GEYS 4010 Final Report

Group 8

Mediclink – A link with your health

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1. Background introduction

Non adherence is a well known factor contributed to poor outcome of the medical treatment and extra treatment costs among long term illness and elderly patients. Adherence is defined as "the extent to which a person's behavior, taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider".[1] To be more precise, medication adherence refers to whether patients take their medications as prescribed, for example, whether they take drugs at the correct time, frequencies, dosage and through proper routine, as well as whether they continue to take a prescribed medication.[2] Poor medication adherence is responsible for the increased frequent re hospitalizations and hence the increased health care costs. The repeat cycle will continue when the problem remains unsolved. The consequences of drug non adherence to drug therapy can affect both the treatment outcome and negatively impact resulting in cost escalation of public health services.

1.1 The prevalence of drug non adherence in Hong Kong

Although drug non adherence is a severe phenomenon which could possibly lead to numerous impacts on patient's health condition, public awareness has not been raised to focus on the prevalence of non adherence in Hong Kong. In fact, the estimated prevalence rate is 37% which is under serious conditions. In a research regarding to the prevalence of drug adherence in geriatric patients in HK, 2445 patients who are suffering from hypertension were recruited from the general outpatient clinics in different district in Hong Kong and requested to finish a cross sectional survey. The result has shown the level of drug non adherence in patients with various

characteristics.

Among a total of 1095 patients with poor drug adherence, 638 are females (58%) and 457 are males (42%). As for the age groups, patients who aged 70 years old or above have the poorest drug adherence as 344 patients (31%) shows drug non adherence. Patients who aged 60 69 and 50 59 are slightly improved, with 340 patients (31%) and 335 patients (30%) respectively. It is obvious that the older the patients are, the poorer their drug adherence are.[3]

On the other hand, the types of chronic diseases can also affect patient's drug adherence. Among all kinds of illness, patients who are suffering from gout have the poorest drug adherence, in which 24.2% interviewed patients are "very poor" while 39% of them are "poor" in the adherence. Other common diseases, such as diabetes mellitus (DM) and osteoporosis also shows severe poor drug adherence, in which 14.7% and 6.7% of patients are being "very poor" in adhering their medications respectively.[4]

1.2 Health impacts of non adherence

According to the School of Pharmacy of the Chinese University of Hong Kong, three major chronic diseases were prevalent among the elderly, namely hypertension, diabetes mellitus and dyslipidemia. Over 75% of the elderly were on medications and among 21.8% were taking over 5 medications. Polypharmacy (patient who is taking more than 5 medications) can result in non adherence and decrease the effectiveness of the treatment outcome, leading to the increase in re hospitalizations and health costs.

Non adherence is also prevalent among long term illnesses. In hypertensive patients, good drug adherence is essential in maintaining a good blood pressure range. Poorly controlled blood pressure can result in a list of complications including increased risk of stroke, myocardial infarction, and other heart related diseases.[5] Extra costs and medical attention are required in treating additional complications, which eventually lead to the worsening of the health conditions and increasing medical financial burdens to the society. Studies indicated that almost all patients who had poor drug adherence will drop out the treatment eventually due to poor health outcomes and did not benefit from the treatment provided.[6]

Non adherence in antibiotics is another major issue that contributed to the negative impact toward patient's health and is responsible for the development of resistant microorganisms. Data suggested approximately 40% of patients do not adhere to antibiotic treatment.[7] Antibiotics non adherence is responsible for treatment failure, recurrent diseases, additional treatment, extra health care costs and antibiotic resistance, in which the bacteria develop the ability to defeat the drugs designed to kill them. Antibiotic resistance can bring a threat to the public health and endanger the safety of others.

1.3 Economic impacts of non adherence

In addition, the economic impacts of drug non adherence cannot be neglected. A research in US indicted health care will account for 20% of the US gross domestic product by 2020, with an estimated 10% of hospitalizations in older adults are caused by medication non adherence.[8] Long term illness contributed a great portion of healthcare costs, data suggested approximately 23% less healthcare cost are needed

for congestive heart failure patients with good drug adherence. Moreover, up to 41% less costs are required for DM patients with good drug adherence. A good drug adherence is believed to benefit the patient's health condition and decrease the general medical expenses, allowing more resources can be brought into other aspects within the medical system.

2. Case Study

2.1 US Medication Therapy Management Services

In the United States, the federal government has implemented a Medication Therapy Management (MTM) programme under the Medicare insurance, and specifically, under the part D Prescription Drug Plan.[9] The MTM programme aims at providing a wide range of comprehensive and patient centric healthcare services to achieve goals of improving medication use, reducing drug adverse reactions and improving patient medication adherence.[10] To achieve these goals, one of the major services in the MTM programme is the Therapy Intervention Programmes (TIPs). The major function of TIPs in the community pharmacy setting is to monitor the medication adherence of patients. Community pharmacists will provide face to face or phone call counselling to their regular customers. Through the counselling service, pharmacists will confirm for patients' medication adherence. If the patient does not comply with the medication, pharmacists will assess for any potential barrier that deters the patient from taking the medication on time and provide relevant patient education. This can provide huge benefits for patients as pharmacists are able to pinpoint the cause and offer help for patients.

However, not everyone is eligible for this useful programme. Patients will enroll in the MTM service only when they fulfill either one of the following criteria:[10]

1) Having at least 2 chronic health diseases
2) Taking at least 2 chronic medications covered in the Part D insurance plan
3) Paying at least $3967 for Part D drug annually

Therefore, it could be a challenge to be a candidate for this programme if the patient

is just having 1 chronic disease or requiring only 1 chronic medication.

Furthermore, the complexity of the MTM workflow may hinder its implementation in Hong Kong. The MTM programme involves multiple stakeholders, including the Centers for Medicare & Medicaid Services, insurance companies, intermediary vendors, MTM providers and patients. Patients eligible for MTM services will pay their insurance premium to insurance companies, who have their Medicare part D plan contracted with Centers for Medicare & Medicaid Services. Insurance companies will then pass patient cases to some intermediary vendors. MTM providers such as community pharmacies and clinics may select patient cases from intermediary vendors and provide MTM services to patient beneficiaries.[10] The whole process of MTM workflow in the US is summarized in Figure 1.

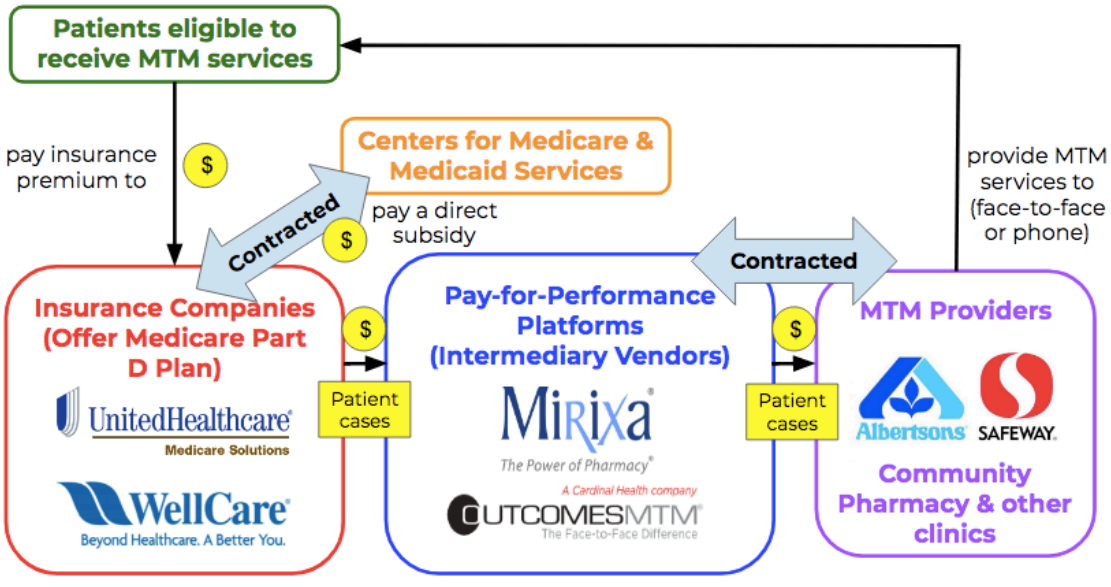

Figure 1. MTM workflow in the US

MTM services can cover over 40,000,000 beneficiaries in part D plan and over 50% of the service are provided by community pharmacists.[10,11] In Hong Kong, this can be an

obstacle as many Hong Kong people will not opt for a community pharmacy to get their medication, but they would choose a doctor instead. According to a large survey conducted in Hong Kong, only 45% of respondents believed that community pharmacists could play a leading role in patient self care of chronic diseases.[12] The idea of promoting MTM services to enhance patient medication safety is good, but the whole system has to be modified in Hong Kong due to the aforementioned problems.

