

Smart One Spirometer

This handout explains how to check your lung function. After having a lung transplant you will need to check your lung function every day. Many patients who have rejection do not feel any different. Patients are often not aware they are rejecting their new lungs. Rejection causes swelling in the airways of your lungs. A decrease in your lung function is a sign of rejection.

We gave you a Smart One spirometer to look at your lung function. Using this tool, you will look at:

- **Forced expiratory volume in one second (FEV1):** This measures the volume of air that you exhale during the first second that you are forcing air out of your lungs.
- **Peak expiratory flow (PEF):** This measure how fast the air comes out of your lungs.

Setup

You must use the Smart One spirometer with the Smart One app. To begin, download the Smart One app on your smart phone or tablet. You can download this for free from Apple Store (for iPhone and iPad).

The first time you open the app, you will need to allow Smart One to access your device's location. This will allow your phone/tablet's Bluetooth to find your spirometer. You will also need to enter your details: birthdate, origin, weight, height, and sex. This will help the app figure out values for your lung measurements. You will only need to do this the first time. Your smartphone will then connect to your spirometer each time you open the app.

Using the Spirometer

You will need your spirometer and your phone/tablet. It is best to do the test standing or sitting upright.

1. Open the app. The display screen will say "Connected device."
2. When you are ready to perform your test, press the "start test" button on your phone
3. The screen will read, "Blow to start first test." Take the deepest breath you can, filling your lungs with air.
4. Press your lips tightly around the mouthpiece, then blow the air out as fast and hard as you can. Do this until you cannot blow any more air out. The device will display a message such as "Good job" or "Blow faster" when the test is complete.
5. Repeat the test two more times for a total of three attempts

The Smart One app will save the best results from your three attempts.

How to Check Your Results

You can view your results, by choosing "Results" from the menu at the bottom of your screen. You will be looking for a 10% decline in your results.

Swelling in the lungs may be caused by things other than rejection. A cold or infection can also cause swelling. With a 10% or more decrease in your spirometry numbers, you need to call your transplant coordinator. The transplant coordinator will figure out what is causing the drop. With rejection, quick treatment prevents further lung damage.

To check if you had a 10 percent change, use the FEV1 and PEF grids found in your transplant binder to help.

1. Compare the “best” FEV1 value for today to the value that you got yesterday. If the “best” FEV1 today is higher than the “Best” for yesterday, good for you!
2. If your best FEV1 for today is lower than the “best” for yesterday, refer to your FEV1 chart.
3. To use the FEV1 chart, find your FEV1 value from yesterday in column “A.” Now look at the number next to it in column “B.” If the FEV1 value for today is equal to or less than the number in column “B,” you have had a 10% change.
4. Now follow the same steps for your PEF values.
5. If you have had a 10% drop, call our transplant coordinator as soon as you can.

Cleaning

Dust or foreign bodies (such as hair or mucus) could slow or block the moving parts of the turbine. This could make the result less accurate or damage the spirometer.

Turbine

Clean the turbine weekly. To clean the turbine, pull it out of the socket by turning it counterclockwise and simply pulling it out.

****See page 12 of the Smart One user manual to find out how to remove and replace the turbine.**

Wash the turbine in warm soapy water and move it around for 2-3 minutes. Rinse in clean water. Never clean under a direct stream of water. Shake gently and allow to air dry on a towel.

Mouthpiece

Clean the mouthpiece daily. Pull it apart from the turbine and wash in warm soapy water. Rinse with clean water and allow to air dry on a towel.

****See page 17 of the Smart One user manual for more cleaning instructions.**

Clinic Visits

Your results will be reviewed at your clinic visits. Bring your phone/tablet with you to transplant clinic.

Batteries

The device runs on 2 AAA batteries. A message will display on your phone/tablet when the battery is low.

Your health care team may have given you this information as part of your care. If so, please use it and call if you have any questions. If this information was not given to you as part of your care, please check with your doctor. This is not medical advice. This is not to be used for diagnosis or treatment of any medical condition. Because each person's health needs are different, you should talk with your doctor or others on your health care team when using this information. If you have an emergency, please call 911. Copyright © 4/2025 University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Department of Nursing HF#8144.