

# Charter of Services

## of Emilia Romagna

### Transplant Reference Centre (CRT-ER)

year 2015



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### INTRODUCTION

This document aims at describing the terms of the relationship between Emilia-Romagna's Transplant Reference Centre and its users, which are the regional Intensive Care Units where donation takes place, Patients on the waiting list and those who already underwent transplant, Organs, Tissues and Cells Transplant Centres, Tissues and Cells Establishments, Citizens, Volunteering and Patients' Associations, Northern Italy and Southern Italy Macroareas, which have been active since 2014 and have replaced interregional centres, the Operational Italian Transplant National Centre (CNTo) and the Italian Transplant National Centre (CNT). The information provided is about:

- The Transplant Reference Centre's main processes:
  - Organs, Tissues and Cells donation-retrieval-transplant
  - Living donation
  - Authorizing transplants abroad
  - Data processing and reporting
  - Training
  - Donor Action
  - Regionalization
  - Regional funding to the network
  - Managing of Autologous Cord Blood export
  - Research programs
- Time and procedures of services
- Quality standards of services distributed by the CRT-ER, guaranteed to its users

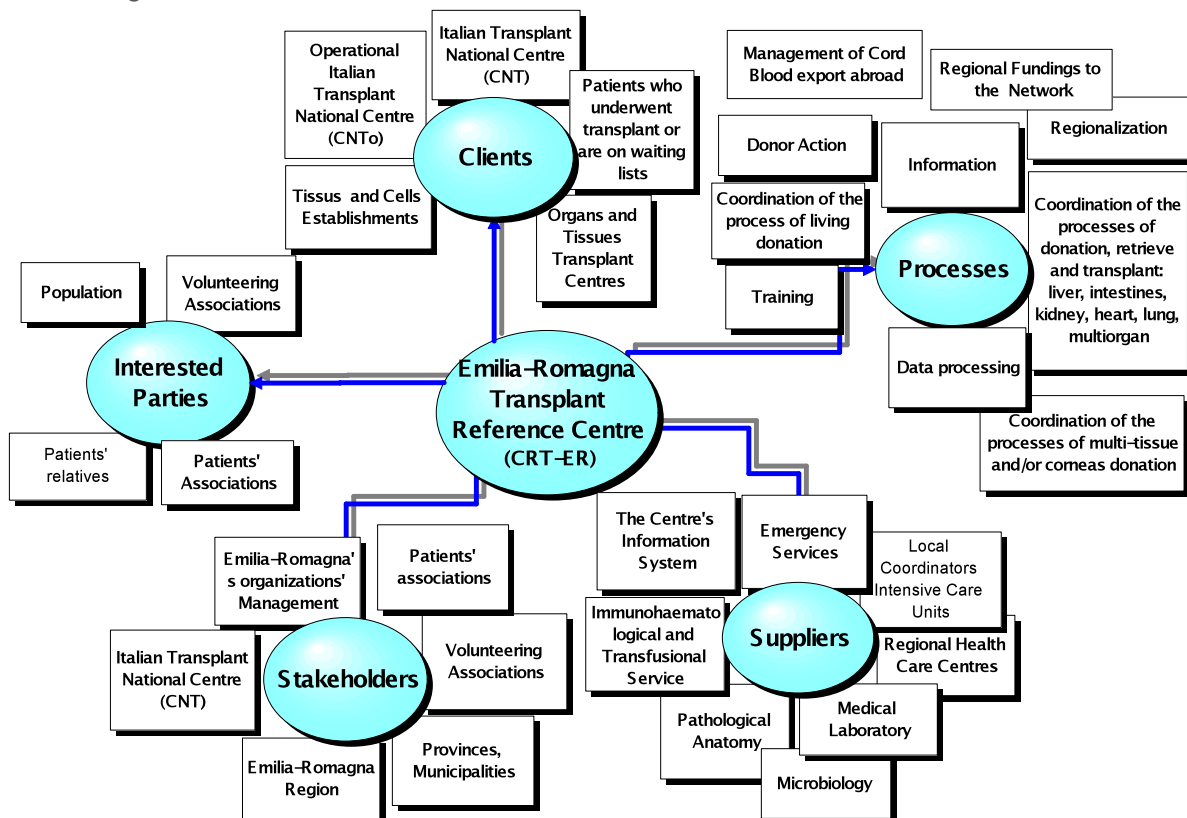
Wishing the information provided hereby will further clarify and make the services we offer, accessible.

## SECTION I: CRT-ER AND ITS MAIN PRINCIPLES

### THE ORGANIZATION

The CRT-ER coordinates the donation, retrieval and transplant process of organs, tissues and cells, in collaboration with the Region's Health Care Providers. It is located at the S. Orsola-Malpighi University Hospital in Bologna, pavilion 25, at the address: Via Massarenti, 9. The organizational system of the CRT-ER can be represented as a network of processes and interfaces which are at the roots of its operations.

CRT-ER's Organizational Network



<b>Clients</b>	Clients are those who benefit from the CRT-ER's services both at a final and intermediate stage of the processes.
<b>Processes</b>	Main processes are those which result in a product/service provided to the clients, back-up processes are those who help building the main processes.
<b>Suppliers</b>	Back-up services, specifically those organizations which provide fundamental services for the processes' success.
<b>Stakeholders</b>	Those who supply resources, authorize processes, define or transfer goals and are somehow interested in the organization's success (for financial reasons, image of the organization, results).
<b>Interested Parties</b>	Individuals or groups of people who benefit from the services or success of the CRT-ER.

Since January 2007 CRT-ER represents a Complex Operational Unit of Bologna's University-Hospital, supervised by Doctor Lorenza Ridolfi until the 31st of July 2014 and by Doctor Gabriela Sangiorgi since the 1st of December 2014, as person in charge. The CRT-ER is part of the Department of Organ Failure and Transplant, supervised by Professor Antonio Daniele Pinna.

