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Experience for epidemic prevention | Informatization helps with prevention and control of COVID-19

To implement the overall deployment on national, provincial and municipal prevention and control of COVID-19, remote medical platform was innovatively put into operation by Northern Jiangsu People's Hospital. Continuous optimization of the platform advances the epidemic screening and maximizes the supporting role of informatization in epidemic prevention and control.

1. Free online general and mental consultation clinics for febrile patients on Internet Hospital

Internet Hospital of Northern Jiangsu People's Hospital

The Internet Hospital was constructed on the ground of hospital entity. It completely covered the regular functions including online consultation, prescription and drug delivery. Apart from these, the Internet platform also gives permission to certification of digital license of medical staff and digital health cards of patients. The system combines online insurance card with the patient's ID card and makes it possible for online payment by medical insurance. It innovatively fulfilled the seamless linking between Internet Hospital and the platforms of hierarchical medical system. Online and offline businesses can be penetrated, permitting functions including the conversations between patients and doctors in Internet Hospital, appointments between primary and Internet Hospitals, reservations for examinations, hospital beds and operations. We created cloud outpatient



service, cloud consultation service, cloud ward round, cloud referral and other service scenarios based on Internet Hospital, which played a positive role in epidemic prevention and control.

Cloud clinic system supports unified scheduling by the hospital as well as independent scheduling by doctors themselves. Patients can register for medical services online via Wechat application by Northern Jiangsu People's Hospital. Doctors can accept and treat patients, conduct private consultation with patients, write medical records and prescribe on the same application. Afterwards, patients can pay for their fees by medical insurance without entity cards after the prescription being approved by pharmacists. Afterwards they can fetch their medicine from the hospital or through online distribution. Meanwhile, doctors can prescribe for medical tests or examinations online. On the other hand, patients may also accept examination as scheduled after paying for their expenses and check the results online as soon as they are released.

Free online general and mental consultation clinics for febrile patients on Internet Hospital

To avoid nosocomial cross infection and to effectively reduce psychological influence on the public, Internet Hospital system was continuously improved according to the requirement of superior department and the hospital, opened up free 24-hour physical and mental consultation clinics online to provide consultation service and psychological intervention for febrile patients. Doctors are required to provide online consultation using internet-connected computers in the cloud consulting room in the daytime and to use mobile Internet Hospital application at night. A total of 748 patients benefited from free online consultation from our hospital from January 27th, 2020 to February 10th, 2020. 44 specialties were established with over 600 doctors registered for referral consultation of common and chronic diseases. The link of Intelligence-assistant supplementary consultation of COVID-19 pneumonia in Jiangsu province was set up on the homepage of the Internet Hospital website, according to the unified deployment of the Provincial Health and Health Committee, to increase the therapeutic efficacy.

2. Network debugging of Jiangsu Remote Consultation System

To thoroughly implement the notice from Jiangsu Provincial Health and Health Committee, professionals were specially assigned to guarantee the network information. According to the requirements of superior departments,



Northern Jiangsu People's Hospital finished network debugging which is connected with the Provincial Remote Consultation Center, and guaranteed the stability and patency of the Internet, creating conditions for the provincial expert group to provide patients with remote services.

3. Establishment of Municipal Remote Consultation Platform for COVID-19

Northern Jiangsu People's Hospital is the largest general hospital in Yangzhou and the units to both group leader and deputy group leader in the municipal medical treatment expert group for COVID-19. To improve the work efficacy of the expert group and shorten the roundtrip time for the specialists, municipal remote consultation platforms were built in designated hospitals in Yangzhou (including Yangzhou Third People's Hospital, Jiangdu people's Hospital, Jiangdu Third People's Hospital, West District of Yizheng people's Hospital , Gaoyou people's Hospital, Baoying people's Hospital),based on the Internet Hospital Remote Consultation Center of our hospital.

The functions of municipal remote platform are included as follows:① Automatic collection of patients' data. Automatic collection of medical records, examinations, inspection reports and image data could be completed by using AI data searching engine technology.②Remote consultation. Experts are able to communicate with doctors from designated hospitals via audio and video, and can write down consultation opinions after checking for medical records, examinations, test reports and image data for the patients.

The designated hospitals of COVID-19 should submit consultation applications to Medical Administration Office of Municipal Health Committee every day by 12:00 a.m. and upload related data via remote consultation platform. Medical Administration Office will orderly arrange the municipal expert group to conduct one by one consultation from 4:00 p.m. Experts will issue consultation reports after checking for medical records, examinations, test reports and image data of the patients and communicating with his tube bed doctors form designated hospitals, which maximizes the efficacy of the expert group and improves the ability of primary medical institutions to deal with epidemic situation.

