Informed consent

Participant Information Page

Project Title: Optimized Inhalation Therapy Based on Peak Inspiratory Flow Rates Measured Against the Simulated Resistance in Patients Recovering From Acute Exacerbation of Chronic Obstructive Pulmonary Disease: a Randomized Trial

Principal investigator: Jing Zhang

Sponsor: Zhongshan Hospital, Fudan University

Dear participant:

You are invited to participate in a clinical study of Optimized Inhalation Therapy Based on Peak Inspiratory Flow Rates Measured Against the Simulated Resistance in Patients Recovering From Acute Exacerbation of Chronic Obstructive Pulmonary Disease, supported by Zhongshan Hospital, Fudan University. Please read this informed consent carefully and make a careful decision on whether to participate in this study. Participation in this research is entirely your autonomous choice. As a subject, you need to give your written consent before joining the clinical study. When your research doctor or researcher discusses your informed consent with you, you can ask him / her to explain to you what you don't understand. We encourage you to discuss this thoroughly with your family and friends before making a decision to participate in this research. You have the right to refuse to participate in the study and to withdraw from the study at any time without penalty and without losing your rights. If you are participating in another study, please inform your research doctor or researcher. The background, purpose, research process and other important information of this research are as follows:

1. Background

Chronic obstructive pulmonary disease (COPD) is a common, multiple, highly disabling and highly lethal respiratory disease. Epidemiological surveys in different

periods in China have suggested that COPD has caused a heavy burden of disease. The prevalence of people over 40 years of age is as high as 8.2-13.7%, and it is on the rise. The number of disabled and deadly people caused by COPD exceeds 5 million and 1.28 million each year respectively. Expenditure for patients with advanced COPD accounts for 40% of household income. Therefore, the prevention and treatment of COPD is an important part of Chinese current health undertakings.

Inhalation therapy directly affects the lungs, which has the advantages of rapid onset, excellent curative effect, and good safety. It has an irreplaceable clinical status and is the first-line basic treatment method for COPD. There are three main types of inhalation devices: aerosols, dry powder inhalers (DPI) and miniature nebulizers. Aerosols are divided into pressure metered dose inhaler (pMDI), pMDI and spacers, new pMDI, soft mist inhaler (SMI) and so on. Different inhalation devices have different requirements on the hand and mouth coordination and inhalation ability of patients, and their use methods also have their own characteristics. Research results at home and abroad show that some patients with severe COPD are unable to effectively inhale DPI due to suboptimal lung function. In addition, 28% -68% of patients are unable to benefit from prescription drugs due to improper use of inhalers. Quite a few patients have poor adherence to inhalation therapy, and they have stopped their medication or used irregularly when their symptoms have improved slightly. Therefore, the key to improving the standardization and efficacy of inhalation therapy is: (1) how to choose the most suitable inhaler for patients; (2) how to improve the patients' capacity to use inhalers; (3) how to improve patients' compliance.

In response to these problems, we have designed an optimized inhalation treatment plan, which mainly includes 3 innovative measures and process improvements: (1) selecting the most suitable inhalers for patients based on peak inspiratory flow rates (PIFR), (2) the prescription was made after training and evaluation of the inhalation device, (3) The WeChat public account will regularly push the inhaler using videos and remind patients to take medication regularly to improve the accuracy and standardization of patients' medication.

2. Study purpose

The aim of this study is to determine whether the optimized inhalation therapy based PIFR can reduce the rate of treatment failure in patients recovering from AECOPD and improve patients' prognosis. Errors in inhaler use and quality of life are also to be evaluated.

3. Study outline

(1) How many patients will participate in this study?

This study is a multi-center and approximately 250 people will participate in the study at our hospital.

(2) Study steps

If you agree to participate in this study, please sign this informed consent form. Before you are enrolled in the study, the doctor will ask, record your medical history, and collect information about your previous relevant examinations. We hope that you can truthfully and fully report your medical history and condition to your doctor in order to accurately evaluate your condition and determine whether you are suitable to participate in this study.

