

# [The is low and the carbon dioxide](https://assignbuster.com/the-is-low-and-the-carbon-dioxide/)

The lungs are one of the main organs in our bodysystem. They run the respiratory system and help us humans to breathe andrespire, allowing us to gain energy and take in oxygen.

A common organ failureis lung failure (also known as respiratory failure). Normally, this occurs whenair movement is limited, less oxygen is taken in or less carbon dioxide isreleased (Kahn, “ Chronic Respiratory Failure: Causes, Symptoms, Diagnosis.”)Other causes include “ smoking, drug or alcohol overdose, conditions that affectthe nerves and muscles that control breathing (e. g. stroke), and lung diseaseslike COPD” (“ Respiratory Failure”).

There are two types of lung failure: “ Type 1 respiratoryfailure is when the blood oxygen is low and the carbondioxide is normal or low. Type 2 respiratory failure is when the blood oxygenis low and the carbon dioxide is high” (Rull, “ Respiratory Failure – Causes”). The two types share commoncauses like COPD and acute respiratory distress syndrome (ARDS). The diagram(see Fig. 1) below clearly shows the difference between a healthy lung and alung with various conditions that result in lung failure.  Fig. 1                     Many symptoms of lung failure include “ difficulty inbreathing (including shortness of breath and rapid breathing), coughing upmucus and blood, wheezing, bluish tint to the skin, lips or fingernails, fatigue, anxiety and confusion” (Kahn,” Chronic Respiratory Failure: Causes, Symptoms, Diagnosis.

“). Shortnessof breath could happen when the patient exerts themselves too much. Tirednesscould be a sign of the amount of oxygen that is getting to the body’s organs. Bluish lips could be a result of cyanosis. Patients could also experience fitsor seizures (Rull, “ Respiratory Failure – Symptoms”). According to “ Respiratory Failure”, chroniclung failure patients could have an inconsistent heart beat pattern or may evenfall into a coma. Diseases such as Chronic Obstructive Pulmonary Disease(COPD), Pulmonary Fibrosis and Cystic Fibrosis are a few examples that causethe failure of the lungs (“ Lung Transplant”).

In order to solve this issue of lung failure, acurrent solution is lung transplant. This means the patient’s unhealthy lung isreplaced by a donor’s healthy lung. The replacement is surgically done by aspecialized surgeon. Depending on the severity of the lungs, the doctor may askthe patient to replace one lung or even both. It is known to improve thepatient’s health and quality of life (“ Lung Transplant”).

In most cases, “ thehealthy lung is from a deceased donor” (“ Lung Transplantation”). Before the transplant takes place, a series of blood tests are takento check the condition of the lungs, heart, liver and kidneys. The recipients(those receiving the transplant) are to be substance-free at least one year beforethe transplant. The average waiting time for a lung transplant is about 4months (“ Understanding the Organ Transplant Waiting List”). The lung is stored in a preservative solution, which is mixed with acold solution. This mixture is flushed on the lungs, cooling them and removingblood from the pulmonary vascular bed. They are transported in a temperature of4 degrees Celsius to 8 degrees Celsius (Cypel, “ Lung Transplantation: Donor Lung Preservation”).

After the surgery, the recipients are required to take all themedications given to them by the doctor (they are given immunosuppressivedrugs). Immunosuppressive drugs are used after the transplant to keep the bodyfrom rejecting the lungs. Antibiotics, cyclosporine, tacrolimus and anti-fungalmedications are examples of immunosuppressive drugs (“ ImmunosuppressantMedications After Lung Transplantation”). The survival of patients with lung transplant varies from about a year to 10years. The survival solely depends on how the patient takes care of themselvesand lead their lifestyle.

An example of lung transplant can be seen below inFig. 2.  fig. 2 The lung transplant has its own benefits and drawbacks. The benefits are that it improves patients’ health, lifestyleand is able to live longer. If patients have obtained a healthy set of lungs, theyare not at risk of developing cystic fibrosis. They are able to breathe moreeasily. They are able to participate in challenging physical activities and theyare able to continue with their previous lifestyle (before their lungs failed).

These are the following drawbacks. The organ could” reject” the lungs (e. g. BOS – Bronchiolitis Obliterans Syndrome), meaning that if the new pair of lungs don’t receive immunity from the body, there is also a risk of developing infections that could affect thetransplanted lungs and the surgically connected airways could affect bloodflow, causing airway problems. Although cystic fibrosis may not occur in thelungs, they could happen in other organs in the body (“ Weighing theBenefits and Risks of a Lung Transplant”). The medications taken before and after the transplant (called immunosuppressivedrugs) pose many threats, much worse than those of the actual transplant. Thepatient is at risk of developing cancer, diabetes, high blood pressure and osteoporosis(“ LungTransplant – Risks”).  “ The solution is an effective treatment for diseasethat had destroyed the lungs function to operate” (Khatri, “ Lung Transplant”).

Ifsuccessful, life after a lung transplant is normal. For instance, one lady, named Lisa Slater, had a lung transplant when she was 15. She had just turned31 this year. She claimed that after the transplant she had felt drowsy, however was back on her feet by that afternoon (Slater, “ Life after a LungTransplant”).

Amongst the many solutions for lung failure, the mosteffective is indeed getting a lung transplant. Other types of solutions include: oxygen therapy, tracheostomy and the ventilator. Oxygen therapy provides extraoxygen through a nasal cannula (like a tube), this can be seen below in Fig. 3. This solution is uncomfortable and the patient is unable to lead a normal life(or lifestyle), as a container has to be carried around with the tube. Tracheostomy involves the surgical implantation of a breathing device on thefront of your neck (a hole is made in order to insert the device) (see Fig.

4). This also makes the person lose their chance of leading a normal life, and areat risk of losing their life while the hole is made surgically. Ventilator is ahuge machine that supports the breathing of the patient, however the patient isbed-ridden (see Fig. 5), and is unable to do much while on the ventilator (“ Respiratory Failure”).

The lung transplant survival rates also indicate itseffectiveness. For example, in the US (for adults) the one month survival rateis about 97%, for one year it is about 88% and for three years it is about 69%(…1).  Comparing all the one yearsurvival statistics, oxygen therapy survival rates (for adults) are about 88%in one year (…4), for tracheostomy is it about 65% (…5) and for ventilator itis about 62% (…6). Fig. 6 shows the survival rates of a lung transplant patientalong with the number of years they can survive. This graph shows how thesurvival rates have risen over the years, which gives an indication that theywill rise in the future (see Fig. 7). This shows that the lung transplantsolution is more effective than the other solutions for respiratory failure.

Part2A lung transplant is a viable solution for lungfailure, however it does include ethical issues regarding the shortage of lungs. Additionally, there are ethical issues behind who gives consent for giving uptheir lungs. Every year, about 1656 recipients are shortlisted for a lungtransplant, unfortunately due to the waiting time of about 4 to 5 months, abouthalf of those on the lost die, as they are unable to survive too long to wait(…5). Due to the shortage of organs, there is an increase in organ trade. Thisis where the organs are “ illegally obtained and traded for transplantation” (…3).

They are obtained by killing innocent children and adults (which occur mainlyin developing countries like China and India). For example, one schoolboy isthe US was killed on his way back home and his lungs (and other organs) werenot found inside his body after an autopsy (months after his death) (…6). Theseunethical practices are prevalent around the world with about “ 10, 000 blackmarket operations, involving human lungs, take place annually” (…4). The lungsare one of the organs distributed around the world illegally, costing about$50, 000 in the black market. A lung transplant normally costs about $560, 000(…7). Even though it is unethical, many people who purchase these ‘ black marketlungs’ are those who can’t afford the tremendous cost of a transplant, andresort to such markets to save their loved ones. Other reasons why peopleinvest in organ trade is to pay off debt, as they owe money to someone else. People also gain lots of money by selling lungs and other organs.

In manyhospitals, the donor has to agree directly for a lung transplant. Normallyduring cadaveric organ donation, once a person dies (natural causes, accidentetc.) the organs are allowed to be donated only if consented. Consent is veryimportant, as people may have religious beliefs or not want their organs to beused for donation (…2). A shocking example would be that prisoners (who havebeen given the death sentence) donate most of their organs, even if theyhaven’t given consent. The Chinese government admitted that 95% of donatedorgans were from executed prisoners (…1). In conclusion, the lung transplant isan effective solution for lung failure, however the lungs should be purchasedlegally, so that it supports the donor’s consent and no innocent lives arelost.