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Addressing Communication Challenges: Implementation of an Enhanced EHR System with Patient Portal at a Vancouver Hospital

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ABSTRACT

The new era of information and communications technology can greatly help the healthcare community, including suppliers, patients, staff and the top-level Management to bridge the gap of communication that is very important in the healthcare process. The inherent nature of society's current ways of communication largely hinges upon technology and networking. It is therefore prudent to leverage technology and evolved tools to be able to deliver the highest standards of patient care and safety. This paper highlights some of the studies done to identify the communication gap that healthcare providers face by looking at a Vancouver hospital as a case study and how the implementation of an enhanced EHR system can alleviate the communication gap. The paper looks into using state-of-the-art industry 4.0 technologies to improve hospital procedures, workflow processes, compliance, and enhance patient services that will lead to reduced costs and streamline of the core functions. This will in return benefit all patients, healthcare providers, suppliers, and other stakeholders.

1. INTRODUCTION

In a survey, the medication incident that proved that the issue of communication gap is very harmful was reported to the Institute of Safe Medication Practices Canada (ISMP Canada) by the community pharmacy incident reporting (CPIR) program. They conducted a survey of 134 cases out of which almost 58% were the result of communication Gap (Samantha Li and Certina Ho, n.d).

Our healthcare case firm which is a hospital Vancouver City Hospital (VCH) faces a similar problem wherein patients feel that there exists a communication gap between them and the healthcare infrastructure. To address this, VCH should be equipped with an enhanced EHR system and a sophisticated patient portal to provide high-level digital care to the patient and integrate cutting-edge technologies and IT solutions through digital transformation to solve the problem of communication gaps to improve internal hospital procedures and streamline the core hospital functions to reduce cost.

Using information communication technologies efficiently and effectively can help different sectors with the health services delivery part to the stakeholders. It has widespread benefits and many more to come. ICT includes communication devices and software such as satellite systems, computers and mobile phones and also services like conferencing and distance learning which is a new norm. After the pandemic, the value of ICT consists of its ability to enhance the access of information and communication across large distances reducing gaps and making the process more efficient and it also helps in enabling social impact like improving access to healthcare, finance and insurance (Shao et al., 2022).

Introducing and implementing information and communication technologies is very important and much required for developing healthcare aids, workflows and activities. After COVID-19, the healthcare system aims to be proactive by using a tool offering various applications and platforms to streamline healthcare tasks and facilitate communication. Implementing information communication technologies can enhance communication between clients, families, and healthcare providers within the care ecosystem. Tools such as chatbots and Electronic Health Records (EHR), which are digital versions of patients' paper charts, can provide real-time support while maintaining confidentiality and accessibility of client information. This approach will ultimately improve care activities and healthcare delivery. Our healthcare firm which is Vancouver City Hospital (VCH) should provide high-level digital care to the patient and integrate cutting-edge technologies and IT solutions through digital transformation to solve the problem of communication gaps to improve internal hospital procedures and streamline the core hospital functions to reduce cost.

If the organization is suffering from communication gaps there can be a few chances of conflicts that might

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result in low morale and low engagement by the employees because they will feel disconnected, and demotivator which will also result in low productivity and performance of the organization (Rasool et al., 2021). Therefore, if the employees are demotivated a higher chance of employees leaving the organization would result in a high turnover rate.

By applying information communication technologies trends, we will be solving our communication challenges and upgrading our processes; after that, by implementing the technology acceptance model (TAM), we can identify Factors influencing the acceptance of digital solutions (Alsyouf et al., 2023.)

The paper tries to investigate the following questions. Firstly, whether information communication technology trends do solve areas which are lacking, and what kind of upgrade needed to those communication processes which are time-consuming between different sections. Secondly, whether using the technology acceptance model (TAM), can help identify some of the challenges that may result during the implementation of information communication technologies.

The rest of the paper is structured as follows: section 2 discusses the literature review followed by the methodology in section 3. Section 4 covers the analysis and discussions. Finally, the conclusion is provided in section 5.

2. LITERATURE REVIEW

Nilsen et al. (2020) looked into the factors needed for successful change in healthcare, they conducted semi structured interviews with over thirty healthcare workers in Sweden. From their study we can narrow down to the three key factors which are the opportunity to influence change, being prepared for change and recognizing the value of change. The study also found that healthcare workers were of the opinion that they should be involved early in the change process and should be consulted on the implementation. It was discovered that those changes that were implemented by the professionals themselves were automatically considered easier and faced low resistance. The chance of success increased with clear communication and ample time provided to prepare for change. Professionals were also motivated to participate in the process by changes that were seen as advantageous for patients.

