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## 心臟移植手術病人及家屬資料

### 簡介

當心臟功能受到永久性損壞，雖然經過相關藥物治療、儀器的協助，或手術治療後，但是病情仍然沒有好轉，並不斷惡化，預計一年內的生存機會降低。此時，醫生會建議你接受心臟移植治療。心臟移植是將病者已嚴重損壞的心臟切除，並換上從捐贈者而來的健康心臟，以代替原有的功能。手術只是心臟移植治療的一部份，為確保外來的器官不被身體免疫系統排斥，病人需長期服食抗排斥藥物。抗排斥藥物會降低受贈者的免疫功能及對疾病的抵抗力，使受贈者易受感染。要在預防排斥和預防感染之間取得最佳的平衡，受贈者必須定時覆診及接受檢驗，並嚴格按照醫生的指示長期定時定量服用抗排斥藥及防感染藥物。另外亦要注意個人及家居環境衛生，遵守移植後的飲食原則，以減低感染機會。

### 手術的重要性

在嚴格篩選的末期心衰竭病者當中，心臟移植是最好的治療方案，可以延長患者的生命並改善生活品質。心臟移植受贈者能夠回復日常生活，例如工作、消閑活動和運動。在香港心臟移植的存活中位數約為 18 年。如果患者拒絕手術，病情可能持續惡化，甚至達到無法挽回的程度。其他治療方法包括繼續藥物治療，心臟再同步療法，或其他循環輔助器作另類治療。

### 手術程序

1. 心臟移植常用的手術程序包括胸骨正中切口和使用人工心肺分流，該設備會在手術期間暫時承擔心臟和肺部的功能。
2. 在心臟移植期間，會從捐贈者處獲得一顆健康的心臟，植入到受贈者的身體中。這涉及將捐贈者心臟的主要血管與受贈者的血管通過手術線縫合。
3. 移植完成後，病人將會移除人工心肺機的支援。



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4. 如果患者在心臟移植前有永久性心臟起搏器或除顫器 ( AICD ) ，這些設備將在手術中被移除。
5. 最後，將進行移植手術的手術傷口進行適當縫合和包紮，以促進癒合。

### 手術後可能出現的併發症

1. 心臟移植住院期間的死亡風險約為 8-10%。此外，移植後一年內的死亡率約為 10-15%。
2. 有時，手術後移植的心臟可能出現原發性心臟器官衰竭而無法正常運作，在這些情況下，可能需要使用額外的機械循環支援，如主動脈內氣球泵 ( IABP )、人工心肺 ( ECMO ) 或右心室輔助裝置 ( RVAD )。
3. 出血
4. 感染
5. 可能出現排斥反應，即身體的免疫系統攻擊移植的心臟。
6. 可能發生心律失常或心臟傳導阻滯，部份病人有需要植入永久性心臟起搏器來調節心律。
7. 在某些情況下，心臟移植後可能發生多器官衰竭。
8. 手術後可能出現傷口癒合不全。
9. 使用免疫抑制劑和類固醇是防止移植心臟排斥的必要手段，但可能引起副作用，如糖尿病、高血壓、腎功能衰竭、骨質疏鬆症、手顫、體毛增多、以及增加感染及患上癌症的機會。
10. 慢性排斥反應可能會影響移植心臟的血管而出現病變。
11. 心臟移植後五年和十年的長期生存率約為 75%及 55%。

### 手術後注意事項

心臟移植接受者需要終身定期覆診及接受評估，還須長期服用抗排斥藥物。



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## A. 排斥與感染

1. 服用抗排斥藥物會抑制自身免疫系統以免排斥新的心臟，但同時也減低對抗感染的的能力。
2. 排斥常見症狀：疲倦、短促的呼吸、咳嗽、體重增加、低血壓、心跳不規則、發燒、尿量減少等。
3. 感染徵兆：發燒、有痰的咳嗽、食慾不振、噁心、嘔吐及腹瀉等消化系統障礙、肌肉疼痛、小便有灼熱感、體重減輕、頭暈、全身無力感或冒冷汗等。
4. 若有以上任何狀況請主動與醫護人員聯絡。

## B. 傷口的護理

1. 傷口癒合並拆線才可沐浴（最好採取淋浴的方式），並保持乾爽，當發現傷口有異樣應向醫護人員查詢。傷口完全癒合約需六至八週。
2. 胸骨的癒合則需要三至六個月，所以術後三個月內避免提重物及進行劇烈運動，以減少胸骨受傷的風險。
3. 術後三個月內應避免過度伸展胸部等擴胸運動，並保持正確的坐臥姿勢。

