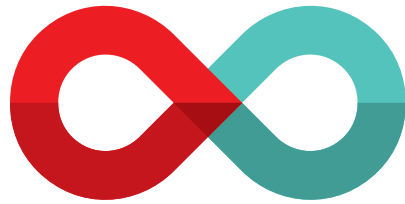


Organ Donation and Transplantation in Canada

System Progress Report – 2017 Update



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The people portrayed in the images are donors, recipients, staff or partners and to them we offer our special thanks.

Front Cover: Heather: Living liver donor
Everad: Heart recipient (and Canadian Blood Services' employee)

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This report is accessible online at
<https://professionaleducation.blood.ca/en/organs-and-tissues/transplantation/reports>



Dr Graham Sher
CEO Canadian Blood Services

Together, we are Canada's biological lifeline. This, our newly adopted mission statement, rings especially true when we consider the remarkable collaborative effort that underpins the organ and tissue donation and transplantation (OTDT) system in Canada. On behalf of that collaborative network, I am pleased to introduce this 2017 update on system progress.

The results reflected within this report represent the individual and collective work of both the provincial programs and the national efforts led by Canadian Blood Services. Most importantly, through this report we sincerely acknowledge the generosity of the 1,335 organ donors and 4,969 tissue donors and their families who gave so selflessly in 2017. We also recognize the heartfelt appreciation of the recipients whose lives were saved or changed through the act of donation.

In recent years, Canada has shown sustained improvement in deceased organ donation, with a remarkable increase of 51 per cent since 2008. The 2017 data show Canada nearing 22 donors per million population, a rate that puts our nation on par with Australia and the United Kingdom — a significant achievement. Although this increase in the overall number of deceased donors is an important metric, equally notable is the degree to which the system utilizes each donor's gift. Canada's organ utilization rate is world class, with an average of three organs from every deceased donor being transplanted. This rate is better than those of Australia, Spain, the United States and the United Kingdom. Utilizing as many donated organs as possible and facilitating the best transplant to improve recipients' quality of life are of utmost importance.

Canada's OTDT system has demonstrated that patients with the greatest need and those whose clinical profiles are most difficult to match benefit when organs are shared across provincial boundaries. By maintaining the National Organ Waitlist and the country's interprovincial organ sharing registries (the Kidney Paired Donation and Highly Sensitized Patient registries), Canadian Blood Services coordinates national collaborative

efforts to improve transplant opportunities for Canadians in need. A significant milestone for national collaboration was achieved earlier this year when we marked the 1,000th kidney transplant made possible through interprovincial organ sharing. Some of the patients who received these kidneys had been on dialysis for decades while waiting for a suitable organ. Without this national approach to increasing the potential donor pool, these 1,000 transplants would not have occurred.

Although Canada's performance in terms of deceased organ donation and transplantation is encouraging, living donation rates nationally (and internationally) have declined slightly. For every patient in Canada who receives a lifesaving organ transplant, there are two on a waitlist. In 2017, a total of 242 Canadians died while waiting for a suitable transplant opportunity. As such, there is much work yet to be done.

Given our experience as the national coordinating body for OTDT in Canada and our knowledge of the components required for success, we believe that national priorities in this realm must focus on strategies that will advance interprovincial organ sharing, improve living donation rates, assist jurisdictions as they implement leading practices, and enhance system performance measurements and accountability mechanisms.

As a nation, we have the recipe for system improvement: when the key elements are implemented, marked improvement is achieved. By working together to ensure these key elements are in place, we will continue to save lives.

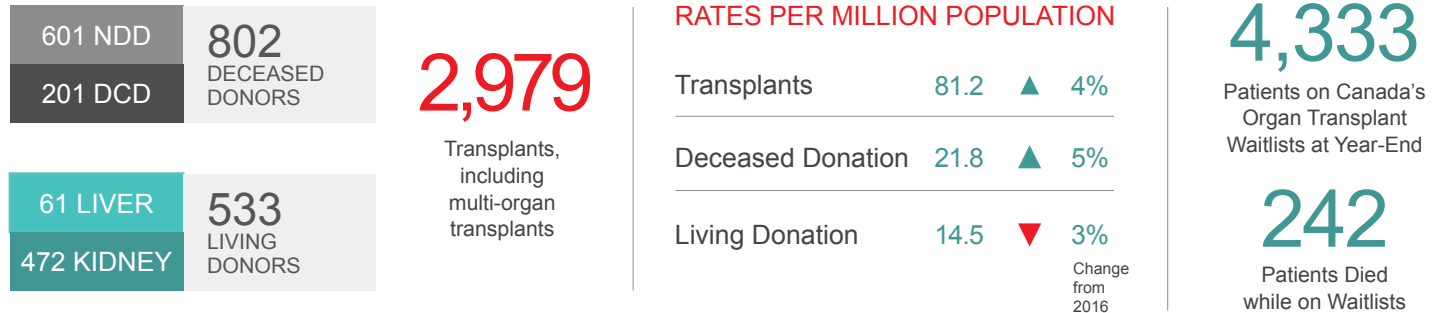


Dr. Graham D. Sher
CEO, Canadian Blood Services

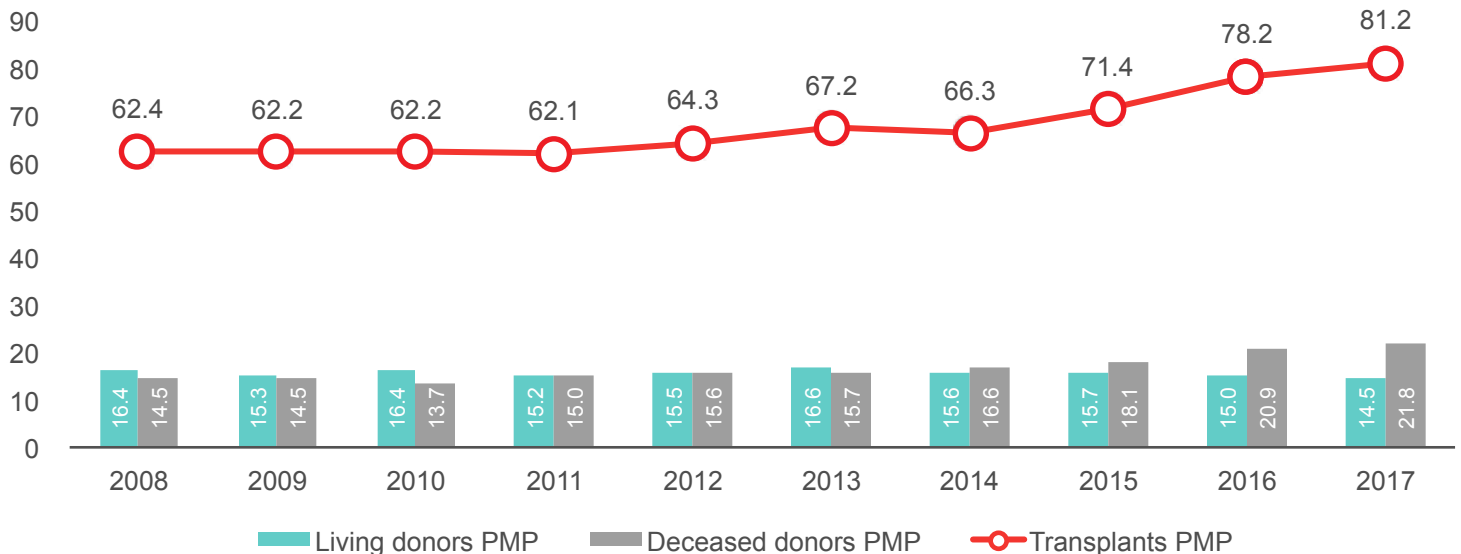
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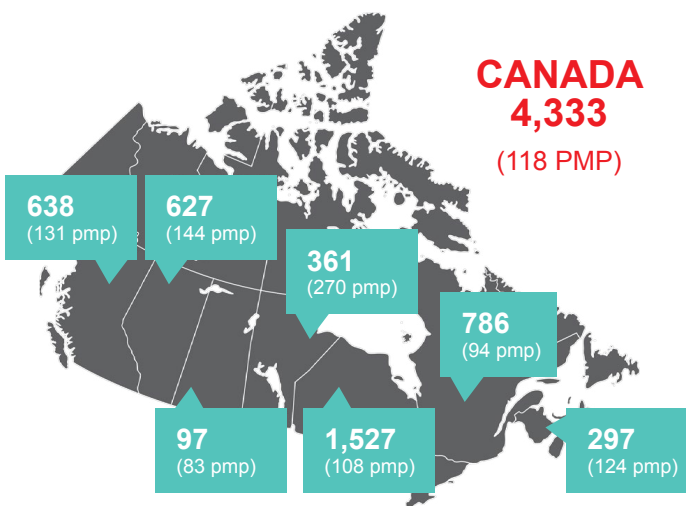
Overview of 2017 national performance results