Fitzpatrick, in 2023, examined how digital communication can help health literacy and improve health results. The study looks at how effective mobile health apps, telemedicine platforms and online health resources are in improving health literacy by offering accessible, interactive and personalized content. Fitzpatrick suggests that improving digital literacy, ensuring information quality and protecting data privacy are important for enhancing online health resources and aiding decision making and self management. The study also finds that addressing problems and enacting strong protection measures result in digital communication enhancing health literacy, patient satisfaction and better health results.

Singh et al. (2021) examine how digital health solutions can aid older adults' transition from hospital to home. They emphasize the vulnerabilities faced during this transition, such as rehospitalization and medication errors. Digital health technologies like electronic health records (EHR), mobile health apps, and telehealth are proposed to ensure seamless care transitions through effective communication, patient monitoring, and continuity of care. The study outlines a two-phase rapid review. Phase one involves a selective literature review to map healthcare professionals' roles in facilitating transitions. Phase two reviews the effectiveness of digital health solutions in supporting these roles. The study finds that the users need to be involved in the designing of the tools to be able to match the needs of the senior patients and healthcare providers. The challenges can come in the form of user frustrations, lack of integration with clinical workflows, and not addressing specific needs. The authors recommend designing user-friendly, accessible, and secure digital health solutions that align with care providers' roles. They emphasize evidence-based development and user engagement to improve the acceptance and adoption of digital health technologies.

This aligns with the Technology Acceptance Model (TAM), which suggests that perceived usefulness and perceived ease of use are critical determinants of technology acceptance. By involving users in the design process, ensuring the technology integrates well with clinical workflows, and addressing specific needs, the likelihood of perceived usefulness and ease of use increases, thereby enhancing the acceptance and adoption of digital health solutions.

Iyanna et al. (2022) examine the challenges in the implementation and use of digital solutions in healthcare. The study highlights various advantages of digital advancements, including better diagnostics, enhanced patient care, and more effective healthcare administration. The study notes how healthcare providers and patients have shown high resistance to these changes. The research points out various obstacles to implementation, such as task-related challenges, patient-care worries, and system-related issues, and patients' usability and resource challenges add to the opposition. The research points out the importance of involving users in the design phase of creating digital health tools that are easy to use and safe. The study uses a theoretical framework to tackle resistance and suggests that the integration of effective healthcare technology will eventually improve patient outcomes.

Morag, I., Kedmi-Shahar, E., & Arad, D. examine how effective remote communication between patients and GPs is in Israel, with a focus on the post-COVID-19 period. They researched four methods of remote communication:

organized online menus, unstructured online messages, phone calls facilitated by clinic personnel, and direct messages to mobile or email. The study has shown that organized digital menus offer the best quality of healthcare by verifying patient identity, documenting queries, and ensuring doctors respond promptly (Morag et al., 2023.) Sending text messages and making phone calls for free have decent quality, but direct messages are not very effective because of problems with verifying patient identities and documenting queries. The research emphasizes the difference in patients' preferences versus the efficacy of communication methods. Patients commonly choose convenience over quality, often opting for less effective methods such as direct messaging. By focusing on these gaps, remote healthcare services can be greatly improved, leading to better patient outcomes according to Morag et al., (2023).

The study by De Moissac, D., & Bowen, S. (2018) examines how language barriers can affect the quality of care and patient safety for Francophones in Canada. The research involved gathering primary data through surveys and interviews to evaluate the issues that French speaking patients face when seeking healthcare services. The study notes that language barriers lead to overall poor healthcare services because of lower quality patient assessment, wrong diagnoses, long wait times and wrong interpretation of medical conditions. Patients use tools like google translate which are just not sufficient and contribute to the problem. The study suggests that trained interpreters and increased awareness of the dangers of language barriers can be the solutions to address the problems created by language barriers such as lower levels of confidence in healthcare services and higher levels of stress among patients and workers. The study suggests that healthcare providers offer their services in both official languages to improve healthcare services for the French speaking minority.

