The Internet Hospital plus Drug Delivery□A Bundled Approach for Health Management during the COVID-19 Pandemic

Liang Ding, Qiuru She, Fengxian Chen, Zitong Chen, Meifang Jiang, Huasi Huang, Yujin Li, Chaofeng Liao

Submitted to: Journal of Medical Internet Research
on: April 29, 2020

Table of Contents

Original Manuscript **4**
Supplementary Files **17**
Figures **18**
Figure 1 ..... **19**
Figure 2 ..... **20**
Figure 3 ..... **21**
Figure 4 ..... **22**
Figure 5 ..... **23**

The Internet Hospital plus Drug Delivery?A Bundled Approach for Health Management during the COVID-19 Pandemic

Liang DingPhD, ; Qiuru SheBS, ; Fengxian ChenBS, ; Zitong ChenBS, ; Meifang JiangBS, ; Huasi HuangBS, ; Yujin LiMS, ; Chaofeng LiaoBS,

Corresponding Author:
Chaofeng LiaoBS,
Phone: +8618926480093
Email: bayylcf@126.com

Abstract

Background: The widely access of internet has boosted the emergence of online hospitals. A new service mode to outpatient called internet hospital plus drug delivery(IHDD) has been developed in China, but too little are known about this platform.

Objective: The aim of this study is to investigate the characteristics, acceptance and initial effects of IHDD during the outbreak of COVID-19 in a tertiary hospital of south China.

Methods: The total amount of online prescription and detail information during the first two work resumption months were obtained. The patients' gender, age, residence, departments, time of prescription, payment, drug delivery region were included in the analysis.

Results: A total of 1380 prescriptions were made between March 2nd and April 20th, 2020. The largest group of patients were the middle-age ones(49.3%), followed by the youth(41.5%). 39.4% of the patients chose to get the medicine by self-pick up, while 60.6% of the patients preferred to get their medicine by drug delivery service. The top five online prescription departments were infectious diseases (41.4%) , nephrology (19.1%), endocrinology (10.5%), angiocardiopathy(7.8%) and neurology(3%). For the 836 delivered prescriptions, 440(52.6%) were sent to the Guangdong province (including 363 to Shenzhen), 396(47.4%) were sent to other provinces in China.

Conclusions: The IHDD mode has been proved to be efficient and convenient for various types of patients during the crisis. Although offline visit are essential when the patients are in severe conditions, IHDD can help to relieve pressure on hospitals by reduce the mild case flow rate. Further effort need to be made to improve the quality and acceptance of IHDD, as well as regulations to standardize the management of this novel mode.

(JMIR Preprints 29/04/2020:19678)
DOI: https://doi.org/10.2196/preprints.19678

Preprint Settings

1) Would you like to publish your submitted manuscript as preprint?

✓ **Please make my preprint PDF available to anyone at any time (recommended).**
Please make my preprint PDF available only to logged-in users; I understand that my title and abstract will remain visible to all users.
Only make the preprint title and abstract visible.
No, I do not wish to publish my submitted manuscript as a preprint.

2) If accepted for publication in a JMIR journal, would you like the PDF to be visible to the public?

✓ **Yes, please make my accepted manuscript PDF available to anyone at any time (Recommended).**
Yes, but please make my accepted manuscript PDF available only to logged-in users; I understand that the title and abstract will remain v
Yes, but only make the title and abstract visible (see Important note, above). I understand that if I later pay to participate in <a href="http

Original Manuscript

The Internet Hospital plus Drug Delivery: A Bundled Approach for Health Management during the COVID-19 Pandemic

Liang Ding[1,*],PhD; Qiuru She[2,*],BS; Fengxian Chen[2],BS; ZiTong Chen[1,2],BS; Meifang Jiang[1,2],BS; Huasi Huang[2], BS; Yujin Li[1,2], MS; Chaofeng Liao [1,2,#] BS

[1] Clinical Trial and Research Center, People's Hospital of Baoan Shenzhen, Shenzhen, Guangdong, 518101, PR China

[2] Department of Pharmacy, People's Hospital of Baoan Shenzhen, Shenzhen, Guangdong, 518101, PR China

*These authors contribute equally to this work

#Corresponding Author

Chaofeng Liao

Department of Pharmacy

People's Hospital of Baoan Shenzhen,

118 Longjing 2nd Road

Shenzhen, Guangdong, 518101, PR China

Phone: 86 18926480093

Email: bayylcf@126.com

Abstract

Background: The widely access of internet has boosted the emergence of online hospitals. A new service mode to outpatient called internet hospital plus drug delivery(IHDD) has been developed in China, but too little are known about this platform.

Objective: The aim of this study is to investigate the characteristics, acceptance and initial effects of IHDD during the outbreak of COVID-19 in a tertiary hospital of south China.

Methods: The total amount of online prescription and detail information during the first two work resumption months were obtained. The patients' gender, age, residence, departments, time of prescription, payment, drug delivery region were included in the analysis.