After determining that you will participate in this study, the doctor will assign you into the control or optimized group using a random envelope method. The control group will be treated and followed up according to the prescription drugs and devices of Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Lung Disease 2019 Report. The optimized group will be given the appropriate inhaler based on their PIFR, and will be evaluated and trained their ability to use the inhalers before prescription. After the prescription, the WeChat public account will also be used to remind the medication regularly and provide patient education.

You will be needed to complete a total of 3 visits, including 2 on-site visits (i.e. baseline visits and 1-month visit), and 1 telephone visits (3-month visit).

The baseline visit was completed on the day of enrollment, including: (1) Basic information: ① Demographic data, including age, gender, age, height, weight, ethnicity,

occupation (years of work), marital status, region, etc. ②General clinical data, including past disease history, drug susceptibility history, vaccination history, family history, current disease history, comorbidities and medication. (2) Evaluation of respiratory symptoms and quality of life: ① the COPD Assessment Test (CAT) Scale, the modified Medical Research Council (mMRC) dyspnea scale; ② St.George's Respiratory Questionnaire(SGRQ) scale. (3) 6-minute walking distance; (4) Survey of satisfaction with inhalers; (5) Measurement of pulmonary ventilation function; (6) Types and dosages of COPD-related drugs.

1-month on-site visit includes: (1) Evaluation of respiratory symptoms and quality of life: ① the COPD Assessment Test (CAT) Scale, the modified Medical Research Council (mMRC) dyspnea scale; ② St.George's Respiratory Questionnaire(SGRQ) scale. (2) Survey of satisfaction with inhalation devices; (3) the error rates of inhaler use; (4) Measurement of pulmonary ventilation function; (5) Acute exacerbation conditions of patients; (6) Types and dosages of COPD-related drugs.

3-month telephone visit includes: (1) Evaluation of respiratory symptoms: the COPD Assessment Test (CAT) Scale the modified Medical Research Council (mMRC) dyspnea scale; (2)the error rates of inhaler use; (3) Acute exacerbation conditions of patients; (4) Types and dosages of COPD-related drugs.

The inspections required during the visit are all based on the clinical needs of regular diagnosis and treatment. There is no need to take additional specimens, which will not increase your burden and risk outside of routine medical treatment.

(3) How long will this study last?

It took 3 months from enrollment to the end of observation. You can opt out of the study at any time without losing any benefits you would have received. However, if you decide to withdraw from the study during the study, we encourage you to discuss it with your doctor first. If you have a serious adverse event, or if your research doctor feels that continuing to participate in the study is not in your best interest, he / she will decide to withdraw you from the study. The sponsor or regulator may also terminate the study during the study period. Your withdrawal will not affect your normal medical treatment and rights.

If you withdraw from the study for any reason, you may be asked about your participation condition in the study. If your doctor thinks it is necessary, you may also be asked to perform laboratory tests and physical examinations.

(4) Information and biological specimens collected during study

This study will collect your basic clinical information, relevant questionnaire information, and information about your condition changes. No extra invasive biological specimen collection will be performed.

The clinical information and samples will be coded by subject numbers and stored in the Department of Respiratory Medicine, Zhongshan Hospital, Fudan University. They will be destroyed after the publish of study and data analysis.

4.Risks and benefits

(1) What are the risks of participating in this study?

The risks that you may take from participating in this study are as follows. You can discuss these risks with your research doctor if you prefer.

During the study, you may have some, all, or none of these adverse events (adverse medical events after the patient or clinical trial subject receives a test product such as a drug / medical device), risks, discomfort, inconvenience, such as:

① There is no additional operation and medication, which will not affect the normal diagnosis and treatment, and will not increase the medical risks other than the normal diagnosis and treatment.

② Participation in this research may involve risks in information security. We will do our best to protect your information from leakage. Some of the questions we ask you in this study may make you feel uncomfortable. You can refuse to answer such questions, and you can rest at any time during the study process. You can also withdraw from the study at any time during the study.

If you experience any discomfort or a new change in your condition or any unexpected condition during the study, whether or not it is related to the study, you should promptly notify your doctor, who will make a judgment and give appropriate

medical treatment.

During the study, you need to be followed up to the hospital on time and do some examinations. It will take some of your time and may cause some trouble or inconvenience.