## CLIENTS (STRUCTURES LINKED TO CRT-ER)

### Organ Transplant Centres

#### kidney transplant

Azienda Ospedaliero-Universitaria di Bologna  
Azienda Ospedaliero-Universitaria di Modena  
Azienda Ospedaliero-Universitaria di Parma

#### liver transplant

Azienda Ospedaliero-Universitaria di Bologna  
Azienda Ospedaliero-Universitaria di Modena

#### intestines transplant

Azienda Ospedaliero-Universitaria di Bologna  
Azienda Ospedaliero-Universitaria di Modena

#### heart transplant

Azienda Ospedaliero-Universitaria di Bologna

#### lung transplant

Azienda Ospedaliero-Universitaria di Bologna

#### pancreas transplant

Azienda Ospedaliero-Universitaria di Parma (isolated and combined with kidney)  
Azienda Ospedaliero-Universitaria di Bologna (isolated and combined in multivisceral transplant)

### Tissues and Cells Transplant Centres

#### muskolo-skeletal transplant

Orthopedic Institute Rizzoli of Bologna, all health care centres of the region, some private clinics

#### blood vessels transplant

Azienda Ospedaliero-Universitaria di Bologna, Azienda USL di Bologna, I.O. Rizzoli di Bologna, Azienda Ospedaliero-Universitaria di Modena, Azienda USL di Modena, Azienda Ospedaliero-Universitaria di Parma, Azienda USL di Ravenna, Azienda Ospedaliera di Reggio Emilia, some private clinics

#### heart valves transplant

Azienda Ospedaliero-Universitaria di Bologna

#### skin transplant

Azienda USL di Cesena, Azienda Ospedaliero-Universitaria di Bologna, Azienda Ospedaliero-Universitaria di Modena, Azienda Ospedaliero-Universitaria di Parma, some private clinics

#### cornea transplant

All health care centres of the region, some private clinics

#### autologous haematopoietic stem cell transplant centres

Bologna - Policlinico S. Orsola, Istituti Ortopedici Rizzoli di Bologna, Ferrara - Arcispedale S. Anna, Forlì - IRST Meldola, Modena - Policlinico, Parma - Ospedale Maggiore, Piacenza - Ospedale Guglielmo da Saliceto, Ravenna - Ospedale S. Maria delle Croci, Reggio Emilia - Ospedale S. Maria Nuova, Rimini - Ospedale Infermi

#### allogenic haematopoietic stem cell transplant centre

Bologna - Policlinico S. Orsola (adults and children)  
Modena - Ospedale Policlinico (adults and children)  
Parma - Ospedale Maggiore  
Piacenza - Ospedale Guglielmo da Saliceto

### Regional Tissue and Cells Establishments

#### blood vessels bank

Azienda Ospedaliero-Universitaria di Bologna

#### heart valves bank

Azienda Ospedaliero-Universitaria di Bologna

#### cord blood bank

Azienda Ospedaliero-Universitaria di Bologna

#### organ donor biobank

Azienda Ospedaliero-Universitaria di Bologna

#### tissue donor biobank

Azienda Ospedaliero-Universitaria di Bologna

#### bone marrow donor register

Azienda Ospedaliero-Universitaria di Bologna

#### muskolo-skeletal tissue bank

Istituti Ortopedici Rizzoli di Bologna

#### eye bank

Ospedale Maggiore di Bologna

#### regional eye bank's branch

Ospedale Nuovo di Imola

#### skin bank

Ospedale Bufalini di Cesena

### Cell Factory

Bologna - Azienda Ospedaliero-Universitaria di Bologna  
Bologna - Istituti Ortopedici Rizzoli  
Modena - Centro di Medicina Rigenerativa "Stefano Ferrari"

Pieve Sestina - Azienda USL di Cesena  
Meldola IRST - Forlì

## SUPPLIERS

### Intensive Care Units

Bellaria di Bologna, Maggiore di Bologna, Istituti Ortopedici Rizzoli di Bologna, TI Polivalente Policlinico S.Orsola-Malpighi di Bologna, MUB Policlinico S.Orsola-Malpighi di Bologna, CEC Policlinico S.Orsola-Malpighi di Bologna, TI Pediatrica Policlinico S.Orsola-Malpighi di Bologna, Faenza Policlinico S. Orsola-Malpighi di Bologna, B. Ramazzini di Carpi (MO), Rianimazione Ospedale M. Bufalini di Cesena, TI Ospedale M. Bufalini di Cesena Degli Infermi di Faenza (RA), Arcispedale S. Anna di Ferrara (Cona), Cento (FE), Civile di Fidenza (PR), Morgagni Pierantoni di Forlì, Civile di Guastalla (RE), Nuovo di Imola (BO), Del Delta a Lagosanto (FE), Civile di Lugo (RA), Policlinico di Modena, Nuovo Ospedale S. Agostino Estense di Baggiovara (MO), Maggiore di Parma, Guglielmo da Saliceto di Piacenza, S. Maria delle Croci di Ravenna, S. Maria Nuova di Reggio Emilia, Infermi di Rimini

### Regional Health Care Centres

All of Emilia-Romagna's Health Care Centres

### Donor's Safety Regional departments

Laboratorio Centralizzato dell'Azienda O-U di Bologna, dr. Motta  
Microbiologia dell'Azienda O-U di Bologna, prof. Landini  
Anatomia e Istologia Patologica dell'Azienda O-U di Bologna, prof. D'Errico  
Malattie Infettive dell'Azienda O-U di Bologna, prof. P. Viale  
Ematologia dell'Azienda O-U di Bologna, dr. G. Bandini

### Regional Reference Immunogenetics departments

Trapianto di rene: Genetica Medica dell'Azienda O-U di Parma, dr.ssa P. Zanelli  
Altri organi: Medicina Trasfusionale dell'Azienda O-U di Bologna, dr. A. Bontadini

### IT System

Servizio Informativo dell'Azienda O-U di Bologna, Ing. D. Pedrini ff  
Softtime 90, Ing. A. Bagnini

### 118 Bologna Emergency Service

The operational Centre Bologna's Emergency, supervised by Doctor G. Gordini, coordinates air and wheel transportation, related to donation and transplant of organs, tissues and cells, in collaboration with the CRT-ER and other Emergency Centres in the region and private companies.

## ASSISTENTIAL WARRANTY AND CLINICAL RISK

In case of organizational and technological accidents, the CRT-ER's functions are not suspended: the centre is re-located within the Hospital. In order to grant greater safety against potential risks during the process of organs, tissues and cells donation, retrieval and transplant, the CRT-ER adopted Bologna University-Hospital's procedures of clinical risk management.

Tissue Establishments' functions are guaranteed as follows:

- Cornea Regional Tissue Establishment is guaranteed by the branch in the city of Imola,
- Muskolo-skeletal and Skin Tissue Establishments' functions are guaranteed by the Donor's regional tissue establishment, of cardiovascular segments, cord blood and viceversa.
- Functions related to the donor's safety in terms of infections and laboratory, are guaranteed by Parma's University- Hospital which replaces Microbiology, Pathological Anatomy and the Central Laboratory of Bologna's University-Hospital.

## SERIOUS ADVERSE EVENTS AND REACTIONS

As set on a European, National and Regional level, as far as quality and safety rules are concerned, the CRT-ER plans within its networking system, the monitoring and warning of both serious adverse events and reactions, amongst qualified branches, the Italian Transplant National Centre and the regional Observatory.

## STAFF

CRT-ER is run by professionals trained on donation, retrieval and transplant with specific knowledge on related rules.

