

Journey into the world of transplants: The allocation of organs (part two)

by CHIARA PALMERINI, <http://scienza.panorama.it/salute/trapianti-assegnazione-organ>

'Over a hundred people mobilised every time and an alert system active 24 hours a day, 365 days a year - this is how Italy's network of centres receiving news of donated organs and notifying people on the waiting list operates.'

In a nondescript prefab forming part of the Careggi hospital in Florence, a one-storey box between the avenues of one of the biggest general hospitals in Italy, is Tuscany's transplant control centre, the clearing house for **organs for transplantation**, the hub which connects the deceased who were willing to donate their organs and the living, those on the waiting list, waiting for a heart, liver,



kidney or lung to become available. It is called the Regional Centre for the Allocation of Organs and Tissues (CRAOT).

When a death occurs in an intensive care unit in any hospital in Tuscany, the local coordinator notifies the centre. There is a similar centre in every region in Italy, and it is here that the process

of taking organs from donors and allocating them to recipients on the waiting lists begins.

On the day I visited, a rainy afternoon in late January, what is known as a 'PLD' (pronouncement of legal death) was under way for a man who had died of a cerebral haemorrhage in a hospital in the province of Arezzo. The man's family had already given their initial consent for his organs to be donated (or rather, they had certified that he had expressed his wish to donate while he was still alive), and all the procedures necessary for the routine medical checks had been carried out, pending the final green light from relatives and doctors. The organisation here is painstaking, operating 24 hours a day, 365 days a year, which is essential, given the nature of the machinery that has to be set in motion. 'Between 100 and 120 people are mobilised for every transplant,' explains Franco Filipponi, director of the liver surgery and liver transplant operating unit of the Pisa University Hospital, which carries out an average of three operations per week, the highest number in Italy.

Journey into the world of transplants: Where it all starts - organ donation (part one)

Checks

During the hours required to **formalise the death** of the person, the regional coordination centres are working mainly on checking their suitability as a **potential donor** and the safety of a potential transplant. They seek to establish whether the deceased was suffering from any disease, infection or tumour which would make their organs unusable, and in the meantime to establish compatibility with recipients on the waiting list and inform them that their turn may have come. The donor is assigned a level of risk based on their medical history, cause of death and laboratory and diagnostic tests, which may be normal or increased, depending on the results of analysis of the available information. 'This is a provisional assessment, because the surgeon will make the final assessment. They might realise something is wrong at the time the organ is removed,' says Adriano Peris, the regional coordinator of the Tuscan transplant organisation.

In the meantime, the search for possible recipients gets under way. The donor undergoing this procedure is elderly: if everything goes according to plan, only his liver and kidneys can be donated. The heart and lungs cannot usually be used above the age of 55-60. In the case of kidneys, for which in Tuscany and other regions there is a single waiting list, **histocompatibility testing** is carried out to find initial potential recipients on the basis of immunological criteria and blood group. In the case of hearts, livers and lungs, the organ must be compatible in terms of weight and height, as well as blood group. The health condition of a potential recipient is also crucial. 'The chances of survival of individuals on the waiting list is estimated using an algorithm based on the value of some of their lab tests, and priority is given to those whose life is most at risk,' explains Lorenzo D'Antonio, the director of CRAOT.

'Anti-waste' programmes

Organs are usually allocated on a regional basis in Tuscany, as in the rest of Italy. First, however, a check is made at national level to see whether there is any **seriously ill patient** with a life expectancy of a few days: if so, the first available organ will go to him or her. The emergencies programme, like the paediatric transplant programme, is managed by the National Transplant Centre and has a single list for the whole of Italy.

It is also possible for an organ to arrive from abroad (or be allocated outside national borders), although in practice this is rare. The [EU-funded] **Foedus** programme, coordinated by the **National Transplant Centre**, was set up to facilitate organ exchanges between European countries and minimise the possibility of organs which are potentially useful to someone going to waste. 'It used to happen that other European countries would offer a spare organ, which was allocated to the first country to accept it,' says Paola Di Ciaccio, head of the International Affairs Department at the National Transplant Centre. 'However, the notification was sent by fax, and there could be a difference of twenty minutes between the first and last country to receive it. But with the new portal, the notification is sent by e-mail and in Italy there is someone on duty 24 hours a day to receive it over the phone. We decided to use a special ring tone, the Radetzky March, to make it unmistakable.' Last year **22 organs were 'imported' into Italy** (from Greece, Switzerland, France and Malta), while Italy donated five organs, which went to individuals in Greece, Spain and Germany. Consistent information on the donor should then be available, translated into all languages, also thanks again to the Foedus programme. This too has been an obstacle to date.

The final stage

When the final go-ahead is given to remove an organ, surgeons from the centre where the transplant will be carried out usually **remove the organ**. Several teams take turns in the operating theatre. Generally, the most perishable organs, the heart and lungs, are removed first, followed by the liver and kidneys. 'Every organ has its own "expiry date" - the ischemic time - after which it is lost. Hearts cannot usually survive more than four hours between removal and implantation. Lungs can last up to six hours, while the time limit is 10 hours for pancreases, and up to 12 for livers. For kidneys, between 24 and 36 hours is feasible,' explains Filipponi.

Each organ leaves for its destination as soon as it has been removed, transported inside special refrigerated containers. Usually the transfer is done by car or train. For longer distances of more than 500 kilometres, organs are transported by air.

In the meantime, the recipient is also on the move, having received the call they were probably waiting for for months. Some people only have to travel a short distance, but others have to make a long journey. Each centre has different policies regarding what is expected of the patient. Sometimes the air force organises the flight necessary to ensure the recipient arrives in time. However, some centres require the patient to be already on site. In this case, individuals on the waiting list who do not reside in the area must make arrangements to live nearby. Nonetheless, for someone, the wait will end today.

On Twitter @chiarapalmerini