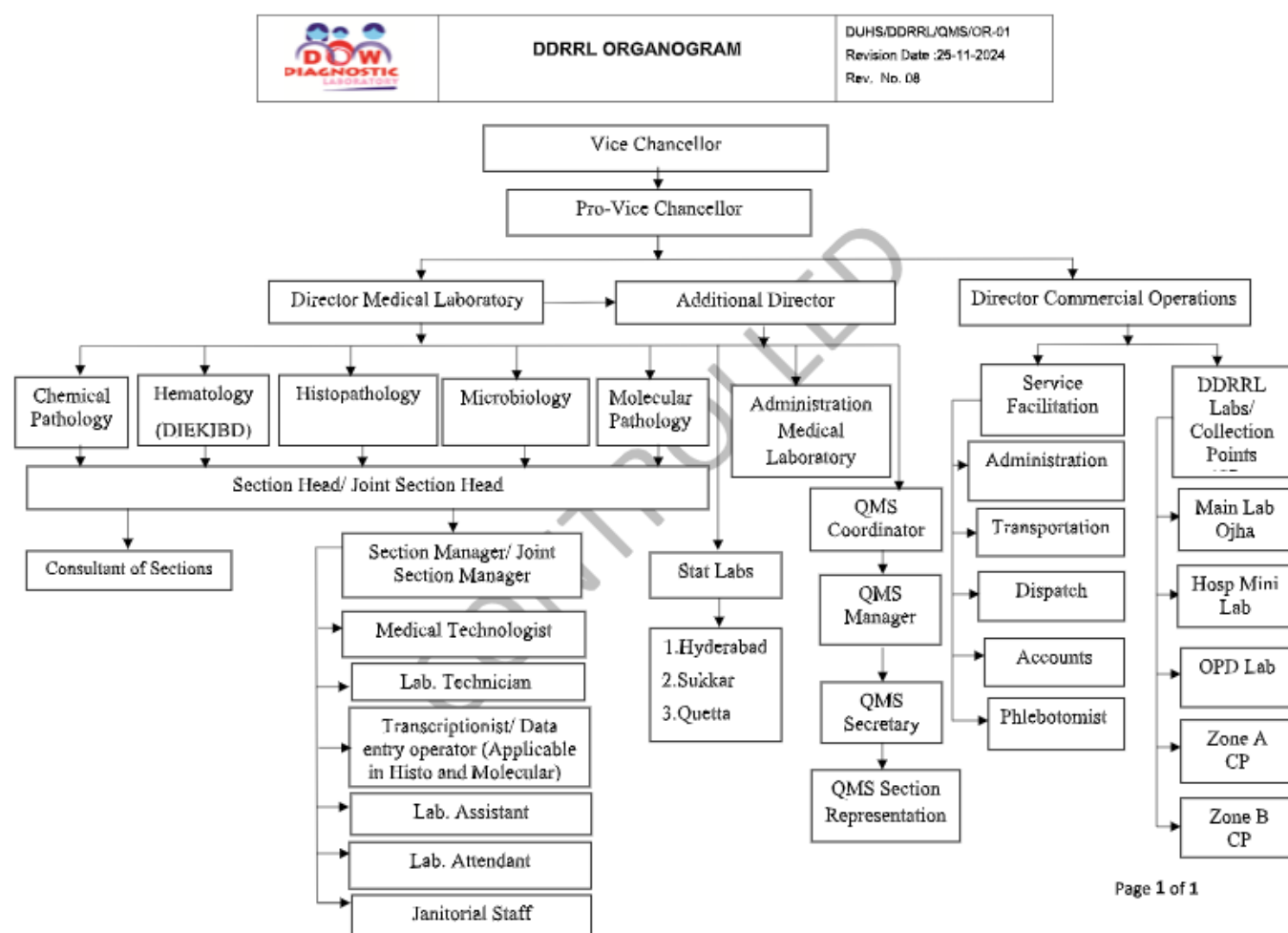
SECTION I: OVERVIEW OF THE STRATEGIC PLANNING PROCESS

Membership of the Executive Strategic Planning Work Group for the facility was as follows

Prof. Dr. Muhammad Asif Qureshi   Chairperson
Director Medical Lab DDRRL

Prof. Dr. Sahar Iqbal   Member
Additional Director Medical Lab DDRRL

Prof. Dr. Uzma Bukhari   Member
Section Head Histopathology

Prof. Dr. Saeed Khan   Member
Section Head Molecular Pathology

Dr. Ambreen Fatima   Member
Section Head Microbiology

Dr. Talha Naeem   Member
Section Head Chemical Pathology

S.W.O.T were first identified and based on the findings from S.W.O.T and TOWS matrix, Strategic Goals and OKRs were identified. The plan was scrutinized thoroughly by the members in the notification and the final draft was reviewed and approved by all.

SECTION II: VISION, MISSION & VALUES

VISION

To be a pre-eminent academic institution committed to changing and saving lives.