(2) What are the benefits of participating in the study?

Immediate Benefit: If you agree to participate in this study, you will receive follow-up and free medical counseling for your disease during the study.

Potential benefits: This study may contribute to the improvement of the treatment methods of COPD, and your contribution to the medical cause is very meaningful. We hope that the information you get from this study will benefit you or another patient same as your condition in the future.

5. Alternative treatment options

No alternative treatment options.

6. Use of study results and confidentiality of personal information

All your information during the study is strictly confidential. Only relevant personnel can view your medical records so that they can check the accuracy of the information collected and ensure that the study proceeds normally. Any electronically transmitted information will be renamed to ensure the confidentiality of the information. Information on all computers will be protected with a password. Results of the study may be reported at medical conferences and published in scientific journals. However, no personally identifiable information will be used.

With your and other subjects' understanding and assistance, the results of the research through this project may be published in medical journals, but we will keep your research records confidential as required by law. The personal information of the study subjects will be kept strictly confidential, and your personal information will not be disclosed unless required by relevant laws. When necessary, government administrations, hospital ethics committees, and other relevant researchers can review your data as required.

7. Study costs and related compensation

(1) Drugs / devices used in study and related inspection fees

There is no additional intervention in this study and it will not increase your costs. Inpatient and outpatient routine consultations will not be free. Routine treatments and examinations for other diseases you have combined at the same time will not be free.

(2) Compensation for participating in research

Throughout the study, you only need to visit the site in accordance with the follow-up consultation requirements. There is no additional cost for participating in the study, so no compensation will be made.

(3) Compensation / compensation after damage

The study will not cause additional damage.

8. Subject rights and related considerations

(1) Your rights

You are totally voluntary the study. If you decide not to participate in this study, other treatments you should get will not be affected. If you decide to participate, you will be asked to sign the informed consent form. You have the right to withdraw from the study at any stage of the trial without discrimination or unfair treatment, and your corresponding medical treatment and rights will not be affected.

(2) Related considerations

As a subject, you need to provide true information about your own medical history and current physical condition, tell the research doctor about any discomfort you feel during the study period, do not take restricted drugs and food that the doctor has informed, and tell the research doctor whether you has participated in other study recently or is currently participating in other research.

9.Contact details for information

Your doctor will notify you if there is any important new information during the research that may affect your willingness to continue participating in the study. If you

are interested in your research data or the findings of study, you can ask any questions about the study at any time and get the corresponding answers. Please contact Dr. Jing Zhang at 17898846216.

The ethics committee has reviewed the study, and if you have any questions related to your rights / entitlements, or if you want to reflect the difficulties, dissatisfaction, and anxieties encountered in participating in this study, or if you want to provide comments and suggestions related to this study, please contact the Ethics Committee of Zhongshan Hospital, Fudan University, Tel: 021-64041990 ext. 3257, Email: ec@zs-hospital.sh.cn.

Participant Signature Page

Informed Consent Statement:

I have been informed of the purpose, background, process, risks and benefits of this research. I have enough time and opportunity to ask questions, and I am satisfied with the answers.

I have also been told who to contact when I have questions, want to reflect difficulties, concerns, suggestions for research, or want further information or help with the study.

I have read this informed consent and agree to participate in this study.

I understand that I can choose not to participate in the study and to withdraw from the study at any time during the study process without any reason.

I already know that if my condition gets worse, or if I have serious adverse events, or if my research doctor feels that continuing to participate in the study is not in my best interest, he / she will decide to quit me from the study. Without my consent, the funder or regulator may terminate the study during the study period. If it happens, the

doctor will notify me in time, and the research doctor will discuss my other options with me.

I will get a copy of this informed consent, which contains the signatures of me and the investigator.

Subject Signature: Date:

(Note: If the subject is incapacitated / restricted, the legal representative's signature and signature date are required.)

Legal representative Signature: Date:

(Note: If the subject cannot read the informed consent, an independent witness is required to prove that the researcher has informed the subject of the informed consent. The independent witness's signature and signature date are required.)

Independent Witness Signature: Date:

Investigator Signature: Date: