



RECYCLE**YOURSELF**

An Organ, Eye, and Tissue
Donation Curriculum

ACKNOWLEDGMENTS

This curriculum was created by Donate Life Northwest, through generous funding from the Collins Foundation and Genentech, a member of the Roche Group.

donatelifenw.org

Published 2014

Revised 2018

Revised 2023



The creation of this curriculum was not a solo endeavor. There are numerous professionals, organizations and community members who, without their insight, time, and resources, this resource would not have been possible.

CONTRIBUTING AUTHORS

Solvita

Malia Devilliers
Erin Lambert

Donate Life Northwest

Aimee Adelman
Valerie Egan
Marissa Markintire, MPH
Sandy Jewell, M.Ed.

Legacy Health Transplant Services

Viken Douzjian, M.D.
Daniel Porter
John Fallgreen, R.N.

VisionGift

Rod Carew

Oregon Health & Science University Transplant Program

Regina Klein, R.N.

Cascade Life Alliance

Lisa Miller
Christine Shaw, R.N.

DONATE LIFE CONTRIBUTING AFFILIATES

Kathryn Cicerchi, Colorado Donor Alliance
Barbara Turci, Donate Life New Jersey
Donate Life California
Marti Cooper, Donate Life Indiana
Katie Paulson & Sharon Smith Hirsch,
Donate Life North Carolina
Kelly Valentine, Donate Life Ohio
Mary Graff, LifeCenter Northwest
Mia Matthews, Living Legacy Foundation Maryland
Heather Shearer, Pennsylvania Department of
Education
Dwendy Johnson, Gift of Life Donor Program
LifeCenter of Ohio

DONATE LIFE NORTHWEST VOLUNTEER ADVISORY COMMITTEE

Alejandra Mercado, Portland, OR
Stephanie Voderlandwehr, Portland, OR
Jan Schumacher, Portland, OR
Carol Ingersoll-Palumbo, Portland Public Schools
(retired), Portland, OR
Martha Decherd, David Douglas High School
(retired), Portland, OR
Marcia McGary, Reynolds High School & North
Clackamas SD (retired), Troutdale, OR
Gina Castro-Brandt, Siuslaw High School, Florence, OR
Terri Karkau, Mt. View High School, Vancouver, WA
June Miller, Marist High School, Eugene, OR
Staci Fisher, North Medford High School, Medford, OR
Sheila Fowler, Crescent Valley High School, Corvallis, OR
Paula Jacobs, Westview High School, Beaverton, OR
Geoffrey Robinson, Northeast Oregon Area
Health Education Center, La Grande, OR
Kirby Warner, Hermiston High School, Hermiston, OR

CONTRIBUTING GRAPHICS AND DESIGN

Byron Mosley
Nick Tracy Photography
DHX Advertising
Art Institute of Portland, Spring 2014 Advanced Graphic
Design class

FIVE REASONS TO INCLUDE DONATION IN YOUR CURRICULUM

1

[Studies](#) show that most Americans learn about donation from TV, media, and family. Formal classroom education about donation is needed so that decisions are based on facts – not fears! In the 2025 - 2026 school year [Oregon House Bill 3234](#) will go into effect requiring all high school health teachers include the topic of organ and tissue donation into their class curriculum.

2

Students will be asked, “Do you want to register as a donor?” while at the DMV. Whether they register online or at the DMV, proactive teaching about donation prepares them to make informed decisions.

3

Donation is a complex and sometimes sensitive topic. The classroom provides a space for safe and thorough conversations about whether and how to register as a donor.

4

Students often think the subject of donation is irrelevant to them and their loved ones. This is not the case.

5

The tragic circumstances which often accompany donation are no time for families to be surprised or confused about their loved one’s final wishes. By emphasizing the importance of articulating personal decisions regarding donation, you are helping families communicate clearly and honestly about a potentially life-changing decision.



Dear Educator,

THANK YOU FOR HELPING DONATE LIFE NORTHWEST SAVE LIVES AND IMPROVE HEALTH THROUGH EDUCATION!

While it's easy to register as a donor in the Pacific Northwest – whether at the DMV, online, with an iPhone, or with a paper registration form – it's not always so simple for students to distinguish fact from fiction when it comes to organ, eye and tissue donation. What does that “D” on a license really mean? How does donation work? And what does my decision about donation mean for families?

Although donation is an end-of-life decision, comprehensive education about the ever-increasing need for donation is an opportunity to increase student understanding of both lifestyle choices and community health. Why are donated kidneys in such high demand? Why are Hispanic Americans, African Americans, and Native Americans disproportionately represented on the United States waiting list for organ transplants? Donate Life Northwest believes that students play a critical role in educating their families and peers with the facts of why transplants are needed, and how donors save lives.

Organ, eye and tissue donation is a complex issue touching on health, civics, ethics, medical careers, and science. We have aligned this curriculum with the Common Core Standards so that critical discussions on donation can be easily and comprehensively incorporated into a variety of classroom settings.

Health teachers and Driver Education instructors will find reading materials and lesson plans, project ideas and extension activities designed to integrate and demonstrate reading, writing, speaking, and listening skills. GoRecycleYourself.com provides multimedia videos, presentations (PowerPoints, Google Slides, and PDF formats), and links to resources.

Science and Medical Careers teachers can build on core materials and lessons in order to increase student interest and engagement, particularly in regards to career exploration.

Contact Donate Life Northwest for free classroom presentations, teaching materials, trainings, or to organize a donor registration drive on your campus or in your community.

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RECYCLEYOURSELF

An Organ, Eye, and Tissue Donation Curriculum

SECTION ONE: INTRODUCTION



ABOUT DONATE LIFE NORTHWEST

Donate Life Northwest is the non-profit educational agency serving Oregon and Southwest Washington by providing programs which both educate and inspire the public to register with their state's organ and tissue donor registry. As a partner of Donate Life America, Donate Life Northwest works on behalf of regional member programs and partner agencies to educate the community about the need and importance for people to document their donation intentions.

DONATE LIFE NORTHWEST:

- Supports the Department of Motor Vehicles by providing staff training and donation registry information
- Provides free educational programs to students and teachers.
- Provides outreach programs regarding deceased and living donation in communities.
- Works with the media to accurately report donation stories.
- Raises funds to support public education programs.

Oregon and Washington are both nationally recognized for achieving high rates of donor registration via their DMV partnerships and online registries.

DONATE LIFE NORTHWEST

PO Box 532

Portland, OR 97207

503-494-7888 | 800-452-1369

education@donatelifenw.org

donatelifenw.org

[facebook.com/DonateLifeNorthwest](https://www.facebook.com/DonateLifeNorthwest)

DONATE LIFE NORTHWEST SCHOOL PROGRAMS

Visit donatelifenw.org/content/school-outreach to learn more about the following free services.

CLASSROOM PRESENTATIONS AND ALL-SCHOOL ASSEMBLIES

Students learn facts, ask questions and hear personal stories of individuals whose lives have been directly impacted by donation and transplantation. See Lessons section for presentation outline.

3 WAYS TO REQUEST A PRESENTATION

ONLINE

donatelifenw.org/speaker-request

CALL

(503) 494-7888

EMAIL

education@donatelifenw.org



CAMPUS DONOR DRIVES

Students can complete senior projects or community service requirements by organizing a campus or community-based donor designation drive, focused on increasing organ, eye, and tissue donation awareness and donor registrations. Donate Life Northwest staff provides project mentoring and free donor drive materials.

GoRecycleYourself.com

Donate Life Northwest works with local and national Donate Life America affiliates to monitor and update the online resource, GoRecycleYourself.com and its social media channels.

EDUCATIONAL MATERIALS

Find our latest materials online, available free to download or request.

TEACHER TRAINING

Staff is available to provide teacher training on donation education by request.



DONATE LIFE NORTHWEST PARTNERS

Donate Life Northwest speaks on behalf of its partners to educate the general public about organ, eye, and tissue donation and motivate individuals to join the donor registry. These agencies comprise the "Donation Specialists" to whom we generally refer throughout the curriculum.



SOLVITA

Solvita is a quality, ethical, not-for-profit provider of services to donor families, medical communities, recipients, and community partners through recovery, processing, and distribution of tissue grafts. Solvita strives to be on the forefront of new graft development and biotechnology to better serve recipients and medical professionals.

solvita.org

(800) 545-8668



VISIONGIFT

VisionGift is a non-profit organization founded in 1975 by Lions Clubs of Oregon. Since its inception, over 20,000 people have received the gift of sight from tissue procured and screened by VisionGift, which works closely with transplant surgeons. Additionally, donated ocular tissues have been utilized for valuable research projects and surgical training.

visiongift.org

(800) 843-7793



CASCADE LIFE ALLIANCE

Cascade Life Alliance (CLA) is the federally designated organ procurement organization serving Oregon, Southwest Washington and Western Idaho. It is part of the United Network for Organ Sharing's Region 6, which includes all of Oregon, Washington, Idaho, Montana and Alaska. CLA staff works with hospitals to ensure collaboration on organ and tissue donation. They also provide support to donor families and ensure clear communication between the donor family and recipient.

cascadelifealliance.org

(503) 494-5560

HOW TO USE THIS CURRICULUM

This toolkit is intended to ensure that educators can teach donation thoroughly and accurately, whether as a stand-alone lesson, a complete unit, or in conjunction with a Donate Life presentation (free and available by request, year-round).

INFORMATIONAL TEXTS

	TEXTS	RECOMMENDED SUBJECTS & GRADES	DESCRIPTION
GENERAL AUDIENCE	Foundational Readings	<ul style="list-style-type: none"> • Health & Wellness Classes 9th - 10th Grades • Driver's Ed Courses 9th - 12th Grades • Leadership 9th - 12th Grades 	<ul style="list-style-type: none"> ▶ Essential, need-to-know information ▶ Sophisticated vocabulary and topic treatment
ADVANCED AUDIENCE	Advanced Readings	<ul style="list-style-type: none"> • Biology & Anatomy Classes 10th - 12th Grades • Health Career Classes 11th - 12th Grades 	<ul style="list-style-type: none"> ▶ In-depth; reflects scientific and professional perspectives. ▶ Professional terminology and vocabulary ▶ Specialized information designed to complement/expand on foundations

Reproducible readings were developed by Donate Life Northwest in conjunction with both local and national partners and affiliates. They are intended to provide educators with a comprehensive informational text and students with an engaging resource for close reading. Select the level of detail appropriate to your classroom and students.

ONLINE RESOURCES

The rapidly changing nature of online research resources, as much as the scientific field of donation and transplantation, means that this curriculum makes every effort to direct students and teachers towards reputable online resources for further information and for multimedia resources which support classroom teaching.

- ▶ GoRecycleYourself.com features a For Educators page, containing videos, images, research links and the registry.
- ▶ Follow Go Recycle Yourself on [Facebook](#), [X](#), and [YouTube](#), which are regularly updated by Donate Life staff with current events and resources regarding donation.
- ▶ Donatelifenw.org maintains resources specific to Oregon and Southwest Washington.



LESSONS

The lesson plans have been designed to support literacy initiatives across the curriculum. Each subject-tailored lesson entails an overview, as well as a template for materials needed, activities, and assessment opportunities.

ACTIVITIES

In order to expand educator choice, activities are grouped by type: Warm-Ups, Kinesthetic, In-Class, and Extension & Enrichment. Activities are grouped by literacy skill to allow for targeted practice of reading, writing, and/or speaking and listening.

STORIES OF DONATION & TRANSPLANTATION

By facilitating donor registration and public education, Donate Life Northwest represents the voices of all those touched by donation and transplantation in our region: those on the waiting list; organ, cornea and tissue recipients; and the families who have courageously supported their loved one's decision to donate. We have provided several sample stories to frame the subject of donation as we encounter it every day: the stories of individuals on transformative journeys.

APPENDIX

An assortment of tools, references, and information, the Appendix can be used to further deepen student and teacher learning.

DONATION AND THE COMMON CORE STATE STANDARDS

Students naturally generate many questions about donation, a philanthropic act often obscured by a proliferation of misunderstandings, misconceptions and urban legends. An overarching goal of this project is to ensure that students can articulate probing questions, and marshal credible evidence to present and justify their opinions, both in the classroom and at home, about whether or not to donate.

READINGS AND RESOURCES

The Common Core Standards for English Language Arts & Literacy Standards for grades 9-12 endorse teaching resources which align with the practice and demonstration of key literacy skills:

- **Reading Text Closely:** The informational reading texts, in addition to multimedia content available on GoRecycleYourself.com, require students to examine texts closely to discern and demonstrate a deep meaning of the complex topic of organ, eye, and tissue donation.
- **Text-based Evidence:** Texts facilitate rich and rigorous evidence-based discussions and opportunities for writing through a sequence of specific, thought-provoking, and text-dependent questions.
- **Writing from Sources:** The complex nature of donation demands that students draw evidence from texts to produce clear and coherent writing that informs, explains, or makes an argument in various written and oral forms.
- **Academic Vocabulary:** Texts build students' academic and technical vocabulary in context throughout instruction. Students interested in scientific, medical, or public health careers can particularly benefit from the practiced use of profession-specific words and phrases.

INSTRUCTIONAL SUPPORTS

The lessons and activities provided are adaptable in a variety of classroom settings, and provide educators with multiple options for scaffolding and extension. We hope that they will assist educators in engaging students in a productive struggle towards independent and well-informed decisions about donation.

- **LESSONS** outline objectives, CCSS.ELA alignment, materials needed, core activities, and basic assessment templates.
- **ACTIVITIES** provide options for direct, observable opportunities for students to engage in critical reading, writing, speaking, and listening.

Lessons and activities have been aligned with Common Core State Standards for grades 9-12. Refer to the following charts for the specific standards referenced throughout the Lessons and Activities chapters.



MOST FREQUENTLY APPLICABLE STANDARDS FOR THIS CURRICULUM

ENGLISH LANGUAGE ARTS Grades 9-10

STANDARDS – READING: INFORMATIONAL TEXT

CCSS.ELA-LITERACY.RI.9-10.1

Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

CCSS.ELA-LITERACY.RI.9-10.2

Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.

CCSS.ELA-LITERACY.RI.9-10.3

Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.

CCSS.ELA-LITERACY.RI.9-10.4

Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone.

CCSS.ELA-LITERACY.RI.9-10.8

Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and evidence is relevant and sufficient; identify false statements and fallacious reasoning.

SCIENCE & TECHNICAL SUBJECTS

CCSS.ELA-LITERACY.RST.9-10.1

Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

CCSS.ELA-LITERACY.RST.9-10.2

Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

CCSS.ELA-LITERACY.RST.9-10.6

Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the questions the author seeks to address.

CCSS.ELA-LITERACY.RST.9-10.7

Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CCSS.ELA-LITERACY.RST.9-10.9

Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

ENGLISH LANGUAGE ARTS Grades 9-10

SPEAKING & LISTENING	
CCSS.ELA-LITERACY.SL.9-10.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
CCSS.ELA-LITERACY.SL.9-10.1.A	Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
CCSS.ELA-LITERACY.SL.9-10.1.C	Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.
CCSS.ELA-LITERACY.SL.9-10.1.D	Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
CCSS.ELA-LITERACY.SL.9-10.2	Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
CCSS.ELA-LITERACY.SL.9-10.3	Evaluate a speakers' point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
CCSS.ELA-LITERACY.SL.9-10.4	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
CCSS.ELA-LITERACY.SL.9-10.5	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understandings of findings, reasoning, and evidence and to add interest.



ENGLISH LANGUAGE ARTS Grades 9-10

WRITING

CCSS.ELA-LITERACY.W.9-10.1

Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

CCSS.ELA-LITERACY.W.9-10.1.A

Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claims(s), counterclaims, reasons, and evidence.

CCSS.ELA-LITERACY.W.9-10.1.B

Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns.

CCSS.ELA-LITERACY.W.9-10.1.E

Provide a concluding statement or section that follows from and supports the argument presented.

CCSS.ELA-LITERACY.W.9-10.2

Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

CCSS.ELA-LITERACY.W.9-10.2.A

Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting, graphics, and multimedia when useful to aiding comprehension.

CCSS.ELA-LITERACY.W.9-10.2.D

Use precise language and domain-specific vocabulary to manage the complexity of the topic.

CCSS.ELA-LITERACY.W.9-10.2.F

Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

CCSS.ELA-LITERACY.W.9-10.7

Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

CCSS.ELA-LITERACY.W.9-10.8

Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each resource in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.

CCSS.ELA-LITERACY.W.9-10.9

Draw evidence from informational texts to support analysis, reflection, and research.

ENGLISH LANGUAGE ARTS Grades 11-12

STANDARDS - READING: INFORMATIONAL TEXT

CCSS.ELA-LITERACY.RI.11-12.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
CCSS.ELA-LITERACY.RI.11-12.2	Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
CCSS.ELA-LITERACY.RI.11-12.3	Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.
CCSS.ELA-LITERACY.RI.11-12.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how “recovery” is used vs. “harvest”).
CCSS.ELA-LITERACY.RI.11-12.7	Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

SCIENCE & TECHNICAL SUBJECTS

CCSS.ELA-LITERACY.RST.11-12.1	Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
CCSS.ELA-LITERACY.RST.11-12.2	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
CCSS.ELA-LITERACY.RST.11-12.6	Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
CCSS.ELA-LITERACY.RST.11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
CCSS.ELA-LITERACY.RST.11-12.9	Synthesize information from a range of courses (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.



ENGLISH LANGUAGE ARTS Grades 11-12

SPEAKING & LISTENING	
CCSS.ELA-LITERACY.SL.11-	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
CCSS.ELA-LITERACY.SL.11-12.1.A	Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
CCSS.ELA-LITERACY.SL.11-12.1.C	Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.
CCSS.ELA-LITERACY.SL.11-12.1.D	Respond thoughtfully to diverse perspectives, synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
CCSS.ELA-LITERACY.SL.11-	Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
CCSS.ELA-LITERACY.SL.11-12.3	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.
CCSS.ELA-LITERACY.SL.11-12.4	Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
CCSS.ELA-LITERACY.SL.11-12.5	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understandings of findings, reasoning, and evidence and to add interest.

ENGLISH LANGUAGE ARTS Grades 11-12

WRITING	
CCSS.ELA-LITERACY.W.11-12.1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
CCSS.ELA-LITERACY.W.11-12.1.A	Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claims(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.
CCSS.ELA-LITERACY.W.11-12.1.B	Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience’s knowledge level, concerns, values, and possible biases.
CCSS.ELA-LITERACY.W.11-12.1.E	Provide a concluding statement or section that follows from and supports the argument presented.
CCSS.ELA-LITERACY.W.11-12.2	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
CCSS.ELA-LITERACY.W.11-12.2.A	Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting, graphics, and multimedia when useful to aiding comprehension.
CCSS.ELA-LITERACY.W.11-12.2.F	Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
CCSS.ELA-LITERACY.W.11-12.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
CCSS.ELA-LITERACY.W.11-12.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and over-reliance on any one source and following a standard format for citation.
CCSS.ELA-LITERACY.W.11-12.9	Draw evidence from informational texts to support analysis, reflection, and research.



DONATION AND TRANSPLANTATION IN OREGON

DONATION

Hospitals throughout Oregon and Southwest Washington play a critical role in identifying potential organ, eye, and tissue donors, and alerting donation specialists. Cascade Life Alliance provides continuing clinical education regarding organ donation to hospital staffs throughout the region.

Medical examiners, funeral homes, hospice care centers, and caretakers play a critical role in identifying potential eye and tissue donors and alerting donation specialists. VisionGift and Solvita provide continuing clinical education regarding eye and tissue donation to these professionals throughout the region.

TRANSPLANT CENTERS

For those in need of an organ transplant, the following programs are currently available in Oregon.

LEGACY GOOD SAMARITAN HOSPITAL AND MEDICAL CENTER

legacyhealth.org/health-services-and-information/health-services/for-adults-a-z/kidney-transplant.aspx

OREGON HEALTH & SCIENCE UNIVERSITY KIDNEY AND PANCREAS TRANSPLANT PROGRAM

ohsu.edu/transplant/kidney-and-pancreas-transplant-program

OREGON HEALTH & SCIENCE UNIVERSITY LIVER TRANSPLANT PROGRAM

ohsu.edu/xd/health/services/transplant/liver/

OREGON HEALTH & SCIENCE UNIVERSITY HEART TRANSPLANT PROGRAM

ohsu.edu/xd/health/services/heart-vascular/getting-treatment/heart-failure-transplant/index.cfm

PORTLAND VA MEDICAL CENTER

portland.va.gov

PROVIDENCE HEART TRANSPLANT AND VAD PROGRAM

providence.org/locations/or/mother-joseph-plaza/heart-transplant-and-vad-program

Lung and intestine transplant procedures are not currently performed in Oregon.