2.2 HK e Fill services

In Hong Kong, the Hospital Authority (HA) has implemented a similar service in Prince of Wales Hospital, Tuen Mun Hospital and Pamela Youde Nethersole Eastern Hospital in 2017.[13] This is a special drug refill service that targets patients over 60 years old attending Medical Specialist Outpatient Clinics. To be eligible for e Fill service, patients should also be taking multiple drugs with medical consultation interval of 16 weeks or longer, and having multiple medical consultations or hospital admissions in between appointment.[14]

Joining the e Fill service, patients will collect their chronic medications in batches. Before the next drug refill, hospital pharmacists will review the conditions of patients. If there is no change in medications or patients do not have any drug related issues, then they will be reminded to collect their drug refills. However, follow up consultation by hospital healthcare professionals will be needed if patients have recent changes in medications or drug related problems.[14] The whole process workflow of e Fill service in HK is summarized in Figure 2.

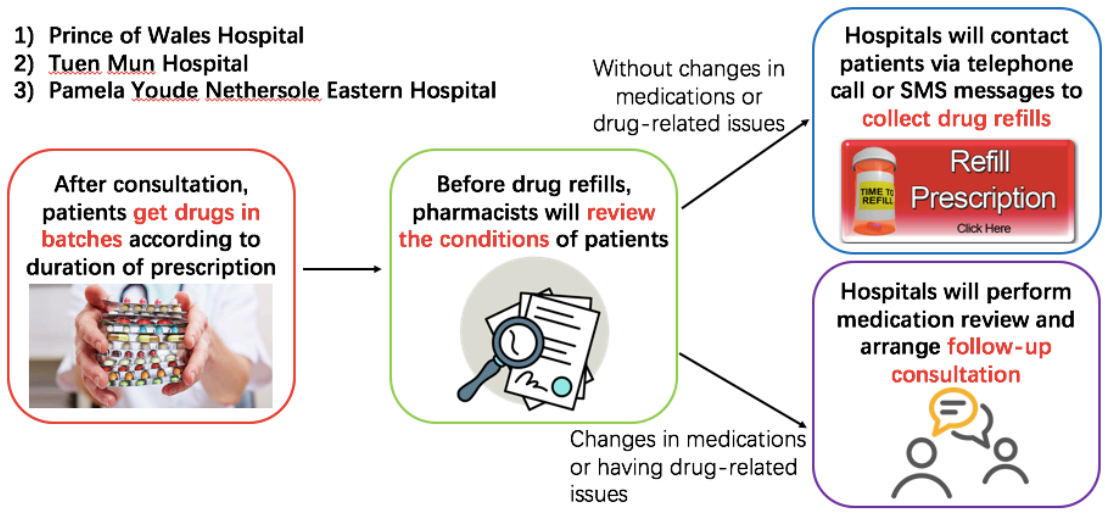

Figure 2. e Fill workflow in HK

The major difficulty for HA to run the e Fill service comes from the lack of human resources. Healthcare professionals such as pharmacists and nurses are in huge shortage so there is hardly any spare manpower to be responsible for this project. Therefore, it demonstrates a need for our company to help HA.

2.3 HK General Outpatient Clinic Public Private Partnership Programme

In fact, the public sector in Hong Kong actually wants to promote the collaboration between public hospitals and private healthcare providers. In 2014, HA launched a General Outpatient Clinic Public Private Partnership (PPP) programme and this programme has now covered all 18 districts.[15] The aim of this programme is to provide choices to enrolled patients for receiving primary care services from the private sector so that patients can have more access to primary healthcare services in the community. As a result, it can relieve the demand and burden for HA general outpatient clinics (GOPC) services. Also, the PPP programme promotes the concept of family doctors and fosters the development of Electronic Health Record Sharing System (eHRSS), which

will be investigated later.[15]

The target patient groups of PPP programme are those attending the HA GOPC for more than 12 months, with hypertension and/or diabetes mellitus being clinically stable.[15] Eligible patients with interest can select a private doctor participating in the PPP programme as their family doctor. They have to sign enrollment forms for the PPP programme and eHRSS so that their health records can be shared between HA and their family doctor. After enrolling in the programme, participating patients can receive the same consultation services from the private family doctor as at HA GOPC. They can obtain some general drugs for their chronic and episodic illnesses. The private family doctor can prescribe drugs covered in the HA "List of Special Drugs" without extra charges to the patient if the patient has fulfilled a certain medical indication to justify the use of that medication.[15] If the patient needs some further relevant investigations for their health such as a Chest X ray, the family doctor can refer the case back to HA for follow up. This demonstrates a close rapport between HA and private healthcare providers in providing primary care services to patients.

One of the most appealing factors for patients to join this programme is the cost. Participating patients can receive up to 10 subsidized visits per year when they visit the family doctor, covering both chronic and spasmodic illnesses. They are only required to pay $50 per consultation which is the same as HA GOPC services.[15] For Comprehensive Social Security Assistance (CSSA) recipients or Waiver Certificate Holder, HA will even bear this $50 cost for them.[16] Compare with this $50 consultation service charge, visiting a private doctor would cost at least $200 if a patient does not join the PPP programme. It provides a huge motive for eligible patients to enroll in the PPP programme. For private healthcare providers, participating private doctors can

receive a maximum of $3,408 per year for each patient of up to 10 consultations in a reimbursement basis. This amount has included the $50 consultation fee per visit paid by the patient, with the remainder paid by HA.[17] The whole process of PPP programme workflow is summarized in Figure 3.

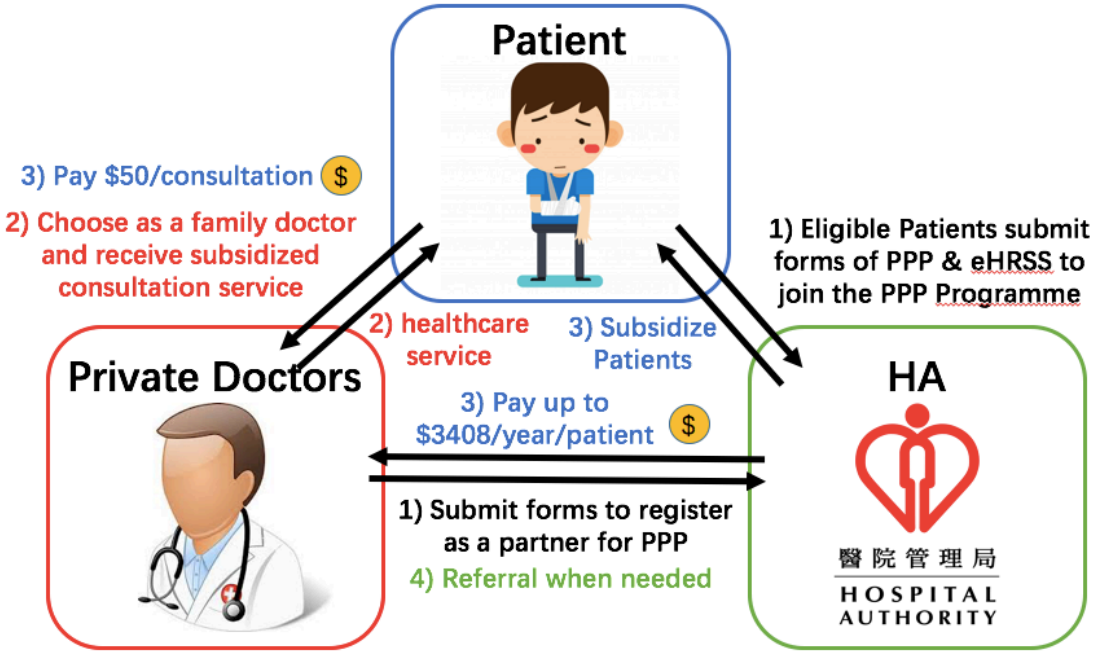

Figure 3. PPP programme workflow

This shows that HA is now promoting the collaboration between public and private sectors, as well as encouraging the use of private healthcare services to alleviate its manpower burden by offering monetary support.