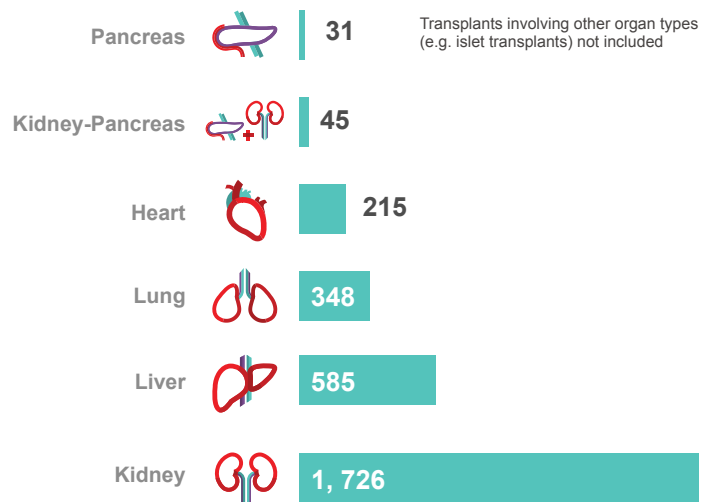
Donors and transplants per million population (pmp) in Canada, 2008-2017



Patients on transplant waitlist by province, as of December 31, 2017 count (pmp)



Transplants by organ, 2017



Deceased donation performance

Canada continues to show sustained improvement in deceased donation. This important achievement involves the collective effort of the provincial Organ Donation Organizations, intensive care units, transplant programs, HLA laboratories, and researchers, including Canadian Institute of Health Research (CIHR) and Canadian Donation and Transplant Research Program (CDTRP).

Deceased Donor Utilization

3.0

Organ transplants per donor in 2017



While an increase in the overall number of deceased donors is an important metric, equally important is the degree to which the system utilizes each donor's gift. A single donor has the potential to provide as many as eight organs for transplant.

The deceased donor utilization rate in Canada, as measured by the number of organ transplants per deceased donor, exceeds that of other nations such as Australia, Spain, the United Kingdom, and the United States.

Donation after circulatory death - a key contributor to system improvement

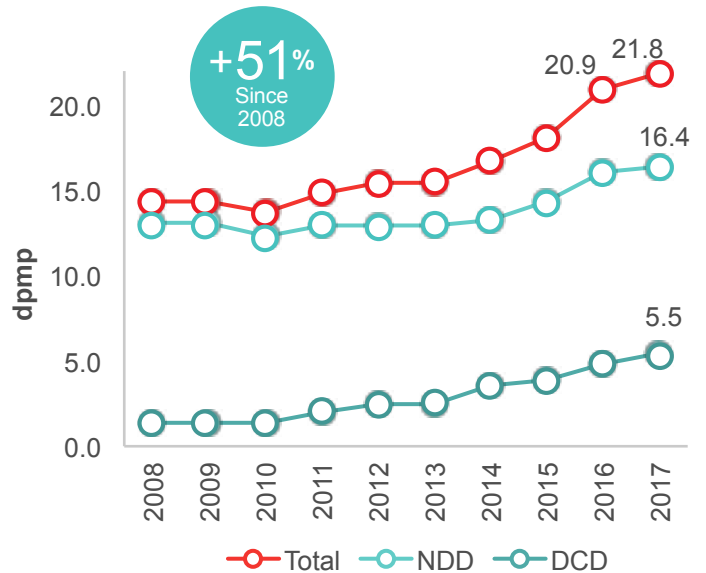
Improving Canada's deceased donation rate will require a continued focus on implementation and evaluation of donation after circulatory determination of death (DCD) programs. In 2017, 25 per cent of all deceased donor organ transplants were realized through donation after circulatory death.

DCD accounts for the largest increase in deceased donation over time and, next to ensuring consistent donor identification and referral, constitutes the greatest opportunity to continue to increase donation potential. Nine provincial organ donation organizations have implemented donation after circulatory death programs within their jurisdiction, in addition to their neurological determination of death (NDD) programs.



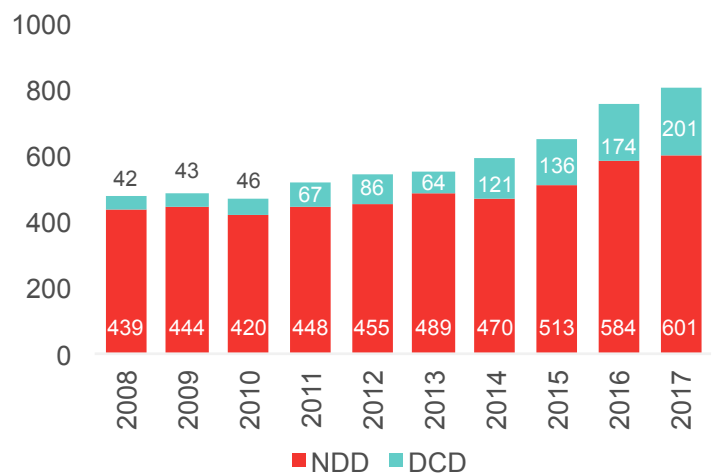
Of the total transplants in 2017 in Canada, 802, or 82% were from deceased donors, and 18% were from living donors.

Deceased donor rate by donor type, 2008 – 2017 (donors per million population (dpmp))



Canada's national deceased donation rate has increased by 51 per cent since 2008, from 14.4 to 21.8 dpmp in 2017. The deceased donation rate in 2017 exceeded the rate in 2016 (20.9) by five per cent.

Deceased donation by donor type, 2008 – 2017



Key Elements of a High Performing Deceased Donation System

Opportunity for improvement

Through experience gained provincially, nationally and internationally it is now known and generally accepted that fundamental key components to a high performing deceased donation system exist, and when implemented, lead to improved performance. Although more research is needed to inform the relative impact of each of these on performance, generally foundational elements include: adequate resources and infrastructure, availability of highly trained front-line specialists, practice guidelines and professional education, availability of performance data to inform improvement, adequate legislation, and the presence of appropriate accountability tools and structures. A general description of each is provided below.

Accountability tools and structure

There are many ways in which to ensure and/or demonstrate accountability, within the OTDT system in Canada. Examples of tools and structures that have been implemented to varying degrees include: implementation of death audits to identify if a donation opportunity was lost, use of potential donor referral criteria checklists, integrating best practices into accreditation guidelines, and the development and reporting of hospital performance using benchmarks and scorecards.

Legislation

A fundamental aspect of an interprovincial donation and transplantation system is ensuring appropriate legislation is in place that optimizes donation and transplantation, including provisions for mandatory referral to the ODO, sharing of donor and recipient personal information for purposes of facilitating organ donation and transplantation and mandatory outcome data reporting for system performance measurement. Presumed consent or opt-out legislation is also often debated in terms of relative impact on system performance, however it is generally accepted that these other legislative elements are fundamental, as is the case in other national systems.

Data and system performance improvement

To ensure quality care, performance must be monitored, measured and reviewed systematically. Foundational to improvement is defining metrics at the hospital, provincial and national level and working towards achieving performance targets. Opportunities exist to continue to build on performance data that is currently collected and available to continue to improve outcomes for patients.