## C. 自我監察及照顧

1. 遵循醫護人員的指示定時定量服藥，在未諮詢醫療團隊的情況下，應避免自行購買成藥服用。
2. 當身體有感染症狀時，請探測體溫，如發熱伴有感染的症狀應立即通知醫護人員。
3. 每天探測體重，若體重在一至兩天內重一至兩公斤或一星期內增加兩公斤以上，請致電通知醫護人員安排提早覆診。
4. 每天服藥前和睡前，請量度血壓；洗澡或運動後要先休息三十分鐘才可量度血壓。
5. 如同時患有糖尿病，請根據醫療指示，於餐前測試血糖。



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6. 保持個人衛生及家居環境清潔，以及室內空氣流通。避免接觸傳染病患者，例如上呼吸道感染患者。避免前往人煙稠密的地方，外出時，請戴上外科口罩。

#### D. 日常生活常見問題

1. 疼痛：除了傷口疼痛外，肩膀、背部及手臂也可能有肌肉酸痛的情形。請以一個最舒服的姿勢放鬆自己，慢慢做深呼吸；或依醫囑服用止痛藥。
2. 睡眠障礙：可能由於疼痛或心理因素，會出現失眠或容易醒來的情形。應避免日間的睡眠，增加活動量，必要時可向醫護人員協助。
3. 虛弱與疲倦：適度的休息、睡眠，均衡飲食和營養，維持恆常運動有助恢復體力及心肺功能。
4. 心理問題：手術後可能會感到擔心、害怕、煩躁、甚至有時候想哭或發脾氣，建議患者將心中的感受和想法說出來。
5. 性生活：如果患者在手術後能循序漸進的進行復康運動，並能自行上下樓梯（以每秒走二階的速度，上到二樓而不覺得氣促），表示患者的體力已恢復到可以回復以往的性生活的程度。

#### E. 心臟移植術後～飲食篇

飲食對移植手術後的康復很重要，包括有助傷口癒合、增強對抗感染的能力及彌補術前營養不足的情況。另外，使用抗排斥藥物可能引致高血壓、高血糖及高血脂等副作用，因此飲食需限制鹽份攝取，以減少水份滯留及改善高血壓情況，同時適當的糖份及脂肪的攝取可控制體重，減少肥胖及糖尿病的風險。因為高血壓、高血脂及肥胖，除了增加心臟血管的負荷外，也容易造成心臟血管等疾病。因此，術後可以與營養師相談，設計適合患者術後的飲食指南。



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## 心臟移植後，如何「吃」得安全

食物或食材可能帶有細菌、黴菌、病毒甚至寄生蟲等，對一般人而言可能無礙，但對使用抗排斥藥物患者則存在風險。因此在選擇、使用或製作食物時，請遵循以下相關建議事項，以減少感染機會。

### 移植手術後飲食注意事項：

1. 請勿進食任何未經煮熟的食物，例如：肉類、魚生、生蠔、生雞蛋、沙律...
2. 在家或出外用餐時，食物烹調必須完全煮熟。
3. 注意食物的有效保存期限。
4. 購買經巴氏低溫消毒過的牛奶或奶類製品。
5. 適當地冷藏食物，若須冷藏的食物應盡快放入雪櫃內並應儲存於  $-4^{\circ}\text{C}$  或以下，急凍食物應儲存於  $-18^{\circ}\text{C}$  或以下。
6. 準備及處理食物前後，均需要肥皂洗手，尤其處理肉類或魚類等。
7. 蔬菜洗淨後再進行烹調。
8. 請選擇可削皮水果，把水果先洗淨及削皮才可進食。

## F. 日常活動指導

1. 出院後應養成恆常運動的習慣，以改善心肺功能及增加活動能力。
2. 手術後的活動應逐漸增加強度和內容，避免過急增加活動水平。
3. 運動前後應進行熱身和緩和運動，進食前後不宜運動。
4. 若感到身體不適，應停止運動並告知醫護人員。
5. 復康活動計畫由移植後第一天即開始，住院期間會安排到復康中心進行，出院後仍需持續進行，若有任何問題可與醫護人員了解。

**請注意，以上指南只是一般建議，最好諮詢您的醫護移植團隊以獲取個人情況和病史的特定飲食建議。**



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## **Heart Transplantation Information for Patient & Family**

### **Introduction**

When the heart's function is permanently damaged despite receiving the most advanced medical treatment, device therapy, or surgical intervention, and the condition continues to worsen, doctor may suggest considering heart transplantation. Heart transplantation involves surgically removing a diseased heart and replacing it with a healthy heart from a donor to restore proper heart function. The surgical procedure is just one aspect of heart transplantation therapy. In order to prevent the recipient's immune system from attacking the transplanted heart, long-term immunosuppressive therapy is necessary. However, taking immunosuppressants can weaken the patient's immune system and make them more susceptible to infections.