2.4 HK Electronic Health Record Sharing System

Besides monetary support, HA also provides technical support to facilitate the cooperation of public and private sectors. As aforementioned, patients enrolled in PPP programme has to provide consent for Electronic Health Record Sharing System

(eHRSS). The eHRSS provides “an information infrastructure for healthcare providers in both the public and private healthcare sectors, with informed and express consent of the patient and proper authorization for access to the System, to share the electronic health record (eHR) they keep on the patient with other healthcare providers and to retrieve the eHR of the patient shared by other healthcare providers”.[18] To make it simpler, eHRSS is a platform that allows healthcare providers in public and private sectors to share health records of patients with given consent.

To facilitate an effective and secure sharing of patient information, there are 4 key concepts of eHR sharing:[19]

1) voluntary participation
2) patient under care
3) need to know basis
4) eHR sharable data

Firstly, “voluntary participation” means the registration is completely voluntary. Secondly, “patient under care” means healthcare providers can only access eHR data of patients who are under their care. Thirdly, “need to know basis” means only the health data that are useful for the purpose of providing healthcare services to patients should be accessed. Lastly, “eHR sharable data” means only information within the eHR sharable scope will be shared.[19] The scope of eHR sharable data includes 9 types of health information, which mainly include personal identification and demographic data, medications, appointments and clinical summary etc.[19] This shows that HA is willing to share a wide range of eHR with the private sector if the healthcare providers can obey the above 4 key concepts.

There are 7 types of healthcare providers that are allowed to register for eHRSS. They

are specified entities that involve a registered healthcare professional to perform healthcare services at a premises in Hong Kong such as a dental clinic or a medical clinic.[19] "Healthcare professionals" are defined by Cap.625 in law and there are currently 10 types of healthcare professionals that are authorized to access to eHR of patients, including doctors, pharmacists and nurses.[20] These healthcare professionals have to apply to the healthcare providers that they working for in order to access for patients' eHR. With the patients' consent, healthcare professionals can access, upload and share the eHR of patients with other healthcare professionals in eHRSS. The process of eHRSS registration is summarized in Figure 4.

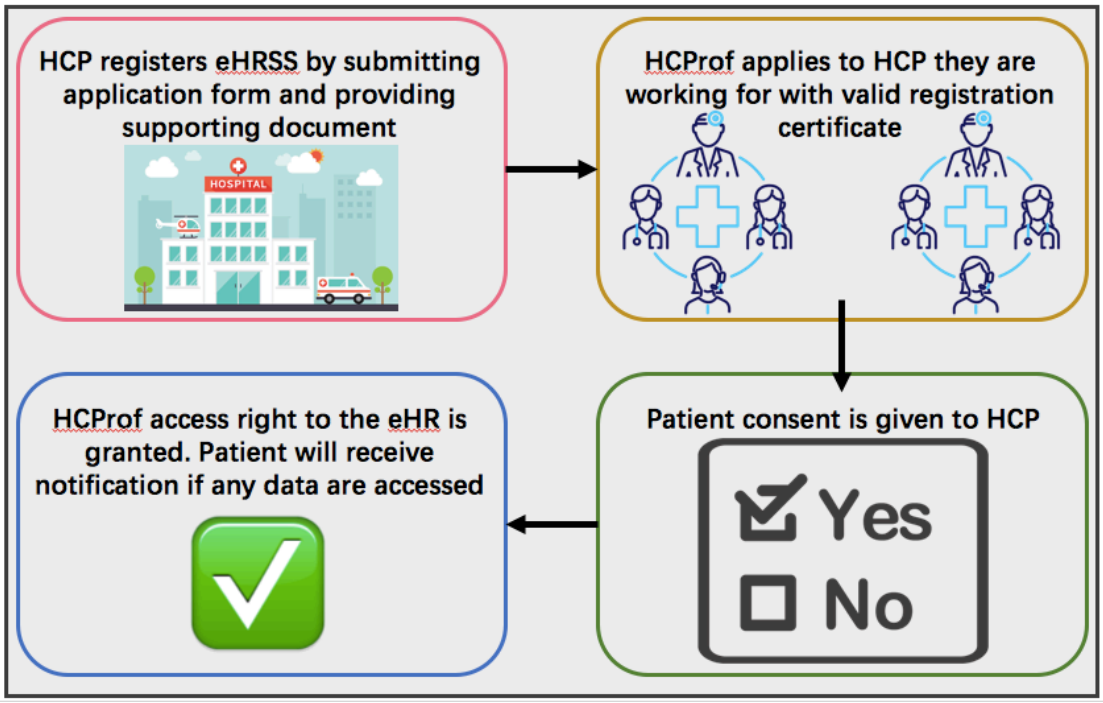

Figure 4. eHRSS registration workflow

All the above reveal the fact that HA actually permits the use of patients' health data outside the HA hospitals. Our company, primarily consists of doctors, pharmacists and nurses, should all be allowed to access patient data if we apply for eHRSS. Furthermore,

the data that our company needs, such as personal identification, medications and appointment records, are all allowed for access in eHRSS. Therefore, security concern on patient information is not a major problem as long as our company can obey the above 4 key concepts in accessing patient eHR. All these possibly indicate a high feasibility for running our company to collaborate with HA.

3. Questionnaire Results

To find out the seriousness of the drug adherence problem in HK and the public level of interest in subscribing our services, we have conducted a questionnaire interview with 50 people including 35 males and 15 females at the North District Hospital, with the age distribution between 50 to 70. During the interview, 73% of the responders are diagnosed with long term diseases and they are currently undertaking long term medications. More than half of the responders are taking 4 to 9 medications and around one third are on 1 to 4 medications. One significant figure shows that over 85% of the responders have forgotten to take the medications under the doctor or pharmacist regimen, over 76% of them have had questions regarding the medications' dosage, side effects and administration time etc. and yet 64% of the responders have remained quiet when they encounter medication related problems and only 11% will go and seek medical professional help. Moreover, over 69% of the responders have at least one smartphone and 64% of them are interested in the service of Mediclink.

To conclude, the result reveals that drug adherence is a significant problem, especially among the long term disease patients. Some patients have encountered problems regarding the drug regime but failed to find out a solution to their questions. Technology is developing rapidly, at least two thirds of the patients are using a smartphone, which allows us to continue on our plan to establish an online platform, and we are thrilled to find out over half of the responders are interested in subscribing our services.

問卷調查

題目：改善病人服藥依從性

你好，我們是一群中文大學的學生，現正為一個針對改善病人服藥依從性的服務進行問卷調查，以評估服務是否可行。

1.	性別：	男			女		
2.	年齡：	20-29	30-39	40-49	50-59	60-69	70＋
3.	您有沒有患有長期病患？	有			沒有		
4.	您有沒有需要服食長期藥物？	有			沒有		
5.	您正在服食多少種長期藥物？	1-4	5-9	10-14	14<		
6.	您有沒有試過忘記按時服藥 ？	有			沒有		
7.	您有沒有對正在服用中的藥物出現過疑問？例如 ：副作用、劑量、用藥時間等	有			沒有		
8.	您對藥物產生疑問後會向誰請教？	醫生	互聯網	朋友	家人	沒有人	
9.	您有擁有至少一部智能電話嗎？	有			沒有		
10.	你對 mediclink 的服務有興趣嗎？	沒有興趣	一般	有興趣	極大興趣		

Figure 5. Questionnaire Questions

4. Our Services

4.1 Our initial target groups

One of our initial target groups is elderly that aged above 65 years old. It is common for elderly patients to have poor memory so they may easily forget to take their medication on time. Another target group for our company is patients with chronic diseases including Hypertension, Dyslipidemia, Diabetes, Gout, Osteoporosis, Seizure disorders and Chronic Obstructive Pulmonary Diseases (COPD). Taking long term medications, these patients usually have a lower adherence rate because they may think it is troublesome to take several pills a day or they may feel completely "healthy" even without taking any pills. Also, we would like to choose these patients as they usually have lower adherence rates according to previous studies.

