

SUPPLEMENTARY MATERIAL S1

# PIU Staffing and Operations

*Job Descriptions, Competencies, and Standard Operating Procedures*

## 1. Overview

The Preparedness Intelligence Unit (PIU) requires four core positions working as an integrated team. This document provides detailed job descriptions, competency frameworks, recruitment guidance, and standard operating procedures (SOPs) for daily operations. All PIU staff work within the Public Health Emergency Operations Centre (PHEOC) under the governance frameworks established in Supplementary Material S3.

## 2. Position 1: PIU Lead (Epidemiologist)

### Position Summary

The PIU Lead serves as senior technical advisor to the PHEOC Director, manages the PIU team, oversees all intelligence products, and ensures operational quality. Reports directly to PHEOC Director.

### Essential Qualifications

- Advanced degree in epidemiology, public health, or related field (Master of Public Health (MPH) minimum, Doctor of Public Health (DrPH)/Doctor of Philosophy (PhD) preferred)
- 5+ years experience in field epidemiology, outbreak investigation, or surveillance
- Completion of Field Epidemiology Training Programme (FETP) or equivalent
- Demonstrated experience with Integrated Disease Surveillance and Response (IDSR)/electronic Integrated Disease Surveillance and Response (eIDSR) and District Health Information Software 2 (DHIS2) platforms
- Strong leadership and team management skills

### Core Responsibilities

- Lead PIU team operations, assign tasks, ensure quality deliverables
- Produce daily epidemiological analysis integrating surveillance, laboratory, and climate data
- Conduct risk assessments for emerging threats
- Present weekly risk briefs to PHEOC Director and senior leadership
- Facilitate quarterly simulation exercises and document After-Action Reviews (AARs)
- Supervise alert-to-response time (ART) tracking and performance metrics
- Represent PIU at Data Governance Committee meetings
- Maintain relationships with district health officers and Rapid Response Team (RRT) leads

### Key Performance Indicators

Indicator	Target
Daily dashboards produced	≥95% of working days
Weekly risk briefs delivered on schedule	100%
Quarterly simulations completed with documented AARs	4 per year
Alert-to-response time (ART) ≤48 hours	≥70% of priority disease alerts

Indicator	Target
Team retention	≥80% annually

### Salary Range

United States Dollars (USD) 30,000–60,000 annually depending on country context and experience level. Should be competitive with FETP coordinator or national surveillance officer positions.

## 3. Position 2: Data Scientist

### Position Summary

Develops and maintains analytical dashboards, builds forecasting models, performs statistical analysis, and ensures data quality. Reports to PIU Lead.

### Essential Qualifications

- Bachelor's degree in statistics, data science, computer science, or quantitative field
- 3+ years experience with data analytics and visualization
- Proficiency in R (statistical programming language) or Python (programming language) for statistical analysis
- Experience with DHIS2 analytics and Application Programming Interface (API) integration
- Strong skills in data visualization (dashboards, maps, charts)

### Core Responsibilities

- Design and maintain integrated dashboards pulling from eIDSR, laboratory, and climate sources
- Develop probabilistic forecast models for priority diseases
- Calculate and monitor forecast accuracy (Brier scores)
- Perform statistical analysis of surveillance trends
- Create geospatial risk maps
- Automate data pipelines and quality checks
- Train district staff on dashboard interpretation
- Manage data security and access controls

### Technical Skills Required

Skill	Details
R or Python	Statistical analysis and modelling
DHIS2 API and analytics apps	District Health Information Software 2 integration
SQL	Structured Query Language for database queries
Dashboard tools	Power Business Intelligence (PowerBI), Tableau, or R Shiny
GIS software	Quantum Geographic Information System (QGIS) or ArcGIS
Web development	Hypertext Markup Language (HTML)/Cascading Style Sheets (CSS)/JavaScript for custom dashboards

### Key Performance Indicators

Indicator	Target
Dashboard uptime	≥95%
Data quality checks completed	Daily
Forecast model Brier scores	<0.25 (consistent with S6 performance monitoring standards)
Data breaches	Zero

### Salary Range

USD 20,000–40,000 annually. Competitive with Information Technology (IT) specialists or biostatisticians in government service.

