

*Questions & Answers*

*for* **Transplant**  
**Candidates** *about*  
**Lung Allocation Policy**



## What are the OPTN and UNOS?

The Organ Procurement and Transplantation Network (OPTN) is the nation's organ procurement, donation, and transplantation system. The United Network for Organ Sharing (UNOS) is the non-profit organization that operates the OPTN under a contract from the federal government. The OPTN and UNOS continuously evaluate new advances and research, and then use this information to improve organ transplantation policies to best serve people needing a transplant. All transplant programs and organ procurement organizations are OPTN/UNOS members and agree to follow OPTN policies.

## What is the lung allocation system?

In the lung allocation system, every lung transplant candidate age 12 and older receives an individualized *lung allocation score* (for specifics on pediatric lung allocation, see pg. 3). The *lung allocation score* is an important factor in determining priority for receiving a lung transplant when a donor lung becomes available. The system determines the order of everyone awaiting a lung transplant by their *lung allocation scores*, blood type, and the geographic distance between the candidates and the hospital where the lung donor is located. Age also plays a role because lungs from pediatric and adolescent donors are offered first to pediatric and adolescent transplant candidates before they are offered to adults.

The lung allocation system uses medical information specific to each lung transplant candidate. This information includes lab values, test results, and disease diagnosis. This medical information is used to calculate a *lung allocation score* from 0 to 100 for each transplant candidate. The *lung allocation score* represents an estimate of the severity of each candidate's illness and his or her chance of success following a lung transplant. All candidates are placed in order for compatible lung offers according to their score: a candidate with a higher *lung allocation score* will receive higher priority for a lung offer when a compatible lung becomes available.

The supply of donor lungs is limited. The OPTN designed this allocation system to more effectively use the limited number of available donor lungs as well as reduce the number of deaths among people waiting for a transplant. Prior to this system, transplant candidates received donor lungs based on the amount of time they had been on the waitlist for transplantation. The OPTN designed the lung allocation score system by studying scientific data on lung transplantation and by drawing on prior experience with many types of patients with lung diseases. By offering donor lungs to candidates according to their medical characteristics

instead of their waiting time, lungs will be directed first to candidates who have the most urgent need and who will have the greatest chance of success after transplantation.

### **Transplant candidates' lung allocation scores are calculated from the following medical information:**

- **Forced Vital Capacity-** This is a lung function test that measures the maximum amount of air you can breathe out after you breathe in as deeply as possible. This amount may be lower in patients with lung disease.
- **Pulmonary Artery Pressure-** This is the pressure the heart must generate to pump blood through the lungs. This pressure may be high in some people with serious lung disease.
- **Oxygen at rest-** This is the amount of oxygen needed at rest to maintain adequate oxygen levels in the blood. People with severe lung disease may need additional oxygen.
- **Age-** This is the candidate's age at the time lungs are offered.
- **Body Mass Index-** BMI is a ratio of a person's weight to height that, when interpreted with other medical test results, helps to evaluate health status.
- **Diabetes-** Diabetes may be a predictor of health status in some people with lung disease.
- **Functional status-** A way to measure the effects that lung disease may have on a person's ability to perform routine daily tasks.
- **6-minute walk distance-** In the 6-minute walk test, transplant candidates are asked to walk as far as they can in 6 minutes. The distance walked is a measure of functional status.
- **Assisted ventilation-** The use of a ventilator to assist breathing may be a measure of disease severity and may affect success after a transplant.
- **Pulmonary Capillary Wedge Pressure-** The pressure that blood returning to the heart from the lungs must overcome. This pressure can become increased when the heart is not pumping effectively.
- **Serum Creatinine-** Serum creatinine levels are a measure of kidney function. High creatinine levels reflect impaired kidney function, sometimes associated with severe lung disease.
- **Diagnosis-** Research has shown that urgency among people needing a lung transplant and success following a lung transplant vary among people with different lung diseases. Therefore, for every lung transplant candidate, diagnosis factors into the calculation of the *lung allocation score*.
- **PCO<sub>2</sub>-** The candidate's current PCO<sub>2</sub> and change in PCO<sub>2</sub> are both considered in the lung allocation score calculation. A blood gas test is performed to measure the amount of CO<sub>2</sub> in the blood. When the lung's ability to exchange oxygen and CO<sub>2</sub> becomes impaired, the PCO<sub>2</sub> level may become increased.

## Do pediatric candidates receive a lung allocation score?

Considering the unique circumstances for lung candidates under the age of 12, these candidates are not prioritized by *lung allocation scores*. Instead, a simple priority system based on a candidate's medical condition is used to order these pediatric lung candidates. These candidates are listed as Priority 1 or Priority 2, based on their medical condition. Those that meet criteria reflecting a more urgent status are listed as "Priority 1," remaining lung candidates in this age range are labeled "Priority 2." At the time a match is run, a candidate's pediatric priority will be used along with ABO blood group and distance from the donor hospital to determine the order for making offers to lung candidates. The priority classifications yield a lung allocation system that gives more consideration to a pediatric candidate's urgency, as compared to one that is exclusively dependent on waiting time.

### Pediatric Priority is assigned based on the following criteria:

#### Priority 1:

**Candidates that meet one or more of the following criteria:**

##### **Respiratory failure, defined as:**

- Requiring continuous mechanical ventilation; **or,**
- Requiring supplemental oxygen delivered by any means to achieve  $FiO_2$  greater than 50% in order to maintain oxygen saturation levels greater than 90%; **or,**
- Having an arterial or capillary  $PCO_2$  greater than 50 mmHg, or a venous  $PCO_2$  greater than 56mmHg.

