

# Organ donation and management of the potential organ donor

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## Abstract

Solid organ transplant offers the potential of disease-free survival for hundreds of thousands of patients worldwide. Transplantation not only increases life expectancy and improves quality of life, but offers long-term financial savings to health care systems. The clinician's role in early identification and management of potential donors ensures that the maximum benefit can be gained from the gift of donation. A chronic shortfall in transplantable organs has led to broadened inclusion criteria for donors, and a move towards presumed consent models for donation. Protocolized and goal-directed donor management with early involvement of the transplant multidisciplinary team increases both the quality and quantity of grafts successfully donated.

**Keywords** Deceased donor; donation after brain death (DBD); donation after cardiac death (DCD); organ donation; organ retrieval; transplantation

**Royal College of Anaesthetists CPD Matrix:** 1A01, 1F01, 2C06

## Introduction

For many patients, solid organ transplantation remains the only realistic hope of extended disease free survival. With increasing age and associated prevalence of chronic disease states, the demand for organs is increasing, and annually many thousands of individuals are added to transplant waiting lists around the world. Unfortunately, the demand for organs continues to exceed the supply of donors and many patients die before a suitable organ can be identified. In the UK last year, more than 1300 patients (20% of all patients listed for transplant) either died waiting for transplant or had to be removed from active listing because of deterioration in their condition.<sup>1</sup>

High-impact publicity campaigns aimed at improving public awareness and acceptance of donation, increasing education of medical professionals, changes in donor management and technological advances have all helped to improve successful donation rates. Last year in the UK, the number of deceased donors rose by 4% to its highest number ever.<sup>1</sup> Figure 1 demonstrates

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## Learning objectives

After reading this article, you should be able to:

- define the extent of global transplant activity
- explain the general principles of organ donation
- discuss principles of consent for organ donation
- explain the pathophysiology of brain stem death
- discuss the management of the patient donating after brain death (DBD)
- discuss the management of the patient donating after cardiac death (DCD)

the number of deceased donors, transplant activity and transplant waiting list trends over the last 10 years.

Unfortunately, despite these advances the conversion of potential donors to successful donation remains poor. In the UK last year less than 20% of patients identified as eligible donors went on to donate successfully.<sup>1</sup> Critical care physicians have a key role in helping to improve this conversion rate, through early identification of the potential donor, involvement in specialist organ donation teams, sensitive communication with families, and medical optimization of the potential donor.

## Donation and transplantation activity

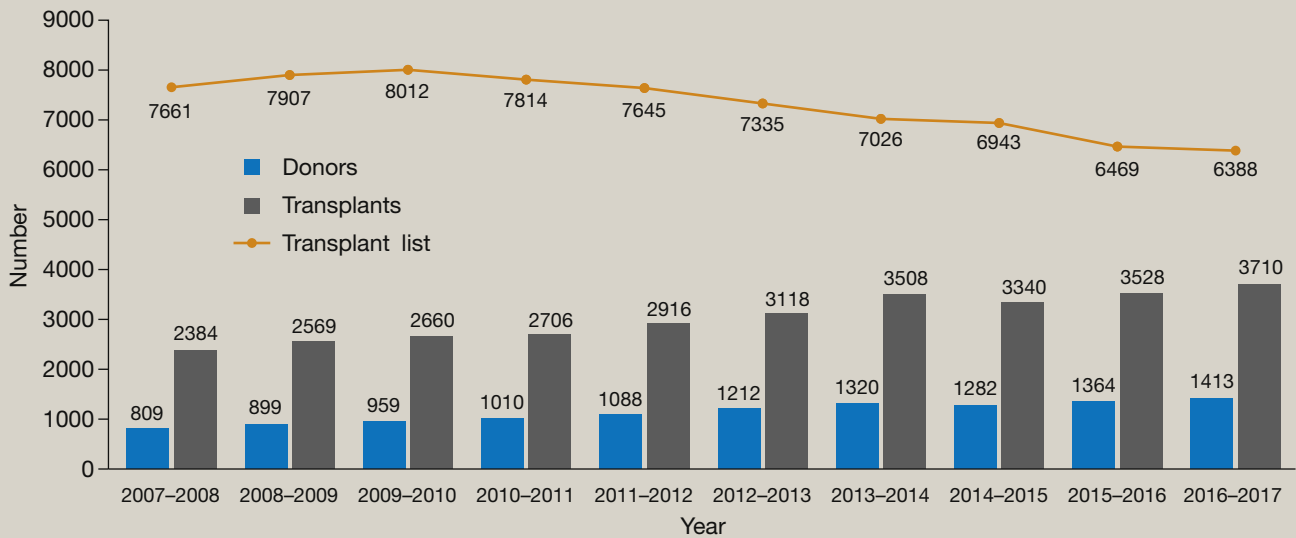
Solid organ transplants are undertaken in over 100 countries worldwide. In 2015 approximately 126,700 transplants were performed globally, a 5.8% increase over the previous yearly figures.<sup>2</sup> Donation rates vary significantly between countries as a result of religious, cultural, societal, legal and organizational differences. Renal transplantation remains the most common transplantation activity accounting for approximately 66% of all transplant activity globally.<sup>2</sup> Liver, heart, lung and pancreas transplants account for 21%, 5%, 4% and 2% of global transplant activity, respectively.<sup>2</sup>