Results: A total of 1380 prescriptions were made between March 2nd and April 20th, 2020. The largest group of patients were the middle-age ones(49.3%), followed by the youth(41.5%). 39.4% of the patients chose to get the medicine by self-pick up, while 60.6% of the patients preferred to get their medicine by drug delivery service. The top five online prescription departments were infectious diseases (41.4%) , nephrology (19.1%), endocrinology (10.5%), angiocardiopathy(7.8%) and neurology(3%). For the 836 delivered prescriptions, 440(52.6%) were sent to the Guangdong province (including 363 to Shenzhen), 396(47.4%) were sent to other provinces in China.

Conclusions: The IHDD mode has been proved to be efficient and convenient for various types of patients during the crisis. Although offline visit are essential when the patients are in severe conditions, IHDD can help to relieve pressure on hospitals by reduce the mild case flow rate. Further effort need to be made to improve the quality and acceptance of IHDD, as well as regulations to standardize the management of this novel mode.

Keywords: Internet Hospital; Drug Delivery; Internet Hospital plus Drug Delivery (IHDD); Health Management; COVID-19

Introduction

Background

As the third largest country in the world, China has 34 provincial regions, over 1.4 billion population, but only 10 million licensed (assistant) physicians (2.2 for every 1000 people) by the end of 2019 (Data from the National Bureau of Statistics of China). Since the severe acute respiratory syndrome(SARS) epidemic in 2003, the Chinese government has been rebuilding the three-tier health care system in the past 17 years. Nowadays, the health-care delivery system in China consists of community health centres (CHCs), secondary and tertiary hospitals in the urban areas; village clinics, township health centres (THCs), and county hospitals in the rural areas. CHCs, village clinics and THCs are considered as the core primary-care providers which are expected to provide affordable first contact care while secondary and tertiary care facilities provide specialist referral services[1]. However, with no gatekeeping in the primary health-care system, patients can freely choose their provider at any health facility. Although many disorders could be treated in primary-care providers with convenient access and at a relatively low price, many patients are unwilling to go to these providers owing to their lack of confidence in the health professionals' skills and the quality of health care provided. They tend to go to high-level hospitals even for mild symptoms, which effectively overcrowding those hospitals[2]. On the other hand, skilled doctors are unwilling to work at the community level and in remote rural areas for financial and professional reasons. These two problems have led to countless transprovincial patients, resulting in numerous extra economic and time costs[3].

The rapid increase of the internet users (22.7% to 59.6% of the population, 2008 to 2018)[4] offer the Chinese government a new perspective to address the healthcare problems. On Oct 25, 2014, the first officially approved so-called "internet hospital" went online in Guandong province. At the very beginning, the internet hospital consisted of four clinics operated by doctors from the Second People's Hospital of Guangdong Province, an online platform operated by a medical technology company, and a network of medical consulting facilities based in clinics in rural villages, community health centres, and large pharmacy chain stores[3]. The inchoate platform usually required onsite

equipment (computers, cameras, speakers and cable network). The patients needed to go to a medical consultation facility near their home and meet through the internet with the doctor based in the top-level hospital of the big city. With the development of smart phones and tablet computers, and the ever-increasing popularity of mobile internet communication, a mode of mobile health (mHealth) care had came into the view of public. mHealth allows patients to access information, assessments, and treatments in a timely manner. In addition, doctors could build another way to connect with their patients, practice without geographical limitation[5]. Therefore, extra costs of healthcare, such as those associated with travel, time, and doctor consultations, can be dramatically reduced.

During the outbreak of COVID-19[6], the Chinese government had adopted a series of administrative measures to stop the spread of the epidemic[7], including requiring the domestic internet hospitals to vigorously carry out remote medical services[8]. Although the convenience and ubiquity of internet hospital, especial the mHealth, makes it a promising avenue through which to overcome geographical limitation between patients and doctors, there is still a “social distance” barrier between the patients and their prescription medicines. In order to solve this problem, many hospitals intend to cooperate with express companies to build a partnership for drug delivery. This bundled approach could offer an omnichannel solution that can help people on their path to urgently needed health care and medicine during the epidemic.

Objective

To explore the advantages of internet hospital plus drug delivery(IHDD) mode in health management under public health emergency circumstances, we analyzed the online outpatients’ prescriptions of the People’s Hospital of Baoan Shenzhen in Shenzhen City, Guangdong. Data of the first two work resumption months were collected to reveal the characteristics, acceptance and initial effects of the new bundled approach.

Methods

Data Sources

The total amount of online prescription and detail information were obtained automatically from the HIS(Hospital Information System, DTHealth, V7.0) of the People’s Hospital of Baoan Shenzhen. Data from March 2nd to April 20th were collected. The patients’ gender, age, residence, departments, time of prescription, payment, drug delivery region were included in the analysis. GraphPad Prism 8.0.2 (GraphPad Software, La Jolla, CA) was used to summarize and analyze the data.