##### **Pulmonary hypertension, defined as:**

- Having pulmonary vein stenosis involving 3 or more vessels; **or**
- Exhibiting any of the following, in spite of medical therapy: suprasystemic PA pressure on cardiac catheterization or by echocardiogram estimate, cardiac index less than 2 L/min/m<sup>2</sup>, recurrent syncope, or hemoptysis

**An exception case approved by the Lung Review Board**

#### Priority 2:

**All other candidates that do not meet the criteria for Priority 1**

## What does the lung allocation system mean for me?

The lung allocation system is responsive to your individual medical needs because it will help determine when you will receive an offer for donor lungs based on your particular medical information. Your *lung allocation score* or pediatric priority is based on your own medical information and will reflect the seriousness of your medical status before transplant. The *lung allocation score* also factors your likelihood of a successful transplant.

## How is waiting time used in the lung allocation system?

Waiting time plays a very limited role when allocating lungs to transplant candidates. Candidates will receive lung offers based mainly on their *lung allocation scores* or pediatric priority (for those candidates younger than 12 years old). Waiting time will be used to break a tie only if two or more lung candidates happen to have the same *lung allocation score* or pediatric priority, and these candidates are in the same OPO/geographic zone classification.

## How do I register as a lung transplant candidate under the lung allocation system?

Your transplant team will decide with you when the time is right for you to be registered for a lung transplant. When that time comes, you will need a complete transplant work-up. During the transplant work-up, you will participate in a series of medical tests that will give your transplant center the information it needs to register you as a candidate for lung transplantation. This same information will also be used to calculate your *lung allocation score*.

## How often should my medical information be updated?

Your transplant center **must** update most of your medical information **every six months**. Since the lung allocation system uses your own medical information to compute your *lung allocation score*, it is important that your transplant center has your most current information and test results. Your transplant center may also update your information in the system any time your physician thinks it is necessary to reflect a change in your condition, but your transplant center will be required to update most of your information **at least once every six months**.

**Updating Pediatric Priority 1 Data:** Like adult candidates, pediatric Priority 1 medical information **must** be updated at least once **every six months**. Six months after a candidates' anniversary date, and every six months thereafter, the system will check to see if a Priority 1 candidate's medical information has been updated. The anniversary date is the day they were added to the waiting list. If a center has not updated a candidate's information within that six-month window, the candidate will revert to Priority 2 until updated, qualifying information is submitted.

**Important:** If your medical information is not kept up-to-date, it **will** negatively affect your *lung allocation score*. It is important for you to work with the team at your transplant center to set up a schedule for visits that will allow you to keep your information up-to-date.

### **What if I cannot perform a required test?**

Much of the medical information that is needed to calculate your *lung allocation score* comes from diagnostic tests or medical procedures. If your transplant team decides that you should not perform these tests or undergo these procedures because of the severity of your condition, your physician may supply a best estimate of your medical information to be entered on the system instead. The Lung Review Board, a national group of transplant surgeons and physicians, will evaluate your doctor's request and determine if it is appropriate to use estimated information in the system instead.

### **How high must my *lung allocation score* be before I may receive an offer for a lung transplant?**

There is no specific *lung allocation score* that will guarantee that you receive an offer for donor lungs. When donor lungs become available, a "match run" list is created to match the lungs with suitable candidates based on blood type, distance from the donor hospital to their transplant center, and age group. Candidates who are registered at transplant centers in the local area around the donor hospital, who are in the appropriate age group, and who also have a blood type that matches the donor will be offered the lungs in order of their *lung allocation scores*. The compatible candidate with the highest *lung allocation score* at that time will receive first priority to be offered the donor lung(s). If no appropriate recipient is

found among the candidates closest to the donor hospital, potential compatible recipients at greater distances will be offered the lung(s).

Remember, you and your medical team at your transplant center will always have the option to decide whether a lung transplant is the right choice for you at that time, or whether the donor lungs being offered are right for you.

### **What if my doctors do not agree with my lung allocation score or pediatric priority?**

If your transplant physician or surgeon believes that you have exceptional characteristics, and that your needs are not adequately reflected by your lung allocation score, then your transplant center may ask the Lung Review Board to review your situation. Similarly, if a transplant physician or surgeon feels that a lung candidate younger than 12 has a medical condition comparable to Priority 1, but does not meet one of the criterion listed in policy, they may request the Lung Review Board to review the pediatric candidate's situation. The Lung Review Board is a national group of transplant physicians and surgeons who will consider your special circumstances and determine what steps to take.

### **Will the lung allocation system change in the future?**

As transplant professionals apply this system and learn from it, some changes will likely be required to better meet the needs of transplant candidates. In fact, this system is designed to be flexible and allow for improvements. For example, the *lung allocation score* was first implemented in 2005 and the simple priority system for pediatric candidates younger than 12 was implemented in 2010. In organ transplantation, as in all scientific fields, new studies are taking place all the time to learn how to save more lives and how to help people live longer and fuller lives. The lung allocation system is reviewed periodically, and adjustments may continue to be made to the way lung allocation scores are calculated. Your transplant team will keep you informed of changes to the system and what you may need to do.

### **What if I have more questions?**

If you have any further questions or concerns, you should contact your transplant team. You may also contact the UNOS Patient Services Department at 1-888-894-6361. Details about the OPTN, UNOS, allocation policy, and patient information resources are available on the following websites:

[www.optn.transplant.hrsa.gov](http://www.optn.transplant.hrsa.gov) • [www.unos.org](http://www.unos.org) • [www.transplantliving.org](http://www.transplantliving.org)

*The UNOS mission is to advance organ availability and transplantation  
by uniting and supporting its communities for the benefit of patients  
through education, technology and policy development.*



P.O. Box 2484, Richmond, VA 23218

[www.unos.org](http://www.unos.org)

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