<b>Lorenza Ridolfi</b>	<i>Regional Coordinator, Head of the CRT-ER, until the 31st of July 2014</i>
<b>Stefania Kapelj</b>	<i>Medical Executive, Donation Coordinator, person in charge of the CRT-ER from the 1st of August 2014 until the 31st of October 2014</i>
<b>Gabriela Sangiorgi</b>	<i>Medical Executive, Donation Coordinator, Research, person in charge of the CRT-ER since the 1st of December 2014</i>
<b>Nicola Alvaro</b>	<i>Medical Executive, Coordinator, Regionalisation, Fundings</i>
<b>Maria Bonanno</b>	<i>Medical Executive, Coordinator, Standards, Donor Action, Clinical Risk, Training</i>
<b>Tiziana Campione</b>	<i>Medical Executive, Coordinator, Tissues, Transplants Abroad</i>
<b>Carlo De Cillia</b>	<i>Medical Executive, Donation Coordinator</i>
<b>Angelo Ghirardini</b>	<i>Technical Executive, Health Economist</i>
<b>Manuel Labanti</b>	<i>Administration Technician, Data Processing and management</i>
<b>Marzia Monti</b>	<i>Nursing Coordinator</i>
<b>Laura Persico</b>	<i>Administration Assistant</i>
<b>Caterina D'Errico</b>	<i>Administration Assistant (until the 18th of January 2015)</i>

## THE GROUP'S VALUES

The group of professionals who work at the CRT-ER is inspired by values such as ethics, competence, coordination, work planning and interpersonal relationship and can be identified with:

- The awareness of being responsible for the coordination of a process which, starting from the will of donating as a civilized society, allows to improve transplanted patients' standards of living
- The desire of working as a group to reach a common goal, sharing a determined and cooperative attitude, through dialogue, the exchange of opinions and the will to question one's own position.
- The constant search for intellectual inspiration and new ideas, in order to make sure that both the organization and its professionals, keep their abilities but also improve them while pursuing innovation.
- The need to find a common ground with people in difficult situations, in order to solve conflict, finding solutions shared by every individual.

## SECTION II: THE STRUCTURE AND THE SERVICES PROVIDED

### CONTACTS

<b>Telephone</b>	Administration Coordination CRT-ER's Supervisor's Office On-call Coordinators (for operators) Umbelical Cord Blood Line	+39-051-2143665 +39-051-2143664 +39-051-2144708 +39-3358135813 / +39-335320683 +39-051-2144646
<b>Fax</b>		+39-051-6364700
<b>@ Email addresses</b>	airt-crter@aosp.bo.it gabriela.sangiorgi@aosp.bo.it	
<b>Pec (Certified Email Address)</b>	crt-er@pec.aosp.bo.it	
<b>Website</b>	<a href="http://salute.regione.emilia-romagna.it/trapianti">http://salute.regione.emilia-romagna.it/trapianti</a>	
<b>Mailing address</b>	Via Massarenti, 9 pad.25 - 40138 Bologna	
<b>In person</b>	Via Massarenti, 9 pad.25, piano terra - 40138 Bologna	

**Administration Office Hours** from Monday to Thursday, from 8am to 5pm  
Friday from 8am to 2pm

**Coordination Activities Hours** from Monday to Friday, from 8am to 8pm  
Saturday from 8am to 12pm  
On-call: Saturday 12pm to 8pm, at night and on holidays

**Cord Blood Counselling Hours** from Monday to Friday, from 9am to 5pm

### PROCESSES AND ACTIVITIES

#### coordinating organs and tissues donation, retrieval and transplant

- Coordinating Organ and Tissue donation and collecting related data
- Verifying on the SIT (Transplant IT system) the consent to donating
- Verifying that the immunological tests needed for transplants have been performed
- Coordinating retrieval of organs and tissues, and the relationship between intensive care units and transplant reference centers, in cooperation with the local coordinators
- Allocating donated organs, following both the criteria established at the national level and priorities deriving from regional patients' waiting lists
- Coordinating transport of biological samples, staff, organs and tissues within the region, and also to the rest of the country and abroad
- Coordinating the collection and transmission of data relating to people waiting for transplantation, in compliance with the criteria established by the Italian Transplant National Centre
- Supervising the relationship between local health authorities and voluntary organizations and patients
- Ensuring transparency of the system, respect for equal opportunities for the citizens registered on the waiting list and privacy.

#### coordinating living donation

Monitoring procedures of living donation:

- Checking and entering both the donor and the recipient's personal information, to the SIT and the Transplant Reference Centre's register
- Checking and entering transplant data, to the SIT and the Transplant Reference Centre's Register
- Checking and entering follow-up data donor / recipient to the SIT and the Transplant Reference Centre's Register
- Joint rating of potential Good Samaritan donors

#### coordinating transplant abroad

- If requested, granting certification/authorization to organ transplantation abroad for patients living in Emilia-Romagna, if transplant cannot be performed in Italy within accepted time standards (DM 03/31/2008, OJ No. 97 of 04.24.2008). Once transplant has been performed, the Transplant Reference Centre releases a new authorization to allow post-transplantation care abroad

## data processing and reporting

- Processing data related to Organ, Tissue and cell donation and transplant
- Writing and disseminating to the regional network, monthly, quarterly and annual data reports related to donation, retrieval and transplant of organs, tissues and cells as a form of evaluation of the activities performed by the regional system and also to inform

## training

The Transplant Reference Centre is committed to promoting the training of staff working in the field of donation and transplantation of organs, tissues and cells.

The main programs are:

- The TPM Italy project which is, currently, the best training available at the European level, for Donation Coordinators (the Transplant Reference Centre joined it in 1996 both with teaching activities and through coordination of regional participants. Since 2009, it also organizes an annual TPM course dedicated exclusively to nurses from the regional network, which did not take place in 2014. In 2015, the Transplant Reference Centre has planned a TPM course for physicians and nurses
- National training projects
- "AL-MA" Regional project, an accredited itinerant course, addressed to the medical staff of various health care institutions in the region, taught by doctors and nurses, aimed at informing and training the medical staff of the regional transplant network. The goal is to identify and solve the problems found in each company in the field of donation, and offer help to optimize the process
- "Civil Registry/Consent Project – Italian Transplant National Centre" (national project in collaboration with all the regions: itinerant course aimed at training Civil Registry Offices' employees of the towns of the region, who work at collecting declarations of consent to donation
- Meetings of the staff of the Transplant Reference Centre which take place twice a month.
- Website: [www.saluter.it/trapianti](http://www.saluter.it/trapianti)

## information

The Regional Information Campaign "Una scelta consapevole" ("A conscious choice"), addressed to the people of Emilia-Romagna, has been active since 1996.

It takes place all over the region, and it is supported by the dedicated Provincial Committees and by volunteering associations. It is most active during the national week of donation and transplantation. The main external information events, sponsored by the Transplant Reference Centre, include lessons on the subject of organ donation and transplantation for the citizens, in schools, barracks and volunteering associations.