At this early stage, we would like to target patients from the New Territories East HA cluster because this cluster is the second largest cluster in terms of bed number which could be positively related to the coverage of patients.[21] We would like to start at the Prince of Wales Hospital and our target number of patients would be 3500. In the future, we could extend our service to other clusters and to other patients.

4.2 Process Flow

For the Mediclink project, we would like to collaborate with medical organizations. The first choice would be Hospital Authority (HA). The reason is that HA is the largest medical organization in Hong Kong nowadays. It covers all areas or districts in Hong Kong, and most elderly and patients with chronic diseases would go to HA hospitals

for follow up and get drugs. As a result, we believe collaborating with HA would bring the largest benefits to the society. On the other hand, compliance problems could bring large waste of resources and cost as mentioned. Collaboration with Mediclink project could reduce the cost of HA.

According to our plan, HA would help us introduce and explain our service to our target patients when they follow up. Then, interested patients would pay to subscribe our service. Our designated price is $78 per month, considering our questionnaire results and budget plan. The price could go lower if patients subscribe for a longer plan. They would also need to a sign a consensus, letting us to obtain their medical records. After getting the consensus, we would obtain their medical records through HA database. We would develop our own systems and database, to store and organize those records. There are medical professionals, including nurses and pharmacists, responsible for supervising, analysing and handling the medical information. They would also provide training to other employees with less medical knowledge. The system allows us to check their record, and know when patients would go follow up or take the drugs.

There would be a phone call and App reminder 1 day before follow up. If any patients are late to follow up or get drugs, we would call them the next day to check their drug adherence, and ask why they do not go to follow up. This allows us to understand the reasons behind. Some patients may just forget to go but some of them may think the treatment they are having is useless, or they are having misunderstanding on the drugs, so they do not adhere and stop the treatment on their own. This can be disastrous to their health. Apart from understanding the concerns of each patient, we would try to provide patient care, including providing health information of their disease, and drug usage and safety, which doctors may not tell them since they are too busy in the

hospital.

We would also try to develop a mobile application for subscribed patients and their family members. There can be a reminder on follow up through the App. There is also some basic health information, such as health lifestyle education and tutorial about using an inhaler etc. Patients and family members can use the password to check the dispensing sheet, discharge summary and follow up date. There can be AI system for basic enquiries too. For more complicated enquiries, patients can call us and there would be medical professionals answering their questions. Regarding more details and the user interface of the apps, it would be introduced in the later section.

All data and information we collect would be sent back to HA. These include the adherence situation of each patient, and any reasons behind the non adherence. As HA have more resources and a more detailed record on the patient, they can provide further support to better help these patients. The process workflow of our company is summarized in Figure 6.

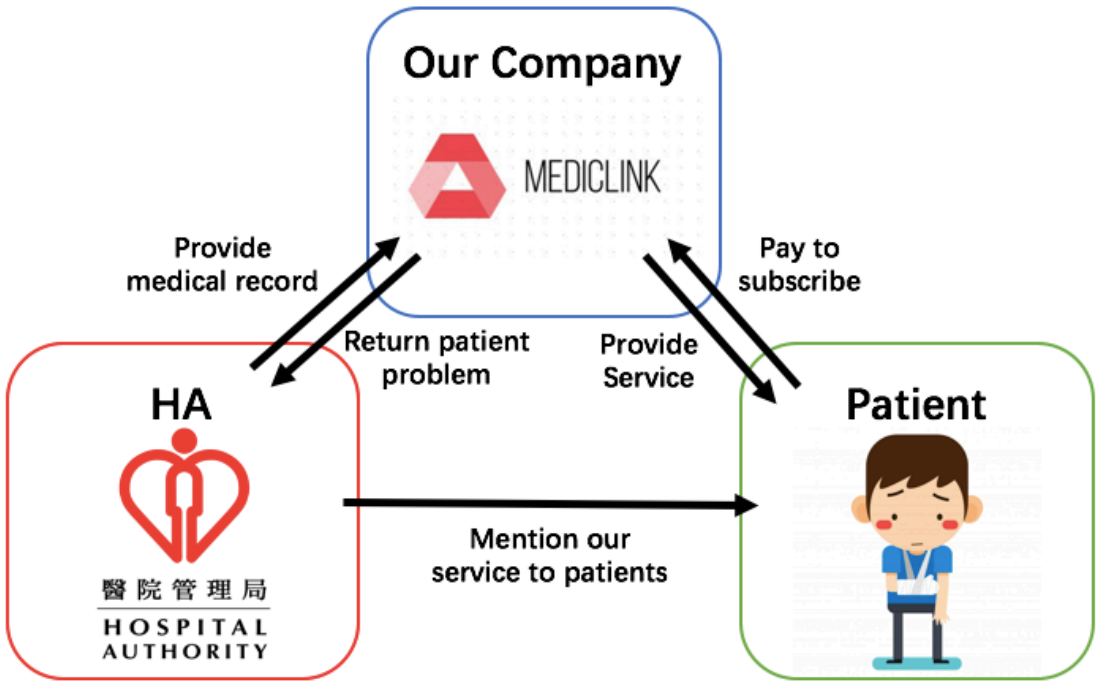

Figure 6. Workflow of our company

5. Mobile Apps

The Mediclink App is a well designed program which is tailor make for elderly who are not familiar to using technological devices. All the functions in the App, including drug reminder and health information aim to promote the drug adherence for elderly and those who are suffering from chronic diseases. All the features in the App are designed as simple as possible in order to reduce the difficulties faced by elderly when using. The following section will focus on introducing the features and functions of the Mediclink App.

Since many information in the App, including ID number and current medication, are personal privacy, which is confidential and only allows authorized assess. As a result, it is required for client to set a password during registration and the password is only allowed to tell another one authorized personnel, such as spouses or children, in order to ensure the safety of client's personal privacy. Only by entering the password correctly, clients can assess the data in the App. If the client unfortunately exposed his password to the public, he can change it whenever he wants by simply clicking the button "Change Password" and providing some data, including ID number. Once the client identity has been confirmed, he is allowed to reset a new one. Even if the client has forgotten his password, he could find it back by proofing his identify in the same way as "Change Password". Client could call our 24 hour hotline to seek help if he has any troubles in logging in the app or changing password.

Figure 7. Login Page

After entering the correct password, the main panel shows in the photo as illustrated on Figure 8. Each icon represents a unique function which will be explained in the following paragraphs. The uppers box on the left side gives clients' various health related information, such as suggested diet for DM patient or what kind of exercise is suitable for patient with hypertension. By understanding these information, clients could gain better control towards their diseases and establish a heathier lifestyle. The lower box shows the record of medication that the client has taken that day. Client could confirm whether they have taken the drug or not so as to reduce the risk of taking the wrong drug or taking double dosage.

Figure 8. Main Panel

The "person" like icon on the top right corner is the basic information of the client. It shows client's name, age, address, phone number and so on. The most important function in this panel is at the bottom, which is the up coming follow up record. All the record will be shown in detail, including date, time, the related hospitals and the specialty of the clinic. Client can ensure the correct venue and time of the follow up and attend on time. Regular follow up will greatly improve client's disease control and avoid disease deterioration.