To strike a balance between preventing rejection of the transplanted heart and preventing infections, heart transplantation recipients need to commit to long-term medical follow-up and regular check-ups. They must also strictly adhere to medical advice regarding the proper use of immunosuppressants. Additionally, they need to pay special attention to personal and environmental hygiene, as well as follow dietary restrictions, in order to minimize the risk of opportunistic infections. These precautions are crucial for the general well-being and long-term success of the heart transplantation.

### **Importance of Procedure**

In carefully selected patients with end-stage heart failure, heart transplantation is the definitive treatment option that can prolong their life while also improving its quality. Heart transplantation recipients are able to resume many of their daily activities, including work, hobbies, and sports. The median survival rate after heart transplantation is approximately 18 years in Hong Kong.



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If a patient refuses to undergo this procedure, their condition can further deteriorate to a point where it becomes irreparable. Alternative treatments for heart failure include medical treatment, cardiac resynchronization therapy, and other mechanical circulatory assist devices.

### **Procedure**

1. Median sternotomy and cardiopulmonary bypass are surgical procedures commonly used in heart transplantation.
2. During a heart transplantation, a healthy heart from a donor is implanted into the recipient's body. This involves connecting the major blood vessels of the donor heart to the recipient's blood vessels through a process called anastomosis.
3. After the transplantation is complete, the patient is gradually taken off the cardiopulmonary bypass, a procedure that temporarily performs the functions of the heart and lungs during surgery.
4. If the patient had a permanent pacemaker or an automatic implantable cardioverter defibrillator (AICD) prior to the heart transplant, these devices will be removed during the procedure.
5. Finally, the surgical wound from the transplant is closed, ensuring that it is properly sutured and dressed to promote healing.

### **Possible Complications**

1. The risk of death during hospitalization for a heart transplant is approximately 8-10%. Additionally, the mortality rate within one year after the transplant is around 10-15%.
2. Sometimes, the transplanted heart may fail to function properly immediately after the surgery, which is known as primary allograft failure. In some of these cases, additional mechanical circulatory support such as the use of devices like the intra-aortic balloon pump (IABP), extracorporeal membrane oxygenation (ECMO), or a right ventricular assist device (RVAD) may be required.



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3. Bleeding can occur as a complication of the heart transplant surgery.
4. Infections are a potential risk following a heart transplant.
5. Hyper-acute or acute rejection can occur, where the body's immune system attacks the transplanted heart.
6. Arrhythmias or heart blocks may develop, necessitating the insertion of a permanent pacemaker to regulate the heart's rhythm.
7. In some cases, multi-organ failure can occur after heart transplantation.
8. Wound-related issues may arise after the surgery.
9. The use of immunosuppressants and steroids, which are necessary to prevent rejection of the transplanted heart, can cause side effects such as diabetes, hypertension, renal failure, osteoporosis, hand tremors, excessive hair growth, and an increased susceptibility to opportunistic infections and malignancies.
10. Chronic rejection can lead to a condition called allograft vasculopathy, which affects the blood vessels of the transplanted heart.
11. The long-term survival rates after a heart transplant are approximately 75% at 5 years and 55% at 10 years.

### **Important notes after operation**

Heart transplant recipients require lifelong follow-up care, regular assessments, and the lifelong use of immunosuppressant medications.

#### **A. Rejection and Infection**

1. Taking immunosuppressants helps prevent the body's immune system from attacking the new heart (rejection), but it also reduces the ability to fight infections.
2. Common symptoms of rejection include fatigue, shortness of breath, cough, low blood pressure, irregular heartbeat, fever, decreased urine output, and more.
3. Signs of infection can manifest as fever, cough with sputum, loss of appetite, nausea, vomiting, digestive system disorders such as diarrhoea, muscle pain,





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burning sensation during urination, weight loss, dizziness, weakness, or cold sweats.

4. If a patient experiences any of these symptoms, please promptly contact medical personnel for assistance. It is important to be proactive in seeking medical attention.

## **B. Wound Care**

1. Bathing (preferably showering) can be done after wound healing and suture removal. Keep the wound dry, and if any abnormality is noticed, return to the hospital for examination. It usually takes about 6-8 weeks for the wound to completely heal.
2. The sternum, or breastbone, takes approximately 3 to 6 months to heal. Therefore, during the first three months after surgery, it is important to avoid lifting heavy objects and engaging in strenuous activities to minimize the risk of sternum injury.
3. Avoid excessive chest expansion exercises within the first three months after surgery, and maintain correct sitting and lying postures.