Ethics Statement

Ethic approval was obtained from the medical research ethics committee of the People's Hospital of Baoan Shenzhen before the start of the study.

Results

The work flow of the internet hospital

Figure 1 showed the online consultation work flow of the internet hospital. The patients needed to choose the department and doctor by self-assessment. There was no prescription option for the picture/text counseling patients. For the online clinic , a confirmation would be sent by messages once the online clinic appointment was made. Another message would be sent to the patients 3 minutes before the video counseling begin to remind them to open the mini program in time. The doctor could initiate a video counseling with the patient and make an online prescription if necessary. A prescription might be needed based on the diagnosis of the patient. At the payment step, the patient could choose to pick up the medicine at the hospital's pharmacy or to deliver the medicine to an assigned place.

Amount and payment of online prescriptions

A total of 1380 prescriptions were made between March 2nd and April 20th, 2020. The weekly amount and payment of the prescriptions were summarized in Figure 2. There was an incremental usage of the online prescriptions. The amount and payment of the 7th week significantly increased, 12.3 and 5.8 times respectively, when compared with the 1st week.

Patient Characteristics

There was no sex difference among the prescribed patients (Table 1).The patients were divided into four groups by their ages. The largest group of patients were the middle-age ones(49.3%), followed by the youth(41.5%). 65.7% of the patients were local residence, 5.6% were from Guandong cities other than Shenzhen, 28.7% were from other provinces of China. 39.4% of the patients chose to get the medicine by self-pick up, while 60.6% of the patients preferred to get their medicine by drug delivery service.

Table 1 Baseline Characteristics of patients

Characteristic	Number of Patients (total=1380)	%
Sex		

Male		693	50.2
Female		687	49.8
Age (years)			
Median		38	
Range		1-93	
	1-17	12	0.9
	18-35	573	41.5
	36-59	680	49.3
	≥60	115	8.3
Residence			
Local (Shenzhen City)		907	65.7
Other Cities in Guangdong		77	5.6
Other Provinces		396	28.7
Access to Medicine			
Delivery		836	60.6%
Self-Pick Up		544	39.4%

Distribution of online prescription

The top five online prescription departments were infectious diseases (572, 41.4%) , nephrology (264, 19.1%), endocrinology (145, 10.5%), angiocardiopathy(107, 7.8%) and neurology(42, 3%) (Figure 3). 836(60.6%) of the prescriptions were delivered, 544(39.4%) were picked up by the patients at the hospital pharmacy. Most of the patients with infectious disease and neurology chose drug delivery service while most of the patients with other disease preferred to pick up the medicine by themselves (Figure 4).

Drug delivery details of online prescription

For the 836 delivered prescriptions, 440(52.6%) were sent to the Guangdong province (including 363 to Shenzhen), 396(47.4%) were sent to other provinces in China. Among the out-of-province deliveries, the top 10 were sent to Heilongjiang, Hubei, Guangxi, Shandong, Jiangsu, Hunan, Shanxi, Henan, Anhui and Jiangxi (Table 2). Most of them were located in the northeast, eastern and central part of China(Figure 5 and Table 2). The top 10 delivered medicines were also listed in Table 3. Most of the medicines were used to treat infectious or chronic disease, which was consistent with the Distribution of online prescription findings.

Table 2. Out-of-province delivery details (base on geographical regions of China)

Regions	Number of Patients (total=396)	%
Northeast	107	27.0
Eastern	102	25.8
Central	82	20.7
Southern	35	8.8

Northwest	35	8.8
Northern	21	5.3
Southwest	14	3.5
Top 10 Province		
Heilongjiang	94	23.7
Hubei	36	9.1
Guangxi	33	8.3
Shandong	27	6.8
Jiangsu	24	6.1
Hunan	24	6.1
Shanxi	24	6.1
Henan	22	5.6
Anhui	14	3.5
Jiangxi	14	3.5

Table 3. Top 10 delivered medicines

Generic name	Formulation	Manufacture
Entecavir	Dispersible Table	ChiaTai TianQing
Metoprolol succinate	Sustained release tablet	AstraZeneca AB
Entecavir	Dispersible Table	Dawnrays
Metformin Hydrochloride	Table	Bristol-Myers Squibb
Tenofovir Disoproxil Fumarate	Table	Brilliant
Atorvastatin Calcium	Table	Pfizer
Nifedipine	Controlled release table	Bayer
Atorvastatin Calcium	Table	JiaLin
Mecobalamin	Table	Desano
Amlodipine Besylate	Table	Pfizer