Figure 9. Personal information

The most special and unique feature of our app is the "Drug Reminder", which only focuses on improving the drug adherence among the elderly and patients with chronic

diseases. A variety of information related to the medications that they are taking is included in the reminder. There are three methods in total for them to view their medication records.

The first method is a “Whole Day Drug Plan”. All the medications that the client needs to take in a day are listed in this plan according to the time to be taken. The client will have a clear understanding of the drug taking time, which will reduce the risk of missing dosage. Not only the time, but also the dosage required is also listed on the plan in order to avoid undesirable side effects from taking wrong dosage.

The second method is the “Drug Categories”. Since many elderly are facing the issue of polypharmacy, it is hard for them to remember the use of every single drug. Therefore, Mediclink App categorizes all their medications regarding their mechanisms of action. For example, for a patient who is suffering from Hypertension and DM, the App will categorize the drug into “anti hypertensive drug”, “hypoglycemic agent” and “anti coagulants”. Elderly is capable to understand what kind of drug they are taking through reading this reminder, which will benefit on their drug use as well as the disease control.

The final method is the “Drug related Knowledge”. Many drugs which treat chronic diseases will lead to undesirable side effects such as vomiting, nausea and headache. Inappropriate drug taking may even cause life threatening outcomes, including shock and massive bleeding. Thus, in order to reduce the risk as well as to improve the drug effects, important information is included in this record. For example, for client taking anti hypertensive drugs, we suggest them to withhold a dose when their blood pressure are lower than normal range, which is 120/80. On the other hand, we will

also give advice to our clients to promote drug effects, such as taking GI medication, Pantoloc, before having breakfast. Viewing this record will give a thorough understanding of the medication to the elderly, which will bring unmeasurable benefits to them.

Figure 10. Drug Reminder

The third green telephone icon is our 24 hours hotline. Clients can assess to the hotline by simply clicking the icon. Our well trained operators will try their best to solve the problems raised by our clients. Client is free to ask any questions, including drug related questions, APP related questions, and diseases related questions. Simple questions will be answered by our operators directly. However, for advanced issues such as diseases related questions, operators will transfer the phone call to specialists, including nurses, pharmacists or even our doctor. This measure ensures all clients' concerns could be answer as soon as possible with no mistakes.

The fourth ‘Question Mark’ icon in red color is the Q&A section. We have uploaded the answers of some common questions which are frequently asked by clients. In order to simplify the searching process, the answers are categorized in different categories, including medication related, function related and lifestyle related. These answers will help to minimize the misunderstanding regarding to patient’s knowledge towards medications and helps them to get used to the method of using the App, as well as to help them to establish a health life style. Moreover, it also helps to reduce the workload of our operators.

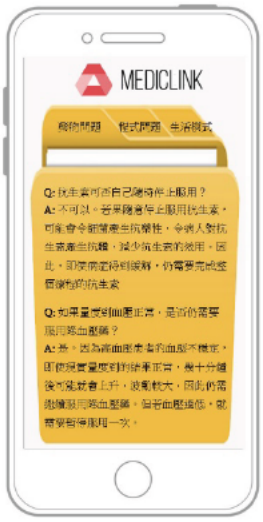

Figure 11. Q&A

The final blue robot icon is the AI reply system, which is similar to the Q&A section. Clients can type out their questions and our Ai will find the appropriate answers by searching the key words and reply automatically. This function dispenses the troublesome process of searching answers in the Q&A section and ensure client can get the correct answer they desired.

Figure 12. AI Reply

6. Creativity

Creativity is a way of bringing imaginative ideas into reality, breaking the regulate rules and original boundary to create something new. Innovation requires four types of essential elements, including Collaboration, Ideation, Implementation and Value Creation.[22]

6.1 Collaboration

How to collaborate with different parties is essential to get things done but teaming up with others is not necessarily easy as conflicts and competitions may appear. For Mediclink, we aim to provide a list of medical service to improve the awareness of the public drug adherence problem, treatment adherence and improvement to all kind of medication related issues, hence, to decrease the chance for re hospitalization. To achieve these goals, we will have to be authorized to access a medical database that contains the patient's medical record. Hospital Authority is responsible for managing all the government hospitals and institutes in Hong Kong, so collaboration with HA allows us to access to the board information regarding the patient's medical file. After gaining access to the medical record with the approval of our clients who have received treatment under HA, we can then further analyze the data and provide the unique service that is most suitable for them. This partnership will be a multi beneficial relationship as not only can we access data from their medical database, allowing us to closely analyze the existing data for each of our client, but also can relieve the financial burden and manpower of HA. Hence, more resources can be focused into other aspects in terms of establishing a better medical system.

6.2 Ideation & Implementation

Ideation is how our idea can help our organization to stand out. After reviewing all the different services including both HK and US, we came up with a couple of new functions and improvements that are more suitable for HK situation.

We will establish an online platform that allows online access for client and their authorized family members to review their medical record including upcoming follow up dates and medical diagnosis through the mobile App. The record will be clearly stated providing all treatments and follow up information ensuring patients do not miss out any of them. Moreover, the platform will allow online access to client's current medication including dosage, frequency and duration, make certain they take their medical correctly.

The complexity of medication can cause confusion to patients, leading to the mistakenly usage of drugs. Medication must be taken correctly according to Five Rights – the right patient, the right drug, the right dose, the right route, and the right time. The platform contains an AI chat room for basic medical enquiries, e.g. usage of medication devices and potential drug side effects, safeguarding the safety of our clients and the effectiveness of the medication. The AI chat room for medication enquiries is an innovative function as there is currently no mobile Apps available in the market can provide this function for patients. Comments and recommendations from the patients regarding the medication and service will be sent back to HA for records and improvement.

6.3 Value

Our company values are to benefit our client's health condition by guiding them to take medication correctly and punctually. Improve drug compliance will lead to a better treatment outcome and reduce chances for hospital readmission, giving a direct positive impact to HA by reducing both the medical expenses and workload of the health care professional.

7. Entrepreneurship

According to Luis Protales, entrepreneurship is “the process that is carried out by an entrepreneur, with the interest of satisfying a need innovatively, taking advantage of present resources and opportunities in a society or context”.[23] We would like to divide entrepreneurship into four aspects according to this definition, which is entrepreneur, identify the need and opportunity, change in using resources and value creation.

7.1 Entrepreneur

Firstly, entrepreneur is someone who starts a business and takes the risk. Taking risk is necessary in order to gain something. In our plan, we are also taking risks. We would like to collaborate with HA, but they may not accept our plan. We are also uncertain whether different stakeholders in Hong Kong, including medical professionals, government and the public, would support our plan or not.

7.2 Need identification

Secondly, about the need and opportunity, there is low adherence for elderly and patients with chronic disease. Low adherence would cost a lot as mentioned above. Besides, HA hospitals are having lack of manpower, due to a higher burden in public hospitals nowadays. Although they have already had an e Fill service for raising adherence, the number of patients that can be benefitted are limited. We can help handle this problem. Since the public is relying on smartphones now, we would link our plan to smartphones, including the mobile App.

7.3 Change in using resources

Thirdly, we try to change the ways in using old resources. Medical professionals in Hong Kong usually serve the public in a very traditional way. Our plan is a new one for them. This provides another channel for medical professionals to provide their care and services to the public. This is a newer way to handle the adherence problem.

7.4 Value creation

Lastly, our plan has benefits to the society leads to value creation. For patients, this could probably remind their adherence, maximizing their treatment outcome and improving their health. For HA hospitals, the plan relieves their financial burden. For healthcare professionals, the plan can relieve their stress indirectly by relieving burden on healthcare system.

8. Value of our enterprise

The core value of our enterprise is to provide benefits to the society so as to bring up some solutions to the current social issues, especially in the medical field. The target of project Mediclink mainly focuses in providing help to three criteria, including elderly or patients with chronic diseases, such as DM, hypertension; public hospitals which is managed by the Hospital Authority; as well as the economic system in Hong Kong.

8.1 Benefits to patients

First of all, as a medical enterprise, we aim to improve clients' general health conditions and help them gain better control of their diseases. As a result, the hospitalization rate, the A&E visit rate will be significantly decreased, and their quality of life will improve in the meantime.