Leading practices and professional education

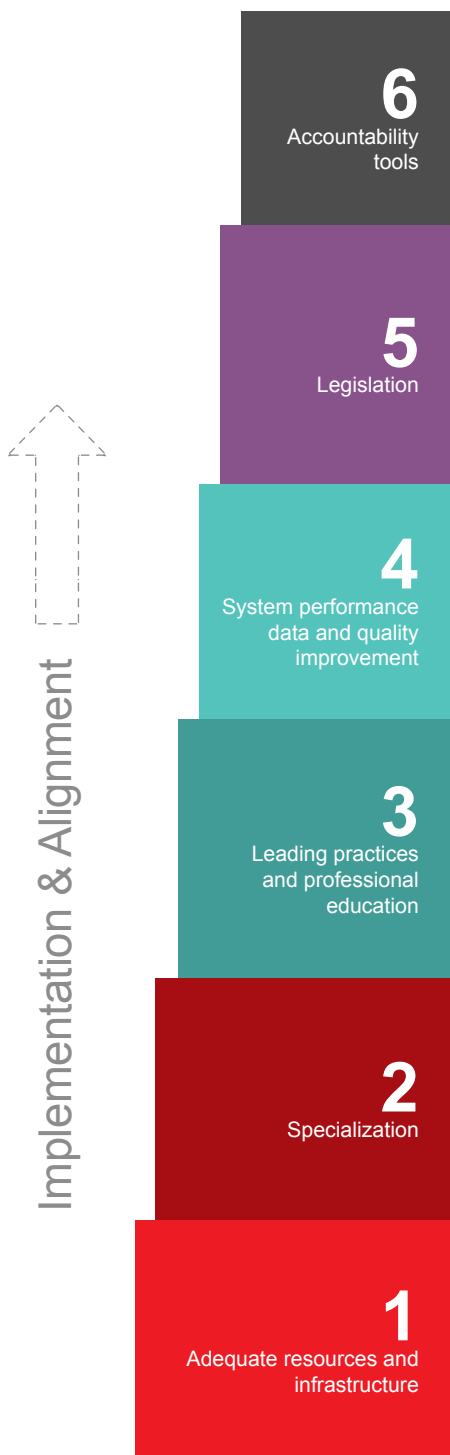
Donation and transplantation are low frequency, high impact events. Development and implementation of leading practices and clinical practice guidelines is essential to guide current practice and aid in the management of complexities of the donation and transplantation process. Special attention must be applied to ensure staff leading these processes at the bedside are highly-trained. Public education and awareness is another important driver of change but must be supported by knowledgeable health professionals.

Specialization

An essential aspect of a high-performing donation system is the availability of highly trained specialized staff such as donation coordinators and donation physicians. These specialists are required to coordinate progression along the donation pathway, implement best practices, support donor care, improve quality, and provide education. Donation specialist models have been implemented in many provinces to differing degrees.

Adequate front-line resources and infrastructure

Adequate resources and infrastructure are necessary to ensure that the clinical donation process is supported at every step in the pathway from donor identification and referral through to transplant and post-transplant care. For example, without adequate hospital capacity, support for donor assessment and management, and availability of surgical retrieval and transplant teams, organ donation and transplantation may not proceed.



Performance among provinces varies

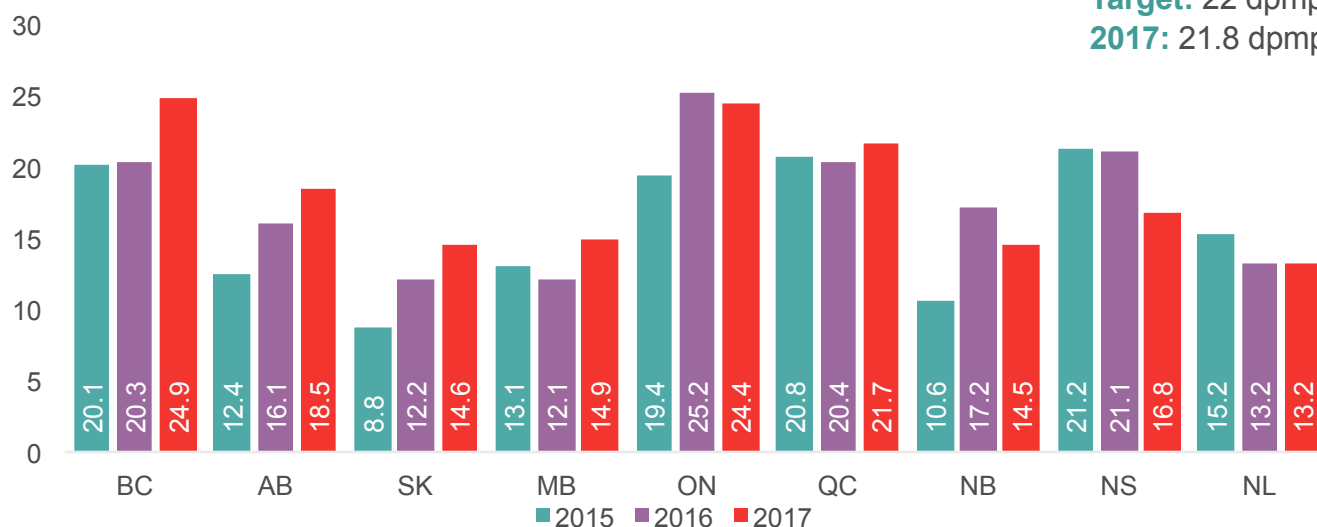
The degree to which provincial variability in performance affects variability in national performance trends is an important consideration. In 2012, a deceased donation target of 22 dpmp was proposed with input from donation and transplantation experts in Canada, and in 2017 national donation rates are approaching that target at 21.8 dpmp.

Deceased donor rate by province, 2015 – 2017 (dpmp)

Canada

Target: 22 dpmp

2017: 21.8 dpmp



Factors contributing to higher donation rates

The table below highlights some of the key factors that contribute to a high performing deceased donation program and how each province is progressing in terms of implementation of these practices. The elements included do not constitute a complete list of all contributory factors and should not be interpreted as a comprehensive assessment of provincial performance.

	BC	AB	SK	MB	ON	QC	NB	NS	NL
Mandatory Referral	●	●	●	●	●	●	●*	●	●
Donation Physicians (Number of Donation Physicians)	● (8)	● (2)	● (4)	● (6)	● (61)	● (12)	● (2)	● (1)	● (1)
NDD Leading Practices	●	●	●	●	●	●	●	●	●
DCD Programs (% DCD donors)	● (26%)	● (20%)	● (0%)	● (15%)	● (31%)	● (18%)	● (0%)	● (56%)	● (0%)
Donor Management LP	●	●	●	●	●	●	●	●	●
Deceased Donors (dpmp) (Number of Donors)	24.9 (121)	18.5 (81)	14.6 (17)	14.9 (20)	24.4 (347)	21.7 (182)	14.5 (11)	16.8 (16)	13.2 (7)
% change in dpmp, 2016-2017	↑ 23%	↑ 15%	↑ 20%	↑ 24%	↓ 3%	↑ 6%	↓ 16%	↓ 21%	0%

● Implementation complete or near completion ● Implementation in progress ● Implementation not started

* Mandatory referral in NB has been implemented for tissue donation only

Living donation performance

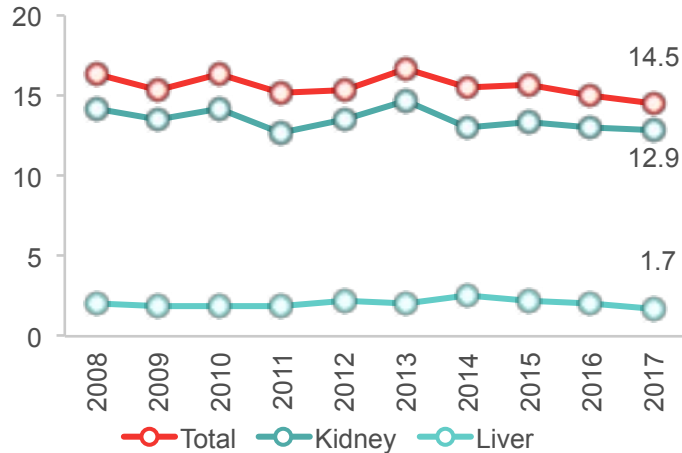
Living donation offers advantages to recipients relative to deceased donation, including better long-term health outcomes.

Canada's living donation rate in 2017 was 14.5 dpmp, which is down three per cent from 15.0 dpmp in 2016. This rate — which is primarily made up of kidney donors, but does include liver and lung donors — has decreased by 11 per cent since 2008. Similar declines in living donation rates in recent years have been seen in other countries as well, including Spain and the United Kingdom.