Discussion

Principal Findings

We provided a basic investigation of the IHDD health care mode in a tertiary hospital of Shenzhen City during the first two work resumption months in 2020. The unbalanced distribution of medical resource and the urgent outbreak of COVID-19 [9, 10]promoted the extension and exploration of more convenient internet-based medical practice[11], especially in the well-developed southern and southeastern China where people have a higher recognition of internet medical behaviors[12]. Despite the advantages of internet hospitals, the access to the medicine was still an obstacle which stop people from using this platform. The traditional internet hospital required patients to go to the hospital or drugstore for medicines, which could cause more cross infections during the outbreak of epidemic. Especially for patients with minor symptoms or disabilities, the drug-pick-up process might increase their risk of acute infectious disease which could lead to severe deterioration of their

health situation. On the other hand, the out-of-city and out-of-province patients could have problems to get the exact prescription medicines as those medicines might be not available at their local hospitals and drugstores. In January 2019, the General Office of the State Council of the People's Republic of China issued the "National centralized drug purchasing (NCDP) and using pilot program", selected 11 cities in mainland China to carry out "4+7" City-Drug-Volume-Based-Purchasing pilot work[13]. As the "frontier" of Chinese reform and opening, Shenzhen was luckily to be one of the pilot 11 cities. Prescription medicines that were made by the doctors of Shenzhen's hospitals might have a more affordable price at the same quality. Therefore, the development of IHDD could enable ecdemic patients to get access to the online prescription medicine in a secured and convenient way.

The Chinese government had encouraged internet hospitals to join the epidemic prevention and control efforts of the COVID-19 outbreak[14]. On March 15, 2020, the first professional standard, "Specification for online consultation service for infectious disease epidemic situation," was published on the national group standard information platform of China, requiring that internet hospitals provide 24/7 online services in response to the epidemic[15]. The internet hospital of the People's Hospital of Baoan Shenzhen was officially online since March 2nd 2020. From the first day to April 20th, it had a total visiting of 8638, with an average of 176 per day. Of the 8638 visiting, 5877 were picture/text counseling, 2761 were online clinic video counseling (including 1381 non-prescribing counseling). Most of the picture/text counseling were prehospital services such as psychological counseling and medical education. The amount and payment of online prescriptions increased progressively from the 1st investigated week to the 7th one (Figure 2), which indicated increased acceptance of IHDD. The drop off of prescription of the 5th week might be a consequent of two reasons: Tomb-Sweeping holiday and a lack of antiviral medicine.

Most of the prescription patients were youth or middle-age, who were lack of onsite visiting time and had a higher recognition of new medical platforms. At present, the health authorities and governments are warning older people that they are at a higher risk of more serious and possible fatal illness associated with COVID-19. Moreover, the global recommendation for older populations includes social isolation, which involves staying at home and avoiding contact with other people for an extended period of time[16]. Our data showed that only 8.3% of the IHDD users were ≥60(Table 1). This might due to the difference in public acceptance. It usually takes longer for the older population to be acquainted with the operation of IHDD.

The "Stay at Home Order" constrained people from going outside, which enhanced the difficulty of health management, especially chronic disease management. Medical professionals of the hospitals

with fever clinics are required to participate in the COVID-19 prevention, control and treatment, which reduced their concentration on other diseases. In fact, the management of chronic disease has become a crucial issue in the cities with large break of the pandemic[17]. The largest number of our internet hospital prescription came from the department of infectious diseases, which including acute and chronic viral hepatitis, fatty liver, alcoholic hepatitis, drug-induced liver damage, autoimmune liver disease, genetic and metabolic liver disease. The second one was the department of nephrology, followed by the department of endocrinology. Patients with chronic liver disease, kidney disease, or diabetes could easily renew their prescriptions and get the medicine by IHDD. A notable finding was that most of the patients with infectious disease chose to get the medicine by delivery (96.3%) while most of the patients with other diseases chose to get the medicine by self-pick-up (Figure 4). This could be explained by special storage request of some medicines(like recombinant human erythropoietin for kidney disease and insulin for diabetes).

Established in 1984, the People’s Hospital of Baoan Shenzhen is also the Eighth People's Hospital of Shenzhen, the Shenzhen Baoan Affiliated Hospital of Southern Medical University and the Second Affiliated Hospital of Shenzhen University. It was recognized as a Grade-A Tertiary Hospital by the Guangdong Health Department in 2012. As an important component of health care providers in Shenzhen, the hospital holds a great reputation in both basic clinical practice and various clinical researches and trainings. The IHDD platform enabled patients all over the country to get access to its health professionals and quality assured medicine (Figure 5). The hospital even offered medical service to the patients in Wuhan, the epicentre of COVID-19. In fact, online prescription medicines that were delivered to Hubei Province accounted for the second largest number of all out-of-province deliveries (Table 2). The top 10 of IHDD delivered provinces were located in the northeast, eastern and central part of China. One of the reasons is that those are relatively economically developed regions and people in those area are highly educated which ensure them to have a better understanding of the benefit of IHDD.