Through our services, we plan to remind our clients to take their medications through SMS or the mobile App. Moreover, we will examine clients' knowledge toward the medications they are taking to ensure there is no misunderstanding in drug therapy. Once drug adherence is achieved, not only the frequencies of attack caused by the chronic disease is decreased, but also the signs and symptoms are relieved.[24] Thus, they are less likely to visit to A&E or being hospitalized. A US research related to DM patients has revealed the relationship between drug adherence and hospitalization rate. Each patient who participated in the research was prescribed with 3 different hypertensive drugs. If a patient is adherent to all 3 drugs strictly with correct time, frequencies and routine, the hospitalization rate has dropped significantly from 12.77% to 7.21% comparing to other patients with no adherence. On the other hand,

the A&E visiting rate decreases from 3.5% to 2.53% and the death rate drops for 12%.[25] It is obvious that the higher the medication adherence, the lower the rate of hospitalization and A&E visit. Meanwhile, patients' quality of life is closely associated with drug adherence. With better disease control, patient is less disturbed by the signs and symptoms of the disease. For example, DM patient will not feel dizziness when there is a good control over the blood glucose level. Therefore, they are capable to perform activity of daily living independently. Furthermore, reduction in hospital admission rate can also relieve the anxiety and depression caused by unfamiliar environment and repeated routine.[26] The effect of disease towards quality of life can be minimized. To conclude, our enterprise plans to promote clients' health condition through a series of benefits follow by the improvement of their drug adherence.

8.2 Benefits to public hospitals under HA

As for the advantages to the public hospitals under the Hospital Authority, our enterprise aims to help them achieve a higher quality of medical services so as to maximize the amount of patients to be benefitted. The health care system in Hong Kong is now mainly facing four challenges. Firstly, the manpower shortage is becoming more and more severe recently. The ratio of doctors to the population is 1.9 to 1000, which is unsatisfactory comparing the suggested ratio 3.4 to 1000.[27] Moreover, a nurse is responsible to provide medical services to 11 patients at daytime and 24 at night, which is much higher than the international standard 1 to 6.[28] Shortage in manpower directly increases the workload of health care professionals and leads to a rise in the happening of medical accidents. On the other hand, the bed occupation rate in public hospitals is extremely high. According to the government statistics, the occupation rate in PWH, UCH and TMH is 132%, 128% 123% respectively, which means the wards in

public hospitals had already saturated.[29] Last but not least, the waiting time in A&E and specialty clinics is perennially long for patient in emergency. In fact, the average waiting time in public hospitals is approximately 2 hours. However, some non urgent patients have to suffer from 8 hours of waiting before examined by doctors.[30] Meanwhile, in the light of the HA, new patients have to wait for 195 weeks, which is almost 4 years in order to access to orthopedic clinics in the Hong Kong Island west cluster.[31] The same situation happens in other specialties, such as eyes, ENT or medicine for all around HK. Many patients miss the best time for treatment due to prolonged waiting time.

Through our scheme Mediclink, once patient's drug adherence got improved, they are able to achieve better disease control. They are less likely to visit A&E if the sign and symptoms are relieved. Thus, the number of patients who are sent to the wards is significantly decreased, which will directly mitigate the burden on the health care professionals. Not only nurses and doctors are capable to put more effort on each patient in the hospitals, but also can they take care of more patients who are in more serious conditions. In the meantime, the risk of medical accidents will decease significantly if the workload of first lined staff is no longer unreasonable. In conclusion, our enterprise and HA hospitals are in reciprocal relationship. We believe that more patients are going to be benefited after the scheme is put in practice.

8.3 Benefits to the society

Last but not least, our enterprise aims to reduce the unnecessary expenditures costed by patient's drug non adherence in order to relieve the burden of health care cost on the society. The expenses costed by drug nonadherence, which is always ignored by

the HK government, is actually unexpectedly high. These costs mainly come from 5 regions, including pharmacy cost, out patient cost, in patient cost, hospitalization cost and A&E cost. In the US, the annual costings of medication non adherence ranges from US$100 to U$290 billion, while it is €1.25 billion in Europe and approximately $7 billion in Australia. Another US research has discovered the annual expenditure of drug non adherence from different chronic disease groups. Among all diseases, patients who suffer from osteoporosis has the greatest cost which is US$40000 per year. Other common chronic diseases, such as DM or cardiac disorders costs US$10000 and US$6000 respectively.[32]

Our enterprise aims to reduce the unnecessary cost by promoting drug adherence in geriatric patient through SMS system of Mediclink. Better drug adherence leads to better disease control which reduces the frequencies of A&E visits as well as hospitalization. Moreover, the intervals of follow up in GOPC will be expanded. Thus, the health care expenditure can be saved and reused in the medical system so as to promote the quality of service as well as to benefit more patients who have more urgent demands in medical services

Our values are closely associated and they form a positive cycle which affects each other. Once patients' drug adherence is improved, they are less likely to visit public hospitals, which not only reduce the workload of health care professionals, but also relieve the burden of medical expenses. Therefore, the public medical system can provide better services and treatment to help more patients who are in need. We believe that more and more people will be benefitted when Mediclink is launched.

9. Financial Plan & Personnel

Innovation and personal capability are always major forces in creating a new business. However, no matter how brilliant your idea is, we could not ignore one more underlying element in forming a business. If ideas, say, are dreams of all entrepreneurs, finance would be the inescapable reality. We all have to think about financial constraints, for example, how do we execute fund raising, what can we do to minimize and control our costs and what potential financial risks we would encounter. All these events should be brought into consideration. In the following, financial plan will be reported in several parts, namely fund raising, income & pricing strategy, income statement analysis, management & working team, budget analysis and balance sheet analysis.

9.1 Fund raising

Fund raising is vitally important in the sense that if the entrepreneur does not own sufficient fund to run the business. Through raising fund, it is also a way to diversify business risks when your idea is approved and recognized by experienced investors. In terms of funding, the sources are divided into three ways, firstly, personal fund, for example, personal savings and financial support from friends and family; secondly, venture and assistance funds; lastly, private funds, for example, loans from private banks. Ideally, we would like to maintain 30% level of total fund that is from personal channels. The remaining 70% would be from venture and assistance which will be introduced in the next part. While for private funding, it is regarded as a back up option. Reasonings behind this will be explained in the next section as well. It is notable that personal fund will be distributed into monetary holding and petty cash for daily

operations. Each of us will contribute $100,000 into the firm. So, our business largely relies on the venture funds and the remaining is contributed by personal capital.

In this part, the choices of venture funds will be introduced. At the same time, explanations will be given for the optional sources of fund. In the first place, our prime target fund is Innovation and Technology Fund for Better Living.[33] This fund is well fitted to our business for its initial purpose in promoting a better living. It can provide 90% of the total eligible costs of the project or $5,000,000, whichever is the less. As second priority, some mini venture funds are taken into account, for example, Cyberport Creative Micro Fund and Youth Business Hong Kong.[34,35] These micro funds are featured with low barrier of entry and quick in approval process though it cannot provide adequate money for the business. In these two examples, they can only assist $100,000 in each scheme. It is noticed that the fund is interest free and other related start up services will be arranged, for instance, a shared workplace, free business consulting and networking services and marketing. Optionally, private loans will be in use if we are short of money in operating the business. Unless the whole business is facing pressing financial difficulties, we will not consider private loans due to high interest rate and short repayment interval. Therefore, private bank loans would be a back up option in financing. On the other hand, to lift up the success rate in fund application, a detailed business and budget plan will be written. To summarize the direction of fund raising, our company would mainly depend on, in order of preference, venture fund, micro venture fund, personal savings and lastly private loans financially.