Bauder, L., Giangobbe, K., & Asgary, R. (2023) all examine the problems in health communication especially in times of pandemics. Their study looked at how the main obstacles to efficient communication are misinformation, a lack of trust, poor collaboration and inconsistent messaging. Health information quality and maintenance is severely affected by misinformation. The study stresses the need for using clear and focused communication tactics through digital mediums like social media which may help improve public health. The study suggests that involving frontline healthcare workers in communication strategies will improve credibility.

Our study explores the possibility of the communication gap between patients and healthcare professionals at Vancouver City Hospital being mitigated by using enhanced electronic health records and a patient portal for efficiency in overall operations that lead to favorable outcomes in terms of patient satisfaction.

3. METHODOLOGY

For the healthcare industry to improve patient care and increase operational efficiency, digital transformation is critical. Our study used secondary data extensively due to time constraints and lack of resources. We collected secondary data from numerous sources, including books, government health reports, and peer-reviewed academic publications. To find other references, reference lists of some articles were also reviewed.

As a part of our research, we also interviewed 15 people who have been living in Canada for the past decade. The questions were open-ended and descriptive, and the general pattern that could be observed across all the respondents was that they felt that the healthcare organizations lack responsiveness and have poor communication, which causes annoyance. We visited a hospital located in Vancouver and explained to the staff about our study and asked about the problems. In response, they said that long waiting times and communication problems are the main issues they face.

Our intention is to apply the Technology Acceptance Model (TAM) to guarantee the effective incorporation of the Enhanced Electronic Health Records (EHR) system along with a patient portal at Vancouver City Hospital (VCH). TAM will assist us in recognizing and tackling obstacles linked to perceived usefulness (PU), perceived ease of use (PEOU), attitude toward using (ATU), and behavioral intention to use (BI).

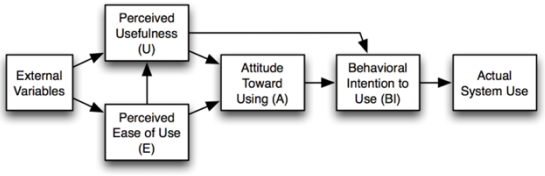

Figure 1. TAM Flowchart

To address the perceived usefulness of the system, we will organize training sessions and demonstrations to showcase how it enhances efficiency and patient results.

We must make a user-friendly interface, invite end-users during design phases as well as testing phases because the system should be simple enough for them. Involve hospital executives in demonstrating support for the new system and providing rewards for those who start using it early.

Our goal is to guarantee the successful adoption and broad acceptance of the Enhanced EHR system and patient portal by systematically tackling these challenges through TAM.

4. Analysis and Discussion

A. *Framework*

Implementing an extensive Enhanced Electronic Health Records (EHR) system with a patient portal at Vancouver City Hospital (VCH) necessitates a strong structure and different tools and technologies on various levels: desktop, network, storage, and mobile.

At the framework level, using of a cloud-based EHR system will allow us to scale up and adapt easily. Incorporating a thorough security structure to safeguard patient information will involve encryption, access management, and adherence to HIPAA regulations (Sutton et al., 2020.)

Desktop computers with modern technology such as adequate processing power (minimum 8GB RAM), Solid State Drive, and high-resolution monitors are required and the software needs to have EHR client software that works with current operating systems like Windows and macOS, as well as antivirus software.

The network infrastructure should consist of a fast, dependable internet connection, strong Wi-Fi coverage across the hospital, and a VPN for safe remote entry (Rao & Nayak, 2014b.) Rao & Nayak (2014) recommend integrating firewalls, intrusion detection and prevention systems (IDPS), and routine network audits as part of network security protocols. Quality of Service (QoS) configurations will be used to prioritize EHR traffic in bandwidth management.

Cloud storage solutions at the storage level guarantee scalability and accessibility, while redundant storage systems help prevent data loss (Tahir et al., 2020.) Need to have dependable backup solutions in case of disaster recovery. Patients will have easier access to their medical details and can communicate with healthcare providers with ease over the mobile platform, also healthcare providers can use the platform to retrieve patient records, verify lab records and also for efficient remote consultations.

VCH's new system will need to be integrated into the existing hospital information system and database and will include extensive testing. Training programs will need to be designed for training employees and patients. Lastly, the deployment and monitoring process involves gradually moving to the new system, beginning with a pilot program, monitoring how it performs, gathering feedback, and making necessary adjustments.