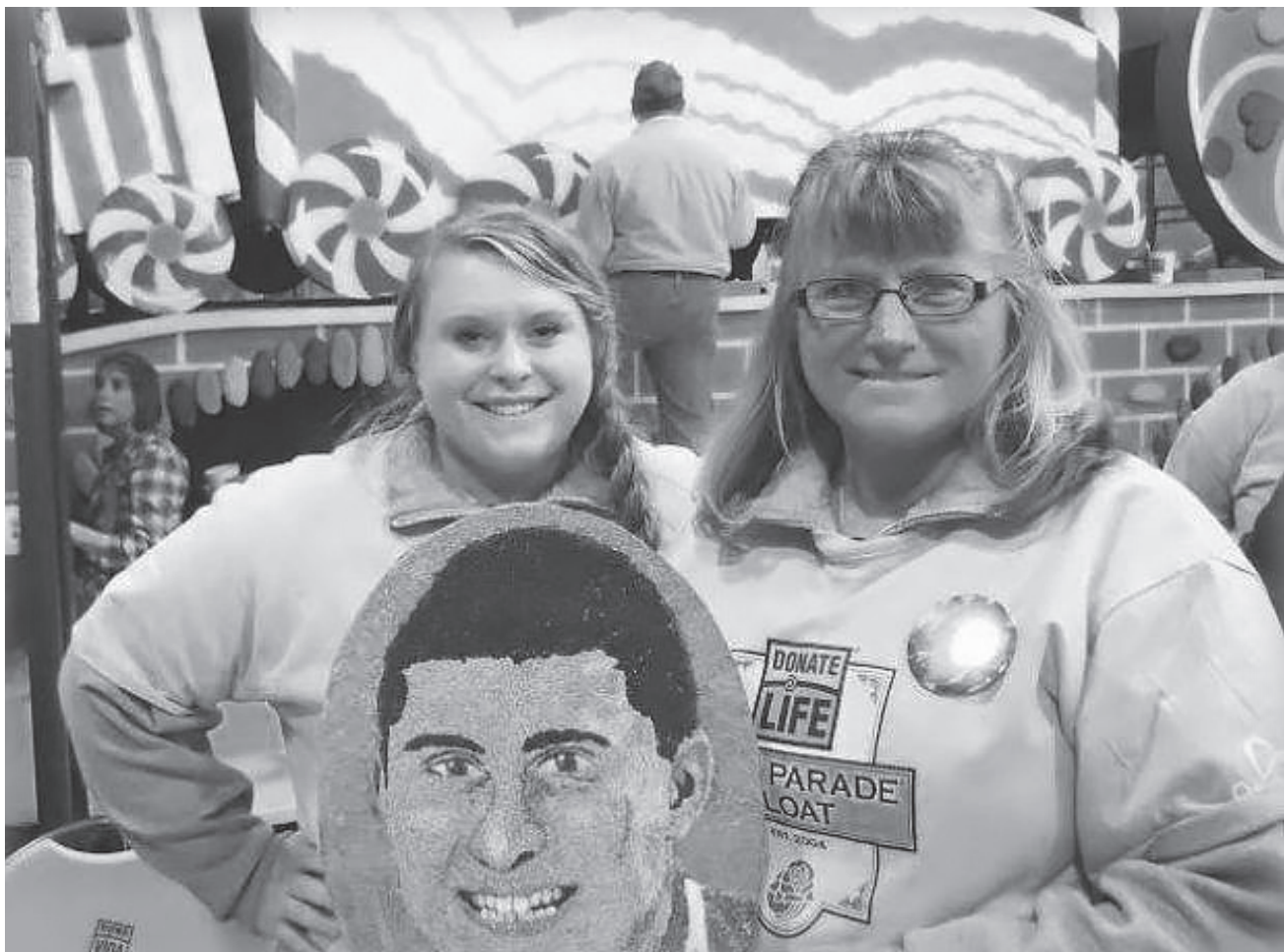
Pacific Northwest organ transplant candidates must travel to transplant centers in Washington, California, and beyond for treatment.

FIND TRANSPLANT CENTERS IN OTHER STATES

optn.transplant.hrsa.gov/members/member-directory/?memberType=Transplant%20Centers

BEFORE YOU BEGIN

Organ, eye, and tissue donation can be a sensitive topic. Many students are likely thinking about it for the first time, while some students may be intimately acquainted with the issue due to personal reasons. To discover any concerns among your students, we highly recommend using a warm-up discussion, writing, or reading activity to establish a comfortable context for the lesson or unit.



The Schreiber family displays a completed floragraph of brother and son Tyson, an Oregon organ donor honored on the 2014 Donate Life float at the Pasadena Rose Parade.



RECYCLEYOURSELF

An Organ, Eye, and Tissue Donation Curriculum

SECTION TWO : FOUNDATIONAL READINGS

Recommended for Health and Driver's Education Classrooms

A DONOR'S STORY

Jerome is a fictional character, but his story illustrates the complexity of organ, eye, and tissue donation.



TRANSPORT

When Jerome arrives at the hospital, ER doctors and nurses have advanced life-support equipment ready. They evaluate injuries and continue lifesaving measures, including a mechanical ventilator, IV fluid, blood replacement, and drugs to help his heart keep beating.

INTENSIVE CARE

After his vital signs stabilize, Jerome is transferred to the Intensive Care Unit, where a doctor performs special tests to see how much damage has been done to his brain and other organs. The medical team continues to provide mechanical support during the tests.

NOTIFICATION

Hospital staff notifies the local organ procurement organization, Cascade Life Alliance (CLA). CLA's Donation Specialists check the state's donor registry to see if Jerome had registered as an organ, cornea, and/or tissue donor. From Portland, they travel to the hospital to determine if Jerome would be medically suitable to donate if he cannot recover from his injuries.

BRAIN DEATH DECLARED

Tests reveal an irreversible loss of blood flow to the brain, causing the brain to die. Doctors inform Jerome's parents that despite their best efforts, he is not going to recover. His brain continues to swell and after a series of tests, he is pronounced brain dead by hospital staff, and his family is notified that he has died. After brain death, Jerome's body is kept functioning by artificial means, while CLA Donation Specialists talk to his family about donation.

AUTHORIZATION

Jerome's family members discuss their feelings about donation with the CLA Donation Specialist, and are given time to think and ask questions. His parents remember that when Jerome got his driver's license, he mentioned that he would want to save someone's life, and had registered as a donor.

Knowing that he had wanted to be a donor comforts Jerome's parents as they make their decision during this tragic time. Since he was a minor, his parents must provide authorization for Jerome to become an organ, eye, and tissue donor, and work with CLA staff to provide a medical and social history about Jerome. Because Jerome was a minor, had his parents declined to provide authorization, the process would end here.



ORGAN PLACEMENT

Jerome's blood type, height, weight, hospital ZIP code and other data are entered into the United Network for Organ Sharing's national computer system. A list of patients who are medically compatible is generated, and each healthy organ is offered to the first patient on the match list who is healthy enough to undergo major surgery and willing to be transplanted immediately. Seventy-five percent of organs go to local patients.

Surgical teams from transplant centers are coordinated to arrive at Jerome's hospital. Matching recipients are alerted, and go to their transplant centers to prepare for surgeries.

ORGAN AND TISSUE RECOVERY

Jerome's body is taken to the operating room. The organs which have been determined medically suitable for transplant are recovered in the same sterile and careful way as in any other surgery (in this case, Jerome can donate eight solid organs). All incisions are closed. The organs are cooled and preserved with special solutions while the transplant teams immediately return to their hospitals to perform the transplant surgeries.

Tissues and corneas are recovered by Donation Specialists from Solvita and VisionGift, and Jerome's body is prepared to be sent to the funeral home.

TRANSPLANT

Meanwhile, transplant teams have arrived at their hospitals with the organs for transplant. Surgeons work around the clock as needed to transplant the new organs into the waiting recipients.

FUNERAL

After donation, Jerome's body is taken to a funeral home. Because Jerome's recovery surgery was done respectfully and carefully, Jerome's family can have an open casket funeral.

FOLLOW-UP

The organ, eye, and tissue recovery organizations provide Jerome's family with general information about the anonymous recipients of his donated organs and tissues. Jerome's donation of eight organs has saved eight lives. His donation of corneas has helped two individuals regain their sight, and by donating tissue he has saved and enhanced over 50 lives.

Adapted from United Network for Organ Sharing, unos.org

WAITING FOR A SECOND CHANCE

Key Vocabulary

Chronic kidney disease, congestive heart failure, cystic fibrosis, diabetes, non-alcoholic fatty liver disease, hypertension, organ, tissue, United Network for Organ Sharing, waiting list



Nearly 104,000 Americans are on the national waiting list for organ transplants. Each have been diagnosed with an ultimately fatal condition, meaning that their only chance for survival rests on the donation of a healthy organ to replace their damaged or diseased heart, liver, lungs, kidney, pancreas or intestine. Around eighty percent of all Americans who need an organ transplant require a kidney.

Millions more need tissue donations to restore their sight and mobility, lost or impaired due to disease or damage.

Tragically, there are not enough donors to meet the growing need for transplants in the United States. Every day, 17 people die while waiting for organ transplants (U.S. Department of Health and Human Services, Health Resources and Services, 2023).



WHY DO PEOPLE NEED ORGAN TRANSPLANTS?

Patients on the U.S. waiting list are in end-stage organ failure. This means that their organs were formed abnormally at birth or have been damaged by disease or accidental injury. When vital organs are severely damaged, they may need to be replaced for a person to survive. The chart below details the most common reasons people need organ transplants.

DONATED ORGAN	DISEASE OR DISORDER	DESCRIPTION
HEART	Congestive Heart Failure	The heart no longer pumps enough blood to meet the body's needs.
LUNG	Cystic Fibrosis	A hereditary disease causing thick, sticky mucus to build up in the lungs.
LIVER	Non-alcoholic Fatty Liver Disease	Extra fat builds up in liver cells and destroys the liver's ability to filter. This tends to develop in people who are obese, or have diabetes or high cholesterol.
KIDNEY	High Blood Pressure	Kidneys are damaged, and can no longer filter waste from the body.
PANCREAS	Diabetes	The pancreas can no longer control the level of glucose in the blood.
INTESTINE	Blocked or twisted intestines	Some babies are born with malformations of the gastrointestinal tract, reducing their ability to digest food or absorb fluid.

WHY DO PEOPLE NEED TISSUE TRANSPLANTS?

A single tissue donor can save or enhance more than 125 lives. This is because there are many kinds of tissues which can be donated, for many different reasons. The chart below details just some of the common types of tissue that can be transplanted.

DONATED TISSUE	TYPICAL APPLICATION	BENEFIT FOR RECIPIENT
CORNEA	Replaces diseased or damaged cornea	Prevents blindness; restores vision.
BONE	Reconstruction related to trauma, tumors, degenerative diseases	Prevents the need for amputation. Accelerates, promotes and allows healing. Restores mobility.
SKIN	Temporary biological bandages for burn victims prevent infection, decrease pain, prevent heat and fluid loss, and reduce scarring	Promotes healing; natural barrier to infection.
VALVES	Repairs congenital abnormalities	Maintains unidirectional flow of blood in the heart.
TENDONS	Reconstruction related to trauma, tears, or overuse	Rebuilds joints; restores mobility.

See Cornea Donation (pp. 38-40) and Tissue Donation (pp. 41-42) sections to learn more.



COMMUNITIES OF COLOR IN CRISIS

- ▶ Hispanic Americans, African Americans, and Pacific Islander Americans are three times more likely to suffer from obesity and diabetes.
- ▶ Native Americans are four times more likely to suffer from diabetes and heart diseases.
- ▶ Asian Americans suffer significantly from liver disease and hepatitis.



*Bella, Kidney Transplant Recipient.
Photo courtesy Donate Life America*

The U.S. waiting list is comprised of people of all ages, genders, and ethnic backgrounds. Due to systemic racism and health disparities however, certain ethnic groups have higher rates of potential organ destroying diseases including diabetes, hypertension (high blood pressure), and liver disease. More information can be found at the US Department of Health and Human Services [Office of Minority Health](#).

At the same time, African American and Hispanic American communities have lower rates of consent to organ and tissue donation. Several studies indicate that cultural beliefs, mistrust in the medical system, misinformation, and/or negative portrayals of donation in TV or the media regarding donation can heavily influence an individual's decision to donate ([National Survey of Organ Donation Attitudes and Practices](#)).

Although organs are not matched according to race or ethnicity, all individuals waiting for an organ transplant will have a better chance of receiving one if there are large numbers of donors from their ethnic background. This is because compatible blood types and tissue markers – critical qualities for donor/recipient matching – are more likely to be found among members of the same ethnicity. A greater diversity of donors may potentially increase access to transplantation for everyone (Office of Minority Health, 2014).

- See Appendix for a list of the most common questions about donation (pp. 183-184).
- See Appendix for faith perspectives on donation (pp. 185-186).

WHO GETS AN ORGAN TRANSPLANT?

Being placed on the waiting list for an organ transplant is not automatic. Because there are so few available organs, patients are carefully evaluated by their doctors, surgeons, and transplant staff prior to being placed on the national waiting list.

The decision is based on the status of the patient’s health, their medical and social history, and the expectation of their stability after the transplant takes place – both psychologically and financially. A donation is a rare and special gift, so doctors must be sure that a potential recipient can take care of their new organ with medication, regular office visits, and healthy lifestyle choices. Patients who are unwilling to give up unhealthy substances, including drugs, nicotine, and alcohol, may be automatically disqualified.

WHAT IS THE WAITING LIST?

When a transplant hospital places a patient on the U.S. waiting list, the patients are registered in a centralized, national computer database that links all donors and transplant candidates. In the United States, this network is managed by the United Network for Organ Sharing 24 hours a day, 365 days a year.

The “list” is a computer network which tracks the following criteria about transplant candidates:

- Blood and tissue type
- Immune status
- Degree of medical urgency
- Time spent waiting

The system uses this information to match the medical characteristics of those waiting against those of a deceased organ donor.

The waiting list does not track a candidate’s race, gender, fame, or financial status. This ensures that organs are matched according to strict medical criteria, and that there is no possibility of special treatment.

transplantliving.org



ORGAN	MEDIAN NATIONAL WAITING TIME*
HEART	183 DAYS or 6.1 MONTHS
LUNGS	215 DAYS or 7.2 MONTHS
LIVER	679 DAYS or 1.9 YEARS
KIDNEY	Data not currently available
PANCREAS	986 DAYS or 2.7 YEARS
INTESTINE	248 DAYS or 8.3 MONTHS

Waiting times are averaged from 2003 through 2014 based on data from the Organ Procurement and Transplantation Network. Data was gathered January, 2024. Most recent data can be found at optn.transplant.hrsa.gov/data/view-data-reports/national-data

HOW LONG DO PEOPLE WAIT?

Once someone is added to the list, they must wait for a matching organ to become available. This may take days, weeks, months, or even years. The average wait time per organ, according to the Organ Procurement and Transplantation Network.

Where a person lives can also impact how long they must wait. For example, waiting times may be longer in large cities with large populations because the need for certain organs will be higher. Waiting times may be shorter in smaller communities. Regardless, when an organ becomes available, it is first offered to local transplant centers. If no match is found, the organ will then be shared on a regional and national level.

TALKING ABOUT DONATION

Language plays an important role in the misconceptions and fears about organ, eye, and tissue donation. When talking about donation, it is important to show respect and sensitivity.

PLEASE USE...

RECOVER or PROCURE

INSTEAD OF...

HARVEST

“Harvest” is a word that has long been used by the medical community. However, it can be very unpalatable, especially to donor families when associated with their loved ones. The words “recovery” or “procurement” help people understand that removal of a loved one’s organs and tissues for transplant is a respectful procedure.

DECEASED DONOR

CADAVER

Today, as more people choose to become living donors, there is a need to distinguish between living and deceased donors. The term “cadaveric” depersonalizes the fact that a gift was offered to someone upon an individual’s death. The word cadaver is defined as a “dead body intended for dissection.” This does not display the honor and respect we give to all individuals who have courageously chosen to give the gift of life.

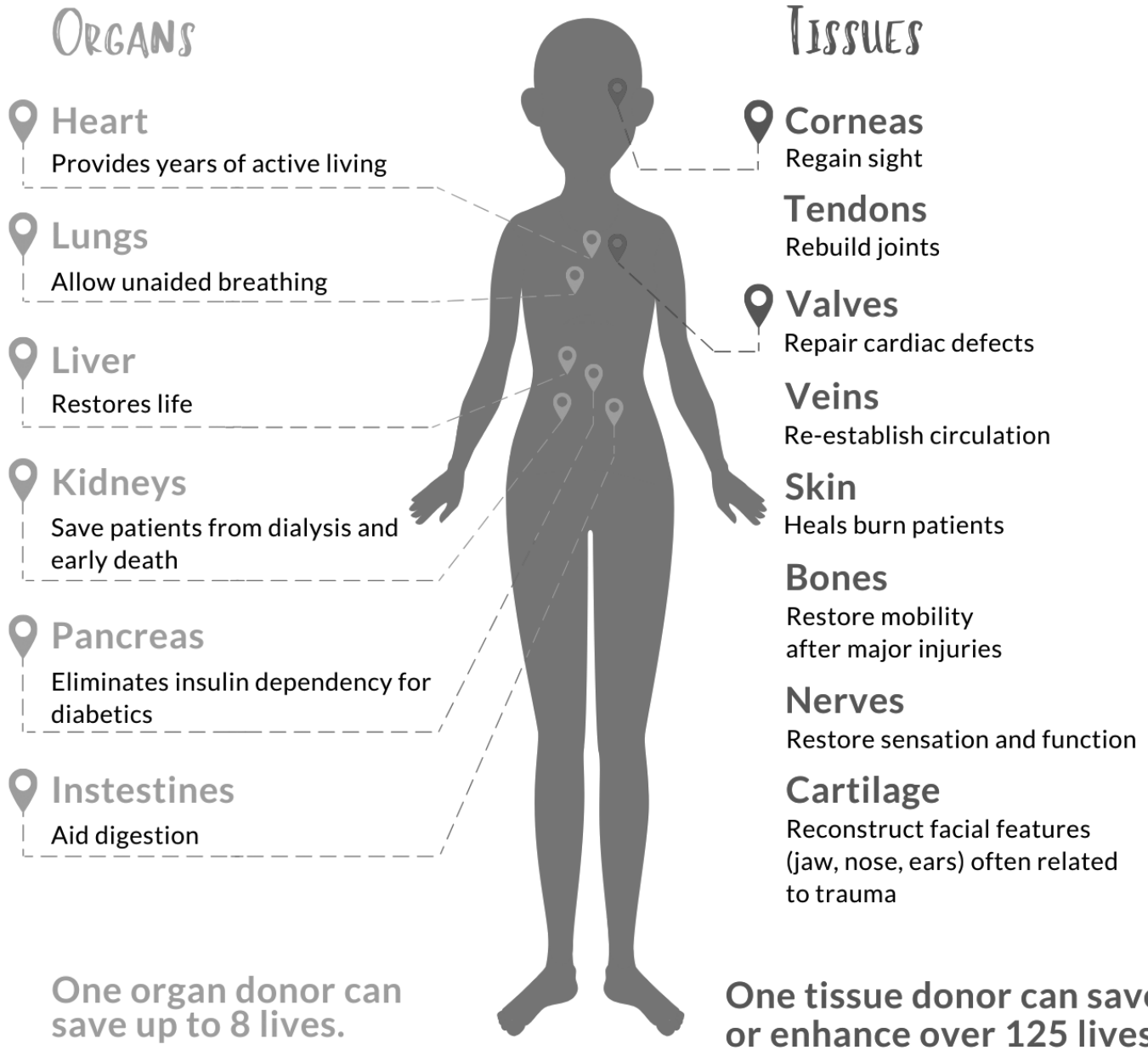
VENTILATED or MECHANICAL SUPPORT

LIFE SUPPORT

There are two ways to determine death: cardiac death (when the heart stops functioning) and brain death (when the brain stops functioning). The term “life support” proves to be a confusing term when used in conjunction with brain death. When death occurs, there is no support that can make the individual live again. The terms “mechanical” or “ventilated support” are appropriate to describe the support given to a deceased person in the event of organ, eye, and tissue donation.



WHAT CAN BE DONATED?



A deceased donor has indicated their decision to donate by registering as a donor on their state's registry, either online, at the DMV, through a paper form, or through their iPhone, or, their family has provided authorization for donation upon his or her death. Ideally, the donor has also talked to their family about the decision to be an organ, eye, and tissue donor.



*Leslie of Portland, Oregon, shares the story of her son Brian, a cornea and tissue donor.
Photo courtesy Donate Life Northwest.*



WAITING FOR A SECOND CHANCE

Questions for Reading Comprehension

CLOSE READING

1. Approximately how many Americans are waiting for an organ transplant? Approximately how many people are waiting for a kidney transplant?
2. Does everyone who needs an organ transplant get one? Why or why not?
3. Which six organs can be donated?
4. Name three kinds of tissue that can be donated.
5. What differences exist between organ and tissue donation?
6. What are some of the problems which put certain ethnic groups at a higher health risk than others?
7. Imagine you are a doctor or nurse talking to a sick patient about the possibility of adding them to the national waiting list. Explain what it is and how it works.
8. What efforts have been made to ensure that the U.S. database matches donated organs with recipients in the fairest way possible?

THINK CRITICALLY

1. How do you feel about organ, eye, and tissue donation?
2. Do you think organ and tissue donation is a good or a bad thing? Explain.
3. Do you feel that you know enough about organ, eye, and tissue donation to make a logical and educated decision about it? What about your family?
4. If you were diagnosed as needing a lifesaving organ transplant, would you accept a donation from someone who has passed away? Why or why not?
5. How would you feel if a loved one were placed on the waiting list for an organ transplant? What could you do to show your support for them?
6. Reflect on a time you've heard about organ donation in television or film. Was the portrayal positive or negative?
7. Assess whether someone with chronic alcoholism is likely to be placed on the waiting list. Defend your opinion.
8. Can you see a possible solution to the rising need for organ, especially kidney, transplants?
9. If applicable, what is your faith's stance on donation?
10. Go online to research two conditions which could cause someone to need an organ transplant.
11. Go online to research how socioeconomic factors can impact health.

CORNEA DONATION

Key Vocabulary

Anatomy: Cornea, iris, lens, micron, pupil, retina, sclera, optic nerve.

Reasons for transplant: abrasion, dysmorphia, dystrophy, trauma, keratoconus, opacity, visual impairment

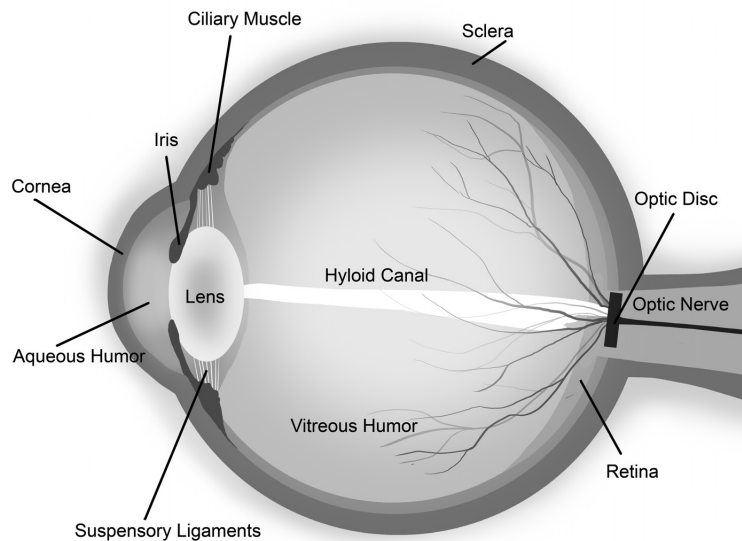
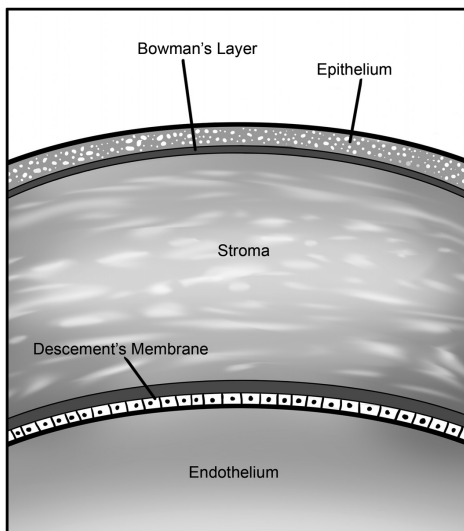
Other terms: astigmatism, cataracts, glaucoma, keratoplasty, macular degeneration

WHAT IS THE CORNEA?

The cornea is, quite literally, just a small part of the eye's anatomy. It is a multi layered membrane consisting of six layers. The entire cornea is only around 500 microns* thick, about the thickness of a dime.

The cornea is not colorful (like the iris or pupil), nor is it the white part of the eye (the sclera; see diagram below). Similar to the windshield of a car, the multi layered membranes of the cornea protect the eye from the outside world.

*A micron is an abbreviation for micrometer, or a millionth of a meter (1/1,000,000 meters). A human hair is about 75 microns thick.





WHO NEEDS A DONATED CORNEA?

Since 1961, nearly two million corneal transplants have been performed, restoring sight to adults and children ranging in age from 9 days to 103 years old. According to the Eye Bank Association of America (EBAA), eye banks provide more than 85,000 corneal transplants with a 97% success rate. There are many reasons why the cornea may need to be transplanted:

INJURY TO THE EYE

Corneal abrasions and injury, such as chemical burns, exposure, or penetrating trauma, can seriously harm the cornea.

Not everyone who is blind or who has reduced vision is eligible for a corneal transplant – only those with damage specifically to the cornea. Someone whose blindness stems from damage to their retina or optic nerve may still have a perfectly healthy cornea; this procedure would not benefit them.

HEREDITARY CONDITIONS

Hereditary conditions can take the form of dystrophies, dysfunctions, or dysmorphia, and can affect specific layers of the cornea.

- Keratoconus is a disease in which the cornea thins and bulges, taking on an irregular, conical shape. This painful condition is among the most common reasons a corneal transplant is needed.

DISEASE OR INFECTION

Non-hereditary diseases or dysfunctions include certain viral infections, such as herpes, that can leave scars on, or in, the cornea. This reduces or destroys vision by creating foggy areas in the patient's field of vision.

There are also rare cases of bacterial conditions which can damage and scar a person's cornea, often related to untreated water exposure, or improper contact lens care.



Images: Mt. Hood, before and after corneal transplant surgery

WHO CAN BE AN EYE DONOR?

Almost anyone can be an eye donor. The human eyeball is extraordinarily complex with several different parts. Even if another part of the eye is impaired – e.g., due to glaucoma (damage to the optic nerve) or cataracts (damage to the lens) – that person’s cornea could be unaffected and perfectly healthy to donate. Donation specialists at VisionGift carefully screen donated tissue to ensure that recipients receive the healthiest possible graft.

If eye tissue is found to be unsuitable for transplant, it can often be used for research purposes. Eye surgeons can practice surgical techniques on this tissue, or it can be used to study conditions which produce visual impairment, such as cataracts, glaucoma, eye complications from diabetes, or macular degeneration. The gift of a single eye donor can change the lives of many.

CORNEA DONATION

Questions for Reading Comprehension

1. What is the cornea?
2. True or False: A corneal transplant changes the color of your eye.
Reflect on the eye’s anatomy to explain your answer.
3. Describe two conditions which would require someone to have a corneal transplant.
4. Would it be possible for someone with cataracts to donate their corneas?
5. What may happen if donated corneas are not suitable for transplant?



TISSUE DONATION

Key Vocabulary

Bone, cartilage, fascia, graft, heart valve, pericardium, skin, tendon, vein

WHAT IS TISSUE DONATION?

After someone passes away, they can donate tissues such as skin, tendons, bones and heart valves to dramatically improve the quality of life for recipients, and even save lives. A single tissue donor can enhance the lives of more than 125 people.



Professional soccer player Bernardo received a tissue transplant after tearing his ACL.

Photo courtesy Donate Life America.

HOW DOES TISSUE DONATION HELP PEOPLE?

Commonly donated tissues can help people whose tissues have been damaged by disease or accidental injury.

- Skin grafts save the lives of burn victims by acting as a biological bandage to protect them from infection.
- Bone grafts can help people whose bones have degenerated due to infection, tumors, or trauma. Bone can be used for facial reconstruction, limb salvage, birth defect correction, cancer treatment, and spinal and dental surgery.
- Veins are used to re-establish blood circulation and to prevent loss of limbs and leg amputation. For example, a donated saphenous vein can replace the damaged lower leg vein of a diabetic patient.
- Tendons and soft tissue can help people lead more active lives; for example, by replacing an athlete's torn ACL (anterior cruciate ligament).
- Pericardium (the connective soft tissue surrounding the heart) is used in neurosurgery, brain operations, and eyelid repairs.
- Fascia is used in surgical repairs for sports injuries, ligament repairs, dental and other surgeries.
- Cartilage is used for facial and other post-traumatic injury reconstruction.

WHAT IS TISSUE DONATION?

There are many variables that come into play: age, timelines, certain diseases and the extent of certain injuries, but even so – nearly anyone can be a tissue donor. The family or next-of-kin must be contacted for a full medical and social history, which helps recovery professionals determine whether the individual is medically suitable to be a donor.

TISSUE DONATION

Questions for Reading Comprehension

1. What is tissue donation?
2. Which tissues can be donated?
3. How can tissue donation save someone's life? Give one example.
4. How can tissue donation enhance someone's life? Give three examples.
5. What role does someone's family play in tissue donation?



DECEASED ORGAN DONATION

Key Vocabulary

Authorization, brain death, mechanical support, cardiac death, organ procurement organization, organ procurement coordinator, waiting list, United Network of Organ Sharing

THE POWER OF ONE PERCENT

Deceased organ donation is very rare. Of all the deaths which occur every year, both locally and nationally, less than one percent of these deaths will occur in the medical environment which will support organ donation. The donation of vital organs is possible only when someone has died under very specific conditions:

- The patient passes away in a hospital.
- Prior to death, the patient was placed on mechanical support. This maintains the flow of blood and oxygen throughout the vital organs.
- Severe trauma causes the brain to swell, resulting in brain death. Electricity, blood, and oxygen irreversibly cease to flow.

HOW DOES DONATION WORK?

When someone in a hospital has a life-threatening illness or injury, or has died, hospitals are required to contact the regional organ procurement organization (OPO). Donation specialists from the OPO are responsible for coordinating the entire donation process. The OPO serving Oregon, Southwest Washington and Southwestern Idaho is [Cascade Life Alliance](#) (CLA).

After receiving notice of a possible organ donor, donation specialists from CLA consult the state Donor Registry to see if the patient had registered as a donor. They also determine whether the patient is medically suitable to donate or not.

- When it is time to talk to the family about donation, donation specialists inform the family whether their loved one had registered as a donor, and explain the donation process to them.
 - If the patient is 18 or older and is registered as a donor, the family does not need to provide authorization for donation.
 - If the patient is not registered or is under 18, donation specialists discuss donation opportunities with the patient's family. If the family says no, the process ends.



Most organ donors pass away in tragic and unexpected circumstances. Whether or not someone registered as an organ donor, a donation specialist will talk to the donor's family about the possibility of donation. All too often, families have never discussed donation, and are not sure of what their loved one's wishes would have been. This can be an additional burden during an already difficult time.

Registering as a donor, whether online, at the DMV, via smartphone, or via a paper form gives a clear indication that an individual has decided to give the gift of life, should the worst happen.

HOW ARE DONATED ORGANS MATCHED WITH RECIPIENTS?

Donation specialists collaborate with transplant surgeons to determine which organs or tissues are healthy enough for transplantation. Donors must be carefully screened to ensure that recipients receive the healthiest possible organs. This is done partly with lab tests, and partly by working with the donor's family to obtain a medical and social history.

Next, donation specialists input data about the suitable organs for transplant into the national waiting list database. Donated organs are matched with potential organ recipients according to many different criteria, which may include:

- Body size
- Blood and tissue type
- Medical urgency
- Time the recipient has been on the waiting list
- Geographic distance between the donor and the potential recipient

Surgeons recover the organs just as in any other surgery – in a careful and respectful manner, in an operating room. Donation does not interfere with funeral arrangements.

Once the organs are recovered from the donor, time is of the essence. Some organs, like the heart and lungs, cannot travel very far; they must be transplanted into the recipient within four to six hours of being surgically recovered from the donor. Seventy-five percent of organ donors help local recipients. The organs are prepared for transport, and rushed to the hospital where the potential recipient is waiting.

Up to eight organs can be recovered from a single donor, which means up to eight lives can be saved.

For current practices regarding organ matching, see unos.org/transplant/how-we-match-organs/.



DECEASED ORGAN DONATION

Questions for Reading Comprehension

CLOSE READING

1. Create a flowchart showing the steps involved in organ donation.
2. Name three major tasks of an Organ Donation Specialist.
3. How are donated organs matched to potential recipients?
4. How is it that one organ donor save up to eight lives?

THINK CRITICALLY

1. Could someone who passes away at home, of natural causes, be an organ donor? Why or why not?
2. Why, in the United States, do organ procurement organizations make key decisions about organ donation, rather than the hospital doctors or nurses?
3. Do the criteria used to match organs with recipients reveal personal information, such as name, gender, or income? Why might these be left out?
4. Why do you think it would be important to talk with your family about your donation decision?



Century High School students after a successful campus donor drive. Photo courtesy Donate Life Northwest.

LIVING DONATION

Key Vocabulary

Regenerative, leukemia, directed donation, donor chain, hemodialysis access, hemodialysis, living kidney donor, paired donation, peritoneal dialysis, non-directed donation

Some decisions to donate and save lives can be made during one's lifetime. Living donation is a voluntary process and has nothing to do with registering as a deceased organ and tissue donor.

REGENERATIVE DONATION

Most types of living donation consist of regenerative tissue. This type of tissue grows back naturally after some of it is removed.

BLOOD

Blood donations help millions of patients in need! You can learn more about blood donation and find a local blood drive through the [American Red Cross](#).

BONE MARROW

Bone marrow often saves the lives of leukemia patients. The National Bone Marrow Program's website, [Be the Match](#), offers information and resources about registering to be a bone marrow donor.

LIVER

The liver is the body's only regenerative internal organ. This means that a portion of the liver can be removed from a living donor and transplanted into a recipient, and both the liver segment in the recipient and in the donor will grow to normal size in a few months. The liver is able to do the extra work necessary so that both the donor and the recipient can be healthy.

NON-REGENERATIVE DONATION

These tissues do not grow back. However, living donors offer their loved one, friend, or an anonymous recipient an alternative to waiting on the national waiting list for an organ from a deceased donor.

KIDNEY

People have two kidneys, except in rare cases. If someone chooses to donate one kidney, the remaining kidney can carry out the normal functions of both kidneys.

LUNG

A lower lobe of a lung can be donated, although this kind of procedure is very rare. This surgical procedure is not currently performed in Oregon.

PANCREAS AND INTESTINE

Though extremely rare, it is also possible to be a living pancreas and intestine donor. Neither of these surgical procedures are currently performed in Oregon.



Living Kidney Donation



Jennifer (far left) received a kidney transplant from her mother, Linda (not pictured). Photo courtesy Nick Tracy Photography.

GOT TWO, GIVE ONE

Since 1954, when the first successful living kidney transplant in the United States took place between identical twins, living donors have been giving the gift of life and making a difference. In Oregon, the first living kidney transplant took place at Oregon Health & Science University in 1959, between 12-year-old identical twin sisters.

Why is kidney donation possible? Put simply, because we have two. Several studies have shown that donating one kidney does not change life expectancy or increase a person's risk of developing kidney disease or any other

kidney-based health problems. A person can lead an active, normal life with just one kidney. Like anyone else, they are able to play sports, have children, and exercise.

Living kidney donors effectively save two lives through their single donation: the life of the recipient, and also the life of a stranger on the waiting list, for whom a chance to receive a deceased donor's kidney is now one step closer. Additionally, if ever a living kidney donor finds themselves in need of a kidney transplant later in life, they will be at or near the top of the deceased donor list, shortening their wait time.

FINDING A LIVING KIDNEY DONOR

If you needed a kidney transplant, who would you most likely ask? Most people respond, "My family."

Unfortunately, this is not always possible. It is critical that blood and tissue types between the donor and recipient are well matched so that the chance of rejection is lessened (see Advanced Readings). Nor does everyone have the option of turning to their family. For example, if someone has a family history of genetic diseases, such as polycystic kidney disease, they might not qualify to donate to a relative.

It is no small thing to try to find a living kidney donor! Some people make the decision to donate instantly – only to find that they are incompatible and cannot donate to their loved one. Fears and misconceptions can make living kidney donation a difficult subject. For example, a common mis-belief is that a living kidney donor is risking their life or compromising their health. For a person who needs a kidney transplant, this mis-belief may be so strong that it may prevent them from even talking to their family and friends about the possibility of living donation.

In any case, transplant centers assist transplant recipients in developing approaches to finding a living kidney donor.

WHO CAN BE A LIVING KIDNEY DONOR?

Potential living kidney donors must be in excellent mental and physical health. The minimum age for volunteering to donate depends on the local transplant center's policy, but in Oregon it is no younger than 18 years old.

Living kidney donors can be parents, siblings, children, spouses, friends, co-workers – or even total strangers. It is a federal crime to buy or sell organs in the United States, so living kidney donation is completely voluntary and donors receive no financial compensation for their gift.

A potential donor will undergo numerous evaluations at a transplant center to determine their mental and physical health, to ensure that the donation is safe, and that their expectations are realistic.

KIDNEY TRANSPLANT CENTERS IN OREGON

[LEGACY KIDNEY TRANSPLANT SERVICES](#)

[OREGON HEALTH & SCIENCE UNIVERSITY KIDNEY AND PANCREAS TRANSPLANT PROGRAM](#)

[PORTLAND VA MEDICAL CENTER](#)

LIVING DONATION

Questions for Reading Comprehension

CLOSE READING

1. Name three tissues which can be donated (partial or whole) while you are alive.
2. How do blood and bone marrow donations save lives?
3. What are two common misconceptions or fears about donating a kidney?
4. Do you have to be a blood relative to donate a kidney? Why or why not?

THINK CRITICALLY

1. Do you plan to donate blood? Bone marrow? Why or why not? Would your answer change if you knew someone whose health depended on donation? Why or why not?
2. Why do you think the first successful transplants took place between identical twins?
3. Imagine that you need a kidney transplant and have learned about living kidney donation. Come up with three people or groups you would ask. Now imagine that these people have never heard of living kidney donation. Develop a short speech which introduces your need, addresses a common fear or misconception about donation, and encourages them to consider being a donor.



REGISTER TO BE A DONOR

JOIN THE OREGON DONOR REGISTRY

In the future, you may save up to eight lives as an organ donor and restore sight and mobility to 125 or more people as an eye and tissue donor.

Visit GoRecycleYourself.com to learn more!

WAYS TO REGISTER

Parental permission is not required to register.

1. At 13, individuals can join Oregon's Donor Registry online:

- GoRecycleYourself.com or
- donatelifenw.org | donevidanw.org (en español)

2. At 13, individuals can join the Oregon Donor Registry by filling out a paper form, available by request from Donate Life Northwest.

3. At 18, individuals can sign up via the iHealth app on Apple phones.

4. At 15, individuals can say YES to donation when they apply at the DMV for a driver's license, permit, or state identification.

If you register at the DMV, you will receive a D or a heart symbol on your license.

If you join the registry online, on your smartphone, or through a paper form, no code will appear on your license.

TALK TO YOUR FAMILY

The news that a loved one was, or was not, a registered donor can be burdensome if it comes as a surprise after a death. It is difficult for families to make major decisions during a time of grief when they may not know, or be able to recall clearly, what their loved one had wanted.

GET INVOLVED

Support donation awareness by volunteering, participating in awareness events, or joining the conversation online.

WHAT IF I WANT TO DONATE MY BODY TO SCIENCE?

Donating your body to science means that after you pass away, you wish to make your entire body available to medical professionals studying anatomy as part of their medical education (physicians, dentists, nurses, physical therapists, biomedical scientists, etc.).

For more information and to enroll as an anatomical donor for medical research through a not-for-profit program in Oregon or Southwest Washington:

Oregon Health & Science University [Whole Body Donation Program](#)

Western University of Health Sciences [Body Donation Program](#)

CHANGING DONOR REGISTRY STATUS

Individuals can change their status at any time:

1. If you registered at the DMV, you will need to apply for a new license and change your answer to the donor registry question. DMV fees apply.
2. If you registered online or with a paper form, and have provided an email address, you will receive log-in information permitting you to update your status online for free. If you lose your log-in information, contact Donate Life Northwest.
3. If you registered via the iHealth app on an Apple phone, you can go back into the health app and edit your registration status.

WHAT IF I DO NOT WISH TO BE A DONOR?

If you do not wish to be a donor, do not register. Talk to your family about your decision.



JOIN THE WASHINGTON DONOR REGISTRY

In the future, you may save up to eight lives as an organ donor and restore sight and mobility to 125 or more people as an eye and tissue donor.