## donor action

The International Program "Donor Action" is a tool for evaluating the quality of the donation process, it was introduced in Emilia-Romagna in July 1998. Through "Donor Action", the Transplant Reference Centre is able to closely monitor the donation processes in the 28 biggest ICUs of its territory. Through this tool, it is also possible to analyse the process of identification of potential donors and implement any corrective actions, in order to achieve higher standards when it comes to processes of donation of organs and tissues. Every year, since 1998, the data provided by the program are published in a wide account.

Since July 2006, the Transplant Reference Centre takes part in the national project Qpido, for the even implementation throughout the country, of the Registry of the brain damaged. The Transplant Reference Centre, every month, sends data related to each death of patients affected by encephalic lesions, occurred in a regional ICU.

## regionalization

The resolution number 214 of the 14th of February 2005 of the Regional Council appoints the Transplant Reference Centre with the function of leading technical investigations of potential new transplant centres' opening which are later conducted by the Regional Technical Board for Authorization, Evaluation of Standards and Safety of the regional transplant system. Another function which is carried out by the Transplant Reference Centre is to keep record of the curricula of all professionals related to transplants.

The Transplant Reference Centre also verifies that organs transplant regional centres fulfill the requirements and evaluates the standards carried out by the Operational Units involved in the transplant system, organizes and attends to regional and national audits, ensures transparency, fairness and equal opportunities in the field, for patients and citizens.

## funding of the regional network

Funding to the regional transplant network are allocated annually by resolution of the Regional Council. Loans also stem from the redistribution of part of the transplant DRGs.

The Transplant Reference Centre annually points out how to redistribute funds at each of the regional public health authorities, based on the activities carried out.

## management of the export of autologous cord blood

Since July 2010, after the transfer of specific competences from the State to the regions, the CRT-ER is responsible for authorizing the export abroad for storage of autologous cord blood for mothers who will give birth at the Policlinico Sant'Orsola Hospital.

It also provides telephone counseling to the mothers who give birth in all other hospitals of the region. The hope is that this service, will give parents correct information about this practice which proved to be insufficiently useful in scientific terms, and also unnecessary and burdensome.

## projects and research

The CRT-ER takes part at the creation and development of research projects promoted by the Region and the Ministry of Health, involving the regional transplant network.

The CRT-ER was in the national program DRIN, created in order to monitor infections of multi-resistant germs in Intensive Care Units which can potentially be transmitted to transplanted patients. After participating in DRIN, the CRT-ER has joined the national project SInT (which aims at monitoring infectious diseases in transplantation) in order to prevent the spreading of infections sustained by multidrug-resistant bacteria (MDR) in the field of transplantation, with risk analysis.

The CRT-ER is also participating in the project "Liver Match, national prospective study on HCV+ donors" and to a Project aimed at correctly allocating organs in liver transplantation from "HbsAg+, anti HbcAb+ and HCV+ donors".

## REPRESENTATIVES OF PROCESSES AND ACTIVITIES

Coordination of the processes of donation, retrieval and transplantation, coordination of multi-tissue and/or cornea donation, coordination of living donation, export of autologous cord blood, information: Dr. Lorenza Ridolfi (until the 31st of July 2014), Dr. Gabriela Sangiorgi, Dr. Nicola Alvaro, Dr. Maria Bonanno, Dr. Stefania Kapelj, Dr. Tiziana Campione, Dr. Carlo De Cillia, Mrs. Marzia Monti, Mrs. Laura Persico, Mrs. Caterina D'Errico.

Data Processing and Reporting: Dr. Angelo Ghirardini, Mrs. Marzia Monti, Mr. Manuel Labanti.

Training: Dr. Lorenza Ridolfi (until the 31st of July 2014), Dr. Gabriela Sangiorgi, Dr. Nicola Alvaro, Dr. Maria Bonanno, Dr. Tiziana Campione, Dr. Carlo De Cillia, Mrs. Marzia Monti, Mr. Manuel Labanti, Dr. Angelo Ghirardini.

## SPECIFIC ASPECTS OF THE PROCESS OF DONATION

### REPORTING OF POTENTIAL DONORS

Detection of any potential donor is carried out by the Health Care Centre Local Coordinator as soon as a person is subjected to brain death assessment in ICU. The CRT-ER consults the national IT system for any expression of will declared while living. In case of positive expression of will to donate expressed by the deceased or in case of a lack of opposition to donating by relatives with the legal right to do so, the procedures to investigate the suitability of the donor, and his/her retrievable organs and tissues, take place. The potential donor's medical history, clinical records and data are transferred from the intensive care unit to the CRT-ER via computer (Intranet Protected Network) where the donation event is available in real time, to the involved professionals (transplant surgeons and doctors working for Transplant Centres, Regional reference services for donor's safety and the quality of donated organs), but also phone and fax are obviously used to exchange information.

### EVALUATION OF THE SUITABILITY OF POTENTIAL DONORS

The phase of evaluation of suitability of potential donors aims at excluding diseases potentially transmissible to the recipients of organs and tissues. Diseases that might be transmitted from the donor to the recipient can be summarized in two categories: infectious diseases (viral, bacterial, fungal, protozoal or prion) and neoplastic ones. As far as this issue is concerned, there are national guidelines, constantly updated and shared, which can be consulted for the allocation of suitability of the donor also when specific diseases are present. At the national level, there are also professionals, available 24 hours a day, to be consulted for a second opinion. The regional network can also rely on advice from the Sant'Orsola Hospital in Bologna (anatomical-pathological, infectivological, immunological, microbiological, haematological, also available 24 hours a day). If the medical history or clinical record of the donor should suggest a social behavior which implies a greater risk of infection, or in the case of retrieval of tissues, biomolecular tests (HBV-DNA, HCV RNA, HIV-RNA) will be performed in order to reduce the possibility of transmitting the most common viral and retroviral diseases. Biomolecular tests are always performed when tissues and corneas are donated. Blood samples of the potential donor are centralized at the Department of Microbiology of the University Hospital of Bologna, directed by Professor Maria Paola Landini, regional representative for the donor's infectivological safety.

During endemic periods for infectious diseases (West-Nile Virus, Chikungunya, Dengue), the Regional Reference Laboratory centralizes the medical reports of the related tests. For the donor's safety in terms of neoplastic, a check list, divided into 2 parts has been laid down. The first part is dedicated to a careful anamnesis and objective examination of the corpse with a beating heart, and it is filled in and signed by the local coordinator of the ICU of donation. The second part is left to the surgeon who retrieves the organs or tissues, who certifies, while retrieving, the lack of suspicious injuries. During the organ retrieval, should there be suspicious lesions, the Regional organization allows to perform biopsies and to obtain the results before transplantation of the first organ. The SSD Histopathological and Molecular Diagnostics of solid organs of Bologna, Professor D'Errico, is the regional reference person who supervises such operations.