MISSION

Providing outstanding patient-centered education, training, and clinical care informed by cutting-edge research and innovation generating and disseminating new knowledge.
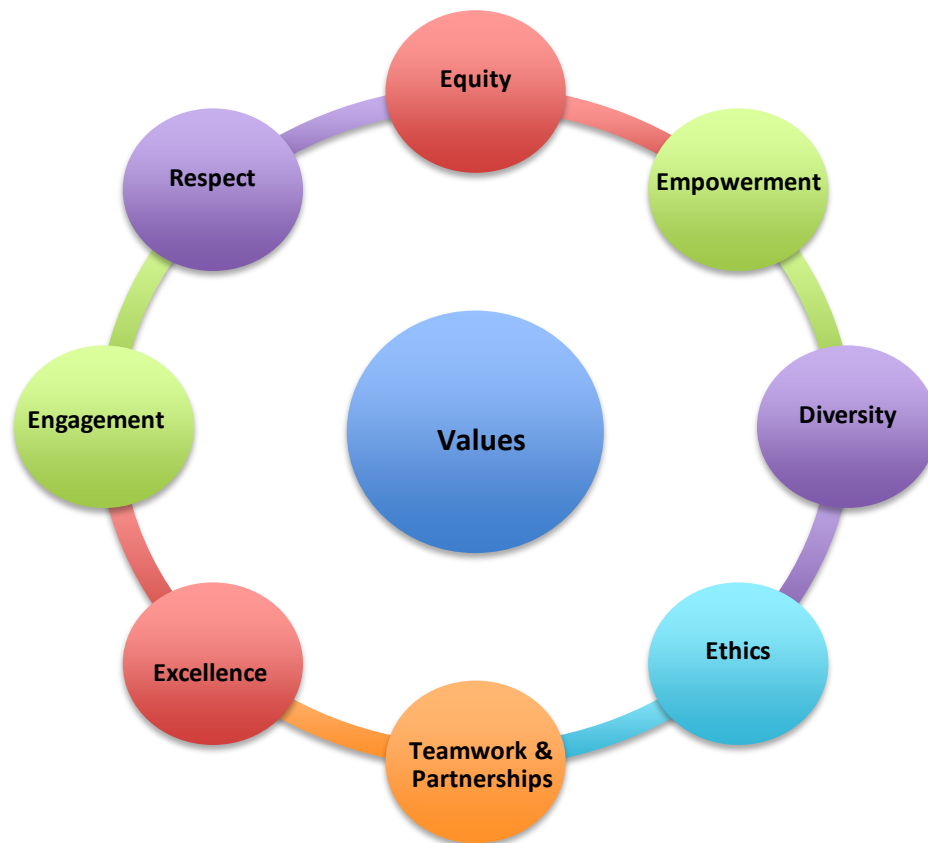
VALUES:

- **Customer Service**
    - o   Put students first

- **Empathy & Compassion**

    - o   Understand before you judge

    - o   Be concerned for the sufferings and misfortunes of others

- **Excellence**
    - o   Be the best and commit to exceptional quality and service
- **Innovation**
    - o   Encourage curiosity, imagine, create, and share
- **Teamwork**
    - o   Engage and collaborate
- **Integrity & Leadership**
    - o   Be a role model and influence others to achieve their best
    - o   Have the courage to do the right thing
    - o   Hold yourself and others accountable
- **Respect & Collegiality**
    - o   Be kind
    - o   Listen to understand
    - o   Value different opinions

STATEMENT OF PURPOSE

To provide high quality diagnostic services with timely and accurate reporting to facilitate clinicians & researchers in identifying appropriate patient-centered diagnostic/prognostic/therapeutic strategies which are data driven and evidence based.

SECTION III: ASPIRATIONAL INSTITUTIONS

- The Aga Khan University Hospital Labs

- Shaukat Khanum Hospital Labs

- International Clinical Laboratory Standards (CLSI, CDC, NIH, CAP)

SECTION IV: STRATEGIC GOALS

Goal I: Offer Evidence-Based, Patient-Centered Diagnostic Services of the Highest Quality.

Objective 1: Continue Participation in External Proficiency Testing.

Objective 2: Continue Participation in the ISO15189 Cycle by PNAC.

Objective 3: Include New Diagnostic Tests as Per Need.

Goal II: Enhance Capacity for Research, Innovation, and Dissemination of New Knowledge.

Objective 1: Publish at Least 10 Research Publications in HEC HEC-recognized international Journals.

Objective 2: Attain Relevant Training, Preparation Material for CAP Accreditation

Goal III: Expand and Sustain Diagnostic Services Across All Provinces of Pakistan.

Objective 1: Increase the Number of Collection Points and STAT Labs.

Objective 2: Develop Section-Specific Strategic Plans for Enduring Fiscal Sustainability

Goal IV: Goal 4: Recruit, Retain, Educate, and Train Quality Workforce.

Objective 1: Hire Appropriate Workforce

Objective 2: Train Lab Workforce with ISO15189 Standards

Goal V: Develop and Sustain an Inclusive Environment of Administrative and Fiscal Responsibility, Accountability, and Transparency.

Objective 1: Continue Teaching and Training as per CPSP and HEC Requirements

Goal VI: Implement Strategic Development of Innovative Projects and Programs of Commercial Importance.

Objective 1: Develop and Implement Commercially Viable Diagnostic Services.

Goal VII: Provide Training and Research Support for Quality Undergraduate and Postgraduate Education.

Objective 1: Develop and Implement Advanced Training Programs for Trainees and Scholars.

Objective 2: Enhance Research Support for Trainees and Scholars.

Objective 3: Strengthen the Research Mentorship Program.

Objective 4: Improve Training Facilities and Research Infrastructure.

Objective 5: Foster National and International Collaborations for Training and Research.

Goal VIII: **The creation of a Digital Pathology Service at Dow Diagnostic Reference & Research Laboratory**

Objective 1: Digitization of Pathology Workflows.

Objective 2: Enhancing Diagnostic Accuracy with AI

Objective 3: Telepathology for Remote Consultations.

Objective 4: Support for Research and Education.