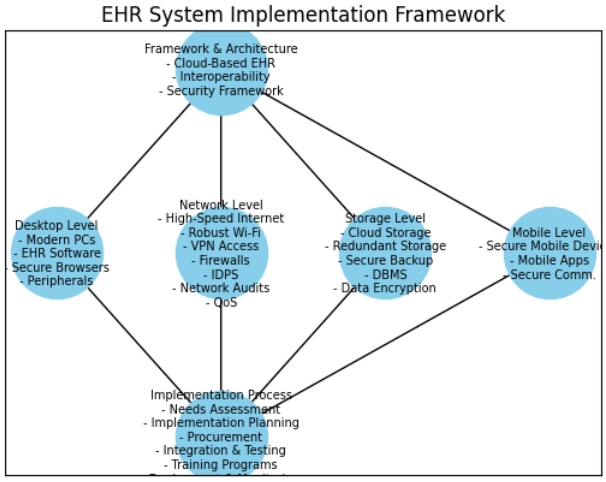

Figure 2. EHR Implementation Framework

The implementation of an advanced EHR system with a patient portal at VCH will need a collective effort that will involve desktop, network, storage, and mobile aspects of the framework.

B. *Cybersecurity Needs*

VCH will need an extensive strategy to address data storage, transmission, user access, and network security in order to maintain the cybersecurity of the proposed Enhanced Electronic Health Records (EHR) system.

All patient data will be encrypted for web communications to maintain data security. Multi-Factor authentication (MFA) will boost security levels by incorporating passwords, security tokens, and biometric verification (Suleski et al., 2023).

Implement firewalls and Intrusion Detection and Prevention Systems (IDPS) for traffic monitoring, breach detection, and updating signatures against emerging threats (Rao & Nayak, 2014a). Ensuring the antivirus software is updated for endpoint security, utilize Mobile Device Management solutions, and integrate Endpoint Detection and Response systems for overall security.

It is imperative to adhere to guidelines like the Health Insurance Portability and Accountability Act (HIPAA) and perform routine security assessments. Training programs will keep employees and users updated about the latest cybersecurity protocols, potential threats and best practices to tackle them.

Vancouver City Hospital will need to protect patient data and maintain the integrity and availability of healthcare services at all times. To achieve this, the proposed enhanced EHR system and patient portal at Vancouver City Hospital requires a holistic cybersecurity plan that implements data encryption, access control, network and endpoint security, incident response, compliance and user training.

C. Technology Acceptance Model (TAM)

By using the Technology Acceptance Model (TAM), Vancouver City Hospital can identify and address the problems related to training staff members to use the proposed Enhanced Electronic Health Records (EHR) system with a patient portal.

i. Perceived Usefulness (PU)

It will be advantageous to provide concrete examples of how the technology might make work easy and lessen administrative burden. Furthermore, presenting mathematical evidence such as statistics and success stories from other organizations that have successfully used similar technologies will provide tangible benefits and have positive impact on workflow effectiveness and patient care.

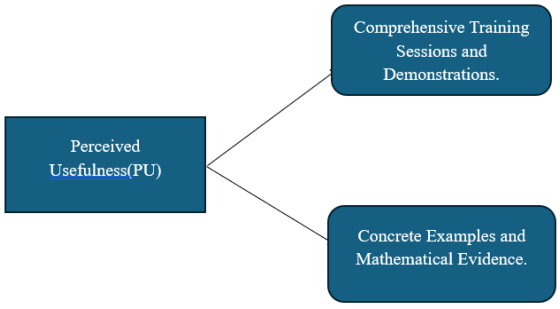

Figure 3. Mitigation Strategies for Perceived Usefulness

ii. Perceived Ease of Use (PEOU)

User-friendliness will be ensured by including end users in the design and testing stages to get input and make required improvements. Furthermore, a phased implementation strategy that begins with the most essential features and progresses as users gain comfort would facilitate the shift.

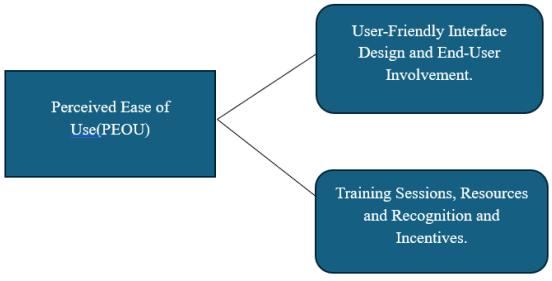

Figure 4. Mitigation Strategies for Perceived Ease of Use

iii. Attitude Towards Use (ATU)

To mitigate this, communicate the advantages and good features of the new system through meetings, newsletters, and seminars. To implement this successfully, there needs to be concrete support from hospital leadership as well, who should actively participate in training and show commitment to the new technology.