WAYS TO REGISTER

1. Individuals can join Washington's Donor Registry online at:

- GoRecycleYourself.com or
- LifeCenter Northwest, lcnw.org

2. Individuals can call LifeCenter Northwest toll-free at 1-877-275-5269, and request a brochure to fill out and return.

3. Register at the age of 18 with your smartphone.

4. Say YES to organ, eye, and tissue donation when you apply for or renew your driver's license! Residents who already have a heart on their driver's license are automatically added to the donor registry.

In Washington, the legal age of registration is 15 ½. If you are under 15 ½ the signature of a parent or legal guardian is required. Whether you register yourself or with the signature of a parent or legal guardian, until you turn 18 a parent or legal guardian can revoke authorization at the time of donation.

TALK TO YOUR FAMILY

The news that a loved one was, or was not, a registered donor can be burdensome if it comes as a surprise after a death. It is difficult for families to make major decisions during a time of grief when they may not know, or be able to recall clearly, what their loved one had wanted.

CHANGING DONOR REGISTRY STATUS

Individuals can change their status at any time. Contact LifeCenter Northwest 1-877-275-5269 for more information.

WHAT IF I DO NOT WISH TO BE A DONOR?

If you do not wish to be a donor, do not register. Talk to your family about your decision.

JOIN THE REGISTRY IN YOUR STATE

In the future, you may save up to eight lives as an organ donor and restore sight and mobility to 125 or more people as an eye and tissue donor.

WAYS TO REGISTER

1. Individuals can join the national donor registry by visiting:
 - [RegisterMe.org](https://www.registerme.org)
2. Research and contact your state's donor registry organization.
3. Register at the age of 18 via the iHealth app on your Apple phone.
4. Say YES to organ, eye, and tissue donation when you apply for or renew your driver's license!

TALK TO YOUR FAMILY

The news that a loved one was, or was not, a registered donor can be burdensome if it comes as a surprise after a death. It is difficult for families to make major decisions during a time of grief when they may not know, or be able to recall clearly, what their loved one had wanted.

CHANGING DONOR REGISTRY STATUS

Changing your donor registry status varies from state to state and registration method. If you register on the national registry via [RegisterMe.org](https://www.registerme.org), you can also edit your registration status through the same web site.

WHAT IF I DO NOT WISH TO BE A DONOR?

If you do not wish to be a donor, do not register. Talk to your family about your decision.



RECYCLEYOURSELF

An Organ, Eye, and Tissue Donation Curriculum

SECTION THREE : ADVANCED READINGS

Recommended Extension Reading
for Science and Health Careers Classrooms

IN FOCUS: CORNEA DONATION & TRANSPLANTATION

Advanced Vocabulary

Cornea: Layers, anterior to posterior: epithelium, Bowman’s layer, stroma, Descemet’s membrane, endothelium

Cornea transplant types: cornea transplant (keratoplasty), penetrating keratoplasty, DSEK (Descemet’s stripping endothelial keratoplasty), DMEK (Descemet’s membrane endothelial keratoplasty)

Surgery Components: trephine, sterile field, aseptic technique, graft, inserter, forceps, running suture

Surgery Indications: keratoconus, trauma, Fuch’s dystrophy, keratitis, bolus keratopathy, ulcerative keratitis

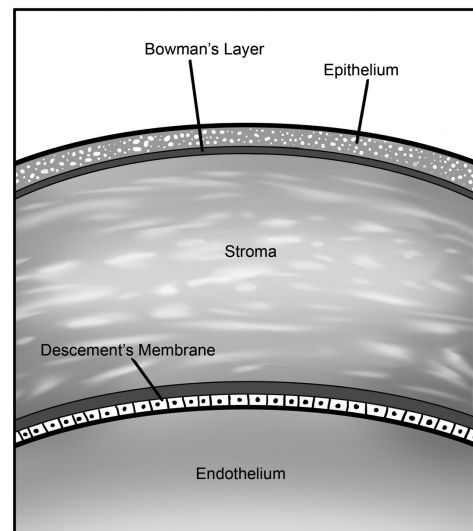
Cornea Characteristics: avascular, immuno-privileged

Other Terms: allocation, contraindications, micron, allograft, xenograft, keratocytes, intra-ocular lens (IOL), rejection, specular microscope, slit lamp, optical coherence tomography (OCT), limbus

A CLOSER LOOK AT THE CORNEA

Although it appears to be one clear membrane, the cornea is actually composed of five distinct layers of tissue. Each layer has its own function:

- **Epithelium** is the thin outermost layer of fast-growing and easily-regenerated cells. This layer is often scraped off by technicians before corneas are processed, but the cells grow back (from the stem-cells in the recipient’s limbus) once a transplant has been completed.
- **Bowman’s membrane** was originally considered part of the stroma, because they are both made of collagen fibers. However, Bowman’s Layer consists of irregularly-arranged collagen fibers – visually similar to tangled hair, as opposed to combed hair – and protects the corneal stroma. It is only 7 to 14 microns thick.
- **Stroma**, the transparent middle and thickest layer of the cornea, is made up of regularly-arranged collagen fibers and keratocytes. The layered nature of collagen fibers in the stroma make dissecting it easier. Keratocytes are specialized cells that secrete the collagen and proteoglycans needed to maintain the clarity and curvature of the cornea.
- **Descemet’s membrane** is a thin layer that serves as the modified “basement” membrane to which endothelial cells adhere.
- **Endothelium** is a single layer of cells responsible for maintaining proper fluid balance, keeping the cornea transparent. Healthy endothelial cells have similarly sized, hexagonal cells, arranged in flower petal-like patterns. Endothelial cell count is the primary measure by which eye donation specialists determine donor tissue quality.





The cornea is avascular, meaning it has no blood supply. This is important because of the way it impacts the capacity to allocate donated corneas.

When it comes to organ donation, matching blood and tissue types is critical, so as not to trigger the body's typical autoimmune response to foreign tissue: rejection. But rejection is not as much of a concern in cornea donation. Because the tissue is avascular, there is no need to find a blood type "match" between donors and recipients. The same is true when it comes to disease transmission. With no blood supply, transferable diseases have a very hard time spreading through corneal transplants. This is why corneas are referred to as immune-privileged tissue.

The avascular and immune-privileged attributes of the cornea contribute to the commonality of corneal transplants and the lack of a waiting list for those who need corneas.

WHAT IS AN EYE BANK?

An eye bank is a not-for-profit organization that obtains, medically evaluates, and distributes eyes donated for use in cornea transplantation, research, and education.

VisionGift provides grafts for individuals throughout Oregon and Southwest Washington. Once local needs have been met, they routinely send additional tissues across the nation and around the world. VisionGift is accredited by the [Eye Bank Association of America](#) and registered with the U.S. Food and Drug Administration.

Learn more about eye bank careers in "Interviews with Local Professionals" (p. 83).

IN THE LAB

The process of medically evaluating donated corneas begins in the lab. Eye bank technicians must carefully analyze and evaluate donated corneas to ensure that the corneas are healthy enough for transplant and that the tissue is free of any disease or virus that could harm the recipient. Tests performed include:

1. Specular Microscopy

A specular microscope uses light refraction to display the endothelium to eye bank technicians. Technicians count cells on a computer program that runs an algorithm to determine the cell density. A cornea needs to have a cell density of 2,000 cells per square millimeter to be transplantable. Endothelial cells degrade with age and do not regenerate, so older donors typically have fewer cells than younger ones.

2. Slit Lamp Evaluation

The second microscopy technique used is the slit-lamp examination. If you have ever had an eye examination, an ophthalmologist has used this instrument to inspect your eye health. The slit lamp uses a narrow beam of light and an off-set optic viewpoint to create a figurative 'cross-section' of the cornea.

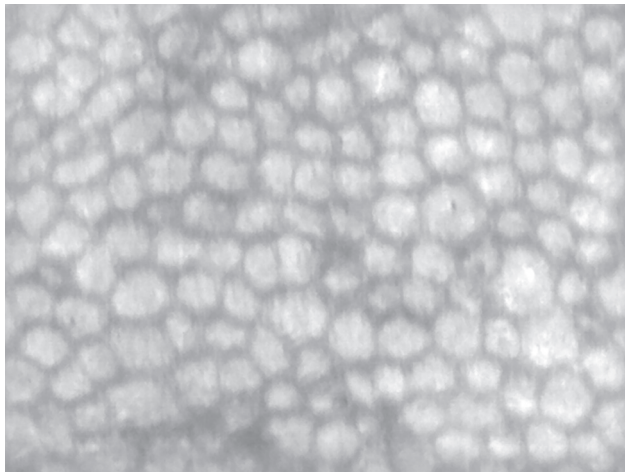
Imagine your cupped hand is a cornea. If you slide the fingers of your opposite hand between your middle and ring fingers of the cupped hand, you can imagine the now exposed side surface of your middle finger to be the different layers of the cornea. In this way, eye bank technicians can examine the entire depth of the cornea for hard-to-see scarring or dysfunction.

3. Optical Coherence Tomography (OCT)

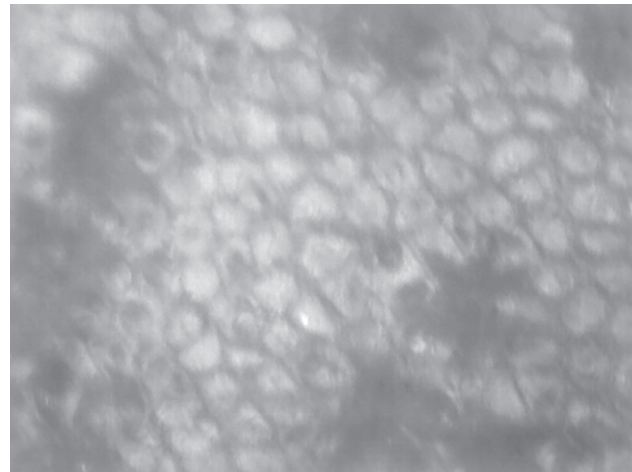
The OCT is the final microscopy tool used to evaluate corneas.



Light beams are scanned across the cornea in a systematic fashion creating hundreds of 'slices' which a computer program then converts to an image which can be used to visualize the interior of the tissue. OCT also evaluates tissue that technicians have cut in the lab to ensure thickness and adherence of the graft.



Healthy Endothelial Layer



Unhealthy Endothelial Layer

Images courtesy of VisionGift

WHAT IS A CORNEAL TRANSPLANT?

Around 46,000 Americans receive corneal transplants every year, making it the most common transplant surgery. Corneal transplant (keratoplasty) is the process of removing and replacing damaged cornea tissue with healthy donor tissue.

During a corneal transplant, a specially trained surgeon removes the damaged or diseased cornea – or portion of cornea – from the patient's eye. The patient's cornea is then replaced with the healthy, donated cornea, which is prepared to fit perfectly into the patient's eye.

THE DEVELOPMENT OF CORNEAL TRANSPLANT SURGERY

Blindness from corneal damage has been known since the earliest times of human history. Ancient Egyptians and Greeks wrote about theoretical cures and treatments for the condition. Legends and myths about receiving "new eyes" can be found across the centuries.

It wasn't until the 19th century that doctors began in earnest to attempt corneal transplants. In 1818, Franz Riesinger experimented replacing opaque human corneas with transparent animal corneas (a xenograft).

Although the technique ultimately failed, Riesinger coined the procedure a keratoplasty (kerato is Greek for cornea; plasty means formation), a term which is still used today.

Research in medical science continued, producing new tools ranging from anesthesia to the trephine (a cylindrical surgical instrument; see photo courtesy VisionGift) (Moffatt & Cartwright, 2005).

The first successful corneal transplant took place in Austria, in 1905. Eduard Konrad Zirm utilized human donor corneas (an allograft) to

► READ ONLINE!

[The Legend of St. Lucy](#)

[The Three Army Surgeons](#)

by the Brothers Grimm



replace the damaged tissues of Alois Glogar. Glogar had received chemical burns from lime while cleaning out his chicken coop. The use of allografts, as opposed to xenografts, was determined to be essential for the success of keratoplasty procedures.

Although the procedure now worked, there was an extremely limited supply of donor tissue. This did not change until the 1940s, which saw the development of advanced antibiotics. The world's first eye bank opened in New York in 1944, and along with it the world's first "anatomical gift" donation program in which people could pledge their corneas to help others after their death. An eye

bank recovers, processes, stores, and brokers eye tissue for transplant and research purposes (Crawford, 2013).

SURGICAL TECHNIQUES: PENETRATING KERATOPLASTY

A full-thickness cornea transplant, or penetrating keratoplasty, is a modern surgical technique in which the entire thickness – all five layers – of a damaged cornea is replaced with a healthy donor cornea. This is an effective technique when all five layers are damaged (for example, in the case of a Kerataconus, severe chemical burns or a penetrating trauma).



Surgeons use a trephine (pronounced tree-fine) to remove the donor cornea, and make a corresponding hole in the recipient. Think of a trephine as a cookie cutter, punching through all five layers of the cornea. The donor 'button' is then sewn into the corresponding trephinated space in the recipient's cornea with a running suture. Sutures are thinner than a human hair, so this is performed under a microscope. Complete visual recovery can take up to a year.

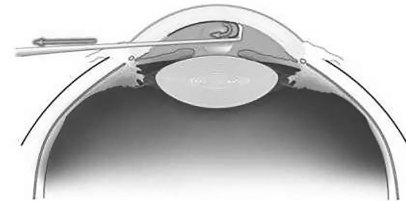
SURGICAL TECHNIQUES: DSEK / DMEK

While it was once common for every corneal transplant to be a Penetrating Keratoplasty, techniques pioneered over the past 20 years are allowing surgeons to target specific layers within the cornea. This means that if only a single layer of the cornea is damaged, it alone can be replaced with a corresponding layer from a donor cornea.

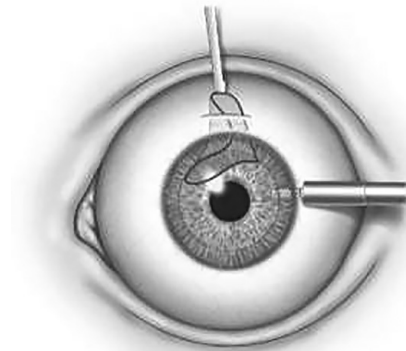
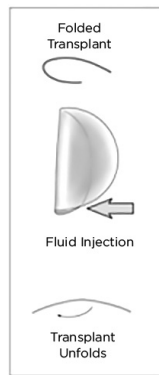
For example, someone suffering from Fuch's Dystrophy is a likely candidate for a DSEK or DMEK surgery. Fuch's Dystrophy is a hereditary condition wherein the endothelial layer of the cornea has cell death and subsequent dysfunction.

Researchers at VisionGift have played a key role in developing these new, targeted techniques. Descemet's Stripping Automated Endothelial Keratoplasty (DSAEK) is one example.

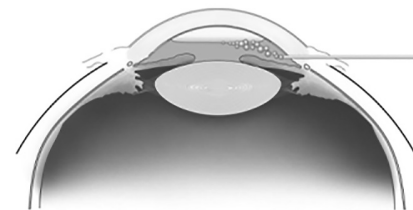
1. A tiny incision is made in the sclera.
2. A small tool is inserted to scrape off the diseased or damaged endothelium layer. This layer can be removed without disrupting the other layers.



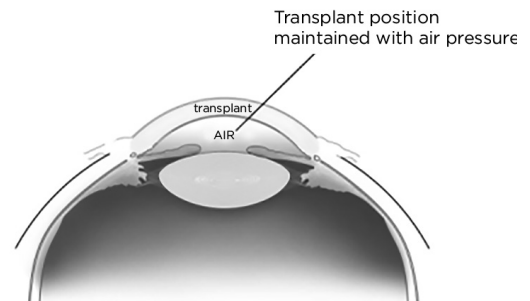
3. The donor cornea is folded in half prior to insertion. Because the folded cornea resembles a tiny taco, this is referred to as the 'taco technique.'



4. Air bubbles are inserted behind the transplanted tissue. The 'taco' pops open; it floats up and adheres itself to the stroma.

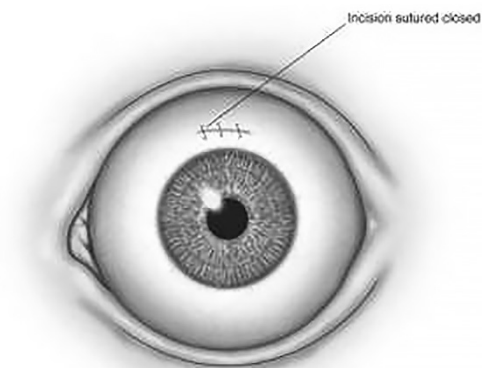


5. The transplant is held in place by this small pocket of air.





6. Stitches may not be necessary, but one or two is common.



7. After the procedure, patients must remain on their back for 24 hours so that the new cornea will not dislodge. If the graft detaches, a repeated air injection can reattach the graft.

Descemet's Membrane Endothelial Keratoplasty (DMEK) is an even newer technique in which an even thinner piece of tissue is transplanted.

IN FOCUS: CORNEA DONATION & TRANSPLANTATION

Questions for Reading Comprehension

1. Name the five layers of the cornea, in order from external to internal.
2. Why are donated corneas inspected for their cell count?
3. Name three advances in medical technology which assisted with the development of corneal transplant surgery.
4. Describe a penetrating keratoplasty procedure.
5. What is the key difference between penetrating keratoplasty and a DSEK or DMEK?
6. Describe a scenario of why a person may need a corneal transplant. Include a short summary of the transplant process this person will undergo in 3-5 sentences using key vocabulary from this section.

IN FOCUS: TISSUE DONATION

Advanced Vocabulary

Allograft, autograft, xenograft, mechanical heart valve

TYPES OF GRAFTS

- ▶ An allograft is when cells, tissues or organs come from another person (same species).
- ▶ An autograft is when cells or tissues are transplanted from one place to another on the same person. There is more potential for pain and infection compared to an allograft.
- ▶ A transplant from another species, like a pig to a human, is called a xenograft. According to the [World Health Organization](#), this type of transplant carries many risks. It is a topic for research and clinical trials.

Adapted from Donate Life Colorado

A LIFE SAVING AND LIFE ENHANCING GIFT

Allograft tissue is voluntarily donated by deceased donors who, prior to death, made the decision to donate by registering as a donor and discussing their wishes with their family. Because allografts can be used in so many ways, for so many surgical procedures, a single donor can potentially enhance or save the lives of up to 125 or more recipients.

Allografts are a common option for patients who suffer from a wide variety of conditions and injuries. In some cases (but not always), the treatment options can include allograft, autograft, mechanical, or xenograft options. The advantage of opting for an allograft is that the patient's body accepts and heals the tissue in a way which synthetic grafts cannot imitate.

For example, someone living with a congenital and degenerative heart valve condition may be offered the choice between a mechanical or allograft heart valve. Choosing a mechanical heart valve means the patient must take blood-thinning medications for the rest of their life. This would be problematic if the patient were, say, a female who might want to one day have children. Physicians discuss the advantages and disadvantages of all options with their patients.

WHAT TISSUES CAN BE DONATED?

HEART VALVES

Blood is pumped through the heart's four chambers, aided by four heart valves that open and close and prevent blood from flowing backward.

- Infections and age-related diseases can damage heart valves. Some children are born with malformed valves.
- Heart valves can be recovered when the whole heart is determined not to be viable for transplant.
- Donated human vessels and valves are used as replacements that can mean the difference between life and death to recipients.



VEINS

Arteries carry oxygenated blood from the heart to the rest of the body, and veins bring the deoxygenated blood back.

- Many people lose circulation in their legs, or even in their heart, due to disease or trauma.
- Donated femoral and saphenous veins are used to restore circulation and avoid leg amputation for people suffering poor circulation, such as diabetics.

BONE

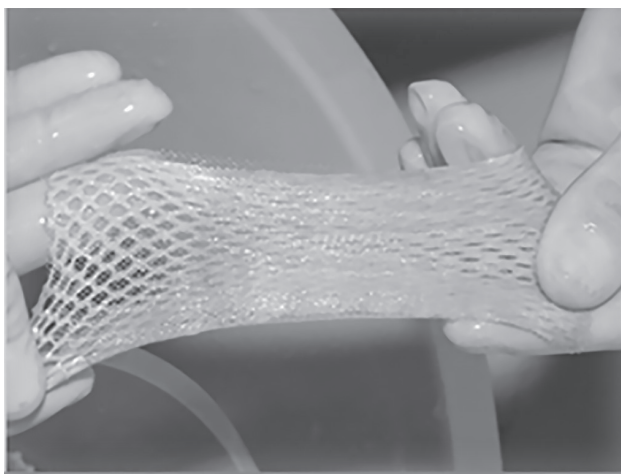
Bones consist of living protein fibers that constantly rebuild themselves.