Objective 5: Cloud-Based ERP Systems

Objective 6: Blockchain for Sample and Data Security

Objective 7: Big Data Analytics for Research and Market Expansion

OBJECTIVES, OKRs & KPIs

Goal 1: Offer Evidence-Based, Patient-Centered Diagnostic Services of the Highest Quality
Goal Statement: To deliver top-tier diagnostic services through proficiency testing, ISO15189 accreditation, and Introduction of new tests.
OKR (Objective and Key Results)

Objective 1: Continue Participation in External Proficiency Testing

Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Continuing participation in External Proficiency Testing	KR 1.1: Maintain participation in at least 90% of available proficiency testing programs annually.	Percentage of participation in proficiency testing programs.	Review proficiency testing participation records and result reports.	100% participation in selected proficiency tests with scores above threshold levels.	Section Managers, Section Heads	Funding for External Proficiency Testing	Ongoing
	KR 1.2: Ensure 100% of results are within acceptable quality ranges as defined by external bodies.	Number of tests included in proficiency testing.					
	KR 1.3: Expand the number of tests covered under proficiency testing by 10% within one year.	Quality scores from proficiency testing results.					

Objective 2: Continue Participation in the ISO15189 Cycle by PNAC

Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
To continue participating in the ISO15189 cycle by the PNAC	KR 2.1: Ensure annual renewal of ISO15189 accreditation.	ISO15189 accreditation status.	Monitor accreditation reports and corrective action plans.	Continuous ISO15189 accreditation with no major non-conformities.	Section Managers, Section Heads	Funding for PNAC Fee and associated costs, such as calibration	Ongoing
	KR2.2: Expand ISO15189 compliance to all new diagnostic services within six months of their launch.						
	KR 2.3: Identify and resolve 100% of non-conformities within three months.	Number of non-conformities identified and resolved.					

				Objective 3: Include New Diagnostic Tests as Per Need			
Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Include New Diagnostic Tests as Per Need	KR 3.1: Identify and validate three new diagnostic tests per quarter.	Number of new tests validated and launched.	Track test development timelines and quality performance data.	Launch of eight new diagnostic tests annually.	Section Managers & Section Heads	Facilitation from the Procurement Directorate as per need	ongoing
	KR 3.2: Launch two new diagnostic tests within six months of validation.						
	KR 3.3: Ensure 100% of new tests meet external quality benchmarks within the first year of implementation.	Quality performance of new tests.					

Goal 2: Enhance Capacity for Research, Innovation, and Dissemination of New Knowledge							
Goal Statement: Drive research and innovation by publishing in top journals, securing funding, and achieving CAP Accreditation.							
OKR (Objective and Key Results)							
Objective 1: Publish at least 10 Research Publications in HEC-recognized international Journals							
Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Publish at least 10 Research Publications in HEC-recognized international Journals.	KR 1.1: Identify research areas of strategic interest and assign projects to lab teams.	Number of publications submitted and accepted.	Track research project timelines and publication status.	Achieve at least 10 published papers in recognized journals within one year.	Faculty members at sections, Section Heads	Funding for Research & publication charges	Ongoing
	KR 1.2: Submit at least five research papers for publication within six months.						
	KR 1.3: Secure funding and resources for each research project within three months.	Number of research projects initiated and funded.					
Objective 2: Attain Relevant Training, Preparation Material for CAP Accreditation							
Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Attain Relevant Training, Preparation Material for CAP Accre	KR 2.1: Develop a CAP accreditation roadmap within three months.	Completion of the CAP accreditation roadmap and training.	Review training logs and accreditation application progress.	CAP accreditation obtained within the planned timeline.	Section Heads, Additional Director, and Director of Med Lab	Relevant training and resource persons/materials	Material to be ready by the end of year 1
	KR 2.2: Complete 100% of staff training and preparation material acquisition within six months.						
	KR 2.3: Achieve CAP accreditation within one year.	Accreditation status.					

Goal 3: Expand and Sustain Diagnostic Services Across All Provinces of Pakistan							
Goal Statement: Increase collection points and STAT labs while ensuring fiscal sustainability through strategic financial planning.							
OKR (Objective and Key Results)							
Objective 1: Increase the Number of Collection Points and STAT Labs							
Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Increase the Number of Collection Points and STAT Labs	KR 1.1: Identify underserved areas and plan new collection points within three months.	Number of new collection points and STAT labs opened.	Track facility openings and patient/sample volume data.	10 new collection points and five STAT labs operational within one year.	Additional Director and Director of Medical Lab	Finances are involved in opening collection points. Support from the procurement & Finance directorate regarding procurement of equipment and reagents	Opening of at least 1 STAT lab by the end of year 1
	KR 1.2: Open five new collection points and two STAT labs within six months.						
	KR 1.3: Ensure new facilities achieve 50% of target patient/sample volume within one year.	Patient/ sample volume at new facilities.					
Objective 2: Develop Section-Specific Strategic Plans for Enduring Fiscal Sustainability							
Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Develop Section-Specific Strategic Plans for Enduring Fiscal Sustainability	KR 2.1: Complete financial analysis of all lab sections within three months.	Completion of financial analysis and strategic plans.	Monitor financial performance data and strategic plan implementation.	Fiscal sustainability was achieved across all sections with measurable financial improvements.	Section Managers and Section Heads	Relevant training and admin support	First round to be completed by the end of year 1
	KR 2.2: Develop and implement strategic plans for each section within six months.						
	KR 2.3: Achieve a 10% increase in revenue or cost savings within one year.	Revenue and cost metrics per lab section.					

Goal 4: Recruit, Retain, Educate, and Train Quality Workforce

Goal Statement: Hire, train, and retain a highly skilled workforce, ensuring compliance with ISO15189 standards and Reducing staff turnover.

