

mHealth System Description



Supplementary Figure 1 Snapshots of Patient app

预警患者列表(99) 不适预警(85) PEF预警(22) CAT量表预警(44) HAD量表预警(28)

每页显示 10 条记录 Search:

序号	姓名	年龄	性别	预警类型	预警种类数	预警详情	忽略所有预警
1	陈	65	男	PEF; CAT; GAD; PHQ; 不适	5		✕
2	郭	64	男	PEF; CAT; GAD; PHQ; 不适	5		✕
3	郭	65	男	PEF; CAT; GAD; PHQ; 不适	5		✕
4	丁	52	男	CAT; GAD; PHQ; 不适	4		✕
5	吴	73	男	CAT; GAD; PHQ; 不适	4		✕
6	王	60	男	CAT; GAD; PHQ; 不适	4		✕
7	李	72	女	CAT; GAD; PHQ; 不适	4		✕
8	沈	49	男	CAT; GAD; PHQ; 不适	4		✕
9	周	65	男	CAT; GAD; PHQ; 不适	4		✕
10	胡	74	男	PEF; CAT; GAD; 不适	4		✕

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基本情况

自测数据

自测数据

康复数据

院内数据

录入检查信息

录入检查信息

录入急性加重

随访记录

问卷记录

消息推送

留言回复

天气状况

自测数据

服药记录 PEF记录 CAT量表记录 PHQ抑郁量表 GAD焦虑量表 HAD焦虑量表 不适记录

六分钟步行试验记录 急性加重症状记录

开始时间: 2020-04-09 结束时间: 2020-06-08

月平均值

CAT量表趋势图



患者管理

取消随访 就诊记录 填写问卷 终止管理

电话随访

随访有效: 有效 无效

无效原因: 停机 无人接听 号码有误

生活质量: 良好 一般 不佳

身体状况: 良好 一般 不佳

心理状况: 良好 一般 不佳

服药状况: 良好 一般 不佳

有无加重症状: 有 无

急性加重症状:

请写患者发生的急性加重症状

有无新增不适: 有 无

新增不适症状:

请写患者发生的新增不适症状

其他情况

是否吸烟: 是 否 已戒烟

Supplementary Figure 2 Snapshots of Doctor workstation

Supplementary Table 1 Function list of mHealth System in this study

Functions	Descriptions
Patient app	
Diary module	
PEF _a value record	Used to record PEF values.
CAT _b scale record	Used to fill out CAT scale and record the result.
PHQ-9 _c scale record	Used to fill out these two scales and record results.
GAD-7 _d scale record	
Medication record	Used to record daily medication.
Symptom	Patient can select the corresponding symptoms if he feels uncomfortable.

	6-minute walk test record	Patient could take a 6-minute walk test according to the app's instructions and the test result will be automatically measured via GPS and saved.
	Local air quality data	Record data provided by www.heweather.com every day for each participant based on their address.
Education module		
	Knowledge	This app provides videos and texts associated with inhalants guidance, pulmonary rehabilitation, smoke cessation and other COPD-related knowledge or health tips. ^e
	Communication	Patients will receive personalized materials according to their current situation
Doctor workstation		
Warning module		
	PEF value warning	Detect and alert abnormal data uploaded by patients.
	CAT scale warning	
	PHQ-9 scale warning	
	GAD-7 scale warning	
	Symptom	
Follow-up module		
	Follow-up	Used to record the follow-up context in a uniform format.
	Communication	Send messages or materials to patients.
Data module		
	Demographic information	Including patient name, gender, age, height, weight, et al.
	In-hospital laboratory and examination results	Including blood routine test, blood biochemical test, blood gas analysis data, pulmonary function test, CT and ultrasonography from the EMR system in the hospital.
	Self-management data	All the data uploaded via patient app. The data is presented in the form of tables and graphs.
Cloud server		
	Data store	Store all the data securely.
	Inference engine	Providing decision support.
	Recommendation service	Delivering educational materials.

^aPEF: peak expiratory flow

^bCAT: COPD Assessment Test

^cGAD-7: Generalized Anxiety Disorder 7

^dPHQ-9: Patient Health Questionnaire 9

^eThe behavior including reading health knowledge and watching educational videos were caught and uploaded automatically.