

Ministry of Health, Wellness and Elderly Affairs

Health System Strengthening Project

Terms of Reference

Senior Programmer/Mentor

Prepared: November 18, 2024

# 1: Background

 St. Lucia has a long-established web-based electronic medical record (EMR) currently used by all publicly funded primary care centers in the country. This system allows doctors to enter, in a structured format, information on diagnosis, vitals, lab results, medications, health behaviors and other information as well as free-text clinical notes. The system is managed by a Health Management Information Unit (HMIU) within the Ministry of Health, Wellness and Elderly Affairs (MOHWEA).

St. Lucia is currently launching a performance-based financing (PBF) initiative financed by the World Bank, aimed at providing incentives for improving screening and treatment of hypertension and diabetes. To support this work, definitions have been developed for target populations of patient requiring screening and patients already diagnosed with diabetes and hypertension, as well as criteria for screening and treatment. Coding has been done to identify these patient groups and calculate indicators that will be used for payment of incentives.

Furthermore, a list of feedback reports has been created, which outline the types of queries that primary care staff should receive regularly in order to help them improve. Such reports include: lists of patients who have not been seen in the last 4 months; lists of patients not yet screened; lists of patients with poor control of their disease or who have some other gap in their care.

The project is seeking a very experienced consultant who can provide mentorship and guidance to the HMIU team to verify accuracy of code and accelerate its development.

SLUHIS is based originally on the POPULUS software developed in New Brunswick, Canada. All modifications and maintenance over the past decade have been conducted by HMIU staff, including all code development. The HMIU team uses STRUTS Apache to build new data entry windows. Tables and reports generated from SQL queries can be created either within the EMR, or through a JASPER reports server.

# 2: Objectives

The main objectives of this consultancy are:

1. To provide mentorship and technical guidance to the PBF and HMIU teams by conducting thorough code reviews aligned with the PBF and to ensure code quality, while offering constructive feedback that promotes learning and improvement;
2. To recommend best practices, design patterns, debugging techniques, and proper use of tools and frameworks;
3. To develop the Risk Management microservice in SLUHIS 3.0 to include CVD risk and FINDRISC survey.

# 3: Expected Results

* Recommendations for the improved code quality pertaining to the goals of the PBF
* Highlight any defects or logic flaws in the code that could cause incorrect functionality, allowing the Developer to fix them.
* The development of the CVD risk calculator in SLUHIS 3.0.
* The development of the FINDRISC survey in SLUHIS 3.0.

# 4: Scope of Work

The consultant will:

* Liaise with the PBF and HMIU teams to assess the legacy health information system, SLUHIS, in order to better understand the existing framework.
* Conduct technical learning workshops for PBF and HMIU staff.
* Encourage learning of new technologies and modern software development techniques;
* Make recommendations for improvement of logical flow. The review should identify any areas where the code can be refactored for better readability or maintainability.
* Ensure that the code is easy to read, understand, and maintain by future developers.
* Verify that the code aligns with the PBF’s requirements.
* Ensure sufficient testing to ensure reliability and prevent future issues.
* Ensure the CVD risk calculator and FINDRISC survey are fully tested and free of bugs.
* Ensure that the Risk Management microservice can communicate with other microservices based on the existing standards.
* Develop the data dictionary for the Risk Management microservice.
* Develop draft SOPs for CVD risk and FINDRISC.
* Review of all code written for the PBF project, and checking that it conforms with the indicator definitions.
* Review of all code written for the Risk Management microservice.
* Provide advice on efficient coding, proper documentation and other best practices for coding.
* Provide advice on development of additional queries and reports that the HMIU wishes to implement quickly.

# 5: Expected Deliverables and Timelines

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| --- | --- | --- | --- |
| **NO.** | **DELIVERABLE** | **TIMELINE**  **(Weeks after contract signing)** | **PAYMENT**  **%** |
| 1 | Inception Report including workplan and schedule of deliverables | 2 | 10 |
| Validation | 3 |
| 2 | Report on findings regarding conformity to definitions of code written for indicators of the PBF project, as well as additional queries and reports developed/implemented during the consultancy | 6 | 30 |
| Validation | 8 |
| 3 | Functionalities for CVD Risk and FINDRISC developed and tested | 14 | 30 |
| 4 | Two (2) learning workshops for IT staff of HMIU, PBF scheme and MOHWEA | 16 | 20 |
| 5 | Training Report, including methodology used, limitations, feedback, remedial and upgrade actions | 18 | 10 |
| Validation | 20 |

# 6: Required Qualifications and Experience

The individual consultant should meet the following requirements:

* At least a Bachelor’s Degree in Computer Science, Software Engineering or related field 10%
* At least 5 years’ experience in software development 15%
* Experience in working on electronic medical records for primary care 15%
* Familiarity with web-based electronic medical records 10%
* Proficient in multiple programming languages (e.g., Java, C++, R, Python) 10%
* Understanding of Agile methodologies is an asset 5%
* Knowledge of database management systems (e.g., SQL, NoSQL) 5%
* Familiarity with writing queries using SQL on relational databases within EMRs to generate reports 15%
* Knowledge of best practices for efficiency and documentation of coding 10%
* Clinical experience in primary care in addition to programming experience is a highly valued asset 5%

The consultant should provide samples of SQL code used to conduct queries on relational databases, e.g. to calculate a quality indicator or identify a particular group of clients meeting certain characteristics.

Although not mandatory, having clinical experience in primary care in addition to programming experience is a highly valued asset.

# 7: Duration of the services

The consultancy is expected to last **5 months** from the date of contract signing

# ****8: Responsibilities****

## ****8.1: Consultant Responsibilities****

* Work collaboratively with all stakeholders
* Mentor and guide IT staff of HMIU and PBF project to improve the capability of the teams
* Assurance of strict confidentiality of all data
* Execution of services in accordance with the laws, customs and practices endorsed by the Ministry of Health, Wellness and Elderly Affairs.
* Responsible for the office space, equipment, materials, accommodation and transportation.

## 8.2: Client Responsibilities

* HMIU will collaborate with the PIU to ensure the timely review and acceptance of the reports submitted by the Consultant, not more than two (2) weeks after receipt of reports from the Consultant.
* Providing necessary documents.
* Providing secure access to database systems.
* Facilitating meetings and workshops.
* Reviewing and providing feedback on all deliverables.