OKR (Objective and Key Results)

Objective 1: Hire Appropriate Workforce

Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Hire Appropriate Workforce	KR 1.1: Conduct a workforce needs assessment within three months.	Number of critical positions filled.	Track recruitment progress and turnover data.	Full staffing in all critical areas with improved retention.	Additional Director, Director, Human Resource Directorate	Required human resources as per need	Ongoing
	KR 1.2: Fill 90% of critical positions within six months.						
	KR 1.3: Reduce staff turnover by 15% within one year.	Staff turnover rates.					

Objective 2: Train Lab Workforce with ISO15189 Standards

Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Train Lab Workforce with ISO15189 Standards	KR 2.1: Develop a comprehensive ISO15189 training program within three months.	Training completion rates.	Review training records and compliance audits.	Full ISO15189 training completion and operational compliance.	Team QMS	Training materials, venue, and relevant resources	Ongoing
	KR 2.2: Train 100% of lab workforce on ISO15189 standards within six months.						
	KR 2.3: Ensure 95% compliance with ISO15189 standards in daily operations.	Compliance with ISO15189 standards.					

Goal 5: Develop and Sustain an Inclusive Environment of Administrative and Fiscal Responsibility, Accountability, and Transparency							
Goal Statement: Align teaching and training with CPSP and HEC standards, ensuring accountability, transparency, and continuous compliance.							
OKR (Objective and Key Results)							
Objective 1: Continue Teaching and Training as per CPSP and HEC Requirements							
Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Continue Teaching and Training as per CPSP and HEC Requirements	KR 1.1: Update teaching and training curricula to align with CPSP and HEC standards within three months.	Curriculum updates and compliance status.	Review curriculum documents and compliance reports.	Full alignment with CPSP and HEC standards within six months.	Faculty, Section Heads	Relevant training and material. Fee associated with compliance with HEC and CPSP requirements	Ongoing
	KR 1.2: Ensure 100% compliance with CPSP and HEC requirements across all programs within six months.						
	KR 1.3: Monitor and report on training outcomes annually.	Training outcome metrics.					

Goal 6: Implement Strategic Development of Innovative Projects and Programs of Commercial Importance							
Goal Statement: Develop and launch commercially viable diagnostic services, driving revenue growth through innovative Solutions.							
OKR (Objective and Key Results)							
Objective 1: Develop and Implement Commercially Viable Diagnostic Services							
Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Develop and Implement Commercially Viable Diagnostic Services	KR 1.1: Identify and develop one new diagnostic service with commercial potential within six months.	Number of new services developed and launched.	Track service development and financial performance.	Successful launch and revenue growth from new services.	Section Heads, Additional Director, Director Medical Lab	Support from the procurement and finance directorate for procuring equipment and reagents	Ongoing
	KR 1.2: Launch one commercially viable service within one year.						
	KR 1.3: Achieve a 20% increase in revenue from new services within the first year of launch.	Revenue generated from new services.					

Goal 7: Provide Training and Research Support for Quality Undergraduate and Postgraduate Education							
Goal Statement: Enhance training programs and research support for trainees and scholars, establishing mentorship, Research resources, and global collaborations.							
OKR (Objective and Key Results)							
Objective 1: Develop and Implement Advanced Training Programs for Trainees and Scholars							
Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Launch three new advanced training programs tailored to the needs of FCPS trainees, IMT students, MPhil, and PhD scholars within the next 24 months.	KR1.1: Conduct a needs assessment to identify gaps in current training offerings within the next 3 months.	Number of new training programs launched.	Monitor the progress of needs assessments and curriculum development.	Three new training programs launched within 12 months.	Section heads and faculty. SPGS staff	Relevant training and support	ongoing
	KR 1.2: Design and develop curricula for the new training programs within 6 months.	Completion rate of needs assessment and curriculum development.					
	KR 1.3: Achieve a 50% enrollment rate for the newly launched programs within the first year.	Enrollment rate in new training programs.	Track enrollment figures for the new programs.	75% enrollment rate within the first year.			
Objective 2: Enhance Research Support for Trainees and Scholars							
Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Increase the availability of research resources and support for trainees and scholars by 50% within the next 24 months.	KR 2.1: Expand access to research databases and journals by subscribing to at least five new resources within 6 months.	Number of new research resources made available.	Track subscriptions to research databases and journals.	50% increase in research resources within 24 months.	Section Heads, Additional Director, Director	Funding for Research	As per the objective.

Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
	KR2.2: Establish a research support office dedicated to assisting trainees and scholars with research proposals, funding applications, and publication processes within 9 months.	Percentage increase in research output (e.g., publications, funded projects).	Review research output metrics such as publications and successful funding applications.				
	KR 2.3: Facilitate at least 3 research workshops and seminars annually to enhance research skills among trainees and scholars.	Number of research workshops and seminars conducted.	Monitor the number of workshops and seminar attendees.	3 research workshops and seminars annually.	Section Heads, Additional Director, Director	Funding for Research Seminars	As per the objective.

Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Establish a robust research mentorship program to support the development of trainees and scholars within the next 24 months.	KR 3.1: Recruit at least 5 experienced faculty members as research mentors within the next 6 months.	Number of mentors recruited.	Monitor mentor recruitment progress.	10 mentors recruited within 6 months.	Section Heads, Additional Director and Director Med Lab	Any associated funding	Ongoing process as mentioned against targets
	KR 3.2: Match 100% of trainees and scholars with a suitable research mentor within 6-12 months.	The percentage of trainees and scholars matched with mentors.	Track mentor-mentee matching and interactions	100% mentor-mentee matching within 6 months.			
	KR 3.3: Achieve a 70-90% satisfaction rate from mentees regarding the quality of mentorship by the end of the first year.	Mentee satisfaction rate.	Conduct satisfaction surveys among mentees.	90% satisfaction rate from mentees within one year.			