- The humerus, radius and ulna are the bones in the arm that can be recovered.
- The femur, tibia and fibula (leg bones) and the pelvis can be recovered.
- Bones can be transplanted in order to prevent amputation, promote healing, and maintain mobility and structure.
- After the bone is recovered, trained professionals replace the bone with prosthetics for funeral viewing arrangements.

SOFT TISSUE

Soft tissue includes tendons, ligaments and cartilage.

- Soft tissue helps individuals with various orthopedic and neurological conditions. Common examples include back, joint and leg surgeries, such as hip replacement, knee reconstruction, and spinal fusion.
- Torn ACLs in athletes are one of the most common reasons for which allografts are needed.



Recovered and processed skin graft. Image courtesy Donate Life Northwest and Solvita.

SKIN

About 21 square feet of skin, weighing up to 15 pounds, covers the average adult. Not only is skin the body's first line of defense against microbes, but it also regulates heat and fluids in the body.

- Skin can be used to aid in the healing process for severe burn victims and people who suffer from a disfiguring injury or disease, acting as a biological bandage until the patient can heal.
- Skin can help regenerate new soft tissue for cancer patients, trauma victims and patients with severe abdominal defects. Skin also helps reconstruction from mastectomy procedures and to repair hernias.
- Donated skin grafts protect recipients from infection while promoting regeneration of their own skin.

- Skin from donors is removed from the torso and the back and front of the legs.
- Recovered skin is about the thickness of a piece of paper.
- Donation of skin does not affect the appearance of a donor nor viewing at funeral services.

A skin graft recovered from a donor is 18/100th of an inch thick, and run through a mesher to double its surface area and make it more pliable.

PERICARDIUM

A double-layered connective tissue lining the heart.

- Used as a patch to help cardiac, bladder, brain, and dental surgeries.

HOW TISSUE DONATION WORKS

In Oregon, Southwest Washington, and Southern Idaho, Donor Recovery Coordinators from [Solvita](#) oversee the tissue donation process.

REFERRAL

There are many variables that matter when it comes to tissue donation: age, timelines, certain diseases or injuries, but nearly anyone can be an eye and/or tissue donor. Hospitals are required to report all deaths to tissue and eye banks.

AUTHORIZATION FOR DONATION

A tissue donation specialist will check the Registry to see if the deceased person has already registered as a donor. If the individual's wishes are unknown, the specialist will discuss the option of donation with the family.

EVALUATION

Once authorization is verified, or authorization is given by the potential donor's family, the donor is thoroughly evaluated using a medical/social history questionnaire, medical records, blood tests, and physical examinations.

TRANSPORT AND TISSUE RECOVERY

A medical team is dispatched to recover the medically suitable tissue. The donor is treated with the utmost respect and dignity. Once tissue recovery has been completed, the team performs any necessary reconstruction and sutures all incisions to restore the appearance of every donor.

Following the recovery process, a funeral can be held with minimal delay. There can be an open casket funeral, viewing, or other standard memorial.

PROCESSING AND TRANSPLANTATION

Recovered grafts are rigorously screened, tested and prepared for use in surgical procedures. Once the tissues are prepared, surgeons throughout the United States request tissue in order to perform a wide variety of surgical procedures which require allografts.

FOLLOW UP WITH FAMILY

The families of tissue donors receive non-identifying information about the patients whose lives have been saved or enhanced thanks to their loved one's gift.



IN FOCUS: TISSUE DONATION

Questions for Reading Comprehension

1. Why might a patient require an allograft over a mechanical graft? Over an autograft?
2. Name two specific ways tissue donations save lives.
3. How might a diabetic patient benefit from a tissue transplant?
4. How might a patient with a cancerous bone growth benefit from a tissue transplant?
5. How might a patient with a torn ACL benefit from a tissue transplant?
6. Who can be a tissue donor?
7. Why is it important to talk to your family about your decision to be/not be a tissue donor?

IN FOCUS: RECYCLABLE ORGANS

Advanced Vocabulary

Atherosclerosis, triglycerides, electrolyte, gestational

Visit [UNOS Organ Data](#) for detailed information on the functions of each organ.

THE HEART

The heart is a muscular pump about the size of a fist that circulates blood carrying oxygen and nutrients to, and wastes from, the body's cells. The right side of the heart circulates blood to the lungs. The left side circulates blood to the rest of the body and back to the heart.

Common diseases that may lead to transplantation:

CORONARY HEART DISEASE

A narrowing or blockage of the coronary arteries which provide the heart muscle with blood. The disease occurs when these arteries become hardened and narrowed. A plaque builds up along the inner walls of the arteries, known as atherosclerosis. As the coronary arteries narrow and harden, less blood can flow through them to the heart. As a result, the heart receives less oxygen than it needs.

- Causes of coronary heart disease include but are not limited to: obesity, smoking, excessive alcohol consumption, high sodium diets and a sedentary lifestyle.

CARDIOMYOPATHY

An abnormality of the heart muscle which affects the heart's ability to pump blood and deliver it to the rest of the body.

- There are many causes which may include coronary heart disease, heart valve disease, or, rarely, viruses.

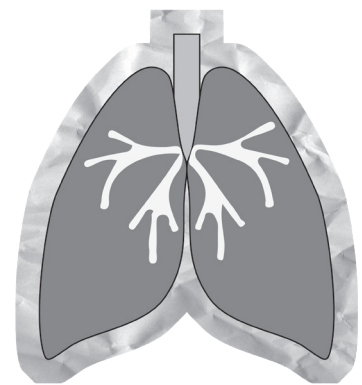
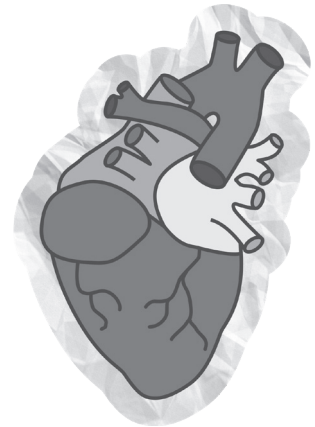
THE LUNGS

The lungs are a pair of highly elastic and spongy organs in the chest. They are the main organs involved in breathing: oxygen passes into the bloodstream through microscopic air sacs in the lungs, while waste carbon dioxide passes out of the bloodstream into the lungs.

Common diseases that may lead to transplantation:

CYSTIC FIBROSIS

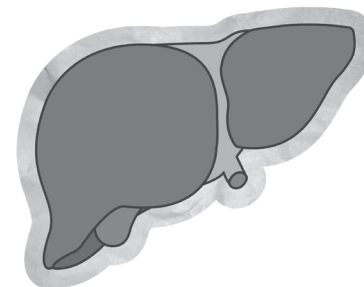
An inherited disease which can cause respiratory failure. Cystic fibrosis affects the cells that produce mucus, sweat, saliva and digestive juices. Normally, these secretions are thin and slippery, but with cystic fibrosis, a defective gene causes the secretions to become thick and sticky. Instead of acting as a lubricant, the secretions plug up tubes, ducts and passageways, especially in the pancreas and lungs.





THE LIVER

This large organ is made up of a spongy mass of wedge-shaped lobes. It performs over 500 individual functions vital to survival. For example, the liver helps process carbohydrates, fats, and proteins, and stores vitamins. It processes nutrients absorbed from food in the intestines and turns them into materials that the body needs for life. It makes the factors that the blood needs for clotting. It also secretes bile to help digest fats, and to break down toxic substances in the blood, such as drugs and alcohol.



Common diseases that may lead to transplantation:

NON-ALCOHOLIC FATTY LIVER DISEASE

The buildup of extra fat in liver cells that is not caused by alcohol. The liver swells, leading to scarring (cirrhosis) over time.

- This condition, the most common reason for liver transplants in the United States, tends to develop in people who are overweight or obese or have diabetes, high cholesterol, or high triglycerides.

HEPATITIS

An inflammation of the liver, characterized by the destruction of a number of liver cells.

- **Hepatitis A** is most commonly transmitted by ingesting food or water contaminated by infected feces.
- **Hepatitis B** is spread through having contact with blood or body fluids with someone who already has a hepatitis B infection.
- **Hepatitis C** is contracted sexually, through blood transfusions, or shared needles during drug use.

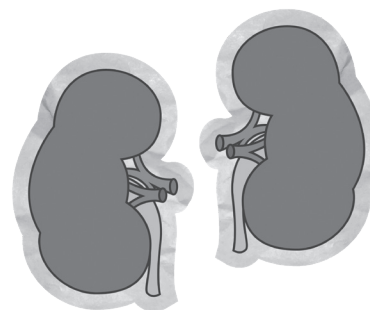
THE KIDNEYS

Kidneys are a pair of reddish-brown organs whose primary function is to remove waste from the body through the production of urine. They also help to regulate blood pressure, blood volume, and the chemical (electrolyte) composition of the blood.

Common diseases that may lead to transplantation:

HIGH BLOOD PRESSURE (HYPERTENSION)

Occurs when the pressure of your blood against the walls of your blood vessels increases. Obesity, smoking, excessive alcohol consumption, high sodium diets and sedentary lifestyle are all factors that can lead to hypertension.



DIABETES

When your blood sugar is too high, the kidneys are forced to overwork. Over time, this causes kidneys to lose their filtering ability.

- **Type 1 Diabetes:** Often diagnosed in children and adults. Occurs more often in African Americans, Native Americans, Hispanic Americans, and women with a family history of diabetes.

- **Type 2 Diabetes:** Typically occurs in adults. Occurs more often in African Americans, Native Americans, Hispanic Americans, and women with a family history of diabetes.
- **Gestational Diabetes:** Develops only during pregnancy.

THE PANCREAS

The pancreas produces enzymes that are used for digestion, and insulin, which regulates blood sugar throughout the body.

Pancreatic transplants are rare. Only 1.2% of all transplants are pancreas transplants, and an additional 3.2% are kidney/pancreas transplants.

Common diseases that may lead to transplantation:

DIABETES

See DIABETES section above.

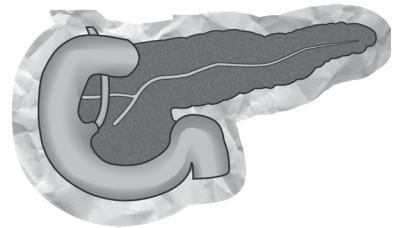
THE INTESTINE

The intestine is the lower part of the digestive tract, which extends from the stomach to the anus. The first part is a long, narrow, and convoluted section referred to as the small intestine. Its function is to complete the digestion and absorption of nutrients into the bloodstream. The second part – the large intestine – absorbs water from wastes, creating stool.

Intestinal transplants are extremely rare. Less than 0.05% of all transplants are intestinal transplants.

Common need for transplantation:

Some people are born with or develop irreversible intestinal failure, preventing them from digesting food or fluids. The majority of intestinal transplants are performed in infants and children.



IN FOCUS: RECYCLABLE ORGANS

Questions for Reading Comprehension

1. Why might a patient require a heart transplant?
2. What is the function of the lungs?
3. Why might a patient require a liver transplant?
4. What is one way someone may reduce their chances of having kidney failure?
5. How common are pancreas transplants?
6. What is the function of the small intestine?



IN FOCUS: DECEASED ORGAN DONATION

Advanced Vocabulary

Allocation, anoxia, artificial support, brain stem, brain death, cell metabolism, cerebrovascular injury, coma, mechanical ventilation, medical urgency, persistent vegetative state, window of viability, United Network of Organ Sharing, Organ Procurement and Transplantation Network.

Of the 3.2 million people who die in the United States each year, relatively few die under circumstances that make them medically eligible to be either organ or tissue donors. In this section, we'll take a closer look at some of the medical science and ethics behind organ donation and allocation.

INTENSIVE CARE

When a patient enters emergency care in critical condition, advanced measures are taken to support their failing bodily functions. When patients are treatable or curable, artificial support is temporary until the body recovers and can resume its normal functioning. Examples of common artificial support include:

- Artificial hydration
- Artificial nutrition
- Mechanical ventilation

The main job of our lungs is to get oxygen into the body and to get rid of carbon dioxide. Like a pump, mechanical ventilation accomplishes both of these functions for a patient who cannot breathe on their own.

When someone on a mechanical ventilator dies, the machine ensures that oxygen and blood continue to circulate through their vital organs and cells. Mechanical ventilation can remain in place right up until the organ recovery surgery begins – for a few hours or even a few days – giving their family time to discuss the possibility of organ and tissue donation, and to say goodbye.

WHAT IS BRAIN DEATH?

Most organ donors die from brain death. Brain death is usually the result of a severe trauma which causes brain tissues to swell. Some examples:

- Trauma: for example, a severe head injury during a motor vehicle accident.
- Cerebrovascular injury: massive bleeding caused by a stroke or ruptured aneurysm.
- Anoxia: loss of oxygen to the brain caused by drowning, a heart attack, or drug overdose.
- Uncontrollable growth of a brain tumor that causes permanent loss of blood flow and oxygen to the brain.

When the brain is injured, it responds in much the same way as an injury like a twisted ankle: it swells. Unlike the muscles and tissues of the ankle, however, the brain is in a confined space – the skull – and has no room to swell.

As the brain swells inside the skull, it pushes downward toward the brain stem blocking all upward flow of blood. Depending on the type of injury, this may happen within minutes or over a period of days. Even while the heart is still beating and supplying blood to the rest of the body, blood that carries oxygen cannot reach the brain or the brain stem, which controls heart rate and breathing. The result is that the brain, and therefore the person, dies.

The physicians who test for brain death are not a part of the donation or transplantation team. They are focused only on trying to save the patient's life, and once that is not possible, on providing an accurate diagnosis of death.

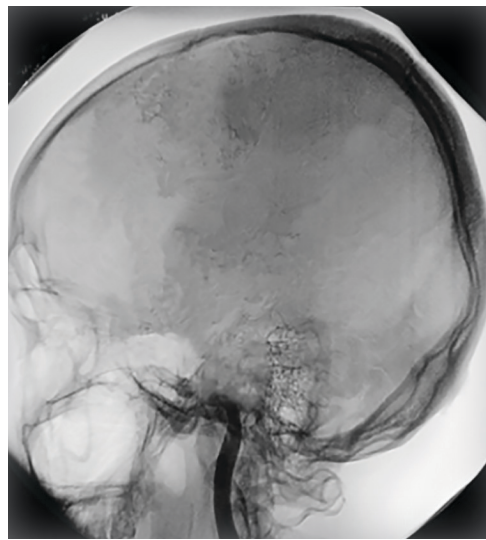
To avoid even the smallest chance of mistake, the physician must conduct an in-depth range of standardized tests showing that there is absolutely no brain function before declaring the patient dead.

BRAIN DEATH VS. COMA

Brain death can be a confusing concept, because a brain dead person on a ventilator can feel warm to the touch and can look “alive.” Their heart beats, and it appears as though they are breathing. Why is this? Because the individual was placed on a mechanical ventilator prior to death, the ventilator is pushing air into the lungs, making the person’s chest rise and fall, allowing the heart to continue to beat. However, once the mechanical ventilator is removed, the heart will stop due to lack of oxygen.



Healthy brain



Brain death; showing no blood flow within the brain or brain stem.

Brain death is not a coma. When brain death occurs, all brain tissue is dead, no blood flows to the brain, and no electrical activity is present in the brain. Both the lower and upper part of the brain has stopped functioning. In a coma, only a portion of the brain is injured; the brain still receives blood flow and electrical activity is present. Someone in a coma or persistent vegetative state is still alive: they retain neurological function and may, with time, recover.

Because someone who has died of brain death may appear as though they are simply sleeping or in a coma, some families tragically expect that the person they love can simply be kept on the ventilator in hopes that their condition will improve. But to be brain dead is to be dead, and no improvement or recovery is possible. There is no method to jump-start or revive a brain that has been deprived of blood and whose cells have died.



ORGAN RECOVERY

Once the family of a deceased donor has been given time to say their goodbyes, and all the transplantable organs have been matched by transplant surgeons for their potential recipients, surgical recovery begins.

A transplant surgical team arrives at the deceased donor’s hospital. The patient is taken to an operating room, where organs and tissues are recovered in the same sterile and careful way as in any surgery. All incisions are surgically closed. Organ and tissue donation does not interfere with funeral arrangements, including open-casket funerals.

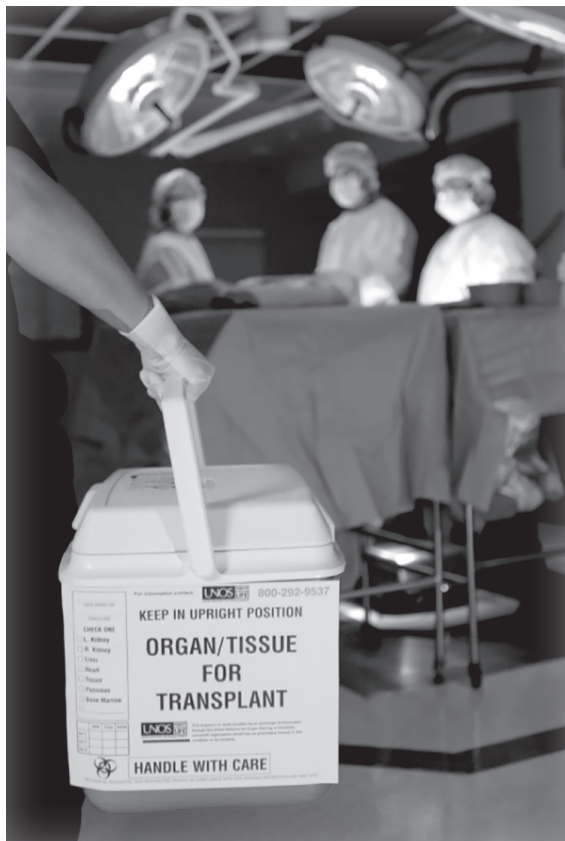


Image courtesy of LifeCenter of Ohio

PRESERVATION AND TRANSPORT

Donated organs require special methods of preservation to keep them viable between the time of recovery and transplantation. Without preservation, the organ will die.

For organs to be recovered and work in a recipient they must be cooled and the blood must be removed within minutes of the cessation of blood flow. Cooling the organs during the recovery surgery slows down cell metabolism. This conserves the oxygen stored within the cells and slows down cell death. The blood is removed to prevent the formation of clots that would damage the organ and prevent its use in a recipient.

Different organs have different “windows of viability.” The window of viability restricts the geographic distance a donor organ can travel.

Cold storage, in which donor organs are literally placed on ice in a small cooler, has been the standard for transporting organs since the 1970s. However, it is not a foolproof method. Traffic jams, bad weather, and mechanical problems can cause serious delays, whether the organs are transported by air or by car. Sometimes, despite the best efforts, organs deteriorate during transport. They sometimes do not survive the cold preservation process, and so ultimately cannot be transplanted.

ORGAN	WINDOW OF VIABILITY
HEART	4 - 6 HOURS
LUNGS	4 - 6 HOURS
LIVER	8 - 12 HOURS
PANCREAS	12 - 18 HOURS
KIDNEY	24 - 36 HOURS

ADVANCES IN TRANSPLANT TECHNOLOGY

Advances in technology may have a dramatic impact on the availability of organs for donation. By improving the cold storage system, organ function may be improved and the windows of viability can be lengthened, in turn, saving more lives.

Devices are currently being tested to pump hearts, lungs, and livers after they are recovered from the donor. Kidney pumps are already in wide use, including at [Cascade Life Alliance](#).

These devices pump preservation solution through the organ, which means cells continue to function and the organ can be better monitored. This may significantly lengthen the window of viability and improve the function of the organ once it is transplanted.

ALLOCATION

Objective medical criteria determine who receives a donated organ. The allocation process is governed by national policy, created by a community of transplant professionals and patient representatives.

1. An organ is donated. An OPO donation specialist enters medical information about the donor – including organ size and condition, blood type, and tissue type – into the national UNOS database.
2. The UNOS database generates a list of candidates on the waiting list who have medical profiles compatible with the donor's.
 - a. MEDICAL URGENCY
For organs such as the heart, liver, and lung, people who are in the sickest condition get priority for the next available organ.
 - b. GEOGRAPHY AND DISTANCE
The computer uses a radius from the donor hospital to help allocate organs to matching recipients who have time to travel to their transplant hospital within the window of viability.
 - c. SIZE
For example, children respond better to child-sized organs, so pediatric candidates are first in line for other children's organs.
3. Transplant centers are notified and offered the organ which matches their patient.
4. Transplant teams consider the organ, and whether it is in the patient's best interest to undergo surgery.
5. The organ is accepted or declined. If an organ is turned down for one patient, it will be offered to the next patient on the list who is a match for that organ. This continues until the organ is placed.