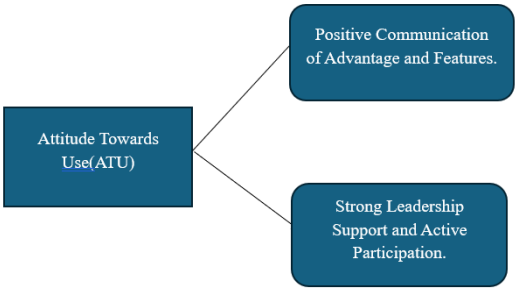

Figure 5. Mitigation Strategies for Attitude Towards Use

iv. Behavioral Intention (BI)

To overcome this, employee participation and sense of ownership may be. Preparing training sessions to highlight the advantages of the system for various positions in the hospital will take care of role-specific issues. Effective tactics include putting the system through pilot projects to boost confidence and promote broader adoption.

D. Strategies

We recommend some of the strategies so that Vancouver City Hospital successfully adopt the Enhanced Electronic Health Records (EHR) system with a patient portal if it is to usefully harness it. A thorough orientation program would be needed to equip all employees including doctors, nurses, administrators' clerks among others, and IT experts to be able to work with this system effectively. This can be achieved through holding workshops, and practical sessions coupled with online courses as well as continuous update on new developments.

If we want to handle probable resistance and conduct the transition process without any probable interruptions, a complete change management strategy should be developed (Serrat, 2017.) This means having a communication plan that informs all affected parties of new developments, benefits, and timelines. For this cause, it is always necessary each department has individuals who can champion for change in order to strengthen the system and support their co-workers i.e. by organizing regular team meetings to handle any emerging issues and keep employees updated on how far they have gone in their work (Ellis et al., 2023.) A smooth transition is ensured by including these updates in departmental meetings and setting up feedback loops to quickly resolve problems.

Another important strategy is to update current business procedures to work with the latest Electronic Health Record (EHR) system's patient portal. This involves carefully transferring data, following data quality guidelines, and performing regular checks. It is important to set clear rules for entering data, provide regular training on best practices, and assign specific roles for maintaining data quality. These steps will help streamline operations and improve overall healthcare services

To enhance safety measures that will prevent data breaches with patient details, we need to consider the law

of personal privacy protection. Some of these include creating complex passwords, setting access restrictions among others. Moreover, regular updating and educating our workers in ways they can safeguard such confidential information is also essential.

E. Information and communication trends (ICT)

After conducting research, we discovered that the primary issue at Vancouver City Hospital (VCH) is poor communication with patients. This gap has led to various problems, including inefficiencies in internal hospital procedures, such as missed appointments, delays in test results, and miscommunication of treatment plans. These issues disrupt workflow processes and create compliance challenges. Additionally, patient services suffer, leading to reduced patient satisfaction and trust. To address these issues, we propose an upgrade to improve communication channels. This will streamline internal procedures, enhance workflow processes, ensure compliance, and elevate patient services. By preventing work duplication and reducing costs, these improvements will significantly benefit the hospital's operations and patient outcomes

For this we can adopt information communication technologies trends there are a lot of advantages that have been seen as a result by different big health organizations outlining the benefits of ICT trends for healthcare helps organizations to guide decisions about introducing and adopting new technologies for them. Research also indicated that the advantage of ICT for healthcare aligns with those observed by other healthcare personnel and these benefits mainly included better documentation. Enhance quality Care improve monitoring by supporting current workflow information and also improve communication.

The figure below illustrates the distribution of benefits identified for Information and Communication Technology (ICT) used by healthcare aides.. These benefits highlight the significant impact of ICT in improving various aspects of healthcare delivery, from communication and workflow management to resource planning and patient care coordination. By leveraging ICT, healthcare organizations can enhance their operations, reduce costs, and improve patient outcomes (Perez et al., 2022.)