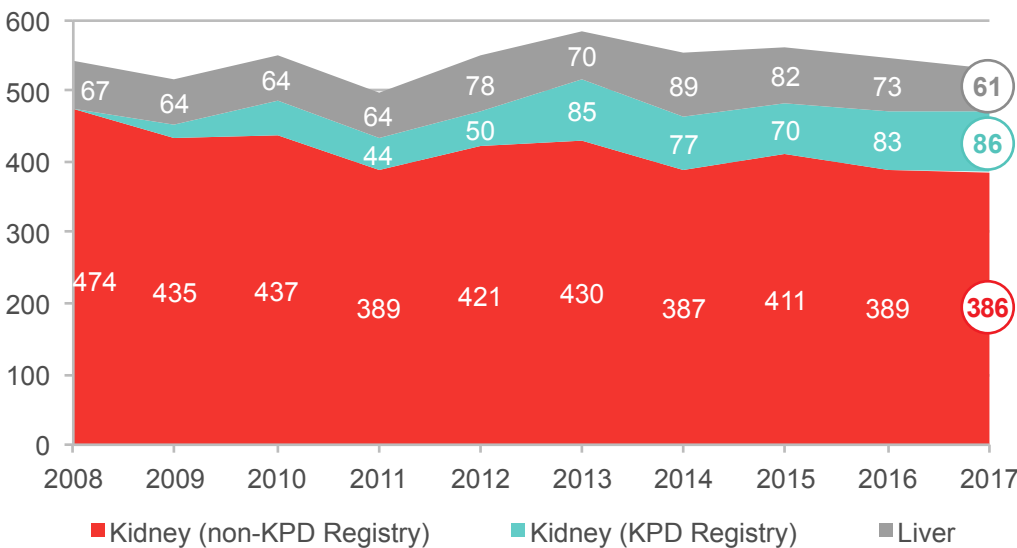
While opportunities for deceased donation are limited and unpredictable (only about one to two per cent of in hospital deaths are eligible for donation), living donation is a controlled process which has significant potential for growth and impact on kidney transplantation rates.

Transplant rate from living donors in Canada, 2008 – 2017 (dpmp)



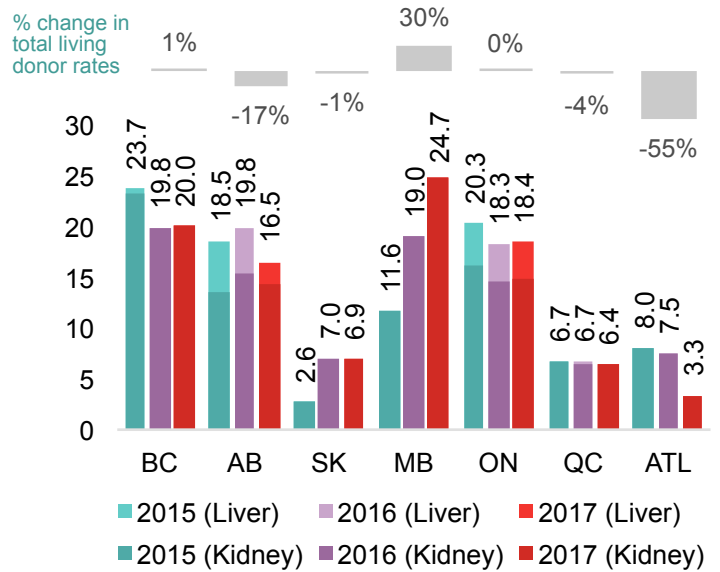
In 2017, the Kidney Paired Donation (KPD) registry operated by Canadian Blood Services had its most successful year since inception and contributes to the national total of transplants made possible from living donors. Without this contribution, the decline in Canada's living donation rate over time would have been more significant. In 2017 there were a total 533 transplants from living donors (see figure below), a two per cent decrease from 2016.

Number of transplants from living donors in Canada, 2008 – 2017



The KPD Registry has facilitated an average of three transplants every two weeks since 2010. These transplants would not have occurred without national collaboration and interprovincial organ sharing.

Living donor rates by province, 2015 – 2017 (dpmp) with % change from 2016 to 2017

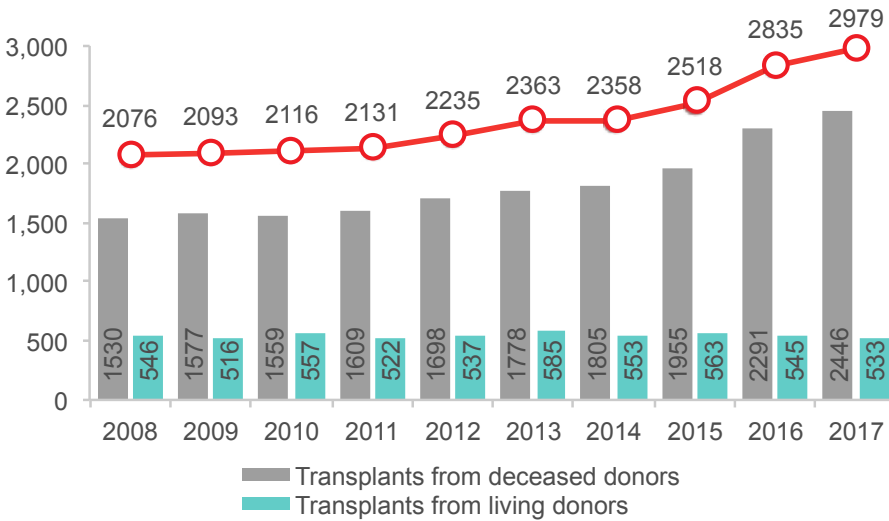


Although living lung donation does exist, it is very rare and has seen a decrease in activity in recent years. In the past 10 years there have been only two living lung transplants nationally and none in the past four years.

Transplantation performance

Over 4,000 Canadians are waiting for organ transplants at any given time, many of whom will never receive one due to the limited number of donated organs. Maximizing donor potential and ensuring equitable access for patients on Canada's waitlists is imperative to increasing system performance and improving outcomes.

Transplants in Canada by donor type, 2008 – 2017

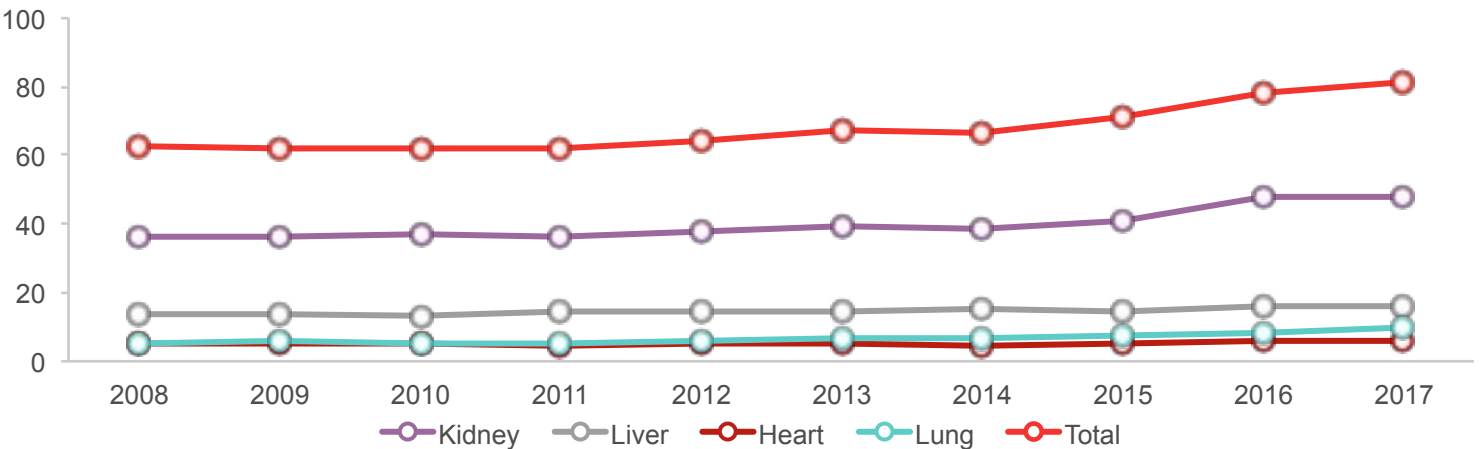


In the period 2008 to 2014, Canada's transplant rate ranged between 62 and 67 transplants per million population (tpmp). In the last three years the rate has continued to climb, reaching 71.4 tpmp in 2015, 78.2 tpmp in 2016 and 81.2 tpmp in 2017. Kidney transplants account for the majority of this rate.