Why would a transplant team turn down an organ? They may feel that the donor and recipient are not a close enough match. For example, if the donor is much larger or smaller than the recipient, the size of the organ could literally make it a "bad fit."



THE ETHICS OF ORGAN ALLOCATION

Because there aren't enough donated organs to transplant everyone in need, organs must be allocated in the most equitable way possible while making the best use of the organ. That means balancing factors of justice (fair consideration of candidates' circumstances and medical needs) with factors of medical utility (optimizing the number of transplants performed as well as how long the patients and organs survive).



Several countries around the world have developed national systems to oversee the development, monitoring, and enforcement of policies which govern organ allocation as ethically as possible. In the United States, the non-profit organization United Network for Organ Sharing (UNOS) has been contracted by the U.S. Department of Health and Human Services to administer this service since 1984.

Organ donation is one of the most regulated areas of health care in the United States. This means that all organ, eye, and tissue agencies, hospitals and transplant centers in the nation follow specific parameters and guidelines. Failure to follow regulations entails heavy penalties. One of the most famous federal regulations regarding organ donation was passed by Congress in 1984:

THE NATIONAL ORGAN TRANSPLANT ACT

- Made the buying or selling of human organs a federal crime
- Established the Organ Procurement and Transplantation Network, to maintain a national registry for matching and allocating organs (administered by the non-profit organization UNOS)

You can read about the specific policies which direct American organ donation online at unos.org



IN FOCUS: DECEASED ORGAN DONATION

Questions for Reading Comprehension

CLOSE READING

1. What role does mechanical ventilation play in organ donation?
2. What is the difference between brain death and a coma?
3. Name three criteria which can impact who will receive an organ transplant.
4. What impact do the windows of viability have on organ donation?
5. Can you buy or sell an organ in the United States? Why or why not?

THINK CRITICALLY

1. Do you think that organ donation is common? What specific evidence can you find in the reading to support your opinion?
2. News reports - online, TV, or radio - often confuse brain death and coma. Why do you think this may be?
3. Why do you think the National Organ Transplant Act specifically mentions the buying or selling of organs?
4. Do you think there is a "black market" for organ donations in the United States? Go online to research the topic. Carefully note the source of your information, including the country, date, the author's credentials, and the institution or organization with which the author is associated.

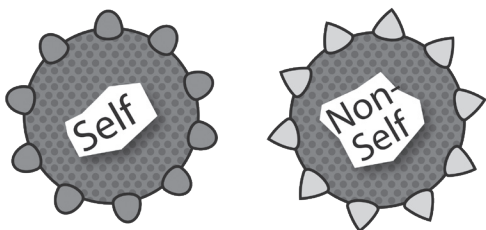


IN FOCUS: ORGAN TRANSPLANTS

Advanced Vocabulary

Antibodies, antigens, compatibility, crossmatching, microorganism, human leukocyte antigens, immune system, immunosuppression, rejection

Ethnicity and gender do not impact whether two people can be a match. Blood type and HLA markers determine compatibility. More registered donors mean a better chance for everyone to find their match.



The uniqueness of an individual's cell surface markers explains why organ donor tissue and recipient tissue must be carefully matched. If a "non-self" antigen is detected within the body – say, because bacteria, virus, or a transplanted organ has been introduced into the body – antibodies are summoned to attack it. Antibodies are small proteins which circulate throughout the body, used by the immune system to identify and destroy foreign objects. Antibodies protect us from infection, by effectively creating and mobilizing a virtual army to defend us from any foreign antigens they encounter. While this is beneficial in keeping us healthy, it poses a special challenge for transplant recipients.

If you place an organ with an incompatible blood or tissue type into a recipient's body, the recipient's immune system goes on the offensive. Incompatible, or "mismatched," antigens on the surface of the transplanted organ can stimulate the production of antibodies. Antibodies may attack the organ and attempt to kill the organ's cells. This process is called rejection, and it may eventually destroy the organ.

Since antigens and antibodies can play an important role in transplantation, we'll take a closer look at the two systems of antigens which impact the ability the matching of donated organs with potential recipients: ABO (blood type) antigens and HLA (tissue) antigens.

While organ transplants can restore someone's health, and greatly improve their quality of life, they are not a cure. There will always be some risk of rejection, and a lifetime of special care will be required to support the donated organ.

COMPATIBLE OR INCOMPATIBLE?

Each person has thousands of genes. The expression of these genes is what makes us unique. Some of the effects of these genes are visible – displayed in features like hair and eye color. However, many are not so obvious, expressed within our bodies in blood and tissue proteins. These inherited proteins, called antigens, determine a person's blood and tissue types.

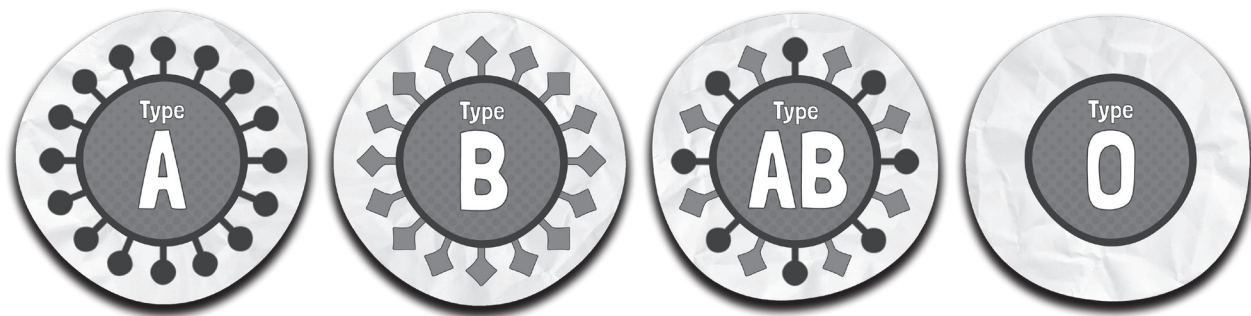
Organized before you were even born, they act as cell markers, telling your cells where to go and which cells to join. Antigens are markers on the surface of blood and tissue cells which identify the cell as "self."

ABO COMPATIBILITY

All blood is made of the same basic elements, but not all blood is alike. There are four major blood types which are determined by the presence or absence of particular antigens. While the Rh factor (what makes blood "positive" or "negative") matters if you are receiving a blood transfusion, it does not need to be matched if you are receiving a solid organ transplant (heart, kidney, liver, etc.). That is because the Rh factor is not expressed on solid organs.

Your red blood cells have antigens on their surface, which determine what blood type you are:

- **GROUP A:** has only A antigens
- **GROUP B:** has only B antigens
- **GROUP AB:** has both A and B antigens
- **GROUP O:** has neither A nor B antigens; red blood cells are "bare" in people with blood type O.



For transplant purposes, it is critical that blood types are compatible. If a patient were to receive an organ from someone with an incompatible blood type, his or her body would recognize the organ as foreign and try to destroy it.

For example, if you are blood type A, the cells in your body trigger an army of antibodies when they encounter type B antigens. Your body kills off any cells which contain type B antigens.

PATIENT BLOOD TYPE	COMPATIBLE DONOR BLOOD TYPE
O	O
A	A O
B	B O
AB	A B AB O

To learn more about blood types and matching, visit [Bloodworks Northwest](#) or the [Red Cross](#).



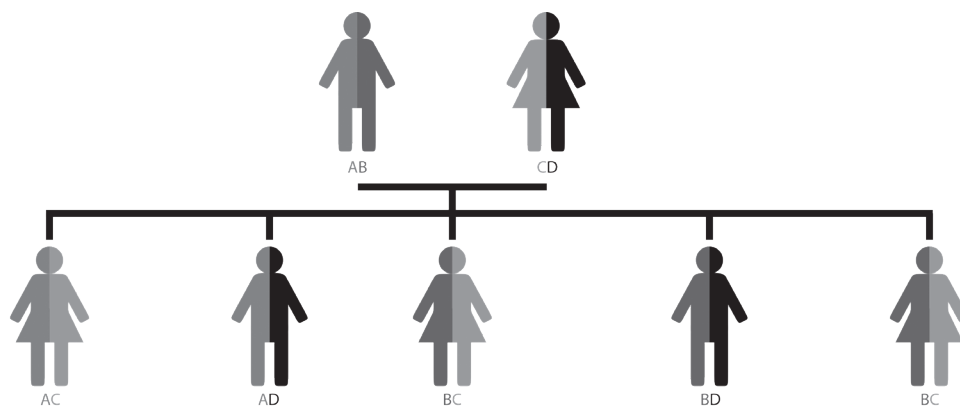
HLAS: HUMAN LEUKOCYTE ANTIGENS

There is a second set of antigens which is important for organ transplant, called the HLA System.

Human leukocyte antigens (HLAs) are proteins which form your unique “genetic social security number.” Identifiable as genetic markers on the surface of almost all the cells in your body (except red blood cells), they are inherited from your parents. You are always a half tissue match with your biological parents, because you receive 50 percent of your genetic material from your mother, and 50 percent from your father. No two people – except identical twins – have identical HLAs.

For transplant purposes, six major HLA antigens are identified in both the recipient and their donor (living or deceased). These six major HLA antigens come from a pool of over 150 HLA antigens that have been identified in the human population. It is fairly unusual for people who are not blood relatives to share more than one or two HLA antigens in common. While it is not necessary to share any HLA antigens in common for a transplant to be successful, studies show that well-matched organ transplants do last longer.

Below is a graphic representation of inheritance of HLA antigens within a family. As noted, you are a half match (3 of 6 antigens) with your parents, but you can share zero, three or six antigens in common with your siblings.



HLA matching has become less important because today’s immunosuppressive drugs – medicines that can subdue the body’s response to a transplanted organ – have improved greatly since the early days of transplant science. In fact, thanks to advances in transplant science, a recipient may receive a transplant even when HLA antigens are a total mismatch as long as their blood type is compatible with that of the organ donor, and the crossmatch test is also compatible.

CROSSMATCHING

The crossmatch is the final test which determines if the recipient and donor can be safely transplanted. It involves mixing white cells from a potential donor with serum from the recipient’s blood. Crossmatches are “transplants in a test tube,” allowing the transplant team to determine if a recipient has “preformed” or already existing antibodies against a particular donor.

Think back to the function of antibodies. Once we have been infected with a particular germ, the immune system remembers the particular antigen which identifies that germ. So, if you contact that germ again, the body will know to quickly mobilize its army of antibodies to block and destroy the germ before it can cause another infection.

A similar scenario can occur when someone has been exposed to foreign tissue. People can be exposed to foreign antigen markers through transfusions, pregnancy, or previous transplants. Their body can 'remember' those foreign antigens and attack them with its pre-formed team of antibodies. Interestingly, we all can have very different reactions to exposure: some people make a lot of antibodies after an exposure, and those antibodies remain active for a very long time, while others do not make antibodies, or the antibodies they do make can weaken or disappear over time.

The recipient's serum contains any active pre-formed antibodies that the recipient has made as a result of previous exposure to foreign human tissue. The goal is to determine whether the recipient's body will respond to the transplanted organ by attempting to reject it.

	CROSSMATCH RESPONSE	COURSE OF ACTION
POSITIVE CROSSMATCH	There are antibodies in the recipient's blood, ready to attack the donated organ.	Transplantation should not be carried out.
NEGATIVE CROSSMATCH	There is no reaction.	Transplantation is safe.

AFTER THE TRANSPLANT

The way to prevent or reduce rejection (other than getting a kidney from an identical twin) is to use immunosuppressive drugs – medicines that interfere with our immune system's ability to recognize "foreigners."

THE PROS OF TRANSPLANT

- Improved quality and length of life.
- Freedom to travel.
- Fewer dietary and fluid restrictions.
- Ability to return to work or school.
- Improved fertility.

THE CONS OF TRANSPLANT

- The patient must take daily anti-rejection medications for the rest of their life.
- Risk of rejection is always there. However, as medicines and treatment have improved, this risk has reduced considerably in recent years.
- Because the immune system is suppressed by medications, transplant recipients are more susceptible to infections and cancer.



IN FOCUS: ORGAN TRANSPLANTS

Questions for Reading Comprehension

1. Describe the concept of compatibility and the role which antigens play in its determination.
2. In your own words, describe the process of rejection.
3. Compare blood type and tissue markers. Which is more critical for organ donation, and why?
4. Is transplant a "cure"? Why or why not?

IN FOCUS: KIDNEYS

Advanced Vocabulary

Dialysis, hemodialysis, peritoneal dialysis, directed donation, paired donation

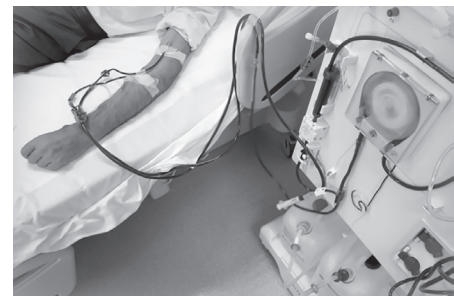
Nationally, over 80 percent of the U.S. organ transplant waiting list is comprised of individuals waiting for a kidney transplant, due to various conditions leading to kidney failure, such as congenital kidney disease, autoimmune kidney disease, hypertension, and diabetes.

There is a chronic shortage of kidney donations in the United States. According to UNOS, the number of people waiting has increased. The amount of time individuals spend on the waiting list is also rising. Approximately 4,400 people die while waiting for a kidney transplant each year. If you or someone you loved were diagnosed as needing a kidney transplant, what options would be available?

More kidney data can be found at the [United States Renal Data System](#).

TREATMENT OPTIONS

When someone suffers from chronic kidney disease, their kidneys do not usually fail all at once. Kidney disease often progresses slowly, over a period of years. It is not until a person's kidney function declines to 10 to 15 percent that life-saving treatment - either transplant or dialysis - becomes necessary. Alternatively, patients may opt for no treatment. Without treatment, survival is 1 to 2 weeks.



Hemodialysis treatment

DIALYSIS

Unlike those who are in imminent need of a heart, lung, or liver transplant, a patient's life can be maintained through dialysis treatments. Dialysis is not a cure for those with kidney failure. Dialysis performs the work of the kidneys, cleaning the patient's blood of waste and excess fluid. There are two kinds of dialysis:

■ HEMODIALYSIS

This requires patients to travel to a clinic for treatment three times a week for an average of four hours each time. A patient's blood is pumped, a few ounces at a time, through a large hemodialysis machine. This machine removes toxins and excess fluid, and returns the cleaned blood to the body. There are significant dietary restrictions for those undergoing dialysis, as well as time constraints, making it difficult to work, go to school, or travel.

■ PERITONEAL DIALYSIS

This type of dialysis is usually done multiple times each day or overnight, and does not require the patient to go to a center. A catheter is placed inside the peritoneum, a membrane in the abdomen. Then, fluid is inserted into the membrane and "dwells" or stays there for several hours. During the dwell time excess fluid and toxins are drawn into the membrane. The fluid is then drained out through the catheter.

The time and cost of long-term medical care accumulates, impacting a patient's social, emotional, financial and physical well-being. The 5-year survival rate for dialysis patients is 42% for hemodialysis and 52% for peritoneal dialysis.



DECEASED KIDNEY DONATION

Patients who meet the necessary medical criteria may join the national organ transplant waiting list. They may wait days, weeks, months or years until they are matched with a deceased organ donor. Typically, the wait time ranges from between two and ten years, depending on where they live, and issues of blood and tissue compatibility.

LIVING KIDNEY DONATION

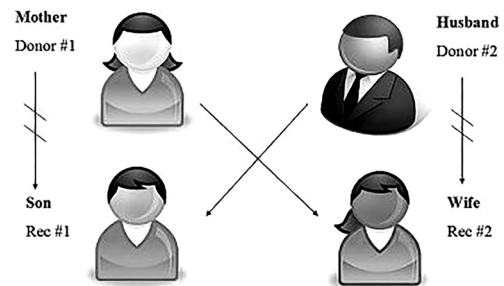
A healthy living person can donate one kidney for transplantation to another person. This eliminates the recipient's need to be placed on the national waiting list. Because the need for kidney donations is a life or death issue for so many Americans, there exist several kinds of living kidney donation programs which aim to facilitate the matching of recipients and living donors. Not all programs are available at all transplant centers.

DIRECTED DONATION

This refers to donating a kidney to someone you know, and for whom you are a blood and tissue type match: a family member, friend, coworker, neighbor, etc. The challenge with direct donation is that, in the majority of cases, direct donors are incompatible with their intended recipients.

PAIRED DONATION

If a donor and recipient do not match blood or tissue types, they can agree to "swap" with another donor/recipient pair with whom they are compatible.

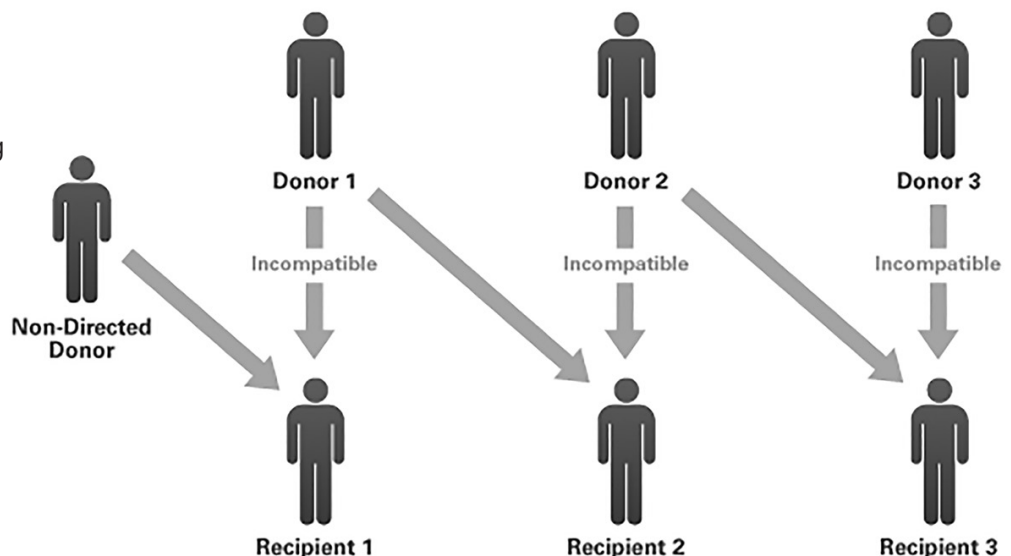


NON-DIRECTED/ANONYMOUS DONATION

If someone is not a match with their intended recipient, they may still wish to donate, and can do so to a stranger on the waiting list with whom they are a match. They could also start a donor chain (see below). The donor and recipient will remain anonymous to each other unless both parties express a desire to communicate.

DONOR CHAINS

Donor chains begin with a non-directed donor whose wish to donate initiates a string of kidney transplants for incompatible donors and recipients. Essentially, for each patient who needs a transplant, a family member, friend or acquaintance of that patient agrees to donate their kidney to someone else in need.



Images courtesy of UNOS.

IN FOCUS: KIDNEYS

Questions for Reading Comprehension

1. What are the options for someone experiencing kidney failure?
2. What is the difference between hemodialysis and peritoneal dialysis?
3. In your own words, describe the difference between directed donation, paired donation, and non-directed donation.



IN FOCUS: CAREERS IN DONATION AND TRANSPLANTATION

Students who pursue a career in organ and tissue donation or transplantation enter one of the most rapidly changing and most challenging areas of medicine. On the following pages are brief descriptions of some of the roles different healthcare professionals play in relation to donation and transplantation. Additional careers are investigated in the remainder of this section.

CAREER	DESCRIPTION
CHEMISTS	Chemists are scientists who study chemicals and how they react with one another. Chemists can be involved in developing medications to treat organ recipients.
DIALYSIS TECHNICIANS	Dialysis technicians oversee the process of safely administering dialysis to kidney patients. Patients with failing kidneys who are waiting for a transplant must have dialysis to keep their bodies cleansed of impurities that the kidneys would normally help eliminate.
IMMUNOLOGISTS	Immunologists are medical professionals who study and research the body's immune system, and who help develop ways for the body to more effectively accept a transplanted organ with fewer side effects.
LAB TECHNICIANS	Lab technicians trained in the life sciences help catalog, store, and test tissues, blood samples, and other important information.
NEPHROLOGISTS	Nephrologists are medical doctors who specialize in kidney care and treatment.
NURSES	Nurses assist physicians in treating organ transplant recipients and donors, and assist in surgery during organ and tissue recovery and transplantation. These nurses typically have critical care experience.
NUTRITIONISTS	Nutritionists study how diet affects overall health. Nutritionists can help organ recipients maintain a diet that will help them regain their health during the recovery period and through the rest of their life.
PHARMACIST	Pharmacists work closely with a patient's medical team, the patient and family members to minimize side effects and organ rejection and maximize quality of life.
PHARMACOLOGISTS	Pharmacologists are scientists who deal with the preparation, uses, and effects of medications.
PHYSICAL THERAPISTS	Physical therapists develop and help administer exercise programs that help organ and tissue recipients recover their physical strength and resume their normal activities as much as possible.
PHYSICIANS	Physicians diagnose and treat diseases that may result in organ failure, and provide treatment and prescribe medication for individuals who are waiting for an organ transplant or have undergone organ transplantation.