## **C. Self-Monitoring and Care**

1. It is important to follow medical advice and comply with medication instructions. Avoid taking over-the-counter drugs without consulting healthcare provider.
2. If a patient experiences any signs or symptoms of infection, check body temperature. If a patient has a fever, inform the medical team promptly.
3. Monitor body weight daily. Inform transplant team to advance follow up if body weight increases 1-2 kg in 1-2 days or more than 2 kg in 1 week.
4. Measure blood pressure before taking medications and before bedtime. Please measure blood pressure after shower or exercises 30 minutes.
5. For patients with diabetes, monitor blood glucose level as directed.



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6. Maintain good personal and environmental hygiene as well as good ventilation. Avoid contact with people with infectious disease such as upper respiratory tract disease. Avoid going to the crowds and wear surgical mask when going out.

#### **D. Common Issues in Daily Life**

1. Pain: In addition to incisional pain, there may be muscle soreness in the shoulders, back, and arms. Adjust to a comfortable position, relax, and take slow deep breaths, or take pain medication as prescribed.
2. Sleep disturbances: Sleep problems may arise due to difficulty breathing, pain, or psychological factors, resulting in insomnia or easy awakening. To address this, try to reduce daytime sleep, increase physical activity, and seek medical assistance if necessary.
3. Weakness and fatigue: Resting adequately, getting enough sleep, maintaining a balanced diet, and ensuring proper nutrition, along with regular exercise, can aid in regaining physical strength and cardiovascular function.
4. Psychological issues: After surgery, patients may experience feelings of worry, fear, irritability, or even occasional crying or outbursts. It is recommended to express their feelings and thoughts, and seek support from loved ones or professionals if needed.
5. Sexual activity: If patients can gradually participate in rehabilitation exercises after surgery and can climb stairs without feeling breathless (e.g., reaching the second floor at a rate of two steps per second), it indicates that their physical strength has recovered enough to resume sexual activity.

#### **E. Post-Heart Transplant Diet**

Dietary plays a crucial role for recovery after undergoing a heart transplant. While in the hospital, it is important to focus on wound healing, building resistance against infections, and correcting any nutritional imbalances from before the surgery. The use of immunosuppressants, in particular, can lead to side effects such as high



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blood pressure, high blood sugar, and high blood lipid levels. Therefore, it is necessary to follow a specific diet that limits sodium intake to reduce fluid retention and improve hypertension. Adequate intake of carbohydrates and fats can help control weight and reduce the chances of obesity and diabetes. Hypertension, high blood lipids, and obesity not only increase the burden on the cardiovascular system but can also lead to other cardiovascular diseases. Therefore, after the surgery, patients can discuss with a dietitian to design a balanced diet suitable for their post-operative conditions.

#### Eating Safely After Heart Transplant:

Food or ingredients can potentially carry bacteria, mold, viruses, or parasites, which pose a greater risk of infection for individuals taking immunosuppressant. To minimize this risk, it is important to follow the recommendations below when selecting, handling, or preparing food. Take note of the following post-transplant dietary precautions:

1. Avoid consuming raw foods such as meats, sashimi, oysters, salads, and the like.
2. When dining at home or outside, ensure that the food is cooked at high temperatures and fully cooked.
3. Pay attention to the expiration dates of food products.
4. Purchase milk and dairy products that are pasteurized.
5. Refrigerate food properly; place it in the refrigerator promptly if refrigeration is required and should be stored at or below  $-4^{\circ}\text{C}$ ; frozen food should be stored in a freezer at or below  $-18^{\circ}\text{C}$ .
6. Wash hands with soap and water before and after preparing and handling food, especially when dealing with meat, chicken, or fish.
7. Wash vegetables thoroughly before fully cooked.
8. Please choose fruits that can be peeled, and make sure to wash and peel them before eating.



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## **F. Daily Activity Guidelines**

1. It is important to develop an exercise routine after discharge to maximize the benefits of cardiac rehabilitation exercises.
2. Post-surgery activities should be gradually intensified and expanded. Avoid sudden and excessive increases in your activity levels.
3. Prior to and after exercising, it is important to perform warm-up and cool-down exercises. It is not recommended to exercise immediately before or after meals.
4. If you experience any physical discomfort during exercise, stop exercising and consult with your doctor.
5. The rehabilitation program starts from the first day after transplantation and should continue even after discharge until further rehabilitation sessions. If you have any questions, consult with medical personnel.

**It is important to note that these guidelines are general recommendations only. For personalized advice and specific dietary restrictions based on your individual case and medical history, it is always best to consult with your healthcare team.**



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