The top 10 delivered medicine were used for the treatment of hepatitis, hypertension, hyperlipidemia, diabetes, climacteric symptoms, etc.(Table 3). This finding was consistent with the distribution of prescription departments. In fact, seven of the them were enrolled in the National Essential Drugs of China. Within these seven, three belonged to the "4+7" NCDP catalog. The affordability and quality of these medicines were guaranteed by the Government.

One of the concern of IHDD is the safety and security of the drug delivery. Therefore, express companies with high reputations were chosen by the hospitals as delivery partners. As the industry leader, SF express is the first logistics company that has been cooperating with both

pharmaceutical providers and hospitals. It has a long history of ambient temperature and cold chain medicine transport. Moreover, it offers real-time package tracking and zero-touch delivery. Once the patients placed the order, a tracking number will be sent by message to their cell phone. The processing information of the medicine will be updated and sent to the patients automatically. Couriers put the medicines into the customer assigned delivery lockers, which are usually near the patient's residence, so the patient can get them by a random cipher. This process could effectively cut off the route of virus transmission and save a lot of effort for the patients. At present, an advanced cooperation model is under exploration: generally, the pharmacist audited prescription will be sent to the manufacturer directly, and the medicines will be delivered from manufacturer's stock house. This will massively reduce the hospital drugstore pressure and save the transport expenses.

Future Prospects

Although offline visit are essential when the patients are in severe conditions, IHDD can help to relieve pressure on hospitals by reduce the mild case flow rate. To make a better use of IHDD during and after the epidemic, more efforts are needed. Simple and clear instructions are necessary to improve the acceptance of older audience. Financial supports like adding medical insurance to the payment methods can also promote the public's intention. The new hospital-manufacturer-patient transport model should be evaluated. Moreover, official regulations are required in terms of standardization the operational process and management of IHDD.

Conclusion

The pandemic of COVID-19 has clearly entered a new stage with rapid spread in countries outside China and becomes a global threat. This once-in-a-century pandemic might permanently change people's life style, especially the way of health management. In our study, the IHDD mode has been proved to be efficient and convenient for various types of patients during the crisis. The widespread existence of this platform can help to cut-off the person-to-person transmission during the pandemic and also weakened the infected risk of patients with chronic disease or disability.

Acknowledgements

This research was supported in part by the Key Laboratory of Emergency and Trauma (Hainan Medical University), Ministry of Education(KLET-201908); and Science, Technology and Innovation Commission of Shenzhen Municipality(731144920168). We gratefully acknowledge the help of the Information Technology Center, People's Hospital of Baoan Shenzhen. We also thank Mr.

Zhiyong Zhang for assistance with data collection.

Authors' Contributions

LD, QS and CL designed the research. QS, FC and YL searched relevant national and regional information. MJ and HH gathered data. ZC did the data analyses. LD wrote the first draft of the paper, with revisions from QS and CL. All authors contributed to revisions and approved the final version.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

References

1. Yip WC, Hsiao W, Meng Q, Chen W, Sun X. Realignment of incentives for health-care providers in China. Lancet. 2010 Mar 27;375(9720):1120-30. [doi: 10.1016/S0140-6736(10)60063-3.]
2. Wu D, Hesketh T, Shu H, Lian W, Tang W, Tian J. Description of an online hospital platform, China. Bull World Health Organ. 2019 Aug 1;97(8):578-9. [doi: 10.2471/BLT.18.226936.]
3. Tu J, Wang C, Wu S. The internet hospital: an emerging innovation in China. Lancet Glob Health. 2015 Aug;3(8):e445-e6. [doi: 10.1016/S2214-109X(15)00042-X.]
4. [Ministry of Industry and Information Technology of the People's Republic of China]. [Work dynamics]. URL:http://www.miit.gov.cn/n1146290/n1146402/index.html [accessed 2020-04-24] [WebCite Cache ID 1544604009399639]
5. Whitehead L, Seaton P. The Effectiveness of Self-Management Mobile Phone and Tablet Apps in Long-term Condition Management: A Systematic Review. J Med Internet Res. 2016 May 16;18(5):e97. [doi: 10.2196/jmir.4883.]
6. Sohrabi C, Alsafi Z, O'Neill N, Khan M, Kerwan A, Al-Jabir A, et al. World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). Int J Surg. 2020 Apr;76:71-6. [doi: 10.1016/j.ijsu.2020.02.034.]
7. Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72314 Cases From the Chinese Center for Disease Control and Prevention. JAMA. 2020 Feb 24. [doi: 10.1001/jama.2020.2648.]
8. Gong K, Xu Z, Cai Z, Chen Y, Wang Z. Internet Hospitals Help Prevent and Control the Epidemic of COVID-19 in China: Multicenter User Profiling Study. J Med Internet Res. 2020 Apr 14;22(4):e18908. [doi: 10.2196/18908.]
9. Mahase E. Covid-19: WHO declares pandemic because of "alarming levels" of spread, severity, and inaction. BMJ. 2020 Mar 12;368:m1036. [doi: 10.1136/bmj.m1036.]
10. Bedford J, Enria D, Giesecke J, Heymann DL, Ihekweazu C, Kobinger G, et al. COVID-19: towards controlling of a pandemic. Lancet. 2020 Mar 28;395(10229):1015-8.[doi: 10.1016/S0140-6736(20)30673-5.]
11. Tanne JH, Hayasaki E, Zastrow M, Pulla P, Smith P, Rada AG. Covid-19: how doctors and healthcare systems are tackling coronavirus worldwide. BMJ. 2020 Mar 18;368:m1090. [doi: 10.1136/bmj.m1090.]