Objective 4: Improve Training Facilities and Research Infrastructure

Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Upgrade training facilities and research infrastructure to meet global standards within 18 months.	KR 4.1: Conduct a facility and infrastructure audit within 3 months to identify areas needing improvement.	Completion of facility and infrastructure audit.	Review audit findings and upgrade plans.	Facility audit completed within 3 months.	Faculty at Sections and Section Heads	Funding as per need and budgeted allocation	As per objective
	KR4.2: Secure funding and complete the upgrade of at least two key training facilities within 12 months.	The number of facilities upgraded.	Track the progress of facility upgrades and equipment installations.	Two key facilities were upgraded within 12 months.			
	KR 4.3: Ensure that 100% of trainees and scholars have access to state-of-the-art research labs and equipment within 18 months.	Access rate to upgraded research labs and equipment.	Monitor trainees and scholar access to upgraded facilities.	100% access to upgraded labs and equipment within 18 months.			

Objective 5: Foster National and International Collaborations for Training and Research

Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Establish and strengthen collaborations with at least three national and international institutions within the next two years.	KR 5.1: Identify and initiate partnerships with three institutions within 9 months.	Number of partnerships established.	Track partnership agreements and collaboration outcomes.	Five partnerships were established within two years.	Section Heads, Additional Director & Director Med Lab	Feasibility as per institutional SOPs.	2 years
	KR 5.2: Develop and launch joint training and research programs with at least two partner institutions within one year.	Number of joint programs launched.	Monitor the progress and success of joint programs.	Two joint programs were launched within one year.			
	KR 5.3: Facilitate at least five exchange programs for trainees and scholars with partner institutions within 18 months.	Number of exchange programs facilitated.	Review exchange program participation and feedback.	Three exchange programs facilitated within 18 months.			

Goal 08: The creation of a Digital Pathology Service at Dow Diagnostic Reference & Research Laboratory							
Goal Statement: To establish a robust technical infrastructure to support digital pathology services, enabling high-quality diagnostic workflows.							
Objectives & Key results (OKRs)							
Objective 1: Digitization of Pathology Workflows.							
Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
To transition from traditional glass slide examination to a fully digital workflow that includes slide scanning, digital image analysis, and telepatholog-y.	KR 1.1: Deploy X high-resolution digital scanners by the end of Year 2.	Track the number of high-resolution scanners deployed by the end of Year 2	Track the number of scanners deployed.	Installation of Digital scanners by the end of the 2nd year	Section Head Histopathology Procurement and Finance Directorate	High-resolution slide scanners.	2 years (subject to provision of relevant resources)
	KR 1.2: Achieve 20% digitization of pathology workflows by the end of Year 1.	Measure the percentage of digitized pathology workflows by comparing the number of digital slides with traditional glass slides.	Monitor the percentage of pathology workflows digitized	At least 20% of the workflow is digitalized.	Section Head Histopathology Procurement and Finance Directorate	Technicians for scanning and workflow management.	2 years (subject to provision of relevant resources)
	KR 1.3: Achieve 95% accuracy in digital slide scanning, verified through manual cross-checks.	Audit scanning accuracy to ensure at least 95% of scanned slides are accurate, validated against manually scanned slides.	Perform routine audits for scanning accuracy.	95% accuracy in digitization of slides	Section Head Histopathology. Procurement and Finance Directorate	IT infrastructure for storage and image management.	2 years (subject to provision of relevant resources)
Objective 2: Enhancing Diagnostic Accuracy with AI.							
Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
To incorporate AI-powered image analysis tools that assist pathologists in detecting abnormalitie	KR 2.1: Reduce diagnostic reporting time by 30% using AI-assisted diagnostics within 18 months.	Measure the percentage reduction in diagnostic reporting time, comparing pre- and post-AI implementation.	Track average diagnostic time pre- and post-AI implementation.	Reduction of reporting time as per objective	Section Head Histopathology Procurement and Finance Directorate	AI-powered image analysis software.	Dependent on provision of relevant software, training, resources and infrastructure

Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
s, reducing diagnostic errors, and speeding up reporting times.	KR 2.2: Achieve 95% accuracy in AI-powered diagnostics, compared to traditional methods, by Year 2.	Monitor the accuracy rate of AI-assisted diagnoses against traditional manual diagnosis (benchmark to 95%).	Compare accuracy rates between AI-assisted diagnostics and traditional methods.	Accuracy in achieving AI powered diagnostic methods		Data sets for AI model training.	
	KR 2.3: Train 100% of pathologists on AI-powered diagnostic tools by Year 2.	Track the percentage of pathologists trained on AI tools (target: 100% by Year 2).	Monitor pathologist training completion rates.	Training of all Histopathologists on AI powered tools		Pathologists and AI specialists for training and integration.	

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Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
To establish telepathology services enabling remote consultations with specialists, improving accessibility and the efficiency of complex case diagnoses.	KR 3.1: Facilitate at least 20 telepathology consultations per month by the end of Year 2.	Track the number of telepathology consultations conducted each month	number of telepathology consultations performed.	At least 20 telepathy consultations /month	Section Head Histopathology. Procurement and Finance Directorate	Telepathology platform (video calls, image sharing)	Dependent on the provision of relevant software, training, resources, and infrastructure
	KR 3.2: Establish at least 1 international collaboration agreement with pathology institutions by Year 3.	Monitor the number of international collaboration agreements signed and active by Year 3.	Count the number of international partnerships signed.	At least 1 international collaboration		IT infrastructure to support remote consultations	
	KR 3.3: Achieve 80% satisfaction from patients involved in telepathology consultations, measured through surveys.	Measure the percentage of patient satisfaction with telepathology consultations through post-consultation feedback surveys.	Measure patient satisfaction via post-consultation surveys.	80% participant satisfaction		Staff and partners for managing consultations and international agreements	

Objective 4: Support for Research and Education.

Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
To leverage digital pathology for research and educational purposes, providing access to digital slide archives and image analysis tools for research students and healthcare professionals.	Publish at least 2 research papers based on digital pathology data by Year 3.	Track and measure the number of research papers published based on digital pathology data.	Number of published research papers based on digital pathology data.	2 publications based on Digital Path by year 3	Section Head Histopathology. Procurement and Finance Directorate	Digital slide archives. IT infrastructure	Depending on the provision of the required IT infrastructure, relevant training and relevant resources
	Achieve 80% participation from healthcare professionals in digital pathology training programs by Year 3.	Measure the participation rate of healthcare professionals in digital pathology training (target: 80% by Year 3).	participation rates in digital pathology training.	Training of at least 80% pathologists		Research collaboration with academic institutions. IT infrastructure	Dependent on provision of required IT infrastructure relevant training and relevant resources.
	Provide 5,000 digital slides for research use by Year 3.	Track the number of digital slides provided for research and educational purposes	Usage statistics of digital slide archives.	Have an archive of at least 5000 digital slides by the end of year 3.		training programs and materials for healthcare professionals. IT infrastructure	Dependent on provision of required IT infrastructure. relevant training and relevant resources

Objective 5: Cloud-Based ERP Systems

Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Implement a cloud-based ERP (Enterprise Resource Planning) system to centralize and streamline pathology workflows, including specimen tracking, reporting, and inventory management.	Implement the cloud-based ERP system for pathology management by Year 1.	Measure the timeline of ERP system implementation.	Track ERP implementation milestones.	Having a cloud-based ERP system in place	Section Managers, Section Heads, IT head, procurement, and Finance Directorate	ERP software and cloud hosting services. IT infrastructure	Dependent on the provision of required IT infrastructure. relevant training and relevant resources
	Achieve 95% utilization of the ERP system across pathology departments by Year 2.	Monitor the percentage of ERP system usage within pathology departments (target: 95% by Year 2).	Measure user adoption rates across the pathology department.	ERP system established in 95% of the units by the end of year 2		Staff training for ERP use	Dependent on the provision of required IT infrastructure. relevant training and relevant resources
	Reduce workflow errors (e.g., misidentified specimens) by 20% post-ERP implementation	Measure the percentage reduction in workflow errors related to specimen misidentification.	Monitor error reduction through incident reports.	As per the objective		Integration with existing pathology management systems. IT infrastructure	Dependent on the provision of required IT infrastructure. relevant training and relevant resources

Objective 6: Blockchain for Sample and Data Security

Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Adopt blockchain technology to ensure the secure and transparent tracking of pathology samples and sensitive patient data, preventing fraud and ensuring data integrity.	Implement blockchain for sample tracking and data security by Year 2.	Track the milestones of blockchain system deployment	Monitor the progress of blockchain implementation	Implementing block chain technology at the DDRRL by the end of year 2	Section Head Histopathology. Procurement and Finance Directorate	Blockchain technology and platforms. IT infrastructure	Dependent on provision of required IT infrastructure & relevant resources
	Achieve 100% data integrity in digital pathology records by Year 2.	Conduct audits to verify data integrity, ensuring 100% accuracy	Perform periodic audits to ensure data integrity	As per objective		IT infrastructure for data security.	Dependent on provision of required IT infrastructure. & relevant resources
	Achieve 100% adoption of blockchain protocols within pathology workflows by Year 2.	Measure the adoption rate of blockchain protocols across all pathology departments	Adoption rates across pathology departments.	As per the objective		Collaboration with blockchain experts and developers. IT infrastructure	Dependent on the provision of required IT infrastructure & relevant resources.

Objective 7: Big Data Analytics for Research and Market Expansion

Objective	Key Results	KPI	Measurement Method	Target	Person Responsible	Resource Requirement	Timeline
Leverage big data analytics to mine insights from digital pathology datasets, supporting research initiatives and identifying market opportunities for service expansion.	Implement big data analytics tools by Year 2.	Track the implementation status of big data analytics tools	milestones and tool usage via project management and access logs		Section Head Histopathology. Procurement and Finance Directorate	data analytics software, Data scientists	Dependent on the provision of required IT infrastructure.
	Publish at least 3 market insights reports based on data analysis by Year 3.	Measure the number of market insights reports generated	Count reports in a central repository.	As per the objective		Access to large datasets for analysis. IT infrastructure	Dependent on the provision of required IT infrastructure.
	Achieve 80% utilization of available digital pathology data for research and market analysis by Year 3.	Track the percentage of digital pathology data being used for research and analysis	Calculate data utilization from access logs.			IT infrastructure	Dependent on the provision of required IT infrastructure.

SECTION V: RESOURCE PLANNING FOR ACHIEVING STRATEGIC GOALS

It is evident that appropriate resource planning is inevitable for any institution striving to achieve its goals. Importantly, the cost of reagents and consumables involved in diagnostics are on a very higher side, posing a major challenge of sustainability and profitability. It is therefore very important to devise strategies for viable resource utilization. To do so, the following steps will be undertaken,

- Establishment of priorities for expenses which are informed and guided by (i) the strategic goals and plan, (ii) physician/researcher demands.
- Efficient utilization of available resources.
- Appreciation of extramurally funded projects, particularly for research.
- Looking for alternate funding opportunities including collaborations, donations, philanthropy.