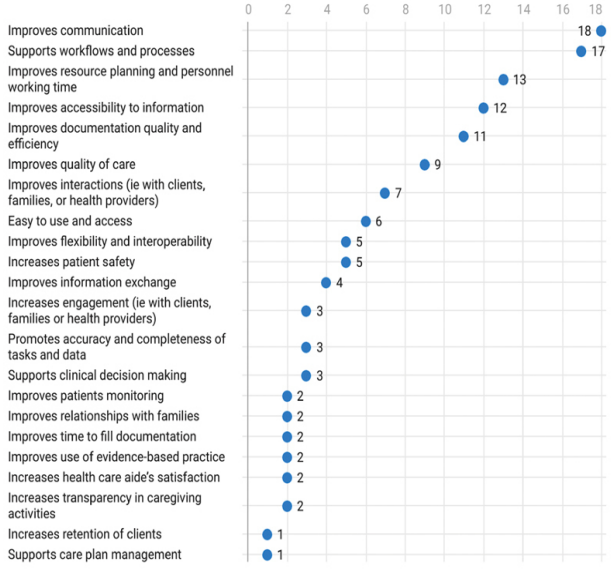

Figure 6. Distribution of benefits from ICT use by healthcare aides sourced from *Applied Clinical Informatics*

As for Trend, that comes under ICT that we can use to overcome the issue of communication faced by our organization are

i. Electronic health records (EHRs)

This process can eliminate the process of carrying paperwork from different departments to the doctors. After using electronic health records, the patient can send their past information in advance to the doctor so that they won't have to wait for the paperwork to arrive before the checkup.

By integrating EHR into our organization information can be created and managed by providers in a digital format also, consuming processes can be shared with other providers across more than one healthcare organization. It is a system that is built to share information with other healthcare providers and organizations such as information between different Liberty specialists, medical imagining facilities, pharmacies, schools, and workplace clinics.

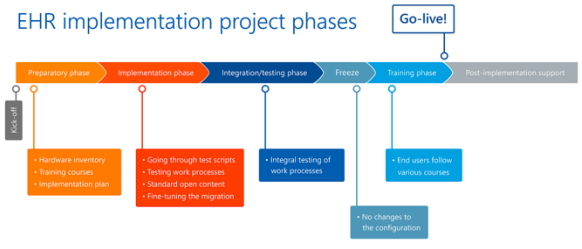

Figure 7. HER implementation flowchart

The adoption of EHR in our proposal will solve communication gaps. We will be analyzing the current

needs of the organization. Involvement of key stakeholders after that, choosing an EHR integrated communication tool after that providing the staff with comprehensive training, then conducting a pilot testing at the end, we will be establishing a feedback mechanism and ongoing monitoring so that we can make sure the effectiveness in user certification after implementing EHR.(*HealthIT.gov*, n.d.)

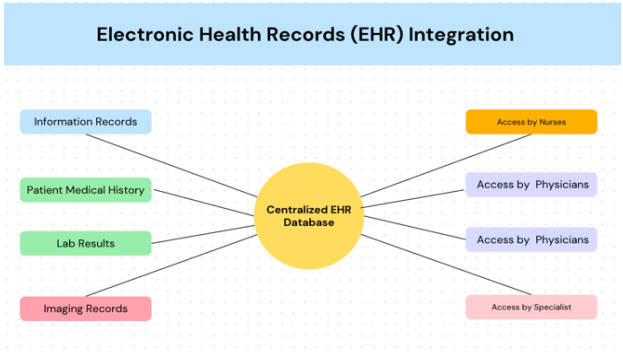

Figure 8. EHR integration diagram

ii. Telemedicine and Virtual Care

Telemedicine helps healthcare firms to improve their emergency services, speed up day diagnosis process and help them to minimize their cost by optimizing procedures and travel time (Haleem et al., 2021).

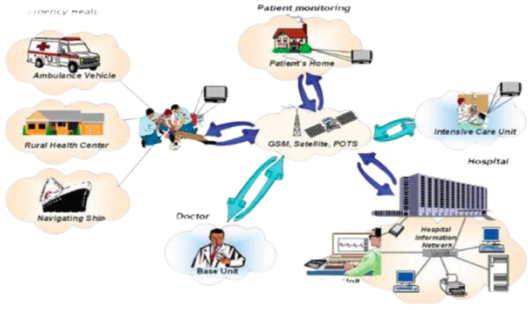

Figure 9. Example of a figure caption

As illustrated in the figure below we can see the workflow for adopting telemedicine in our health services. The process will provide cutting edge facilities and supervision fire every stages it will start with patient filling up detail information, which will be followed by the telehealth supportive Care unit. The next should involve assigning of a medical assistant to the patient, leading to diagnosis. And providing appropriate treatments. All the activities should be conducted with the highest level of care and attention. By applying this format to our Vancouver City hospital, we can have seamless, efficient and top quality of telemedicine service in our healthcare firm (Haleem et al., 2021).