12. Xie X, Zhou W, Lin L, Fan S, Lin F, Wang L, et al. Internet Hospitals in China: Cross-Sectional Survey. J Med Internet Res. 2017 Jul 4;19(7):e239. [doi: 10.2196/jmir.7854.]

13. Tang M, He J, Chen M, Cong L, Xu Y, Yang Y, et al. "4+7" city drug volume-based purchasing and using pilot program in China and its impact. Drug Discov Ther. 2019;13(6):365-9. [doi: 10.5582/ddt.2019.01093.]

14. National Health Commission of the People's Republic of China. 2020 Feb 07. Notice on accomplishing online consultation services in the epidemic prevention and control (Medical Letter 2020 No. 112) URL: http://www.nhc.gov.cn/yzygj/s7652m/202002/32c3e98988894fa18280e4543d2710c7.shtml

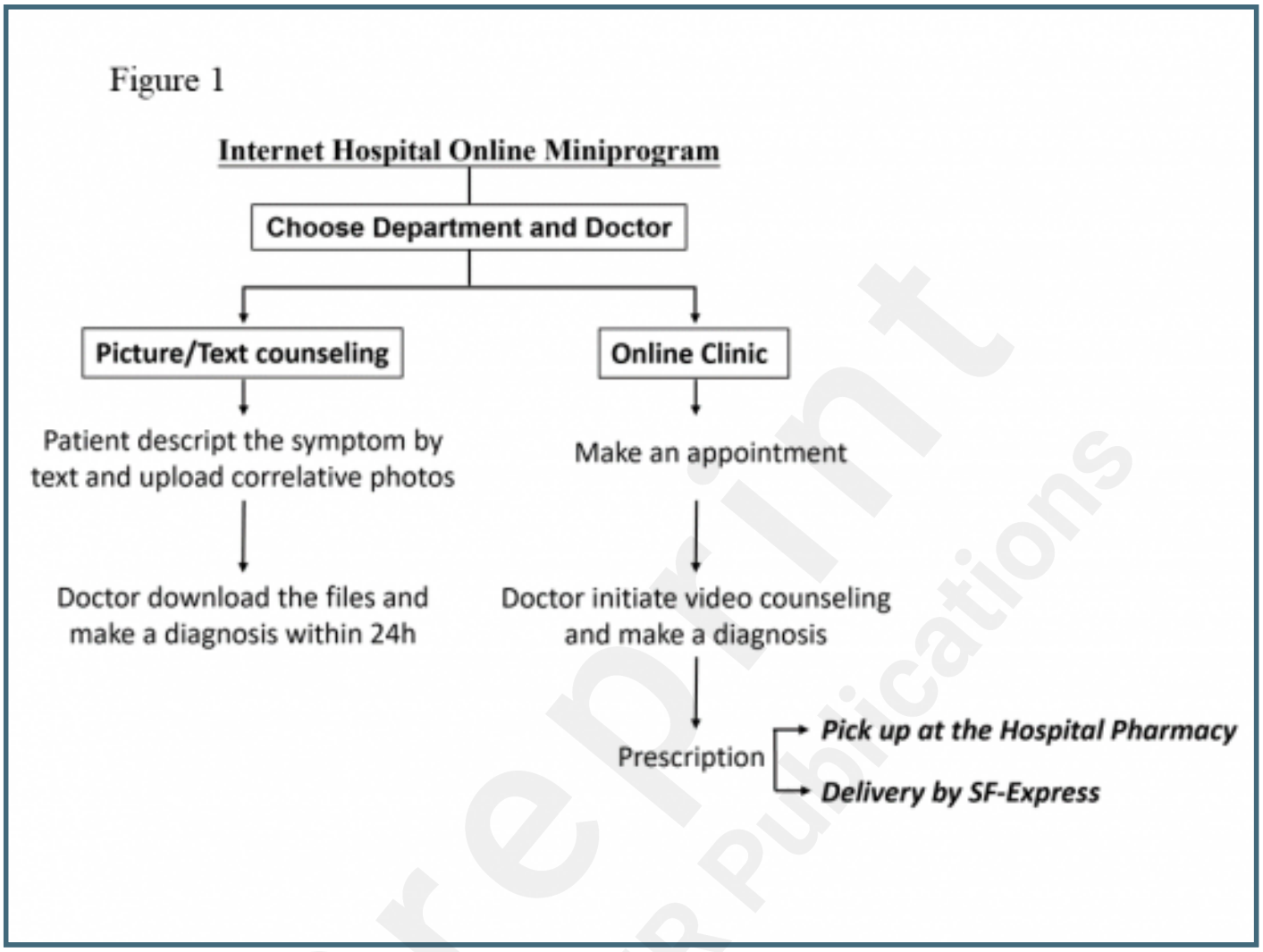
16. Brooke J, Jackson D. Older people and COVID-19: Isolation, risk and ageism. J Clin Nurs. 2020 Apr 2. [doi: 10.1111/jocn.15274.]