Figure 13. Innovation and Technology Fund For Better Living

9.2 Income & Pricing strategy

In terms of income & pricing strategy, our primary income is the service fee collected from patients. Our target patient number is optimally around 3500 in the first stage from the Prince of Wales Hospital and the lowest acceptable range is between 2450 to 3150. We would try to set the price in a low level since the target group of our business is senior people and people with chronic diseases. Consumers could choose to buy or not to buy the service on their own wills. The service will be divided into different plans based on time intervals, for example, by month, by quarter and by year. The cheapest one on average would be the annual plan. Our price plan is decided. For monthly fee, it would be $78. As followed, quarterly fee is $208, $398 half yearly and $778 annually. After launching the service, we will offer a first month free trial for all interested customers. Undoubtedly, profitability of the service is limited at the beginning and promotion to other groups of people will be done in the next stage in order to obtain more diverse income. It is also possible that our company will launch more other medical services in the future. However, at the beginning, it is more beneficial to focus on medication adherence service first.

9.3 Income statement analysis

For income statement analysis, it is about source of income and expenditure. Besides, after further analysis, we can determine the profitability of our company by utilizing company's data. For revenue part, it is estimated that we will have positive profit at the level of 70%, 80%, 90% and 100%. At 100% level, it is the most optimal number of customers we want, which is 3500. And at 90% ,80% and 70% level, with simple calculation, it would be 3150, 2800 and 2450 respectively. If our expected customer level is actually at 60% or below, we will receive negative profit and we will suffer a loss. Looking into expenditure, it is clearly that the largest part of our expenditure is salary. We need to spend around $1,500,000 on salary annually. The following is rent which is $240,000. It is also worth to see that we will lose $234,000 in the first month in the most optimal level of customer and so on due to the first month free trial activities. We believe that it is useful to hold such campaign to attract attention and spread out our service to the targeted market. On the other hand, the average value of 194 which is used in the statement comes from the sum of the product of ratio of 55%, 25%, 15% and 5% and its correlated prices, $78, $208, $398 and $778 respectively. For further explanation, 55% means there are 55% of our target customers subscribed our service and so on. Lastly, financial analysis is executed by using the company's data. We calculate pre tax profit ratio, total return on investment, return on capital and post tax profit ratio for reference. Income statement is a good presentation of a company's situation on operation in terms of cost and revenue and it can reflect its profitability. It is necessary to be used in order to persuade investors to invest in our company and also a preparation for us to estimate and ensure how much effort should we put to increase average value and the number of customers so that we will not suffer from losses. It is also useful for us to pay more attention on the expenditure to see whether

it is necessary to cut costs on several aspects.

MEDICLINK							
損益表				佔用比率			
	100%	90%	80%	70%	60%	50%	40%
營運能力							
目標顧客人數	3,500	3,150	2,800	2,450	2,100	1,750	1,400
平均價值	194	194	194	194	194	194	194
平均營運流轉次數	5.5	5.5	5.5	5.5	5.5	5.5	5.5
首月免費	273,000	245,700	218,400	191,100	163,800	136,500	109,200
預算營業總額	3,461,500	3,115,350	2,769,200	2,423,050	2,076,900	1,730,750	1,384,600
毛利	3,500,500	3,115,350	2,769,200	2,423,050	2,076,900	1,730,750	1,384,600
減：費用							
經常性支出							
薪津	1,464,000	1,464,000	1,464,000	1,464,000	1,464,000	1,464,000	1,464,000
租金	240,000	240,000	240,000	240,000	240,000	240,000	240,000
水電	15,000	15,000	15,000	15,000	15,000	15,000	15,000
辦公室消耗品	12,000	12,000	12,000	12,000	12,000	12,000	12,000
其他主要費用							
地產經紀佣金	20,000	20,000	20,000	20,000	20,000	20,000	20,000
辦公室設備	100,000	100,000	100,000	100,000	100,000	100,000	100,000
宣傳及其他費用	44,000	44,000	44,000	44,000	44,000	44,000	44,000
APP相關費用	20,000	20,000	20,000	20,000	20,000	20,000	20,000
法律費用	18,000	18,000	18,000	18,000	18,000	18,000	18,000
商業登記及公司註冊	7,500	7,500	7,500	7,500	7,500	7,500	7,500
折舊	40,000	40,000	40,000	40,000	40,000	40,000	40,000
總支出	1,980,500	1,980,500	1,980,500	1,980,500	1,980,500	1,980,500	1,980,500
利息及稅前淨利	1,481,000	1,134,850	788,700	442,550	96,400	-249,750	-595,900
利息	200,000	200,000	200,000	200,000	200,000	200,000	200,000
稅前淨利	1,281,000	934,850	588,700	242,550	-103,600	-449,750	-795,900
稅項	553,658	442,579	331,501	220,423	137,172	81,633	26,094
稅後淨利	727,342	492,271	257,199	22,127	-240,772	-531,383	-821,994
整體盈利能力計量	100%	90%	80%	70%	60%	50%	40%
淨利率	0.427849	0.364277	0.284811	0.182642	0.046415	-0.1443	-0.430377
總投資回報	0.207812	0.140649	0.073485	0.006322	-0.06879	-0.15182	-0.234855
資本回報	0.118518	0.086122	0.048574	0.00454	-0.05441	-0.13457	-0.236739
利率	0.210123	0.158015	0.092878	0.009132	-0.11593	-0.30702	-0.593669

Figure 14. Mediclink's Income Statement

9.4 Management & Working team

In this part, management and working team of our company will be released which is uncovered in the background report. Firstly, to satisfy the requirement of a regular medical service company, we need to hire a consultant doctor and his salary is variable which is dependent on the number of consulting services he provided. We estimate that the consulting fee we need to pay is around $5,000 per month. If there are any questions that we are unable to answer or our customers have desperate needs to

seek for more professional opinions, we will call the doctor for help. Instead, we won't hire a full time doctor due to high cost and it is not necessary to do so.

Secondly, our company will have two pharmacists and two nurses on the spot who are our group members majoring in pharmacy and nursing. Another member who majors in economics will serve as an accountant. Apart from running the business, they also need to act as telephone operators when they are free from their positions. The two pharmacists and nurses will also be responsible for providing professional medical trainings to other staffs, for example, the intake rule and side effect of common or daily drugs that are taken by chronically ill patients and elderly.

Thirdly, it would be better to hire an IT staff as well. He will be mainly in charge of the management of our system and app operation and maintenance. It is estimated that his expected salary is $17,000 per month. Next, two office workers and two telephone receptionists will be employed and their expected salary is $15,000 per month. Lastly, the company will outsource legal works to law firm in the market in order to curb costs. In our case, outsourcing legal works is more efficient than employing a lawyer. The company will only have high demand for legal services in the first year, for example, coping with patient's sensitive and personal information, and the demand will fall sharply in the next year. So, it would be better to choose outsourcing in this position. It is expected that our company will spend around $15,000 to $20,000 per month in the first year for the legal service. In the following year, it is hope that we could reduce the cost on manual setting under the assumption that our scale remains the same.

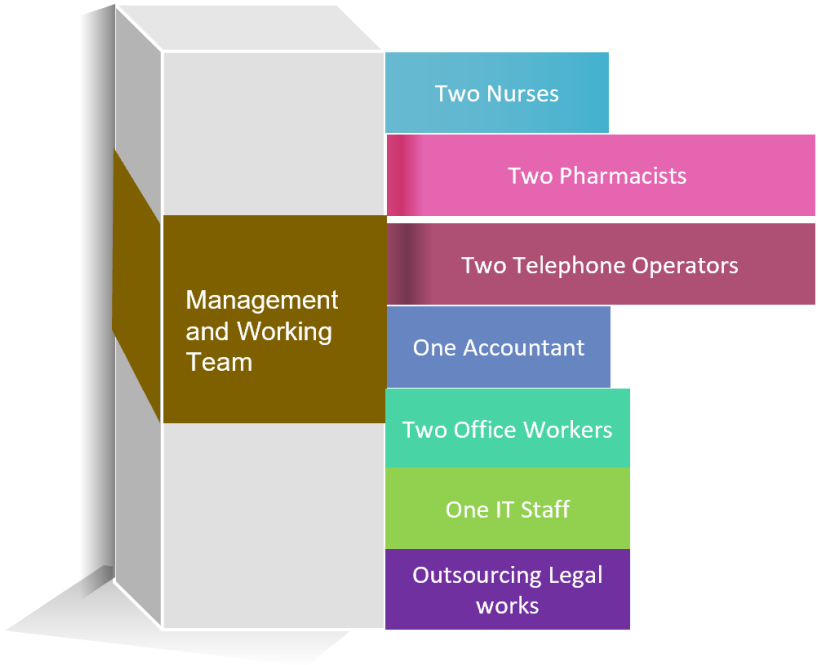

Figure 15. Mediclink's Management and Working Team

9.5 Budget analysis

For budget analysis, there is an amendment compared to the background report in which our total spending and the fund we need in the first month was underestimated. In the first month, it is expected that we need a total of $679,375. The two largest initial costs are the decoration and the personalized app which cost $100,000 and $190,000 respectively.[36] It is also notable that the recurrent expenditure for operational use is $176,875 each month. It means that even the company earns $0, it still needs to spend $176,875 for the business continuation.