### EVALUATION OF THE QUALITY OF ORGANS AND TISSUES TO BE TRANSPLANTED

The evaluation of the quality of organs and tissues to be transplanted includes a first step which coincides with the collection of anamnesis, clinical and instrumental data, and a second step which is achieved, if necessary, during the retrieval of organs and which includes the histopathological feedback, necessary to assess the presence/amount of degenerative diseases on donated organs through biopsy.

The procedure also guides doctors through the choice of the most compatible recipient to the donated organ and the type of transplant (i.e. double kidney transplant). Professor D'Errico is the regional representative for this activity.

## ORGAN ALLOCATION

In the delicate process of donation, procurement and transplant, the criteria for organ allocation are strongly ethical and need to be implemented as transparently as possible. Professionals at the Emilia-Romagna Transplant Centres share the general criteria of choice and, every day collaborate so that the "transplant network", and not a single doctor, decides who has to receive the donated organs.

As a general rule it must be said that the organs are transplanted in the transplant centres of the region which generated them, except in the event of national programs (emergencies, made emergencies, pediatric, liver allocation based on Macroarea) which follow the national allocation that is managed by the CNT.

There are 4 scenarios that can occur when it comes to a donor in the region Emilia-Romagna:

### 1. Organ allocation for national programs

In case of donation from children (<15 years old) organs are allocated, by CNT, to the most compatible recipient enrolled on the national waiting list, regardless of the Transplant Centre where the patient enrolled. National protocols that Transplant Reference Centres have to observe in the process of allocation, are those of emergency for liver, heart and lungs transplantation: in this case, the donated organs must be allocated to the transplant centres which have called for an emergency. An emergency liver case can be listed if the liver failure has been caused by a fulminant hepatic failure caused by viruses or toxics on a liver which was previously healthy, by a Primary Non Function of a liver transplanted since less than 10 days, by post-traumatic hepatectomy, by acute failure of Wilson's disease, by acute thrombosis of the hepatic artery within 15 days from transplant. Also the criteria used to request a heart or a lung with emergency, are codified by national guidelines. Another national program, in force since 2/1/2011, is the one for "hyper immune" patients, which has the purpose to facilitate access to kidney transplantation, to hyperimmunised patients (PRA  $\geq$  80%) who have been enrolled to the waiting list since, at least, 10 years, and which includes exclusively adult donors. In the former AIRT area, the program "hyperimmune AIRT" has been operational for more than nine years. It aims at promoting transplantation to hyperimmunized patients, regardless of the time spent on the waiting list. At national level, from the



28th of March 2011, the liver allocation program "Macroarea" is operational: it states that patients on the list waiting for a liver, who are in critical conditions, highlighted by the MELD score  $\geq 30$ , are allocated based on the Macroarea (Macroarea North, in CRT-ER's case) with the first available liver. Also organs received following this procedure, must be returned to the region which generated them.

## 2. Organ Allocation in conditions of surplus

Allocation of organs in advance is based on a "gentlemen agreement" between National transplant centers. If an advanced request is notified to the CNT, when an organ donation occurs, the organ can be allocated based on the advance, by the Transplant Reference Centre. The organ will have to be returned.

## 3. Organ Allocation in return

There is the obligation to return an organ at the earliest, if an organ has been obtained, in order to satisfy an urgent request.

## 4. Organ Allocation in standard conditions

As a general rule it should be emphasized that the aim of the Transplant Reference Centre is to transplant every organ donated to the most compatible/serious recipient, registered on the waiting list, by doing everything to ensure safety and quality throughout the whole procedure and to guarantee equal opportunities to patients. In the region Emilia-Romagna the criteria below, are followed:

### ▪ Kidney transplant

The IT program which collects the clinical records of every patient on the regional waiting list, provides the the list of potential recipients, from the most compatible to the least, after inserting the donor's immunological data, weight, age and blood type. At Parma's regional Immunogenetics Department, the cross-match process is performed (a search for a negative response between the donor's and the potential recipients' blood), on the serum of the first 10 patients who are listed as compatible. This process, avoids transplantation of the kidney to a patient who would experience a serious rejection of the organ. Donated kidneys are transplanted to the first two patients on the list with a negative cross match, regardless of the place of registration to the waiting list (Bologna, Modena or Parma).

### ▪ Liver Transplant

The allocation of liver is performed according to the regional list, where those enrolled at the Transplant Centers of Bologna and Modena are sorted by the seriousness of their conditions. Amongst the patients compatible to the donor enrolled, the liver is allocated to the one who is considered in most severe clinical conditions, according to the MELD score (Mayo clinic End Stage Liver Disease score).

### ▪ Heart transplant

Also the allocation of the heart follows the criteria of blood type compatibility, of the conditions of the recipient, the time spent on the list. Also, the differences in weight and gender between donor and recipient are crucial.

### ▪ Pancreas transplant

In the region, pancreas transplants are performed both combined with kidney (Parma's Transplant Centre), with other organs in Multivisceral Transplantation (Bologna's Transplant Centre) or isolated. The allocation of pancreas follows the same criteria as other organs. In combined transplants, "priority of allocation" criteria, are followed.

### ▪ Intestinal and multivisceral transplant

The intestinal and multivisceral transplant centre for adults of the Bologna University Hospital is, currently, the only one in Italy, where such surgery is performed. All suitable organs donated in Italy are, therefore, offered to the region Emilia-Romagna. The CRT-ER allocates organs to the Bologna Transplant Centre which performs the surgery to the recipient who shares the same blood type with the donor, who is in the most serious conditions, who is most somatically compatible to the donor and has spent a greater amount of time on the list. A limiting factor for intestinal transplantation is the need to retrieve organs from small size donors (body weight less than 45-50 kg).

### ▪ Lung transplant

The anthropometric data of both donor and recipient determine the allocation of donated lungs, as well as ABO compatibility. Shall two patients share the same features, the organs are transplanted to the one who has been longer on the waiting list.

### ▪ Combined transplants

If the clinical features of the donor allow so, to some selected patients, combined multiple organs transplants can be performed. Specifically, heart-kidney, heart-liver, kidney-liver, or multivisceral with or without liver, kidney-pancreas, heart-liver-kidney transplants and so on. Combined transplantation is considered a clinical emergency and the allocation of more organs is a priority with respect to the allocation of a single organ, unless emergency for a single organ is listed.

## TISSUE ALLOCATION

**Cornea:** If there is specific consent to donation, the corneas are retrieved (by ophthalmologists or other doctors trained to perform the surgery) and they are sent to the regional bank which is situated at the Ospedale Maggiore in Bologna. The bank takes care of certifying the quality of the tissues, of their storage and subsequent allocation to the Transplant centres which apply for them. In the city of Imola, there is a branch of the regional Bank which retrieves, processes and transplants corneas on its own.

**Skin:** The tissue is mainly retrieved by the team of the Burn Centre in the city of Cesena, where there is also the regional Skin Bank, but also by other doctors that have been trained at the regional level. At the bank the evaluation of quality, storage and subsequent allocation to applying transplant centers, takes place.