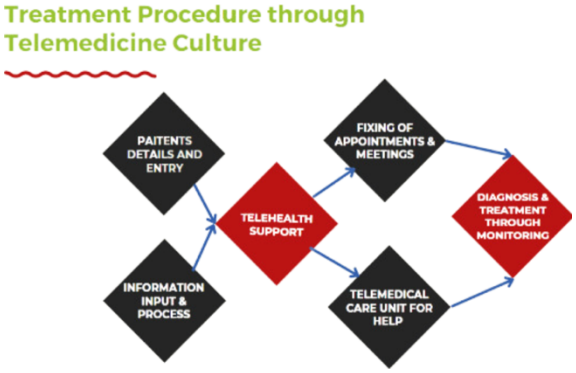

Figure 10. Telemedicine and Virtual Care

F. Costs

An Enhanced Electronic Health Records System (EHR) is to be setup with a patient portal at the facility of Vancouver City Hospital, as it requires a thorough breakdown of certain costs associated with it has a detrimental impact on the functioning of the Hospital. The costs are categorized into 3 of the following which are known as Capital, Training and Miscellaneous/Ongoing Costs. The estimated costs mentioned is in relation to the varying size of the organization and the ability of an EHR system to perform

i. Servers and Physical/Cloud Storage

Servers need to be set up to handle processing of data at an efficient speed and storage requirements are required for securing confidential patients and staff information. The estimated cost of setting this up would vary between $100,000 - $300,000 (Orlousky, H).

ii. Desktops and Computer Peripherals

An organization should be able to upgrade and purchase new devices such as operating systems, monitors, barcode scanners and printers to stay up to date with the ability to handle large data and high footfall at a hospital. The estimated cost to implement this would be around $50,000 - $ 200,000.

iii. Networking Equipment

A hospital needs to be able to be able to connect with patients, devices and other emergency providers and a setup of High-speed internet connections with a Wi-Fi Infrastructure, routers need to be installed. An estimated cost is to be around $50,000 - $100,000 as the data points towards 1998 we have taken into consideration inflation and portrayed a broader range (D'Alessandro, Michael & D'Alessandro, D & Kash, J & Jurca, DA & Wakefield, Douglas & Schallau, S & Galvin, J & Erkonen, W. 1998.).

iv. EHR System License

Software purchase or subscription based on an agreed tenure needs to be implemented with an estimated cost of $15,000 - $70,000 per year (Avadhani, C).

v. Patient Portal Software

The Software needs to be purchased or subscribed to annually and it involves an estimated cost of $50,000 - $120,000 per year (Tateeda).

vi. Telehealth Platform Integration

A software which helps patients and doctors connect over a service fee for consultation can streamline and categorize the severity of the patient's health status and it involves an estimated cost of $40,000 - $200,000 (Technology Ally).

vii. Employee Training and Maintenance

Employees require a training plan, module to develop themselves, which are mainly prepared for healthcare providers and administrators. An estimated cost is around $2,000 - $20,000 (Chabanovska, D & Altynpara, E. 2024).

viii. Training Materials

A medical facility requires training manuals, online and offline resources, guides to stay up to date with current medical knowledge and it involves an estimated cost of $2,000 - $20,000(Chabanovska, D & Altynpara, E. 2024).

ix. Inhouse Training Support

Staff need to be hired or allocated for certain training and support services and has an estimated cost of an avg cost of $4,700 per hire (Avadhani, C).

x. Consulting Fees

A medical facility requires to hire external consultants for system integration, customisation and implementation and has an estimated cost of $50,000 - $500,000(Shah, R).

xi. Customization Costs:

The EHR System requires continuous improvements and customisation to meet the hospitals specific needs and involves an estimated cost of $10,000 - $50,000(Chabanovska, D & Altynpara, E. 2024).

xii. Ongoing Technical Support:

A hospital has running costs involved for its technical support and system maintenance and it involves an estimated cost of $75,000 - $350,000 per year (Avadhani, C).