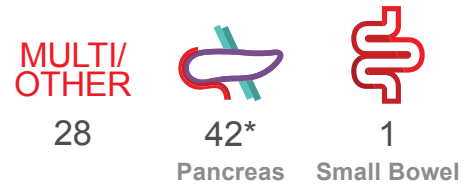
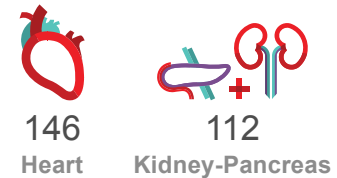
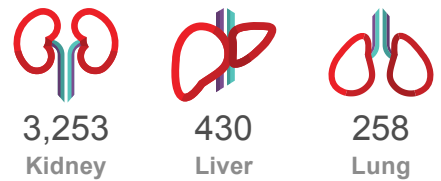
It is important to note that the overall number of transplants in Canada also includes "re-transplants" (second or third transplants) for patients who have out-lived the life of their graft. This trend is a growing challenge to the system as these patients are re-listed for transplant and add to the number of patients waiting for a first transplant. Therefore, while an increase in the number of transplants should be celebrated, equally if not more important is monitoring and reporting on patient outcomes with the ultimate goal of "one transplant for life".

A necessary focus of current and future work will continue to focus on initiatives that improve patient outcomes so that instances of graft rejection and the need for re-transplants is minimized or prevented.

Transplant rates in Canada by organ type, 2008 – 2017 (tpmp)



Patients waiting for transplants as of December 31, 2017

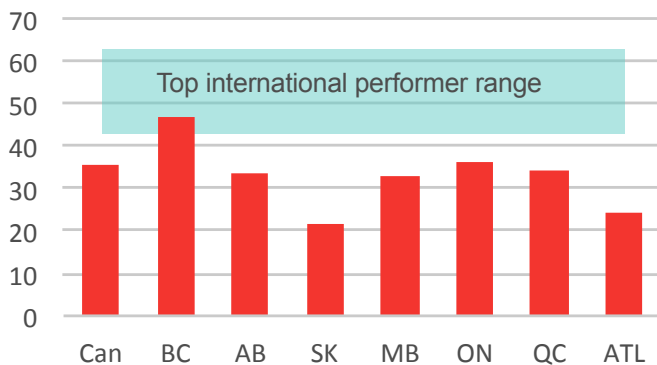


* Does not include islet patients (63)

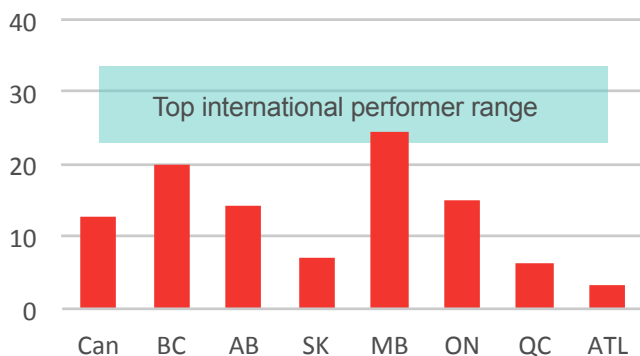
Transplantation performance by organ type and by province

Number of transplants from living and deceased donors are provided by province and nationally by organ type. For comparison, rates from the top five international performers have also been included as referenced in the 2017 IRODaT Newsletter*

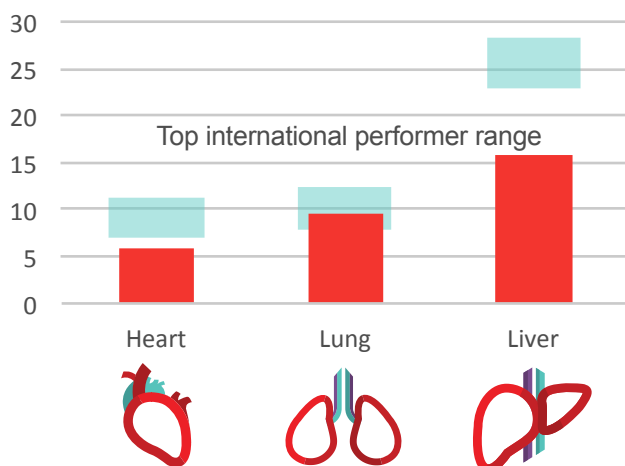
Kidney transplants from deceased donors by province, 2017 (tpmp)



Kidney transplants from living donors by province, 2017 (tpmp)



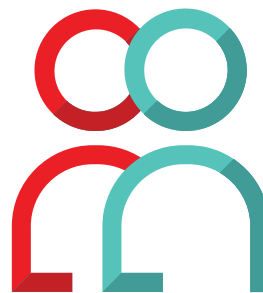
Heart, Lung, and Liver transplants, 2017 (tpmp)



Awareness and approval of organ and tissue donation in Canada

Trust in the system

There has been a significant increase in the proportion of Canadians who trust that the organ and tissue donation system in Canada is administered in the best interest of the public (76%, up from 71% in March 2015) and who trust Canadian Blood Services to do what is best for the system in Canada (76%, up from 72%).



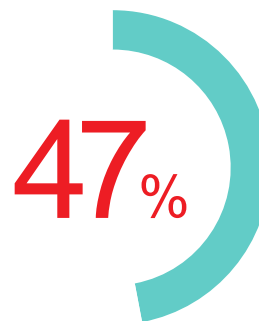
76%

of Canadians trust that the organ and tissue donation system in Canada is administered in the best interest of the public

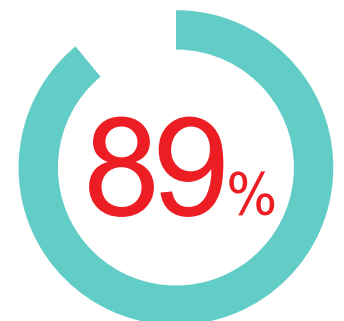
Awareness and Approval of Organ and Tissue Donation in Canada

Approval for organ and tissue donation in Canada has remained stable at 89%. Those who are more likely to disapprove include those who also disapprove of living organ donation, those who have decided not to donate their organs/tissues at the time of their death and those who are undecided whether they would accept an organ or tissue transplant if they needed one.

Fewer than half (47%) of Canadians indicate they have seen, read or heard 'a lot' or 'something' about the topic of organ and tissue donation over the last few years, a decline since last surveyed in 2015 when it was 54%.



of Canadians have recently heard some or a lot about organ and tissue donation



of Canadians approve of organ and tissue donation after death

Trust and awareness results are from the "Organs and Tissues General Public Opinion Survey" conducted by IPSOS on behalf of Canadian Blood Services every two years.

* Source: http://www.irodat.org/img/database/pdf/NEWSLETTER2018_June.pdf

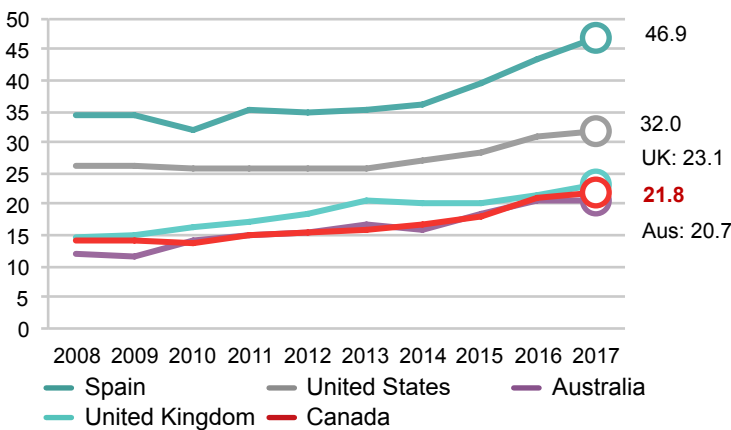
International donation rates

The deceased donation rate in Canada continues to increase, and is on par with Australia and the United Kingdom, despite Canada adopting a more conservative definition in tracking donation performance than is typically used by the international community.