**Blood Vessels:** They are retrieved by surgeons of the vascular surgical departments of the region who have often already been involved in the retrieval of kidneys from the same donor, and they are sent to the regional bank which is situated at the Transfusion Department of the University-Hospital in Bologna. At the bank the evaluation of quality, storage and subsequent allocation to applying transplant centers, takes place.

**Bones:** Bone-tendon segments are retrieved from a specializing team at the Istituto Ortopedico Rizzoli in Bologna (Rizzoli Orthopedic Hospital), where the regional bank is situated. At the bank the evaluation of quality, storage and subsequent allocation to applying transplant centers, takes place.

**Heart valves:** If the heart cannot be transplanted and the donor is younger than 65, with a normal valve function, it is possible to retrieve it to later isolate the valve structures at the regional bank which can be found together with Vessels Bank. At the bank the evaluation of quality, storage and subsequent allocation to applying transplant centers, takes place.

## WAITING LISTS FOR ORGAN TRANSPLANTATION IN EMILIA-ROMAGNA

Kidney transplantation is performed by the three Transplant Centres of the region: Bologna, Parma and Modena. The waiting list is one at the regional level, which means that each organ is transplanted to the most compatible patient, regardless of the place where the patient has enrolled.

Liver transplantation is performed by the Transplant Centres in Bologna and Modena and also in this case, there is only one regional list, updated in real time by the Transplant Centres and monitored online by the CRT-ER in order to observe the national guidelines which, every year, are adjusted to the appointed Regional Technical Committee's needs and ratified by the responsible member of the regional council.

Intestinal, multivisceral transplant is performed in Bologna, as well as heart-lung transplant. Parma's Transplant Centre performs transplants of kidney-pancreas and pancreas only. Bologna's Transplant centre performs pancreas transplant as part of the multivisceral one.

In the following table are the numbers of patients recorded on the regional waiting lists at 12/31/2014 for each organ, with their relative waiting time and mortality rate while on the list (Source national data: CNT at 12/31/2014).

	KIDNEY		HEART		LIVER		ADULT INTESTINES MULTIVISCERAL	POLMONE		
	E-R	Italia	E-R	Italia	E-R	Italia	E-R	E-R	Italia	
patients on the list	1,094	6,538	45	719	266 (209 BO/57 MO)		1042	23	24	368
average waiting time enrolled patients at 12/31/2014 (years)	3.29	3.2	1.68	2.9	3.09 (BO) 2.42 (MO)		2	5.6	1.32	2.3
mortality rate on the list % year 2014	1.26	1.7	10	6.6	4.61 (BO) 7.55 (MO)		6.4	8.33	16.67	9.2
average waiting time transplanted patients 2014 (years)	2.89	2.2	0.83	1	0.92 (BO) 0.57 (MO)		0.5	---	0.44	1

Further and more detailed information may be found on the Charters of Services of each Transplant Centre, where the requirements to be recorded on the list are described. As far as kidney transplant is concerned, in order to be kept on the list, it is mandatory to send serums to Parma's Immunogenetics department, every three months (Dr. Paola Zanelli).

## RECIPIENT AND ORGAN SURVIVAL

Below, are the percentages of survival of patients and transplanted organs, after 1 and 5 years from transplant, for kidney, heart and liver transplants performed from 2000 to 2012 (last data available).

The source of the data is <http://trapianti.salute.gov.it>, quality and results section, Table B1.

KIDNEY					
Number of cases	Patient survival rate %			Organ survival rate %	
	1 year	5 years		1 year	5 years
Bologna	807	98.2	94.7	92.1	83.9
Parma	535	98.3	94.1	95.5	85.6
Modena	319	97.7	92.9	91.5	82.5
Italia	17,256	97.2	92.1	92	81.9

HEART					
Number of cases	Patient survival rate %			Organ survival rate %	
	1 year	5 years		1 year	5 years
Bologna	396	91.1	81.4	90.4	80.7
Italia	3,727	83	74.1	82.4	73.4

LIVER					
Number of cases	Patient survival rate %			Organ survival rate %	
	1 year	5 years		1 year	5 years
Bologna	1041	84.9	72	78.6	66.3
Modena	521	83.3	69.7	78.1	65.1
Italia	11,517	85.9	73.7	81.5	69.1

As for lung transplantation, national clinical records only refer to the years from 2000 to 2009. Source CNT.

LUNG			
Number of cases	Patient survival rate %		
	1 year	5 years	
Bologna	17	69.5	53
Italia	764	65.4	45.6

National patient and organ's survival percentages, after 1 and 3 years, for intestinal-multivisceral transplantation refer to the years from 2001 to 2011. In Italy, Intestinal-multivisceral transplantation, is performed on adults only in the region Emilia-Romagna. In the national clinical records, pediatric cases have been added. Source CNT.

INTESTINES / MULTIVISCERAL					
	Number of cases	Patient survival rate %		Organ survival rate %	
		1 year	3/5/10 years	1 year	3/5/10 years
Bologna Adults al 31/12/2014	49	77	59/54/46	71	54/50/42
Italia (con pediatrici)	59	78.3	60.6/-/-	75.6	56.4/-/-

## SECTION III: STANDARDS AND COMMITMENTS

### PROCESSES, ACTIVITIES, QUALITY FACTORS, STANDARDS AND COMMITMENTS

In the following table are the main activities performed by the CRT-ER with their related quality factors, standards and commitments.