SECTION VI: IMPLEMENTATION & MONITORING OF THE STRATEGIC PLAN

The implementation and monitoring of the strategic plan are crucial to its success, as a strategic plan without execution and evaluation remains a static document. To ensure that the plan is implemented effectively, a phased approach will be adopted for the digital pathology service. The rollout will begin with infrastructure development, followed by the integration of AI tools, telepathology, and the establishment of research services in subsequent phases. This phased approach will ensure that each stage builds upon the previous one, allowing for comprehensive and efficient implementation. A dedicated project management team will oversee each phase, ensuring that timelines are adhered to, resources are properly allocated, and KPIs are met. The team will be responsible for coordinating efforts across departments, handling challenges, and adjusting strategies to stay on track. Regular meetings, held every six months, will involve the committee members and key stakeholders such as pathologists, technicians, and management to review progress, align objectives, and resolve any issues that may arise.

Additionally, a designated unit will be established within the facility to monitor and evaluate the implementation of the strategic plan. This unit will provide ongoing updates and address any operational challenges to ensure that the strategic objectives are consistently met. To track progress, quarterly reviews will be conducted, and progress reports will be submitted to higher authorities, keeping leadership informed of advancements, obstacles, and necessary adjustments. Continuous feedback from pathologists, technicians, and patients will be collected to assess satisfaction and identify areas for improvement, which will be used to refine the services and operational processes, ensuring quality and efficiency. Compliance with relevant standards, such as ISO15189, will be ensured through regular internal and external audits, with the findings driving necessary improvements. Throughout the process, transparency will be maintained, with stakeholders kept informed of progress and challenges, and decisions will be merit-based, ensuring that the right individuals are empowered to lead and implement the changes effectively. By integrating these strategies, the strategic plan will remain dynamic, adaptable, and continuously improving, fostering a culture of accountability and ongoing success.

| OBJECTIVE | LEAD | | SUPPORTING UNITS | DATE OF COMPLETION |
	Primary	Secondary		
To continue participation of all units in the External Proficiency Testing	Section Heads	Director Med Lab, DDRRL	VC office, Finance	Ongoing
To continue participating in the ISO15189 cycle by the PNAC	Section Heads,	QMS Coordinators, Additional Director & Director Med Lab, DDRRL	VC office, Finance	Ongoing
To train the lab workforce with ISO15189 standard	Section Heads,	QMS office DDRRL, Additional Director & Director Med Lab, DDRRL	VC office, Finance	Ongoing
To attain relevant training, preparation material for CAP Accreditation	Section Heads,	QMS office. Additional Director & Director Med Lab, DDRRL	VC office, Finance, QMS office DDRRL	December 2025
To publish at least 10 research publications in HEC recognized international journals	Section Heads	Director Med Lab, DDRRL	ORIC, Finance	ongoing
Include new diagnostic tests as per need	Section Heads	Director Med Lab, DDRRL	Procurement, Finance, VC office	Ongoing
To hire appropriate workforce	Section Heads	Director Med Lab, DDRRL	HR office, VC office	Ongoing
To devise a section specific Strategic plan for enduring fiscal sustainability	Section Heads	Director Med Lab, DDRRL	OSDI	Ongoing
To continue teaching and training as per CPSP and HEC requirements	Section Heads	Director Med Lab, DDRRL	SPGS	Ongoing
To implement new AI-based technologies	AI experts, I.T directorate	Director of Med and Commercial Lab	IT, OSDI	ongoing

LIST OF APPENDICES

No.	DESCRIPTION
C	SWOT Analysis
D	TOWS Matrix

APPENDIX A: SWOT ANALYSIS

STRENGTHS	WEAKNESSES
1. Accreditation & Quality Standards: DDRRL is ISO15189 accredited and renowned for high-quality diagnostic services, offering 24/7 diagnostic support and STAT labs. 2. Existing Infrastructure: The laboratory boasts advanced equipment and a highly qualified team, ensuring reliable diagnostic services. 3. Extensive Network: DDRRL's network spans over 50 collection points across Sindh and Balochistan, providing broad access and rapid sample acquisition. 4. Brand Reputation: DDRRL is a trusted name in diagnostics, contributing to the strong foundation for expanding digital pathology services. 5. Training & Research: DDRRL supports research and provides CPSP and HEC-recognized training, aiding in academic development in health sciences.	1. Outdated IT Infrastructure: The current IT and inventory management systems are not fully integrated, causing operational inefficiencies. 2. Human Resource Deficiencies: High staff turnover, limited talent retention strategies, and lack of specialized staff impact on service quality. 3. Staff Training Deficiencies: There is limited expertise in digital pathology workflows and AI-driven diagnostic tools, requiring substantial training. 4. Market Expansion Constraints: DDRRL has a limited presence outside major cities, and the rollout of new collection points and diagnostic services is slow. 5. IT Limitations: Outdated systems could hinder the adoption and deployment of advanced digital tools such as AI, ML, and blockchain.
OPPORTUNITIES	**THREATS**
1. Expansion of Collection Points and STAT Labs: Increasing the number of collection points and STAT labs will enhance market coverage and boost patient/sample volume. 2. Digital Transformation: Upgrading existing technologies and integrating AI, ML, blockchain, and full digitalization could increase operational efficiency. 3. AI and Automation in Diagnostics: Leveraging AI tools could enhance diagnostic speed and accuracy, reduce pathologist workload, and improve patient outcomes.	1. Competition from Emerging Labs: Private labs with digital capabilities pose a growing threat, potentially undermining DDRRL's market position. 2. Cybersecurity Risks: Data breaches and cybersecurity threats are significant risks, especially with the expansion of digital health services and management of large patient data. 3. Staff Retention Challenges: A lack of an effective retention policy for skilled staff (including techs and consultants) could lead to expertise gaps.