CAREER	DESCRIPTION
RADIOLOGIST	Radiologists are medical professionals who understand x-rays and x-ray therapies, and who determine the best use of these technologies in the medical care of donors and transplant recipients.
RESEARCHERS	Researchers in the field of medicine – chemists, biologists, radiologists, and others with training and/or experience in the life sciences – help develop new drug treatments, methods of transplantation, and ways of treating organ recipients.
SOCIAL WORKER	Social workers work with transplant patients and living donors, to provide counseling and education, provide information on services and resources, and perform psychosocial evaluations as needed.
TRANSPLANT COORDINATORS	Transplant coordinators – a vital link in the donation and transplantation process – counsel the family of a recently deceased person about the option of donation, and help oversee the medical management of the donor and placement of the organs. They educate transplant candidates about the donation process and options.
TRANSPLANT SURGEONS	Transplant surgeons specialize in the transplantation of particular organs. They also remove organs from donors.

Adapted from U.S. Department of Health and Human Resources

For more information on careers, visit gorecycleyourself.com



Interviews with Local Professionals

The following are informational interviews with local professionals in the donation and transplantation field.

JUSTIN

DONATION SPECIALIST at VisionGift

1. WHAT'S YOUR DAY-TO-DAY WORK LIKE?

We take calls and process cases 24/7, 365 days a year from all over Oregon, Southwest Washington, and Idaho. Donation specialists are in the building 24 hours a day, in 12 hour shifts. After VisionGift has been notified of a death by a hospital, medical examiner, hospice worker, etc., I take over cases regarding potential cornea donors and coordinate what needs to be done to determine if someone is eligible to donate cornea and/or tissue and to facilitate actual donation. I check the Registry to see if a potential donor had registered with the DMV or online. I read medical records, call the donor's family, and consult with doctors.

2. WHAT SKILLS WOULD YOU SAY ARE IMPORTANT FOR YOUR JOB?

I think the biggest skill is multitasking—being able to coordinate a lot of different types of work at the same time. You might have five to seven active cases per shift, and each one of them needs your attention, such as reading electronic records sent by the hospital and getting details from the doctor to determine if someone can be a donor. A lot of the job is managing your time as well as you can, while also, during what can be a stressful time, paying close attention to detail.

3. WHERE DID YOU LEARN THE SKILLS NEEDED FOR YOUR JOB?

It helps to have a general medical background, especially courses in general anatomy, or to have had an internship in a hospital or ER. Many people in the field are at some stage of pursuing or entering medical school. But there is a lot of on-the-job learning, so above all it's important to be able to dive in and learn a lot, quickly.

4. WHAT ROLES DO SPEAKING AND LISTENING HAVE IN YOUR JOB?

People skills are important because I am talking to many different kinds of people on the phone. For example, I need to sympathize with the grieving family, for whom it might be the worst day of their life. I have to be comfortable with medical terminology, so I can speak comfortably with busy doctors and nurses, to determine if donation is possible. Meanwhile, I am also talking to a courier, trying to help them to deliver tissue.

TUCKER

RECOVERY TECHNICIAN at VisionGift

1. WHAT'S YOUR DAY-TO-DAY WORK LIKE?

We first confer with the donation specialists, who coordinate donation. Recovery technicians go out into the field and actually perform the recovery. This includes a blood draw for the purpose of testing, a physical inspection to look for any contraindications to donation; then we excise the tissue. We may do some further processing when we get back to the lab. After that, there is standard paperwork, and looking more closely at the tissue we've recovered through testing and specular microscopy. Travel is common; it's not unusual to be in Astoria one day, and Pendleton the next.

2. WHAT SKILLS WOULD YOU SAY ARE IMPORTANT FOR YOUR JOB?

I have to be able to adapt quickly – to really think on my feet. A lot of times I'll be sent out on recovery and get good details from the coordinators, but they of course can't know everything that's happening on the ground. I have to be able to adapt to whatever situation I encounter. It helps to have a clinical mindset, staying focused on clinical and medical records.

As far as schooling goes, anatomy and physiology are important, as is medical terminology. Recovery technicians should also have fairly steady hands – and good attention to detail.

JOSH

PROCESSING TECHNICIAN at VisionGift

1. WHAT'S YOUR DAY-TO-DAY WORK LIKE?

Processing technicians begin the day by looking at the scheduled surgeries for which we need to prepare tissue. Using instruments, we split the cornea into different thicknesses according to what a transplant surgeon has requested. For example, if the surgeon needs to replace only a diseased endothelial layer, we cut the cornea down to maybe 100 microns; the surgeons can then transplant just that healthy endothelial layer which we have prepared. Preparation is a really, really delicate procedure and it takes practice and expertise. We perform thousands a year, and this saves surgeons time in the operating room. The prepared tissue is then sent on to the surgery center.

We also do a lot of ancillary things. For example, we spend one-on-one time with corneal transplant surgeons; if they are interested in pursuing research on anything, from suturing to developing new transplant techniques, we work with them.

As a manager, I do a lot of technical writing. Because our procedures are constantly changing, I want those procedures to reflect the most accurate and efficient procedures available.

2. WHAT SKILLS WOULD YOU SAY ARE IMPORTANT FOR YOUR JOB?

Attention to detail and manual dexterity. Very fine motor skills are probably the most essential skill, just because we're dealing with such small amounts of tissue. We use an operating scope; everything is magnified so little tiny movements are very dramatic on this delicate tissue. Some of this can be taught – for example, how to rest and hold your stands so that you are as stable as possible. Being able to work well with others is important - we don't work in silos. Because we have surgeons coming in from all over the country and world to visit our facility, it is important to have interpersonal skills.



MALIA

RECOVERY COORDINATOR at Solvita

1. WHAT'S YOUR DAY-TO-DAY WORK LIKE?

Every day is different! Coordinators really have two different jobs. One is in the operating room, where we perform the donor recovery procedures. If we are on call, we may be in the operating room all day and night, because a recovery typically takes around three to five hours, depending on what grafts we are recovering. Then, there is our "desk" job, where we are obtaining medical records and getting the charts ready to send to our medical directors for transplant approval.

2. WHAT SKILLS WOULD YOU SAY ARE IMPORTANT FOR YOUR JOB?

Multi-tasking and organizational skills are probably the skills that we use most. Oftentimes, we will be in the operating room performing a recovery, while we may also be on the phone trying to work with families and screen potential donors.

We have to solve problems all the time! We are in a race against the clock. For example, VisionGift may call and say, "We have a time-sensitive donor, what time do we have to get all the paperwork done?" We have to factor where the donor is, what time of day it is (does traffic matter?), what time a funeral home or the medical examiner's office might close, etc. To top it off, we may have two recovery procedures going on. It's a constant balancing act, and we do whatever it takes to make it work for every donor and their family.

WRITING SKILLS

Most of our writing is done with filling out the recovery process on the chart. We have to do a diagram of the physical exam and record every time and tissue taken.

SPEAKING AND LISTENING SKILLS

We have to communicate well with the call center at the eye bank, as well as with our coworkers. If we miss a detail or are not clear on something, we could lose the opportunity for someone to become a tissue donor.

MATH SKILLS

On every donor, we have to do an algorithm to determine how much fluid they got prior to death. We scan medical records and look for blood products and crystalloids (liters of saline, for example). Conversions of pounds to kilograms and centimeters to inches are used on a daily basis. We also have to calculate time, for example, from death to the recovery procedure.

3. WHERE DID YOU LEARN THE SKILLS NEEDED FOR YOUR JOB?

I have a Bachelor's degree in biology. That gave me a good base, but most of my profession is all on-the-job training. For example, I had to learn a lot about medical terminology! Recovery coordinators must be accredited by the American Association of Tissue Banks.

ERIN

RECOVERY COORDINATOR at Solvita

1. WHAT'S YOUR DAY-TO-DAY WORK LIKE?

There are many variables that present themselves every single day, which is just one aspect that I love about this career. From the actual cases themselves, to balancing timeframes in order to be able to recover the donors in a given day, and to being able to work on our donor charts; it is diverse every single day. The day may start out relaxing and slow, then many cases will appear and it will be an "all hands on deck" approach in order to make the recoveries a success!

2. WHAT SKILLS WOULD YOU SAY ARE IMPORTANT FOR YOUR JOB?

Multi-tasking is a must. We also all have to be problem solvers here! When one is the primary coordinator on call, one can get very overwhelmed with cases forming and keeping them separate, coordinating the travel time for the donors to arrive at the office, etc. It helps to have each other as sounding boards to problem-solve and come up with plans for the days and nights when we get busy. It is truly a team effort in this office.

READING SKILLS

I read through donor referral worksheets, medical records, and the medical/social histories of our donors. Even though I've been in tissue banking for seven years, I am still constantly teaching and re-teaching myself medical terms, as well; so I reference a lot of medical web sites.

WRITING SKILLS

During a case, we hand-write everything we observe during our physical assessment of our donors, as well as everything else that needs to be documented during the length of the entire case. After a case, we write letters to the donor's family members thanking them for the gift of donation, and letters to the donor's primary care physicians to follow-up and confirm pertinent medical history. When family members call in to find out more about recipient information on their loved ones, we will write them letters and send them tables explaining the age, gender, and type of surgery/graft utilized. Those are my favorite letters to write.

SPEAKING AND LISTENING SKILLS

Effective speaking and listening skills are important in order to convey the importance of what we do here every day, without being too harsh or reactive. I also get a chance to use my speaking skills with Donate Life Northwest! I have the chance to give presentations to high schools, and colleges. I table booths at health fairs. I get to explain the donation and registration process in ways that all audiences can understand.

MATH SKILLS

We have strict timelines in which recoveries need to commence by, so we are simply calculating times with every case in order to ensure that we are making that correct initial incision time. We serologically test each donor for infectious diseases. Depending on the weight, height, and amount of blood products and other fluids the person received before specific timeframes of death, they could be plasma-diluted, meaning their blood was too dilute to confirm the infectious diseases we tested for; so we have to confirm that they were not plasma-diluted through calculations before the tissue can be released for transplant.



3. WHERE DID YOU LEARN THE SKILLS NEEDED FOR YOUR JOB?

I first started at a tissue bank in Seattle, in distribution. Then, I became a recovery and processing technician. Next, I moved here to Portland, and became a recovery coordinator. I think it has definitely helped me a lot to have worked in three different aspects of tissue banking in order to see the bigger picture! I received my Bachelors of Science in nutrition; having the anatomy and physiology under my belt assisted a lot. Honestly, though, if someone is interested in tissue banking and has a general love and knowledge of anatomy, and being part of someone's last wish and ultimate gift, they will succeed in this job. All the training is done on the job. I also am a Certified Tissue Banking Specialist certified through the American Association of Tissue Banks.

CHRISTINE

ORGAN DONATION SPECIALIST at Cascade Life Alliance

1. WHAT'S YOUR DAY-TO-DAY WORK LIKE?

The most common way to describe a typical workday is that there is no typical workday! We are responsible for responding to any potential organ donor within the state of Oregon, Southwest Washington and Southwest Idaho.

First we evaluate, over the phone, whether the patient meets the basic criteria* to be evaluated as a potential organ donor. If they do, we usually go to that hospital to evaluate their medical history, and to determine if they are medically appropriate to be an organ donor in the event of their death.

After the patient is declared brain dead, we approach the family to discuss the donation options. We offer the family information in a compassionate and supportive manner. We let them know that many families see this as a way for something positive to come from their loss and to help with their grief. Many of the patients have already made the decision to donate by registering as an organ and tissue donor. If a patient is a registered donor, we inform the family of their loved one's legally binding authorization for donation. The authorization for donation is completed with the family and the process of donation is explained.

As we proceed with the donation process, we evaluate all the organs – heart, liver, lungs, kidney, and pancreas. Not every organ is necessarily going to be suitable for transplant, but we evaluate each one to determine if it can be placed with a recipient. We enter the donor's age, height, weight, blood type, and the hospital location into the UNOS national computer system. This generates a computerized potential recipient list which we are obligated to follow as we offer those organs. It takes us the better part of 18-24 hours before we're then ready to coordinate one to four surgical teams to travel to the donor patient and perform the recovery surgery.

Once the transplantable organs are recovered, we coordinate the transplantation to the transplant centers. So that's a "typical" day on call! We also have days where we're not on call, but we're in the office, or out in the hospitals, educating nurses and physicians about the donation process.

*See Advanced Readings to learn more about the criteria for organ donation.

2. WHAT SKILLS WOULD YOU SAY ARE IMPORTANT FOR YOUR JOB?

The most important skill is being able to multi-task, and staying calm and focused in what is a really busy process. In between all the tasks that have to be completed, we are constantly interacting with hospital staff, and sharing as much information as we can about the donation process. Organ donation is such a rare occurrence in any hospital that we're always going to have lots of staff who want to come up and ask a question.

WRITING SKILLS

We do a lot of writing, mostly with letters and follow up. After we've finished a donor case, every staff person who was involved in the case – from the respiratory therapist to the pharmacist, to the nursing staff and the physicians – receives a follow up. We really want to recognize their effort and let them know how much we appreciate it. They helped save lives, and it would not have been possible without their efforts.

SPEAKING AND LISTENING SKILLS

This is 90 percent of the job! When we're talking with potential donor families, there's a lot of information we need to share with them, but it's equally important to really listen to them. As we are filling in the gaps of their medical history, they are sharing the story of their loved one. Yes, it's important for us to know what sort of surgeries they had, but it's equally important to know a little bit about them. It's important to let families have time to share that, to be able to listen, to give them space. This also helps them to start their grief process by sharing the story and the legacy that their loved one is leaving.

MATH SKILLS

We use a lot of everything, from plain old addition and subtraction to a lot of algebra. A lot of our job is to confirm and verify.

3. WHERE DID YOU LEARN THE SKILLS NEEDED FOR YOUR JOB?

Most of our staff has a critical care background. Most are nurses, but we also have some respiratory therapists or EMTs. I went to a nursing program that focused on collaborative learning. I was fortunate to work in intensive care units with a team approach, so everybody worked together. Working in critical care forces you to learn to prioritize what's most critical, how to think critically, and to be a continual learner. Within donation and transplant science and technology, so many things are always changing that there are several medical journals and web-based communities to keep us up to date. We have a specialty certification that requires ongoing education and has to be re-certified every three years.

**DR. DOUZDJIAN****TRANSPLANT SURGEON & SURGICAL DIRECTOR at Legacy Good Samaritan Transplant Program****1. WHAT'S YOUR DAY-TO-DAY WORK LIKE?**

It depends on the day. I know that on Mondays, I'll be going to the operating room, to check in on the donor surgeons performing a nephrectomy (kidney removal from a living donor). Once the kidney is available, I perform the transplant.

The second scenario – the deceased donor transplant – is much more complicated. I have no idea when or where they will occur... Typically I will get a call from Cascade Life Alliance, saying they have a potential organ donor. If I think the kidneys are viable to transplant, we make travel arrangements for me to go perform the recovery surgery, wherever that hospital is [within Oregon, Southern Washington, or Western Idaho].

I get back on the plane, come back, and typically the nephrologist would have made arrangements for whoever will receive the kidney to come in. Patients travel in from all over. I place the kidney in the recipient as well.

When I'm not involved in transplant, my work involves taking care of all the patients that were transplanted and evaluating potential candidates.

2. WHAT SKILLS WOULD YOU SAY ARE IMPORTANT FOR YOUR JOB?

Other than the obvious skills of doing the operations for which we've trained for 20 years...! I have to be very organized. I'm always reading charts and computer screens, or writing notes into [a computer database]. When I evaluate transplant patients I must create a report that details all of their medical problems, and then all the complications we could encounter... because of the waiting list times, it may be a year or two before I see that patient for their transplant, so that when I pull up those notes they must remind me of the conclusions I drew during the evaluation.

Problem solving is a lot of my work. Every 15 minutes, a nurse will walk into my office, put a chart on my desk, and ask "what are we going to do about this patient?" The question is, is this person a candidate for transplant? Do we need more tests, and what kind?

I am part of a committee that meets weekly to review every patient's files. This team includes nephrologists, nurses, social workers, dietitians, a psychologist... There is a great deal of speaking, listening, and decision-making.

3. WHERE DID YOU LEARN THE SKILLS NEEDED FOR YOUR JOB?

A transplant surgeon first needs three or four years of undergraduate education. Then, they are accepted to four years of medical school, plus a general surgery residency... that's about five years. After that, you specialize with a transplant surgery fellowship, maybe two to three years. Then you become a transplant surgeon! From there, you must keep up your skills with continuing education in order to keep your license.



RECYCLEYOURSELF

An Organ, Eye, and Tissue Donation Curriculum

SECTION FOUR : LESSON PLANS

Lessons to help you teach donation in your classroom.

SUMMARY FOR LESSONS ON DONATION

	HEALTH	DRIVER ED	SCIENCE	HEATH CAREERS	LEADERSHIP	OTHER
DONATE LIFE CLASSROOM PRESENTATION	✓	✓	✓	✓	✓	✓
TEACHER-LED PRESENTATION	✓	✓	✓	✓	✓	✓
DRIVER EDUCATION: 30 MINUTE LESSON		✓			✓	✓
DONATION LITERACY	✓		✓	✓	✓	✓
MAKING A DECISION ABOUT DONATION	✓					✓
WHO IS WAITING? DONATION DATA	✓		✓	✓	✓	✓
DONATION & TRANSPLANTATION IN THE NEWS	✓			✓		✓
DONATION DEBATE	✓		✓	✓		✓
THE COST OF TRANSPLANT	✓			✓		✓
CELLULAR IDENTITY			✓	✓		
DONATION FOR MIDDLESCHOOL CLASSROOM	✓					✓



DONATE LIFE NORTHWEST CLASSROOM PRESENTATION

SUBJECT AREAS

Health & Wellness, Driver Education, Science, Health Careers, and Leadership; suitable for substitutes

GRADE LEVEL

8-12
Ages 13-18

TIME

One full class period
45 – 90 minutes

OVERVIEW

This lesson will introduce free guest speakers from Donate Life Northwest to introduce students to the civic and health aspects of organ, eye, and tissue donation, the concept of registration, and respond to student inquiries.

LESSON OBJECTIVE

Students will be able to make an informed decision about registering as a donor, and will share that decision with their family. Students will demonstrate active listening, note taking, and questioning skills.

COMMON CORE STATE STANDARDS

CCSS.ELA-LITERACY.SL.9-12.1, 1.A, 1.B, 1.C, 1.D, 2, 3, 4, 5. CCSS.ELA-LITERACY.W.9-12.8. Addition of homework assignment: CCSS.ELA-LITERACY.W.9-12.1, 2, 2.A, 9

PREPARATION

- At least 3 weeks prior to preferred date, visit donatelifenw.org to request a free classroom presentation. See outline for description of the presentation.

- Make copies of handouts for students:
 - Highly Recommended: **Letter to Family/ Carta para mi Familia** homework assignment (pp. 155-156)
 - Optional: **Guest Speaker Summary** (pp. 124-125)
 - Optional: **Crossword Puzzle** (p. 127);
- Set up laptop, projector, and speakers

LESSON

1. Prior to the speaker's visit, select a **warm-up activity** to introduce the subject (pp. 110-117).
2. Optional: Review rubric for appropriate listening behaviors; distribute **Guest Speaker Summary**.
3. The Donate Life speaker (staff, medical professional, or highly-trained volunteer) will use a combination of online videos, presentations, and personal or professional experience; materials can be previewed at donatelifenw.org. Students are encouraged to ask questions and provide feedback on the presentation.
4. Distribute **Letter to Family**. Consider assigning extra credit if they return the form to you with their parent or guardian's signature as evidence that they have talked to their family about donation.

ASSESSMENT OPTIONS

- Listening behaviors (**rubric**, p. 126)
- **Guest Speaker Summary** (pp. 124-125)
- **Crossword Puzzle** and **answers** (pp. 127-128)
- **Letter to Family/Carta para mi Familia** (pp. 155-156)
- Optional Extension or Enrichment Projects (pp. 153-166)

Donate Life Northwest High School Program Classroom Presentation Outline

Donate Life Northwest provides free classroom presentations in Oregon and Southwest Washington by request, subject to availability. This outline is intended to provide educators with an outline of a typical presentation, as given by a Donate Life staffer, partner, or volunteer. Content varies depending on length and subject of class.