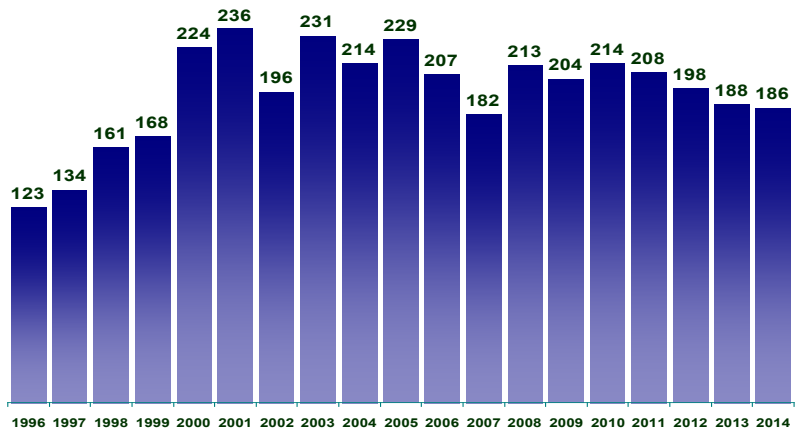
CRT-ER's activities	Quality Factor	Standard and commitment of CRT-ER
<b>Potential donor's identification</b>		
Registration of donor's data	Form's completeness	≤ 15days from donation
<b>Suitability of donor, organs and tissues</b>		
Review of mandatory virological tests and double check of the recording in the donor's form	Observance of time of organ retrieve	Medical reports within death observation period and before transplantation of first organ
<b>Organs, tissues, cells, staff transport</b>		
Coordination of material, surgical staff, organs, tissues, cells' transport	Time of transport	Observance of time agreed with bologna's emergency service and donation site
Coordination of corneas' transport	Time of transport	Within 24 hrs from request
Coordination of umbelical cord blood's transport	Time of transport	Within 48 hrs from retrieve
<b>Organ, tissue and cell's allocation</b>		
Supervision of allocation of organs and tissues	Observance of national and regional guidelines	Suitable transplanted organs/retrieved organs relation (monitoring). Stored tissues/ retrieved tissues relation (monitoring)
Offer (in and out of the region) of retrieved organs	Full use of retrieved and suitable organs	Offered organs/suitable retrieved organs for transplant relation (monitoring)
<b>Contact with relatives</b>		
Sending letter to donor's family (organs and multitissue)	Time of sending	Within 6 weeks from donation
Replying to the donor's family's request of follow up of the donated organs	Follow up data availability from transplant centres or the appointed CRT. Time of reply to relatives.	Letter of reply with the requested information is sent in 100% of cases within 48 hours after follow up is available.
<b>Report on donation, retrieval and transplant activities</b>		
Development of monthly, quarterly and annual activity reports.	Time of sending to those involved in the process	≤ 15days from the end of the month, quarter, year.
	Alignment of SIRT* data with SIT** data	100% data correspondence
<b>Donor Action</b>		
Monitoring of deaths and brain death verification in intensive care units	Accuracy and timing of monitoring and processing of data recorded by regional intensive care units.	Recording data within the first week of the month following deaths. Sending of data to the CNT and the regional network within the first ten days of the following month. 100% correspondence SIRT-SIT data.
<b>Informing population</b>		
Organizing informational events for barracks, schools and other institutions	Organizational efficiency	Handling of 100% of the requests received

\* Regional Transplant Information System

\*\* National Transplant Information System

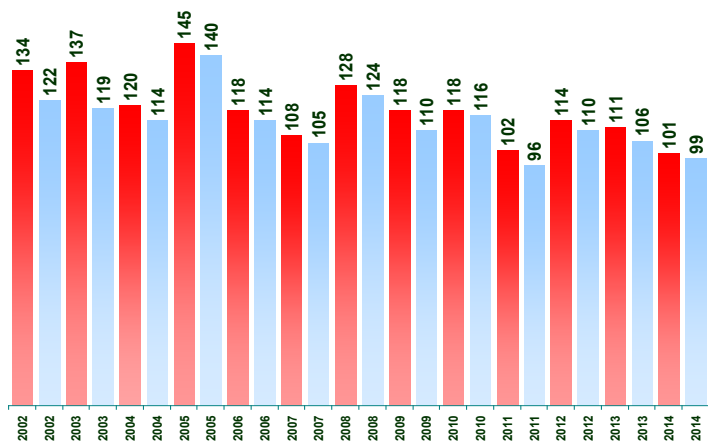
## RESULTS OF THE PROCESS OF DONATION, RETRIEVAL AND TRANSPLANTATION IN EMILIA-ROMAGNA