17. Shahid Z, Kalayanamitra R, McClafferty B, Kepko D, Ramgobin D, Patel R, et al. COVID-19 and Older Adults: What We Know. J Am Geriatr Soc. 2020 Apr 7. [doi: 10.1111/jgs.16472.]

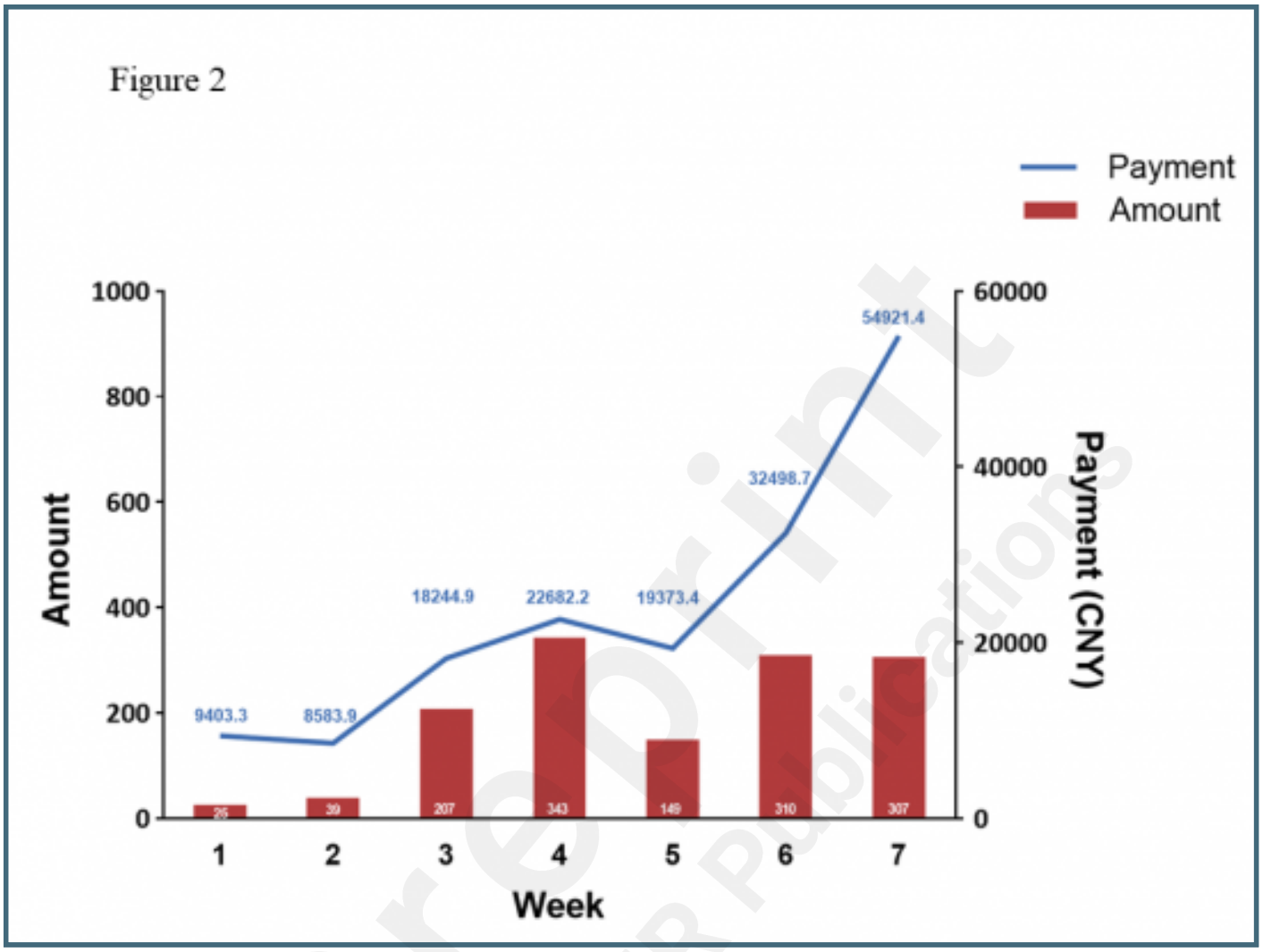
Supplementary Files

Figures

Online consultation work flow of the internet hospital.