4. Forward movement of epidemic detection by optimizing information system

1)Improve and perfect the electronic medical record system of outpatient and emergency rooms, realizing the forward movement of epidemiological



history collection of all the outpatients. Epidemiological history was added to outpatient and emergency medical record templates in more than 10 categories of records, including first and subsequent visit records, pediatric records, obstetrics and gynecology specialty medical records, emergency medical records, etc. Emergency and outpatient service doctors **must** fill in epidemic history of patients in order to avoid missed diagnosis. Epidemiological history of outpatients will be shared hospital wide.

2)Improve and perfect the electronic inpatient certificates. Epidemiological history must be collected before hospitalization and added to electronic inpatient certificates. Doctors must check whether they have related exposure history, such as having been to epidemic areas, before issuing the electronic inpatient certificates. Epidemiological history of inpatients will be shared hospital wide.

3)Improve and perfect inpatient electronic medical records. Detailed information of inpatients' epidemiological history must be collected. Patients are supposed to sign **Medical Commitment during COVID-19 Outbreaks** while signing Informed Consent. They will later be recorded in their electronic medical records. Detailed information of inpatients' epidemiological history should be included as follows:1)whether they have contact history with Hubei Province;2)whether there are any suspected or confirmed cases in their relatives or in residency;3) whether they have contacted suspected or confirmed cases when taking public transportations. Patients or their families are required to sign for inpatient medical record filing.

5. Deployment of epidemic prevention and control using remote video conferences

1)Using Ding Talk to perform daily morning meetings. As to minimize the potential risk of nosocomial cross infection, heads of functional departments held remote video meetings every morning on Ding Talk to give practical solutions to specific problems and to deploy the prevention and control of the epidemic situation.

2)Using Learning Power(Xuexi Qiangguo)to hold working deployment conferences of the branch secretary. The Party Committee held the deployment conferences on the video conference platform of Learning Power to mobilize Party members to actively take part in epidemic control, giving full play to their pioneering roles in the tough campaign.

3)Using Ding Talk to see the working status of medical staff who are supporting foreign provinces, helping them with possible difficulties



encountered, and to boost morale. We sent holiday regards to the working staff in Wuhan from our hospitals on the Lantern Festival using Ding Talk at the remote consultation center of Northern Jiangsu People's Hospital. The medical staff also signaled their determination in the battle.

6. Construction of procedure-based Approval and Requisition Platform of epidemic prevention goods and materials

To further standardize the requisition, all the epidemic prevention goods and materials should be claimed after being approved by the leadership. The claimant should register for requisition on **Ding Talk** through his PC or mobile phone, which effectively reduces nosocomial cross infection. The approver will immediately receive the applications and take approval procedures level by level according to regulations, thus guarantee the orderly and standardized requisition of epidemic prevention goods and materials.

7. Construction of Registration and Reporting Information Platform of febrile patients

Real-time information of febrile patients in all medical institutions are required to be reported, according to the grid management of febrile patient deployment by the Municipal Health Committee. Our hospital specially developed the registration and reporting information platform for febrile patients to dock with the municipal platform as to guarantee the timeliness and accuracy of reporting. All patients must register in the system and the information will be directly uploaded to the municipal information platform for febrile patients. This provides municipal administrative departments with real-time information of epidemic tracking and screening, providing powerful data support for prediction and scientific control.

8. Introspection of informatization application in prevention and control of COVID-19 prevention and control

1)The leadership attach great importance to informatization. The leaders in the hospital pay much attention on construction of Internet Hospital, especially under epidemic situation. Informatization functions as an omnidirectional system link in the whole system. New initiatives were proposed constantly as to push forward the application of information technology in epidemic prevention and control.

2)System construction should keep up with the emergency needs of epidemic prevention and control. Information Department should take



responsibilities to make implementation plans in time for system development. Specific work should be done in time and the person in charge should supervise the company so that they will spare no effort in finishing the system development, test and training. Thus, online implementation work shall be accomplished on time and informatization moves can have a real role to play in the epidemic prevention and control.

3) Training for information systems should be in place. Training for operation of these systems are strongly recommended in all the working staff in the hospital, including Internet Hospital Cloud Clinics, remote video conferences and approval and requisition platform of epidemic prevention goods and materials. It has to be guaranteed that every using staff can properly master the operation method as to ensure its application effect and scope.

4) Organization and management has to be strengthened. Specific departments shall be implemented for specific work. The Health Committee is in charge of the unified arrangement of remote consultation in the city. Outpatient department of our hospital is responsible for the scheduling of Internet Hospital Cloud Clinics. Prevention and Health Service Department should formulate procedures of information collection for febrile patients. Hospital Office should organize video conferences while Information Department answers for systematic problems and fault handling. All the work must be successfully landing to guarantee efficacy.