* What services do you recommend implementing and/or expanding?

Health information exchange (HIE) facilitates the availability and retrievability of clinical information across the connected systems. This has shown improvements in increased patient safety and health outcomes. It would have been great if the federal government along with state government granted the required funding of $6 million for the fruitful implementation of RCHIE project (The RCHIE Road Map). In order to match the funding allocated without compromising the intended objective of RCHIE to improve the health outcomes, I would recommend the implementation of clinical information repository services.

* How will this be accomplished with the reduction in grant funding?

It is practically impossible to implement the clinical information repository services to all the patients (inpatients in hospitals, patients in emergency departments and in ambulatory settings) at the same time with the allocated funding. So, to match the funding, I would like to begin this data repository service with inpatient settings as the stated functionality can be implemented with $1 million according to the case study. Added to this, the initial set up of the infrastructure is expected to cost around $2 million. It is proposed in the RCHIE Road Map that operation of this infrastructure costs $285,000 per year that includes HL7 interfaces, data mapping, maintenance costs of data center and administrative costs to host the data. Also, it is stated that the ongoing costs for the initial implementation of the data repository for inpatient setting is $250,000. So, I recommend that the amount spent on the data warehouses can be reduced by hosting the entire data on the data centers available on AWS Cloud. Various tools like the virtual private cloud (VPC) and S3 buckets are available on AWS Cloud to store the data. There are multiple cost saving plans available in AWS Cloud which facilitate the pay on usage. This can drastically cut short the expenditure from $285,000 per year to almost $200,000 per year. This brings down the implementation of RCHIE Road Map to $3.4 million.

Six months ago, RCHIE was approached by AZER Biomedical (AZB), a local manufacturer of implantable medical devices. This manufacturer is interested to fund the project by paying $300,000 per year if the clinical data repository is covering at least $2 million lives and the manufacturer is able to access this data. So, with the current funding, the repository will be able to document the data of the inpatients which will constitute more than $2 million lives. It is also stated that an agreed upon fee structure can generate funding up to $200,000. All these fundings from federal, state government, AZB company and fee structure from the group will be able to fund the $3.4 million required for the implementation of clinical data repository services.

* An explanation of the rationale behind your recommendation, which includes the benefits, costs, and obstacles associated with the various services

Developing and maintaining the clinical data repository forms the heart of any HIE project. Numerous benefits of such documentation have been recorded in the literature. According to Sayles and Kavanaugh-Burke (2021) the availability of patient specific data at a single source can result in improved healthcare delivery by reducing the clinical time needed to formulate decisions (p. 257). Sayles and Kavanaugh-Burke (2021) also stated that patient physician quality time can be increased by ruling out the need for multiple diagnostic tests or the requirement of paperwork on subsequent encounters (p. 257). Availability of entire patient related data at a single source reduces the frustration of the physician and can result in better treatment protocols. Improvements in the software led to integrating the clinical decision support to the clinical data available resulting in improved patient safety. This clinical data repository can lay foundation to evidence-based medicine to enhance the health outcomes. But this is accompanied by drawbacks like heterogenicity of the data models developed and employed (Gagalova et al., 2020). A crucial concern to be taken in consideration is the health data integrity and privacy when this data is accessed by other organizations like AZB manufacturer. According to Sayles and Kavanaugh-Burke (2021) data breaches can be reduced by employing risk analysis on regular basis (p. 271). Sayles and Kavanaugh-Burke (2021) further added that proper documentation entitling all the updated breach notifications in accordance with HIPPA policies are to be followed (p. 271). Regarding the contract with AZB manufacturer, this was assured by the RCHIE’s attorneys to legally avail all the permissions and document the written data use agreements.

* Your view of how RCHIE will be financially self-sustaining in the long run.

On a broader aspect, the funding from the AZB can ensure the financial sustainability of the RCHIE on long term. Once the project makes progress, multiple organizations will be interested to access the health data from the repository which will ensure more funding to the RCHIE. This funding can be utilized to develop other services like ePrescribing services, clinical messaging services and clinical quality/pay-for-value administration services in the future to meet the intended goals of the RCHIE Road Map. Additionally, initiatives like RCHIE will be supported by various grants like Rural Economic Development Loan and Grant Program (REDL and REDG) and Rural Health Network Development Planning Program in the future if this project proves to be effective to improve the patient outcomes. All the above stated lines reason my choice of recommending the clinical information repository services.

Gagalova, K. K., Leon Elizalde, M. A., Portales-Casamar, E., & Görges, M. (2020). What you need to know before implementing a clinical research data warehouse: Comparative review of integrated data repositories in health care institutions. *JMIR Formative Research*, *4*(8), e17687. https://doi.org/10.2196/17687

Sayles, N. B., & Kavanaugh-Burke, L. (2021). *Introduction to Information Systems for Health Information Technology* (4th ed.). American Health Information Management Association.

Rural Health Information Hub. (n.d.). Health information technology in rural healthcare – Funding & opportunities. <https://www.ruralhealthinfo.org/topics/health-information-technology/funding>