## 4. Position 3: Operations Planner

### Position Summary

Translates intelligence into operational recommendations, coordinates resource pre-positioning, tracks logistics, and maintains readiness. Reports to PIU Lead.

### Essential Qualifications

- Bachelor's degree in public health, logistics, or emergency management
- 3+ years experience in health emergency operations or logistics
- Understanding of health supply chains (vaccines, oral rehydration salts (ORS), antibiotics)
- Experience with incident management systems
- Strong coordination and project management skills

### Core Responsibilities

- Convert epidemiological forecasts into resource requirements (supplies, personnel)
- Track national stockpile levels and pre-positioning of emergency supplies
- Coordinate with district logistics officers for supply deployment
- Monitor RRT readiness and training status
- Plan and coordinate quarterly simulation exercises
- Track AAR corrective actions through to closure
- Maintain PHEOC activation protocols and contact rosters
- Support real-time coordination during outbreak responses

### Key Performance Indicators

Indicator	Target
Monthly stockpile reports completed	12 per year
Quarterly simulations coordinated on schedule	4 per year
AAR corrective action closure rate	≥70%
Supply pre-positioning after forecast triggers	Within 48 hours

### Salary Range

USD 18,000–35,000 annually. Competitive with district health management team supervisors.

## 5. Position 4: Communications Officer

### Position Summary

Produces risk communications materials, manages stakeholder engagement, coordinates public health messaging, and documents PIU activities. Reports to PIU Lead.

### Essential Qualifications

- Bachelor's degree in communications, journalism, or public health
- 3+ years experience in health communications or media relations
- Excellent writing and presentation skills
- Understanding of risk communication principles
- Experience with social media and digital communication

### Core Responsibilities

- Draft public health advisories based on PIU risk briefs
- Prepare presentation materials for PHEOC briefings
- Manage stakeholder communications (district officers, partners, media)
- Document PIU activities through quarterly reports
- Coordinate with national health promotion unit for public messaging
- Monitor social media for disease-related rumours and concerns
- Support AAR documentation and lessons-learned dissemination
- Maintain PIU website/dashboard public-facing summaries

### Key Performance Indicators

Indicator	Target
Weekly risk briefs formatted and distributed on time	100%
Quarterly PIU performance reports published	4 per year
Public health advisories issued after PIU recommendations	Within 24 hours
Stakeholder satisfaction with communication quality	≥75%

### Salary Range

USD 18,000–35,000 annually. Competitive with health promotion officers.

## 6. Team Structure and Workflow

### Daily Operations Schedule

Time	Activity
08:00–09:00	Data Scientist updates dashboards with overnight eIDSR data; runs automated quality checks

Time	Activity
09:00–10:00	PIU team meeting: review dashboards, discuss alerts, assign follow-up tasks
10:00–12:00	PIU Lead conducts epidemiological analysis; Communications Officer drafts summaries
13:00–15:00	Operations Planner coordinates with districts on alert responses; Data Scientist works on forecasts
15:00–16:00	Team reviews draft outputs; PIU Lead finalizes daily brief
16:00–17:00	Daily brief shared with PHEOC Director and district focal points

### Weekly Operations

- Monday: Week planning meeting; review previous week performance
- Wednesday: Forecast model updates and validation
- Friday: Weekly risk brief finalized and presented to PHEOC Director

### Monthly Operations

- Week 1: Compile monthly integrated risk brief
- Week 2: Present to senior leadership
- Week 3: Follow-up on recommendations
- Week 4: Plan next month activities

### Quarterly Operations

- Month 1: Conduct simulation exercise
- Month 2: Complete and present AAR; track corrective actions
- Month 3: Review quarterly metrics; prepare performance report