xiii. Software Updates and Upgrades

Regular updates and upgrades to the EHR system and patient portal. Estimated Cost**:** $2,500 - $35,290 per year (Avadhani, C).

xiv. Security Solutions

A hospital requires an implementation of advanced security measures, including encryption, firewalls, and intrusion detection systems as patients' information are to be kept confidential and secure. This involves an estimated cost of up to $8 million (CDW).

xv. Compliance Audits

Regular auditing to ensure compliance with healthcare and accounting regulations and also (e.g., HIPAA, PIPEDA) are needed to safeguard our credibility and trust amongst staff and patients. This involves an average cost of $80,000 per year with a devasting outlier costing $180,000 to $8.3 million if a data breach occurs (Globalscape).

xvi. Contingency Fund:

A contingency fund in terms of an emergency needs to be allocated during and after the process has been implemented. It involves an estimated percentage of 5-10% based on the size of the IT Expansion and the Hospital.

xvii. Total Estimated Costs

To bring into a better perspective and understanding of the required budget of setting up this sophisticated network and devices we have reached a concluding estimate of our initial, recurring, and one-time costs given together would range between $800,000 to $1 million dollars for Vancouver City Hospital.

G. Benefits of the transformation

One of the main benefits of the proposed digital transformation is a direct quality increase in communication between healthcare providers and patients. The digital tools allow VCH to efficiently access patient records, smooth appointment scheduling and secure messaging and allow patients to obtain their medical data, check their lab results and get notifications about treatment plans. All these features have a favourable impact on patient engagement and satisfaction, resulting in taking an informed decision and increased participation in their healthcare.

Digital transformation improves workflow efficiency by automating routine tasks and lessening administrative burdens on healthcare workers. This will reduce paperwork and result in better accuracy and less time spent by healthcare providers on manual administrative tasks, enabling them to concentrate more on caring for patients. The incorporation of telehealth services increases healthcare accessibility by providing remote consultations and continuous monitoring, especially aiding patients in distant or underserved regions.

Digital systems gather and process large amounts of data, offering insights into trends in patient health. Advanced security measures are utilized to protect sensitive patient information, while also adhering to regulations like HIPAA and earning patient trust. Digital transformation enables ongoing enhancement and creativity in the healthcare sector, to assist VCH in continual improvements in both care quality and operational performance. These benefits all work together to improve the quality of care.

5. CONCLUSIONS AND LIMITATIONS

To conclude, as our proposal contributes towards a digital transformational change required at VCH with various underlying factors and challenges which need to be addressed and communicated with the concerned parties to resolve and bring in the necessary changes. We have first addressed the challenges which are to investigate and adopt

a communication channel between the staff and patients which has brought an increase in inefficient proceedings and an overall decrease in patient satisfaction. There is also a challenge of traditional paper-based records which need to be digitalized to reduce manual workforce process and it would also reduce the risk of errors. Our plan is to implement an EHR System with a patient portal as it is vital to improve our communications and enhance better workflow efficiency by automating tasks and eliminating paper records.

As our ability to provide this information had constraints such as insufficient primary data and relying on secondary data to provide estimates of costs involved in setting up the process which involves training, software and hardware, miscellaneous and ongoing costs is to be studied from service providers about certain costs which we might have left out on and certain limitations of infrastructure which could not be implemented. Also, upon analyzing our proposal there is a sample size of 15 patients we have reached out to understand certain challenges they face, and a large data size needs to be studied with an intricated set of questions which can then be analyzed upon to understand in depth weaknesses of the current system and how improved changes can be implemented soon. There also remains the possibility of certain digital tools not being able to interface within the current infrastructure and would need a complete revamp of the proposal to adjust to it.

A framework needs to be implemented to identify and address any potential challenges in the future which is known as a Technology Acceptance Model (TAM) Framework which has 4 aspects to showcase usefulness, ease of access, openness and resistance to change. A telehealth portal has been discussed to address certain challenges and opportunities to provide for remote patients and analyze critical patients to provide for them at the earliest. A successful strategy requires a plan to implement various developmental tools such as a training module and bringing in a change management proposal to inculcate a clear communication medium along with a foundation of leaders to support the system. With the idea of digital transformation come safety and regulations; to tackle certain issues we must be up to date with legal and compliance measures with regulatory authorities such as HIPAA and PIPEDA. As the transformation takes place it is vital to address the benefits and to maintain a plan to provide for a continuous improvement to maintain efficiency and quality of care.

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