Organs for transplantation can come from either living or deceased donors. In the UK currently around 40% of all solid organ donors (almost exclusively kidney donations) occur from living donors.<sup>1</sup> The remainder of donations occur following the death of the donor. Traditionally, donation was only considered in patients following brain stem death (donation after brain death; DBD). In recent decades significant improvements in road safety, reductions in major trauma, and improved management of traumatic brain injury and intracerebral haemorrhage have led to a steady decline in the pool of DBD donors.<sup>3</sup> As a response to this, in an attempt to increase the pool of organs available following reduced numbers of DBD donors, patients who die from other causes (donation after cardiac death; DCD) have been considered. Figure 2 shows the changing nature of organ donation and transplant activity in the UK over the last decade.

## General aspects of the organ donation process

The process from identification of a possible organ donor to the successful transplant of a viable organ is a highly complex process requiring careful coordination of many, often geographically

Number of deceased donors and transplants in the UK, 1 April 2007 – 31 March 2017, and patients on the active transplant list at 31 March



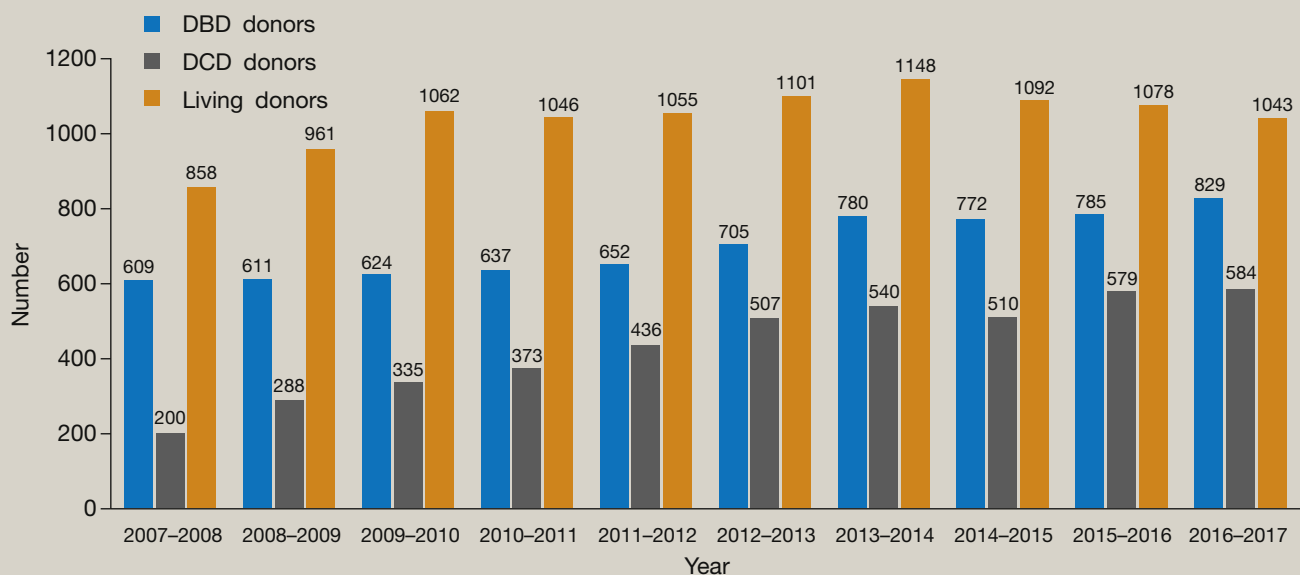
Adapted from: Transplant activity in the UK. Activity report 2016/2017. NHS Blood and Transplant 1

Figure 1

distant multidisciplinary teams. The majority of countries involved in solid organ transplantation have a national database of patients awaiting transplant and well-established networks of organ retrieval and transplant specialist teams.

In the UK, NHS Blood and Transplant (NHSBT) oversee the process of organ donation and transplantation. To facilitate donation NHSBT provide a network of regional specialist nurses in organ donation (SN-OD). These specialist nurses not only deal

Deceased and living donors for 2007-2017



Adapted from: Transplant activity in the UK. Activity report 2016/2017. NHS Blood and Transplant 1

Figure 2

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