## 7. Recruitment and Onboarding

### Recruitment Timeline (Per Position)

Week	Activity
Week 1	Develop job description and advertise
Weeks 2–3	Accept applications
Week 4	Shortlist candidates
Week 5	Conduct interviews and reference checks
Week 6	Make offer and negotiate terms
Weeks 7–8	Complete hiring paperwork
Week 9	Position filled; onboarding begins

### Onboarding Checklist (First 30 Days)

- Week 1: Human Resources (HR) orientation; IT setup; security clearances; sign confidentiality agreement
- Week 2: PHEOC orientation; meet key stakeholders; review governance frameworks
- Week 3: Technical training (DHIS2, laboratory systems, climate data)

- Week 4: Shadow other team members; begin taking on responsibilities

## 8. Performance Management

Annual performance reviews are conducted by the PIU Lead for all staff. Evaluation criteria include:

- Achievement of Key Performance Indicators (KPIs): 40%
- Quality of work products: 30%
- Teamwork and collaboration: 20%
- Professional development: 10%

### Performance Ratings:

Rating	Action
Exceeds Expectations	10% salary increase
Meets Expectations	5% salary increase
Needs Improvement	Performance improvement plan

## 9. Professional Development

- Annual conference attendance budget: USD 2,000 per staff member
- Online training courses: Coursera, EdX subscriptions
- Mentorship: Pair with senior epidemiologists/data scientists
- Knowledge exchange: Annual visit to a PIU in another country
- Publication support: Encourage staff to publish PIU work in peer-reviewed journals

## 10. Conclusion

The PIU team structure balances specialized expertise with integrated teamwork. Clear role definitions, structured workflows, and continuous professional development create an environment where staff can deliver high-quality intelligence products while building long-term careers in public health emergency preparedness.

For technical specifications on data integration and dashboards, see Supplementary Material S2. For governance and legal frameworks governing data access and role-based controls, see Supplementary Material S3. For performance monitoring standards referenced in KPIs above, see Supplementary Material S6.

### List of Abbreviations

Abbreviation	Full Term
AAR	After-Action Review
API	Application Programming Interface
ART	Alert-to-Response Time
CSS	Cascading Style Sheets
DHIS2	District Health Information Software 2
DPIA	Data Protection Impact Assessment

Abbreviation	Full Term
<b>DrPH</b>	Doctor of Public Health
<b>eIDSR</b>	Electronic Integrated Disease Surveillance and Response
<b>FETP</b>	Field Epidemiology Training Programme
<b>GIS</b>	Geographic Information System
<b>HTML</b>	Hypertext Markup Language
<b>HR</b>	Human Resources
<b>IDSR</b>	Integrated Disease Surveillance and Response
<b>IT</b>	Information Technology
<b>IQR</b>	Interquartile Range
<b>JavaScript</b>	JavaScript (programming language)
<b>KPI</b>	Key Performance Indicator
<b>MPH</b>	Master of Public Health
<b>MOU</b>	Memorandum of Understanding
<b>ORS</b>	Oral Rehydration Salts
<b>PHEOC</b>	Public Health Emergency Operations Centre
<b>PhD</b>	Doctor of Philosophy
<b>PIU</b>	Preparedness Intelligence Unit
<b>PII</b>	Personally Identifiable Information
<b>PowerBI</b>	Power Business Intelligence (Microsoft)
<b>Python</b>	Python (programming language)
<b>QGIS</b>	Quantum Geographic Information System
<b>R</b>	R (statistical programming language)
<b>RBAC</b>	Role-Based Access Control
<b>RRT</b>	Rapid Response Team
<b>Shiny</b>	R Shiny (web application framework)
<b>SOP</b>	Standard Operating Procedure
<b>SQL</b>	Structured Query Language
<b>Tableau</b>	Tableau (data visualization software)
<b>TLS</b>	Transport Layer Security
<b>USD</b>	United States Dollars
<b>WHO</b>	World Health Organization
<b>7-1-7</b>	Detect within 7 days, notify within 1 day, initiate early response within 7 days