Brain deaths

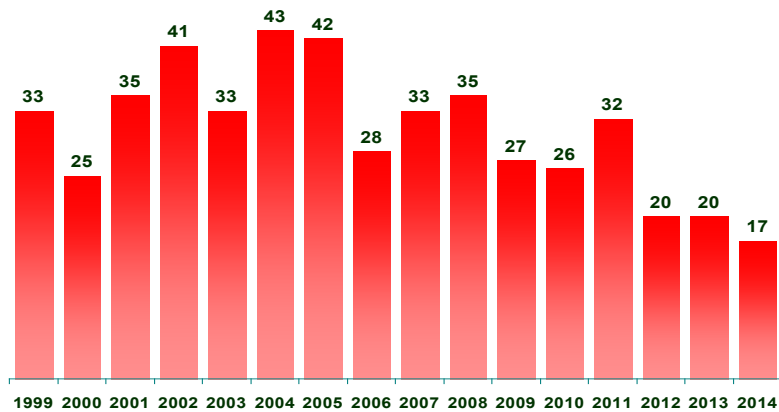


Cadaveric donors

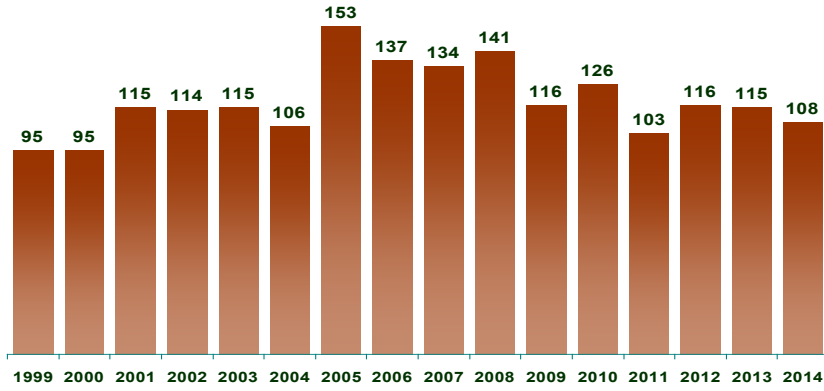
■ EFFECTIVE  
■ UTILIZED



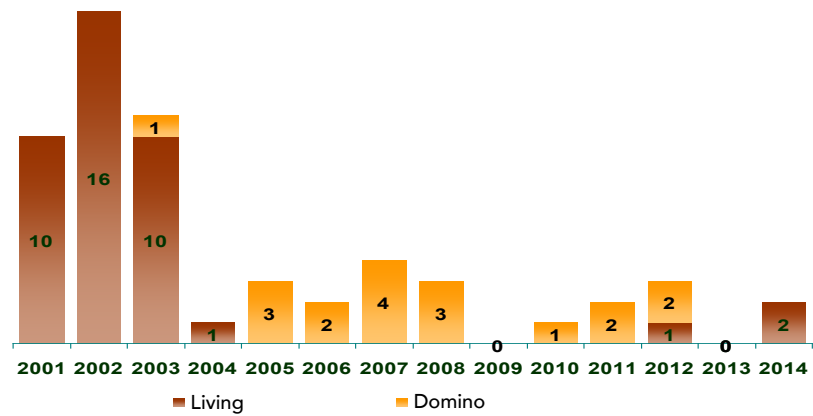
Heart transplants



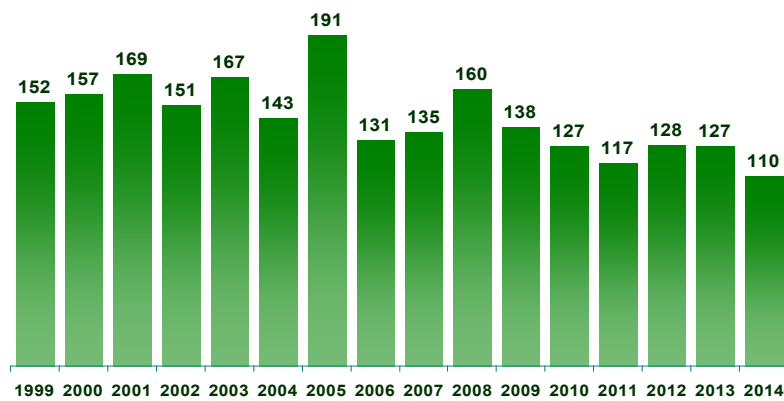
Cadaveric Liver Transplants



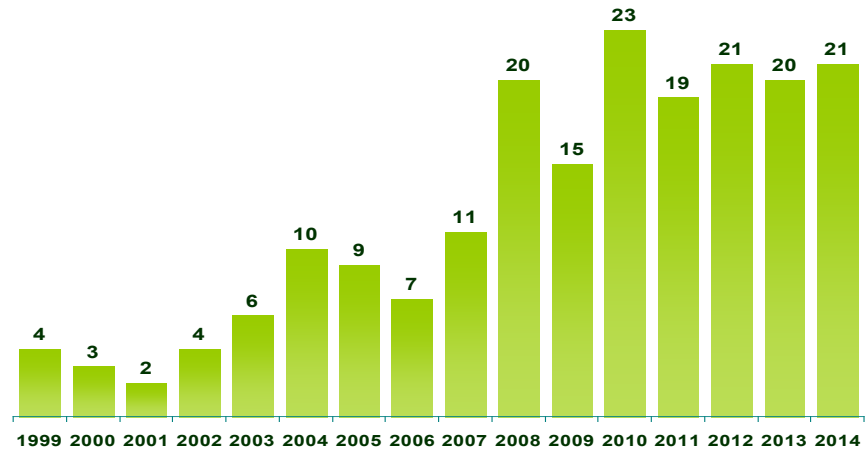
Living Liver Transplants



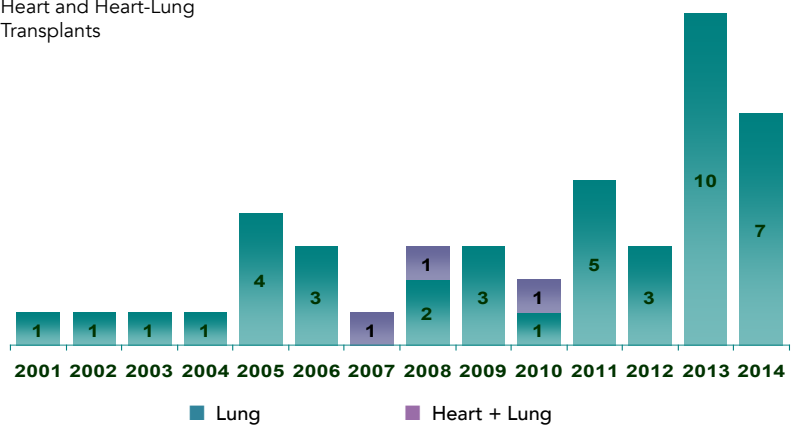
Cadaveric Kidney Transplants



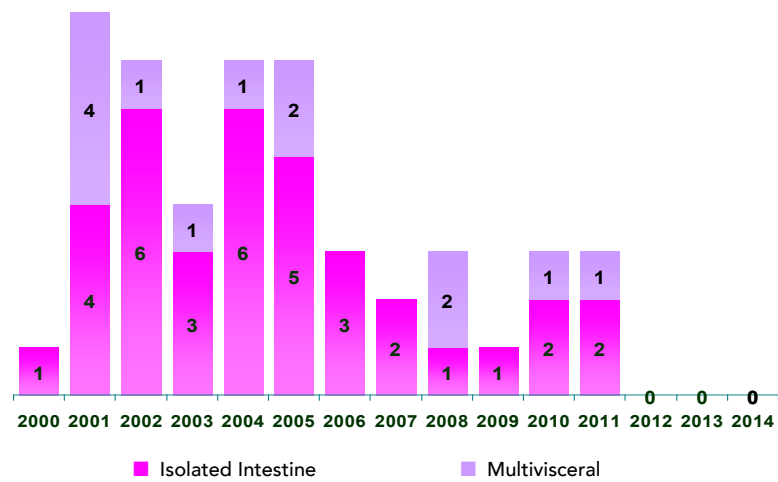
Living Kidney Transplants



Heart and Heart-Lung Transplants



Intestinal-Multivisceral Transplants



#### Retrieved tissues in Emilia-Romagna, years 2012-2014

Tissues	2012		2013		2014	
	donors	retrived tissues	donors	retrived tissues	donors	retrived tissues
Cornea	587	1,169	518	1,031	533	1,064
Amniotic Membrane	12	12	24	24	19	19
Blood Vessels	22	138	26	137	28	139
Bone	942	1,766	839	1,614	771	1,452
Adipose Tissue			14	14	6	6
Heart Valves	27	50	26	52	30	60
Skin	63	213,058 cm <sup>2</sup>	71	210,963 cm <sup>2</sup>	60	181,361 cm <sup>2</sup>

#### Transplanted tissues in Emilia-Romagna, years 2012-2014

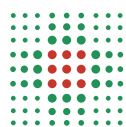
	2012	2013	2014
Cornea	624	582	561
Sclera	82	78	89
Amniotic Membrane	202	250	248
Bone-Tendons Segments (transplants)	616	616	627
Bone-Tendons Segments (implants)	2,253	2,474	1,719
Blood Vessels	79	49	23
Heart Valves	16	12	19
Skin- De-Epidermised Skin - Decellularized Skin	148+18+8=174	120+71+51=242	136+143+38=317
<b>Total</b>	<b>4,046</b>	<b>4,303</b>	<b>3,603</b>

## SECTION IV: PROTECTION OF PEOPLE INVOLVED, LEGAL RIGHTS AND INTERESTS

CRT-ER guarantees that, throughout the whole process of donation, retrieval and transplant the legal rights of the person who is brain dead and of the patients on the list and their relatives, are respected.

Specifically, the CRT-ER's commitment is to guarantee:

- the right information before the start of the process of donation, in order to protect the will of the potential donor and the conscious choice of the relatives who have the legal right to choose
- privacy when it comes to personal information and clinical records of both the donor and the recipient
- impartiality while allocating organs to Transplant Centres, observing the national and regional guidelines and the ethical values implied
- transparency of the data resulted from the donation process, provided to relatives of the patient upon request, through a stream of private information



SERVIZIO SANITARIO REGIONALE  
EMILIA-ROMAGNA