The deceased donation results in Canada report “utilized” donors, a metric that requires at least one organ from a donor to have been transplanted into a recipient. The donors per million population metric in most other countries counts a donor if an incision has been made for the purposes of organ recovery, regardless of whether or not an organ has been transplanted. These are called “actual” donors. Annual reports on organ donation and transplantation activity issued by the National Health Service in the United Kingdom (2012–2015) estimate differences of between four to eight per cent when comparing actual donors and utilized donors.

Unless otherwise stated in the title, the figures below represent actual donor rates for non-Canadian countries.

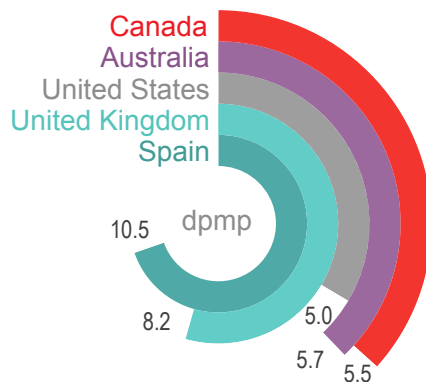
International deceased donor rates, 2008-2017 (dpmp)



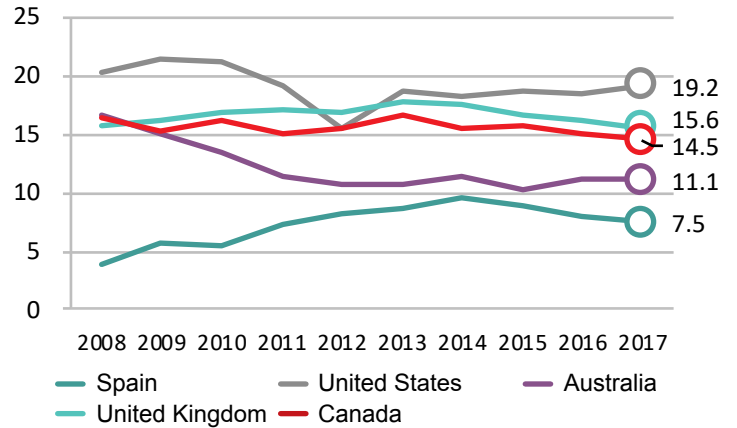
The organ donation rate for donation after circulatory determination of death (DCD) in Canada is similar to rates in Australia and the United States. The top performer is Spain is at 10.5 utilized dpmp. Canada is currently sixth internationally in terms of DCD performance.

DCD utilized donors per million population, 2017

Why these benchmarks: Spain is considered to be an international leader in deceased donation. The U.S., U.K. and Australia represent countries that most align with Canada either politically, socially, legislatively and /or geographically.

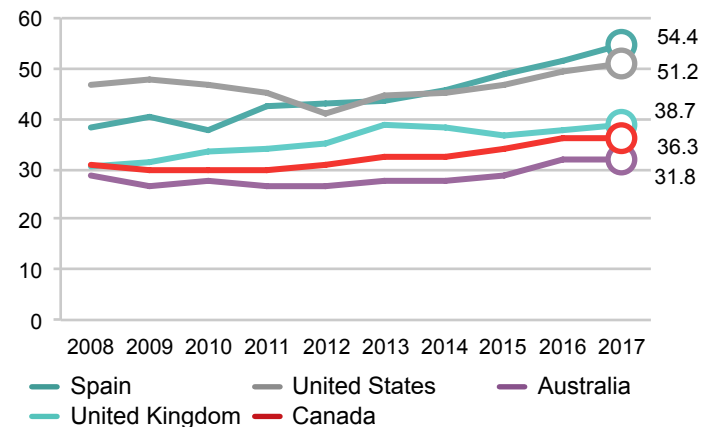


International living donor rates, 2008–2017 (dpmp)

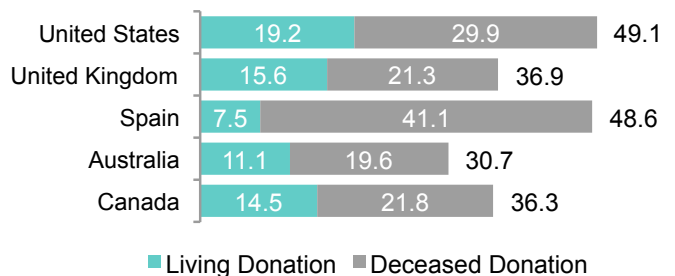


Living donation rates in the United States and Australia have remained relatively stable over the past five years. Conversely, the living donation rates in Canada, the United Kingdom, and Spain have been declining over the last three or four years, with Canada’s rate decreasing from 16.6 in 2013 to 14.5 in 2017. Similarly, the rates for both Spain and the United Kingdom dropped by two dpmp over the past three years.

Combined living and deceased donor rates, 2008–2017 (dpmp)



Living and deceased utilized donation rates, 2017 (dpmp)



Eye and tissue performance

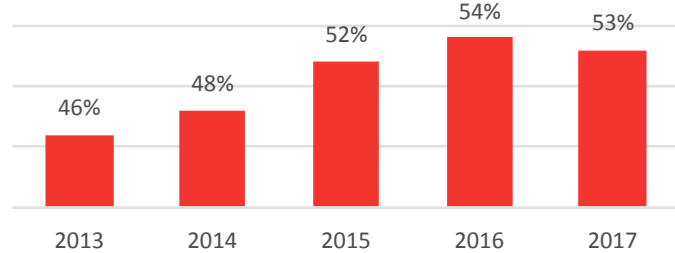
Eye and tissue donation

Ensuring availability of tissue grafts is an important aspect of the donation and transplantation system in Canada. Tissue grafts are used for purposes such as to restore sight, repair sports or trauma injuries, to treat severe burns, and to replace damaged heart valves.

Tissue banks exist in eight provinces, and Canadian Blood Services in collaboration with Canadian eye and tissue programs collects, collates, and distributes data on tissue donation activity which serves to inform provincial strategies and policy.

Consent

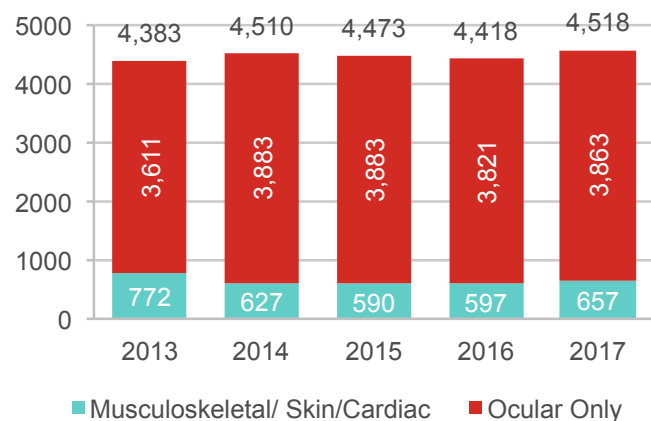
Deceased tissue donation consent rate, 2013-2017



In 2017, 11 programs were able to provide data on 9,057 approaches for deceased tissue donation. A consent rate of 53% was identified, which is on par with the consent rates in 2015 and 2016.

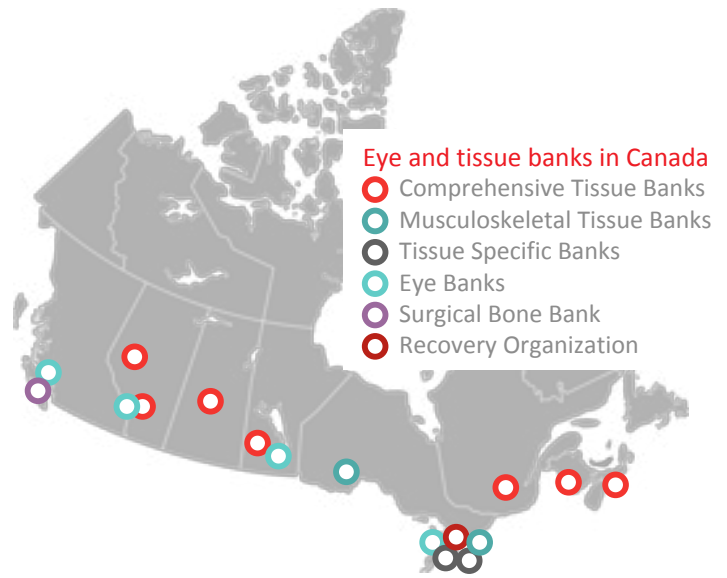
Deceased donation

Number of deceased tissue donors by year, 2013-2017



Results for Musculoskeletal/Skin/Cardiac donors include donors where ocular tissue was also recovered.