4. Market Expansion through Digital Pathology: The introduction of digital pathology could extend services to remote regions and international markets. 5. Training Centers: Establishing state-of-the-art training centers can boost staff competence and attract skilled professionals, enhancing long-term workforce stability. 6. Point of Care Testing: Introduction of point-of-care testing (POCT) under DDRRL's supervision can open new avenues for patient care and service expansion.	4. Operational Disruptions: There is a risk of unaddressed contingencies like equipment failures, supply chain disruptions, and unforeseen challenges that can affect service continuity.

APPENDIX B: TOWS MATRIX

OPPORTUNITIES	THREATS
1. Expansion of Collection Points and STAT Labs: Increasing the number of collection points and STAT labs will enhance market coverage and boost patient/sample volume. 2. Digital Transformation: Upgrading existing technologies and integrating AI, ML, blockchain, and full digitalization could increase operational efficiency. 3. AI and Automation in Diagnostics: Leveraging AI tools could enhance diagnostic speed and accuracy, reduce pathologist workload, and improve patient outcomes. 4. Market Expansion through Digital Pathology: The introduction of digital pathology could extend services to remote regions and international markets. 5. Training Centers: Establishing state-of-the-art training centers can boost staff competence and attract skilled professionals, enhancing long-term workforce stability. 6. Point of Care Testing: Introduction of point-of-care testing (POCT) under DDRRL's supervision can open new avenues for patient care and service expansion.	1. Competition from Emerging Labs: Private labs with digital capabilities pose a growing threat, potentially undermining DDRRL's market position. 2. Cybersecurity Risks: Data breaches and cybersecurity threats are significant risks, especially with the expansion of digital health services and the management of large patient data. 3. Staff Retention Challenges: A lack of an effective retention policy for skilled staff (including techs and consultants) could lead to expertise gaps. Operational Disruptions: There is a risk of unaddressed contingencies like equipment failures, supply chain disruptions, and unforeseen challenges that can affect service continuity.

STRENGTHS	SO	ST
1. **Accreditation & Quality Standards:** DDRRL is ISO15189 accredited and renowned for high-quality diagnostic services, offering 24/7 diagnostic support and STAT labs. 2. **Existing Infrastructure:** The laboratory boasts advanced equipment and a highly qualified team, ensuring reliable diagnostic services. 3. **Extensive Network:** DDRRL's network spans over 50 collection points across Sindh and Balochistan, providing broad access and rapid sample acquisition. 4. **Brand Reputation:** DDRRL is a trusted name in diagnostics, contributing to the strong foundation for expanding digital pathology services. 5. **Training & Research:** DDRRL supports research and provides CPSP and HEC-recognized training, aiding in academic development in health sciences.	1. Leverage Accreditation and Reputation to Drive Expansion: Utilize DDRRL's strong brand reputation and accreditation to enhance the rollout of collection points, STAT labs, and point-of-care testing in underserved and remote regions. 2. Invest in Digital Transformation: Capitalize on DDRRL's existing infrastructure and trusted brand to accelerate the integration of AI, ML, and blockchain technologies, enhancing diagnostic accuracy and operational efficiency. 3. Capitalize on Research and Training: DDRRL's involvement in postgraduate training and research can be expanded into a digital pathology training center, establishing DDRRL as a pioneer in this emerging field.	1. Enhance Brand Loyalty Through Superior Digital Offerings: To combat emerging competition, DDRRL can focus on offering superior digital pathology services, enhancing accuracy, turnaround times, and patient satisfaction. 2. Use Infrastructure to Mitigate Cybersecurity Risks: Strengthen data protection protocols by leveraging DDRRL's existing network and infrastructure to implement state-of-the-art cybersecurity measures that secure patient data while promoting digital transformation.

WEAKNESSES	WO	WT
1. Outdated IT Infrastructure: The current IT and inventory management systems are not fully integrated, causing operational inefficiencies. 2. Human Resource Deficiencies: High staff turnover, limited talent retention strategies, and a lack of specialized staff impact on service quality. 3. Staff Training Deficiencies: There is limited expertise in digital pathology workflows and AI-driven diagnostic tools, requiring substantial training. 4. Market Expansion Constraints: DDRRL has a limited presence outside major cities, and the rollout of new collection points and diagnostic services is slow. 5. IT Limitations: Outdated systems could hinder the adoption and deployment of advanced digital tools such as AI, ML, and blockchain.	1. Address IT Limitations by Integrating New Technology: Modernize DDRRL's IT and inventory systems to support digital pathology, AI/ML tools, and blockchain integration. A full tech overhaul could streamline operations and improve service delivery. 2. Develop Comprehensive Training Programs for Digital Pathology: Address the current gap in digital pathology expertise by establishing a dedicated training program in AI-driven diagnostics, helping DDRRL remain competitive in the growing digital space. 3. Expand Human Resources Through Targeted Recruitment: Use DDRRL's reputation and new technology-driven growth as a selling point to attract highly skilled staff, reducing turnover and improving service quality.	1. Implement Staff Retention Strategies: Develop a structured retention policy and career development programs to address high turnover and staff shortages, ensuring DDRRL retains the expertise necessary to compete with emerging private labs. 2. Create Contingency Plans for Operational Risks: Establish robust contingency plans for equipment failures, supply chain disruptions, and other operational risks, reducing the vulnerability to unforeseen challenges. 3. Cybersecurity Risk Management: Proactively invest in cybersecurity measures to protect against potential data breaches, ensuring DDRRL maintains its reputation as a safe and secure provider of diagnostic services.