創業首月所需資金		
		折舊年期
作固定及長期資產用途		
裝修	100, 000	5
APP	190, 000	
辦公室設備	50, 000	5
租賃及其他長期按金	45, 000	
電腦	50, 000	5
	435, 000	
其他主要費用		
地產經紀佣金	20, 000	
商業登記及公司註冊	7, 500	
顧問費用	30, 000	
宣傳及其他費用	10, 000	
	502, 500	
作營運用途（折舊除外）		
經常開支（一個月）	176, 875	
創業所需資金	679, 375	

Figure 16. Predicted Budget in the first month

At the same time, payoff periods are calculated based on the information from budget amount and the post tax profit. At 100% level of post tax profit, the business can attain breakeven in 0.885 year. And at 90% and 80% level, the company can reach breakeven in 1.28 years and 2.29 years respectively. However, at 70% level, it shows that 10.94 years are needed which is not acceptable, and the situation would be much worse at levels below 70%. Consequently, the amount of profit determines the length of breakeven period. To increase the profit, it is of course the company needs to ensure a stable number of customers between acceptable level. As aforementioned, in the first year, it is hope that 3500 customers could be obtained and this is one of the chief targets of our business.

回本期							
	100%	90%	80%	70%	60%	50%	40%
創業所需資金	679,375	679,375	679,375	679,375	679,375	679,375	679,375
税收淨利	727,342	492,271	257,199	22,127	-240,772	-531,383	-821,994
折舊	40,000	40,000	40,000	40,000	40,000	40,000	40,000
	767,342	532,271	297,199	62,127	-200,772	-491,383	-781,994
回本期(年)	0.885361	1.27637	2.285926	10.935262	-3.38381	-1.38258	-0.868773

Figure 17. Predicted Payoff Period

9.6 Balance sheet analysis

Eventually, the last part of financial section is the balance sheet analysis. Balance sheet mainly reflects a company's ability to repay debt and list all the asset, liability and capital for checking, The two largest assets in the company are decoration and App, however, they are likely personalized. So, it is hard for resale and it cannot be used to repay loan. The company can only utilize the $500,000 contributed by the owners and a few assets to repay debt. The repayment ability of the company needs to be improved in the future. In the current stage, it is still capable for the company to use personal funds to repay the loan interest and fixed amount of principal each month.

	100%	90%	80%	70%	60%	50%	40%
固定及長期資產							
裝修	100,000	100,000	100,000	100,000	100,000	100,000	100,000
APP	190,000	190,000	190,000	190,000	190,000	190,000	190,000
辦公室設備	50,000	50,000	50,000	50,000	50,000	50,000	50,000
租賃及其他長期按金	45,000	45,000	45,000	45,000	45,000	45,000	45,000
電腦	50,000	50,000	50,000	50,000	50,000	50,000	50,000
	435,000	435,000	435,000	435,000	435,000	435,000	435,000
流動資產							
現金	500,000	500,000	500,000	500,000	500,000	500,000	500,000
銀行結存	2,320,625	2,088,563	1,856,500	1,624,438	1,392,375	1,160,313	928,250
	2,820,625	2,588,563	2,356,500	2,124,438	1,892,375	1,660,313	1,428,250
	3,255,625	3,023,563	2,791,500	2,559,438	2,327,375	2,095,313	1,863,250
流動負債							
應付稅款	553,658	442,579	331,501	220,423	137,172	81,633	26,094
長期負債							
創業基金	3,000,000	2700000	2400000	2100000	1800000	1500000	1200000
	3,553,658	3,142,579	2,731,501	2,320,423	1,937,172	1,581,633	1,226,094
營運資金	2,701,967	2,580,984	2,459,999	2,339,015	2,190,203	2,013,680	1,837,156
淨資產總額	3,136,967	3,015,984	2,894,999	2,774,015	2,625,203	2,448,680	2,272,156
資金來源							
資本	500,000	500,000	500,000	500,000	500,000	500,000	500,000
貸款	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000
主要資產負債指標							
流動比率/現金比率	1.164979	1.457367	1.945695	2.926192	4.702126	7.901216	24.71833
槓桿比率	0.956338	0.9947	1.03627	1.081465	1.142769	1.22515	1.320332
資產負債率	1.091544	1.039363	0.978507	0.906614	0.832342	0.754843	0.658041

Figure 18. Mediclink's Balance Sheet

The company has four prime targets in the future. Firstly, we think the market can be a vital channel for more diverse income. It is expected that the company will try to expand the market to other hospitals and even private hospitals. We also would like to have more cooperations with social enterprises and NGOs. Secondly, our company would control the costs in a more prudent way. Reducing unnecessary costs is important for business survival. At the same time, we will increase cost on necessary position, especially costs on promotion and marketing. It is paramount to let more people getting in touch with our service and this is the only way to attract more potential customers to subscribe our service. Thirdly, to achieve market segmentation and price discrimination, the company will try to provide more diverse and personalized services, for example, 24 hours service for VIP users. Lastly, if possible, the company will try to lower the price for patients who come from poor family. Simultaneously, we would see if it is feasible to have our services included in the public medical subsidization scheme.

10. Problem Solving

While we were doing the project, we faced mainly 2 problems. Firstly, there is an uncertainty on patients' acceptance on our idea. This is a rather new service in Hong Kong so patients may not accept the idea and not willing to pay to subscribe our service. Besides, we do not know how much they are willing to pay even they think our service is good. To solve this, we have conducted a pilot study, having questionnaires on some elderly patients. Through the study, we can better understand their needs and interests in our service, so we can contemplate a good fee that is acceptable to patients, and also sufficient to run our business successfully.

Another problem is how to start up the business. Our project design is a large scale plan, which requires a huge amount of money and resources to run it. Our solution is to look up for different fundings and their successful examples. We try to modify our plan to better meet the eligible criteria. For example, more technology (the app) is added to the plan for the application of "Innovation and Technology Fund For Better Living". This raises our chance to get funding so that we can start up our company more easily.

11. Learn from best project

Learning from best projects can surely enlighten us. At the beginning, we had difficulties in determining the service that our company would provide. We came up with some ideas but none of them were creative enough nor required a social need. Then we tried to collect ideas from some best projects in Wu Yee Sun College website. From one of the best projects in 2018/19 named 健康・自檢 , the idea of their company came from a learning trip to Sri Lanka where they observed some social and health related problems from the local people.[37] This reminded us that we could try to observe the society and see what the society actually needs. Also, as our group is formed mainly by students from the medical field, we could make use of this advantage. We have done a lot of medical research and discovered the low adherence rate of patients in Hong Kong. Eventually, we identified this social need and set this as the topic for our project.

After we came up with our topic, we would like to develop some innovative services for our company. As one of our target patients is the elderly, we initially adopted only the most conventional way to remind them to have drug refill, that is, to use phone call and SMS. However, from another best project in 2018/19 named "HOPE: Help Our Precious Elderly", they promoted the use of mobile App in the elderly.[38] This provides us with a complementary way to serve our elderly patients. We contemplated the possibility of using mobile Apps in the elderly and eventually generated a number of creative functions that our mobile App can do to help the elderly.

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