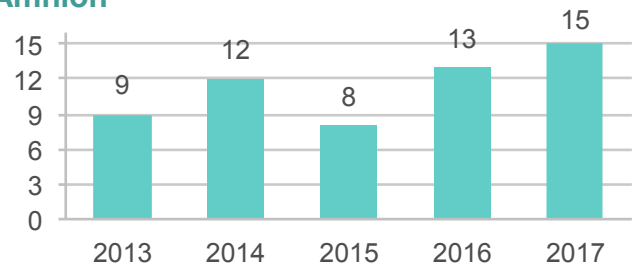
In 2017 there were 4,575 deceased tissue donors and 394 living tissue donors - 86% of tissue donations were for ocular tissue only, while 14% of tissue donations were for musculoskeletal, cardiac and/or skin tissue. In 2017 donations resulted in the production of 17,532 grafts which included: cornea, musculoskeletal, cardiac and skin grafts.



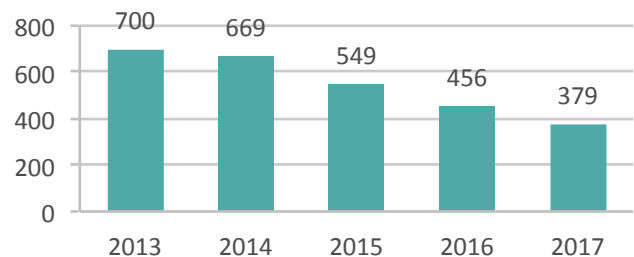
Living donation

Number of living donors by year, 2013-2017

Amnion



Surgical Bone



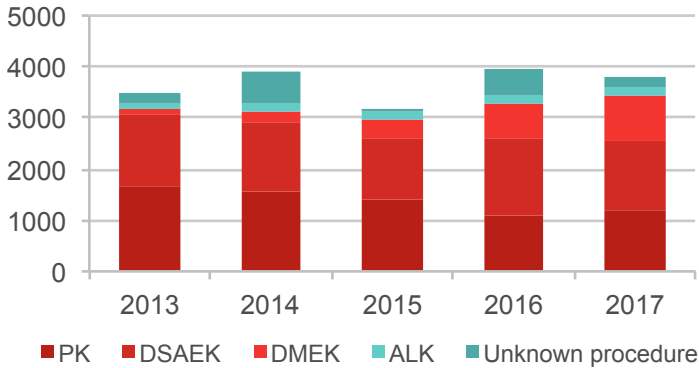
Living donors are a feature of the Canadian tissue system. In some hospitals, femoral heads are donated from patients having total hip replacements; this donated bone can be used in surgical repairs. Donation of surgical bone continues to decrease as hospitals demand shifts to more highly processed grafts.

In some centres mothers donate their amniotic membrane which can be used in eye surgery and in wound healing.

Eye and tissue performance

Cornea

Cornea transplants* (keratoplasty) by type of procedure, 2013-2017

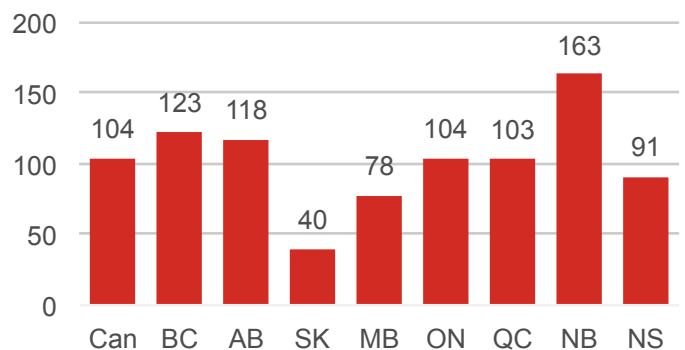


Canadian production and distribution of corneas is stable showing no significant growth over the past five years, with 3,820 distributed for transplant in 2017.

Improved outcomes resulting from pre-transplant processing of corneas (DSAEK and DMEK endothelial keratoplasty) is continuing to increase the demand for these procedures. Within endothelial keratoplasty the demand for the highly technical DMEK procedure continues its rapid growth.

There is a significant variance in the corneal transplantation rate between provinces, ranging from 40 to 124 corneas transplanted per million population. Some jurisdictions supplement their cornea production through importation; 8% of all cornea transplants performed in Canada utilize corneas from the United States.

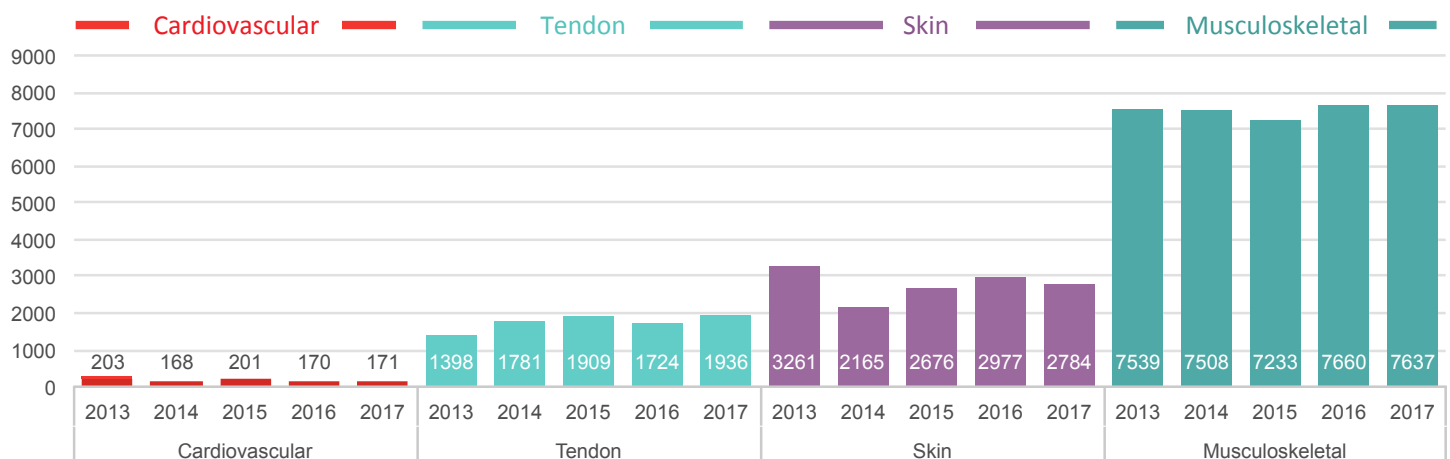
Cornea transplants (keratoplasty) by province, 2017 (ttmp)



Cardiovascular, Tendon, Skin and Musculoskeletal

Canadian production and distribution of musculoskeletal (bone and tendons), cardiac and skin grafts is stable, with no significant growth over the past five years. In 2017 12,652 musculoskeletal, cardiac, tendon and skin tissue grafts were transplanted.

Total non-ocular tissue grafts transplanted from living and deceased donors, 2013-2017



Not represented in the graph: soft tissue, fresh osteoarticular, and other non-ocular tissue grafts from deceased donors (124 grafts were distributed in 2017)

Variance in the transplantation of tissue grafts per province is related to tissue bank activity, population, and the number and type of surgical programs. Many hospitals continue to import tissue grafts from the United States to supplement their needs.

* Transplantation results based on graft distributed for transplant by programs

For the full annual Eye and Tissue Data Committee Tissue Report please visit the Canadian blood Services Professional Education Website at <https://professionaleducation.blood.ca/en>

Acknowledgements

This report acknowledges the generous gift made by organ and tissue donors, both living and deceased, and the families of those who have donated. The report further acknowledges the hope and expectations of patients with end-stage organ failure and the dedication of healthcare teams and practitioners throughout the healthcare system who make it possible to fulfill and increase opportunities for organ and tissue donation and transplantation.