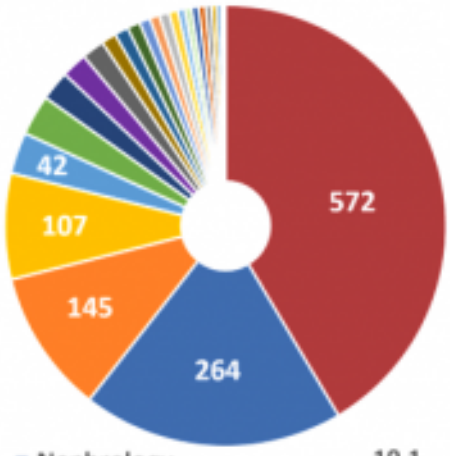


The weekly amount and payment of the prescriptions.



Department Distribution of online prescription.

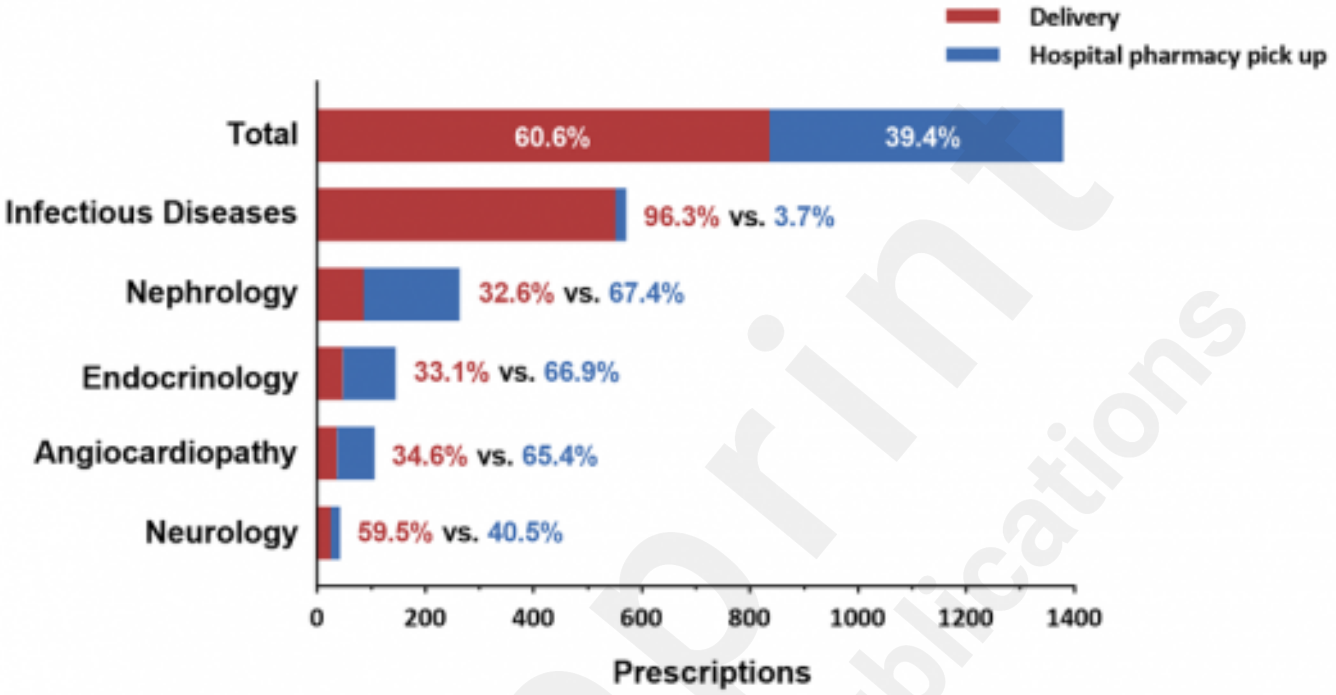
Figure 3



Infectious Diseases	41.4	Nephrology	19.1
Angiocardiopathy	7.8	Neurology	3.0
Emergency	2.2	Gynaecology	1.9
Hematopathology	1.1	Geriatric	1.0
Osteoporosis	0.8	Rheumatism and Immunity	0.7
Pediatric	0.7	Obstetrics	0.5
Pneumology	0.5	Gastroenterology	0.5
Gastrointestinal and Hepatobiliary Surgery	0.4	Neurosurgery	0.3
Urinary	0.1	Nutriology	0.1
Endocrinology	10.5		
CHCs	3.0		
Traditional Chinese Medicine	1.7		
Osteoarthro Surgery	0.9		
Rehabilitation	0.7		
Otorhinolaryngologic	0.5		
Dermatology	0.4		
Oncology	0.1		
Plastic Surgery	0.1		

Delivery/ Self Pick Up Preference of Online Prescription.

Figure 4



Region Distribution of the Delivered Prescription.