This report was made possible through the collective effort and input from members of Canadian Blood Services' Organ and Tissue Donation and Transplantation Committees and the Canadian Institute for Health Information.

Data Sources

The Canadian data collected for this report was compiled from a number of sources and standardized and validated to the greatest degree possible by experts from Canadian Blood Services. Source material was derived from figures compiled from the Canadian Transplant Registry, and materials published by the Canadian Institute for Health Information and the Canadian Organ Replacement Register and the Canadian Eye and Tissue Data Committee. Canadian Blood Services' personnel also collected and validated data from the provincial organ donation organizations.

The international donation and transplantation data collected for this report was compiled from a number of sources and standardized and validated to the greatest degree possible by experts from Canadian Blood Services. Source material was derived from figures compiled from the International Registry in Organ Donation and Transplantation, the Organ Procurement and Transplantation Network in the United States, and the Organización Nacional de Trasplantes in Spain.

In accordance with Canadian Institute of Health Information (CIHI) standards, demographic data for estimates per million population (PMP) are based on Statistics Canada Table 17-10-0086-01 Estimates of population (2011 Census and administrative data), by age group and sex for July 1st, Canada, provinces, territories, health regions (2017 boundaries) and peer groups. For the purpose of this calculation, PMP rates for British Columbia are based on the combined populations of British Columbia and Yukon, PMP rates for Alberta are based on the combined populations of Alberta, Northwest Territories and Nunavut, and Atlantic population includes New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador.

Deceased donation rates for Atlantic provinces are based on their respective populations; however, the donation program in Prince Edward Island identifies potential donors who may be transferred to New Brunswick or Nova Scotia for declaration and recovery.

Appendix A: Acronyms

Acronyms

ATL	Atlantic provinces (includes New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador)	HLA	Human Leukocyte Antigen
CDTRP	Canadian Donation and Transplant Research Program	IRODaT	International Registry in Organ Donation and Transplantation
CIHI	Canadian Institute of Health Information	KPD	Kidney Paired Donation [program]
CIHR	Canadian Institutes of Health Research	NDD	Neurological Determination of Death
DALK	Deep Anterior Lamellar Keratoplasty	ODO	Organ Donation Organization
DCD	Donation after Circulatory Death	ODT	Organ Donation and Transplantation
DMEK	Descemet's Membrane Endothelial Keratoplasty	OTDT	Organ and Tissue Donation and Transplantation
DPMP	Donors Per Million Population	PK	Penetrating Keratoplasty
DSAEK	Descemet's Stripping Automated Endothelial Keratoplasty	PMP	Per Million Population
EK	Endothelial Keratoplasty	TPMP	Transplants Per Million Population
ETDC	Eye and Tissue Data Committee		

Appendix B: Definitions

Definitions of Key Terms

Donation after Circulatory Death (DCD)	A diagnosis and confirmation of death based on circulatory criteria
Deaths on waitlist	Patients who died while waiting for a transplant <i>Note: This does not include patients who die immediately after being removed from a transplant waitlist.</i>
Deep Anterior Lamellar Keratoplasty (ALK/DALK)	A partial thickness corneal transplant procedure used to treat disease or injury confined to anterior layers of the cornea: the epithelium, Bowman's layer and stroma. This procedure is most often used to treat keratoconus and corneal scarring.
Descemet's Membrane Endothelial Keratoplasty (DMEK)	The transplantation of only the Descemet's membrane and endothelial layer of the cornea. DMEK has been described as a more technically challenging surgical procedure than DSAEK but also has been reported to provide better, post-transplant patient visual acuity, lower rejection rates and faster visual recovery
Descemet's Stripping (Automated) Endothelial Keratoplasty (DSAEK)	The vast majority of EK today is DSAEK where the eye bank precuts the corneal tissue, or the surgeon precuts the corneal tissue in the operating room. The prepared (cut) graft is comprised of the donor tissue endothelium, Descemet's membrane and a thin, partial layer of the donor tissue's stroma.
Donation rate	The number of donors relative to the population
Donor (Organ)	A consented eligible donor from whom at least one organ was transplanted. <i>Note: Non-Canadian results presented may reflect a different definition.</i>
Donor (Tissue)	A consented donor from which at least one tissue was recovered.
Donor utilization	The mean number of organs used from each donor from whom at least one organ was transplanted.
Endothelial Keratoplasty	A corneal transplant procedure where only a patient's compromised posterior layers of the cornea are removed and replaced by similar posterior corneal layers of a donor cornea.
Neurological Determination of Death	A diagnosis and confirmation of death based on neurological criteria
Non Ocular Tissue	Musculoskeletal, tendons, soft tissue, cardiac and skin tissue
Ocular Grafts	Grafts produced from the eye including cornea and scleral grafts
Organs transplanted	The number of individual organs transplanted.
Patients waiting for transplants/ patients on waitlist	Patients who are awaiting a transplant and (a) can receive a transplant at any time or (b) cannot receive a transplant for a medical or other reason for a short time. Results are based on a snapshot of patients as of December 31 2017.
Penetrating Keratoplasty	Corneal transplant with replacement of all layers of the cornea, but retaining the peripheral cornea.
Transplant	A completed transplant procedure. <i>Note: Multiple organs may be transplanted as part of the same transplant procedure.</i>
Transplant rate	The number of transplants relative to the population.

Appendix C: Contributing Programs

Canadian Transplant Programs

British Columbia

BC Children's Hospital
St. Paul's Hospital* Vancouver
General Hospital*

Alberta

Foothills Medical Centre*
University of Alberta Hospital*
Stollery Children's Hospital,
University of Alberta
Alberta Children's Hospital

Saskatchewan

St. Paul's Hospital*

**Operates a living donation program*

Manitoba

Health Sciences Centre*
Children's Hospital of
Winnipeg

Ontario

Hospital for Sick Children
Kingston General Hospital*
London Health Sciences
Centre*
The Ottawa Hospital*
University of Ottawa Heart
Institute
St. Joseph's Hospital*
St. Michael's Hospital*

Toronto General Hospital –
University Health Network*

Québec

C.H. de l'Université de
Montréal, Hôpital Notre
Dame*
C.H. de l'Université de
Montréal, Hôpital St.-Luc
C.H. universitaire de
Québec - Université
Laval*
C.H. universitaire de
Sherbrooke*
Hôpital Maisonneuve-
Rosemont*
CHU Sainte-Justine

Institut de Cardiologie de
Montréal

Institut universitaire de
cardiologie et de
pneumologie de Québec
McGill University Health
Centre, Montreal Children's
Hospital
McGill University Health
Centre, Royal Victoria
Hospital*

Nova Scotia

Queen Elizabeth II*
IWK Grace Health

Canadian Organ Procurement Organizations

British Columbia

BC Transplant Society

Alberta

Southern Alberta Organ
and Tissue Donation
Program (SAOTDP),
Calgary
HOPE Program, Edmonton

Saskatchewan

Saskatchewan Transplant
Program

Manitoba

Transplant Manitoba —
Gift of Life Program

Ontario

Trillium Gift of Life Network

Québec

Transplant Québec

New Brunswick

New Brunswick Organ
and Tissue Program,
Horizon Health Network

Nova Scotia

Legacy of Life

Newfoundland and Labrador

Organ Procurement
Exchange of Newfoundland
and Labrador (OPEN)

Canadian Eye and Tissue Banks

British Columbia

Eye Bank of British Columbia
Island Health Bone Bank

Alberta

Southern Alberta Tissue
Program, Calgary
Lions Eye Bank of Calgary,
Calgary
Comprehensive Tissue
Centre, Edmonton

Saskatchewan

Saskatchewan Transplant
Program

Manitoba

Tissue Bank Manitoba
Misericordia Eye Bank

Ontario

Trillium Gift of Life Network** manages the
collation and submission of data from
Ontario eye and tissue banks including:

- Eye Bank of Canada (Ontario Division)
- The Hospital for Sick Children Tissue Laboratory
- Ontario Professional Fire Fighters Skin Bank
- Mount Sinai Allograft Technologies
- Lake Superior Centre for Regenerative Medicine

Québec

Héma-Québec:

- Banque d'yeux du Québec
- Banque d'yeux du Centre
universitaire d'ophtalmologie

New Brunswick

New Brunswick Organ and Tissue
Program

Nova Scotia

Regional Tissue Bank