Videos may be previewed on GoRecycleYourself.com

- | | |
|---|---|
| <ul style="list-style-type: none">I. Distribution of take-home brochure for students and presentation evaluation form*II. Introduction to donation and the donor registry<ul style="list-style-type: none">a. General version: essential facts about the U.S. waiting list, statistics, living and deceased donation, and how donation worksb. Science classroom: the above, plus extensions on cornea and tissue donation, "Guess that organ!" (graphic images), and careers in donation and transplantation | <ul style="list-style-type: none">III. Personal or professional testimonial from speakerIV. Questions and answers<ul style="list-style-type: none">a. Many of our speakers are volunteers, not health professionals. Answers to more complex questions can be found by visiting the FAQ section at donatelifenw.org or GoRecycleYourself.comV. Collection of student evaluations |
|---|---|

We strongly encourage teachers to distribute a take-home writing assignment to reinforce our message that talking to one's family about their decision (whether or not to register) is of vital importance.



TEACHER-LED BASIC PRESENTATION

SUBJECT AREAS

Health & Wellness, Driver Education, Science, Health Careers, and other; suitable for substitutes

GRADE LEVEL

8-12
Ages 13-18

TIME

One full class period
45 – 90 minutes

OVERVIEW

Instructor will use online multimedia presentation tools from Donate Life Northwest to introduce students to the civic and health aspects of organ, eye and tissue donation, the concept of registration, and generate student inquiries.

LESSON OBJECTIVE

Students will be able to make an informed decision about registering as a donor, and will share that decision with their family. Students will demonstrate active listening, note taking, and questioning skills.

COMMON CORE STATE STANDARDS

CCSS.ELA-LITERACY.W.9-12.8, 9. Addition of homework assignment: CCSS.ELA-LITERACY.W.9-12.1, 2, 2.A, 9, CCSS.ELA-LITERACY.SL.9-12.1, 1.D

PREPARATION

- Navigate to GoRecycleYourself.com for presentations and videos. Download the presentation appropriate to class subject and length. Print and review the included script. Prepare by reading over both Foundational and Advanced Readings.

- Make copies of handouts for students.
 - **Letter to Family/Carta para mi Familia** (pp. 155-156)
- Optional: At least two weeks prior to lesson, visit donatelifenw.org to request free educational brochures.

LESSON

1. Select one or two **warm-up activities**; see Activities & Handouts (pp. 110-117) for suggestions.
2. Open the presentation appropriate to your class subject and length. Each presentation contains multiple hyperlinks to videos and websites which can be visited to clarify important information, share inspiring stories, and extend or reduce presentation length. Encourage students to ask or write down questions as they arise.
3. Distribute **Letter to Family** as homework.
 - a. You may consider assigning extra credit if they return the form to you with their parent or guardian's signature as evidence that they have talked to their family about donation.

ADAPTATION

- If students generate challenging questions, the lesson can be extended by an online research activity, using **Online Resources** (p. 182) as a starting point.

ASSESSMENT

- Student questions generated (written or oral)
- **Letter to Family/Carta para mi Familia** (pp. 155-156)
- Optional Extension or Enrichment Projects (pp. 153-166)

DRIVER EDUCATION: 30-MINUTE LESSON

SUBJECT AREAS

Driver Education

GRADE LEVEL

9-12

Ages 14-18

TIME

30 minutes

OVERVIEW

Every resident of Oregon or Washington will be asked if they wish to register as a donor at the DMV. This lesson will use a short reading, videos, and discussion to introduce students to the civic and health aspects of organ, eye and tissue donation, the concept of registration, and the importance of talking to one's family about donation.

COMMON CORE STATE STANDARDS

CCSS.ELA-LITERACY.SL.9-12.1, 1.C, 1.D, 2, 3.

CCSS.ELA-LITERACY.RI.9-12.1, 2, 8

PREPARATION

- Make copies of handouts for students:
 - **Your Decision to Donate** (p. 137)
 - If in Oregon: **Your Decision to Donate Video [Oregon]: Listening Comprehension** worksheet (pp. 129-130)
- Optional: At least two weeks prior to lesson, visit donatelifenw.org to request free educational brochures.

LESSON

1. 5-minute warm-up: ask students to share with a partner their thoughts and opinions on organ donation.
2. Distribute handouts. Ask students to independently read the text.
3. Navigate to [YouTube.com/GoRecycleYourself](https://www.youtube.com/GoRecycleYourself) to show students the video which corresponds to

your state's donor registry:

[YOUR DECISION TO DONATE](#)

Oregon Donor Registry – 11 minutes

- Have students fill out worksheet

[IT'S YOUR CHOICE](#)

Washington Donor Registry – 10 minutes

4. Show the 5-minute video, [DONATION AND TRANSPLANTATION: HOW DOES IT WORK?](#) from the United States Department of Health and Services.
5. 10-minute class discussion to check for understanding. Some questions which could spark conversation:
 - a. How does one become an organ and tissue donor?
 - b. How is the medical system set up to prevent doctors from having to decide between treating one patient and losing another?
 - c. What do you think stops people from deciding to be organ and tissue donors?
 - d. What is the difference between a living donor and a deceased donor?
 - e. What is the difference between brain death and a coma? Can you become a donor if you are in a coma?
6. Ask students to discuss their decision about donation with their family tonight. An educational brochure from Donate Life Northwest may help broach the subject! If students have generated questions, direct them to the websites listed on the worksheet to independently research answers.



DONATION LITERACY

SUBJECT AREAS

Health & Wellness, Driver Education, Science, Health Careers, other; suitable for substitutes

GRADE LEVEL

9-12
Ages 14-18

TIME

At least one to two full class periods, 60 – 90 minutes; time outside of class as necessary

OVERVIEW

This lesson will use a combination of nonfiction textual resources and discussion to introduce to the civic and health aspects of organ, eye and tissue donation, the concept of registration, and respond to student inquiries.

LESSON OBJECTIVE

Students will apply critical thinking skills in order to be able to make an informed decision about registering as a donor, and will share that decision with their family.

COMMON CORE STATE STANDARDS

CCSS.ELA-LITERACY.RI.9-12.1, 2, 3, 4, 8; CCSS.ELA-LITERACY.RST.11-12.1, 2, 6, 7, 9; CCSS.ELA-LITERACY.SL.9-12.1, 2, 3, 4, 5. CCSS.ELA-LITERACY.W.11-12.2, 2.F; Addition of homework assignment: CCSS.ELA-LITERACY.W.9-12.1, 2, 2.A, 9

PREPARATION

- Make copies of handouts for students
 - **Foundational Readings** (pp. 25-52)
 - **Letter to Family/Carta para mi Familia** homework (pp.155-156)
 - Optional for Health Careers & Science classrooms: **Advanced Readings** (pp. 53-90).

- Optional: At least two weeks prior to lesson, visit donatelifenw.org to request free educational brochures and/or a hard copy DVD of Your Decision to Donate.

LESSON

1. Select a **Warm-up Activity** (pp. 110-117).
2. Distribute **Foundational Readings** and assign students to read the packet. Each section concludes with a set of critical thinking questions to assess reading comprehension
 - **Option 1:** Assign as an individual, paired, or group reading assignment.
 - **Option 2:** Assign student pairs or groups to become experts on a single section, and present their answers to reading comprehension questions orally.
 - **Option 3:** For extended, in-depth readings, Advanced Readings may be assigned.
3. **Assessment No. 1:** Require students to individually complete the **Questions for Reading Comprehension** found at the end of each section, as a short essay assignment.
 - a. And/or, assign students to create their own definitions for unit vocabulary.
4. **Assessment No. 2:** Distribute **Letter to Family**.
 - a. You may consider assigning extra credit if they return the form to you with their parent or guardian's signature as evidence that they have talked to their family about donation.

ASSESSMENT

- Responses to **Questions for Reading Comprehension**, found in each section
- **Letter to Family/Carta para mi Familia** (p. 155-156)
- Optional Extension or Enrichment Projects (pp. 153-166)

MAKING A DECISION ABOUT DONATION

SUBJECT AREAS

Health, other

GRADE LEVEL

9-12

Ages 14-18

TIME

One class period, 45-60 minutes

OVERVIEW

This lesson reinforces the importance of gaining appropriate knowledge before making an informed decision, within the context of organ and tissue donation.

LESSON OBJECTIVE

Students will understand the critical decision-making process and utilize scaffolding tools to critically reflect on their decision of whether or not to register as an organ, eye and tissue donor.

COMMON CORE STATE STANDARDS

CCSS.ELA-LITERACY.SL.11-12.1;

CCSS.ELA-LITERACY.W.9-12.1, 2.

Addition of homework assignment:

CCSS.ELA-LITERACY.W.9-12.1, 2, 2.A, 9

PREPARATION

- Make copies of handouts for students
 - **Making a Decision about Donation** handout (p. 132)
 - Optional: **Your Decision to Donate** handout from Driver’s Education lesson (pp. 129-130)
 - Optional: **Letter to Family/Carta para mi Familia** homework (pp. 155-156)
- Optional: At least two weeks prior to lesson, visit donatelifenw.org to request free educational brochures and/or a hard copy DVD of Your Decision to Donate.

LESSON

1. Review the steps of the decision-making process. Project **Decision Making: Definitions and Examples** (p. 131) to lead a discussion on decision making, and how it relates personally as well as on society as a whole.
2. Optional: if your class has not yet addressed donation and registration in class, you can adapt the Driver’s Education: 30 Minute Lesson and resources for a concise introduction to the topic.
3. Distribute the **Making a Decision about Donation** handout to provide students with a scaffolding tool, to critically reflect on their decision to register as a donor. Students may complete the assignment individually, but work in pairs or small groups to discuss.
4. Pay special attention to student responses regarding their fears about donation. Research has shown that the most common reasons people give for not registering are based in misconceptions, misunderstandings, and negative attitudes towards donation exacerbated by media and fictional portrayals. Educational brochures and resources on the Go Recycle Yourself website address common fears about donation. Donate Life staff is available to offer additional support.
5. You may wish to assign Letter to Family to students as a final writing assignment.

ASSESSMENT

- **Making a Decision about Donation** activity (p. 132)
- **Letter to Family/Carta para mi Familia** (pp. 155-156)

Lesson adapted from Pennsylvania Department of Education



WHO IS WAITING TODAY? DONATION DATA

SUBJECT AREAS

Health, Science, Health Careers, Leadership, other

GRADE LEVEL

9-12

Ages 14-18

TIME

One or two full class periods, 45 – 90 minutes;
time outside of class as necessary.

OVERVIEW

Students will utilize real-time statistics on organ donation to analytically examine the transplant crisis, to raise text-based questions, and to produce inquiries about donation. An extension focus on kidneys will support and advance students in their knowledge through a focused research project and presentation.

LESSON OBJECTIVE

Students will collect, analyze, and interpret real-time data and analyze the current state of organ donation in the United States using multiple representations.

COMMON CORE STATE STANDARDS

CCSS.ELA-LITERACY.RI.9-12.1;

CCSS.ELA-LITERACY.W.9-12. 1. E, 2, 2.F, 9; CCSS.

ELA-LITERACY.RST.9-12.1, 2.

Addition of Kidneys in Crisis:

CCSS.ELA-LITERACY.RST.9-12.7, 9;

CCSS.ELA-LITERACY.SL.9-12.1.D, 2, 4;

CCSS.ELA-LITERACY.W.9-12.7, 8, 9

PREPARATION

- Make copies of handouts for students
 - **Waiting for a Second Chance** section of Foundational Readings (pp. 28-37)
 - **Donation Data** worksheet (pp. 143-145)
 - Optional: **Addressing Misconceptions** handout (pp. 140-141)
 - Optional: **Kidneys in Crisis** assignment (p. 146)

- Reserve computer access for online research

LESSON

1. Select a **Warm-up Activity** (pp. 110-117).
2. Distribute **Waiting for a Second Chance** section of the Foundational Readings packet and have students read independently or in pairs.
3. Distribute **Donation Data** handout. Navigate to unos.org; select Donation & Transplantation / Data / National or State as needed. Students will create data reports to see how many individuals in their state, and nationally, are currently on the U.S. waiting list.

EXTENSION/ASSESSMENT

Students will quickly see that kidneys are in highest demand. Distribute **Kidneys in Crisis** handout to focus their online research towards the issues surrounding kidney health and transplant. Kidneys in Crisis can be an individual or group assessment.

Rubric for Kidneys in Crisis poster presentation can be found on page 147.

DONATION AND TRANSPLANTATION IN THE NEWS

SUBJECT AREAS

Health & Wellness, Health Careers,
Journalism and Social Studies

GRADE LEVEL

8-12
Ages 13-18

TIME

It is recommended that this lesson follow a complete lesson about donation. One or two class periods, 45 – 60 minutes; time outside of class if desired.

OVERVIEW

This lesson will engage students in a critical discussion of how donation and transplantation, and health issues generally, may be mis/represented in mass media. Students should know basic information about donation prior to this lesson so that they can distinguish between fact and misrepresentation.

LESSON OBJECTIVE

Students will be able to critically reflect on sources of information and beliefs, ways to evaluate the credibility of claims made in popular media, and the impact of this on public health literacy.

COMMON CORE STATE STANDARDS

CCSS.ELA-LITERACY.RI.9-12.1, 2, 4, 9-10.8;
CCSS.ELA-LITERACY.RST.9-12.2, 6;
CCSS.ELA-LITERACY.SL.9-12.1, 1.C, 3

PREPARATION

- Reserve computer access for online research.

LESSON

1. Lead a discussion to define bias. Have students define and give examples of the following: bias by omission, bias by selection of sources, bias by story selection, and bias by word choice.

2. In pairs or small groups, have students search for “organ donation” and “tissue donation” themed stories in online American news sources. Discuss, or have students respond to prompts in writing:

- Look to see if media stories stress one view over others.
- Examine the sources interviewed for a controversial or major news story. Does media coverage favor interviewing a family, or the medical community? What effect does this have on the story’s accuracy? On its emotional impact?

3. Assign students to create a list of five websites you can use to fact check information about organ, eye and tissue donation in the United States/in your state. Require students to explain in two to four sentences how they know these sources to be reputable and reliable.

ASSESSMENT

- Responses to news story analysis (oral or written)

Adapted from the Journalism Education Association



DONATION DEBATE

SUBJECT AREAS

Health, Science, Health Careers

GRADE LEVEL

10-12

Ages 16-18

TIME

One to two full class periods, 45 – 90 minutes.

It is recommended that this lesson follow a basic introduction to donation.

OVERVIEW

This lesson offers five different scenarios in which two people, both in need of a life-saving organ transplant, would each be a compatible recipient for the same donated organ. The question posed to students in each scenario is: Who should receive the donated organ and why?

LESSON OBJECTIVE

Students will produce rigorous evidence-based group discussions and individual writing through a sequence of specific, thought-provoking and policy-based scenarios and resources.

COMMON CORE STATE STANDARDS

CCSS.ELA-LITERACY.RI.9-12.1, 3, 8;

CCSS.ELA-LITERACY.RST.9-12.1;

CCSS.ELA-LITERACY.SL.9-12.1.A, 1.C, 1.D, 10.3;

CCSS.ELA-LITERACY.W.9-12.1, 2, 9

PREPARATION

- Make copies of handouts for students
- **In Focus: Deceased Organ Donation** section of Advanced Readings (pp. 67-72)
- **Donation Debate Organizer** handout (p. 134)
- **Donation Scenarios** (p. 133)

LESSON

1. Distribute **In Focus: Deceased Organ Donation** from Advanced Readings, paying special attention to allocation and ethics.

2. Use the following questions to guide class discussion; can be adapted as a writing exercise:

- What would happen if people were allowed to buy organs from organ procurement organizations or individuals?
- Why has the federal government created an entity to set policies on how scarce organs will be allocated?
- Do wealthy or famous individuals have ways of obtaining donated organs that are unavailable to most Americans?
- Would it be an infringement of individual rights if we changed the donation policy so that all people are donors unless they sign a card saying they do not want to donate?
- If more or fewer organs were available for transplantation, do you think current organ allocation policies would be changed?

3. Set out below are three options for structuring your class debate.

OPTION NO. 1: Divide the class into ten groups. Assign one of the ten people/positions depicted in the five scenarios to each group, so that for each scenario there is one group defending each position. Provide a **Debate Organizer** to each student and an additional **Debate Organizer** for the group. Explain to students that they are to use the Organizer to formulate and support an argument supporting their choice. After students complete their group's Organizer, have them conduct a short debate in front of the class with the group with the opposing position. After each debate, use **Scenario Outcomes Under Current Organ Allocation Policies** (pp. 135-136) to explain to students how such a case would be decided under current policies. Engage students in a discussion of whether they think these policies are effective in ensuring that donated organs go to the most appropriate candidates or if these policies should be changed.

OPTION NO. 2: Divide the class into five groups and assign each group to a different scenario. Provide a **Debate Organizer** to each student and one **Debate Organizer** to the group. Have each group decide collectively who they think should receive the donated organ and fill out their Organizer to justify their position. Display the group's position using a projector and have students present the position they took and their arguments in support of their position. After each presentation, inform students which way each case would be decided under current policies (found in **Scenario Outcomes Under Current Organ Allocation Policies**). Engage students in a discussion of whether they think these policies are effective in ensuring that donated organs go to the most appropriate candidates or if these policies should be changed.

OPTION NO. 3: Randomly assign each student to one of the five scenarios. Provide each student with a **Debate Organizer** and ask student to formulate their own opposition and individually fill out the organizer. For each position/person depicted in the scenarios, ask a student who has taken that position to read the scenario aloud and explain their decision (and justifications for that decision) to the class. Share the **Scenario Outcomes Under Current Organ Allocation Policies** so students can see how these difficult decisions would be decided under current policies.

ASSESSMENT

As an in-class or homework assignment, ask students to write a persuasive essay evaluating the way these policies determine the allocation of donated organs.

Lesson adapted from U.S. Department of Health and Human Services



THE COST OF TRANSPLANT

SUBJECT AREAS

Health, Health Careers, Economics

GRADE LEVEL

11-12
Ages 17-18

TIME

One or two full class periods, 45 – 90 minutes;
time outside of class as necessary.

OVERVIEW

This lesson introduces students to the economics behind organ, eye and tissue donation.

LESSON OBJECTIVE

Students will be able to identify the various costs of organ and tissue transplant from procurement and transplantation to long-term care, and to identify the role of supply and demand in determining these costs. Students will also research how a patient may pay for all these incurred costs and develop a public health literacy tool to explain the economic impact of donation.

COMMON CORE STATE STANDARDS

CCSS.ELA-LITERACY.RI.11-12.3, 7;
CCSS.ELA-LITERACY.W.11-12.2, 2.A, 7, 8

PREPARATION

- Make copies of **Considering the Cost of a Transplant** handout (p. 150).
- Secure computer access for Internet research and Microsoft Word or Publisher.

LESSON

1. Distribute the **Considering the Cost of a Transplant** handout for students to read.
2. As a class, identify what the students believe are the “good starts” and “missteps” made by the couple pursuing the transplant.

3. In small groups, students will research and document the cost of organ and tissue transplant, specifying the cost of each step in the transplant procedure:
 - a. Transplantation surgery
 - b. Hospital stays
 - c. Surgical fees
 - d. Rehabilitation
 - e. Long-term care
 - f. Medications/Pharmaceutical needs of patient over their lifetime
4. Research how a patient pays for these incurred costs. We recommend that students choose a single organ transplant (heart, liver, lungs, or kidney) for the cost analysis.
5. As a small group, create a regional user’s guide for those considering a transplant. Microsoft Word templates are available to craft brochures and/or small booklets.
6. As a summary, students will write an essay on the financial considerations of a transplant and possible trouble-shooting.

Adaptations: You may wish to consider adapting this activity to focus on the economics of kidney treatment options, looking at transplant vs. hemodialysis vs. peritoneal dialysis. Atlantic Monthly has published several excellent articles throughout 2014 regarding the economics of these treatment options.

ASSESSMENT

- Quality & depth of student research on transplant costs; appropriate citations
- Brochure/booklet; **rubric** provided on page 151.

CELLULAR IDENTITY

SUBJECT AREAS

Science, Health Careers

GRADE LEVEL

10-12

Ages 16-18

TIME

At least one full class period, 45 – 90 minutes; time outside of class as necessary.

OVERVIEW

This lesson reinforces the students' understanding of how the body recognizes its own cells and knows to attack foreign cells, and asks students to relate this recognition to the importance of matching donor tissue with recipient tissue in organ transplants. Students will describe the cell membrane, define cell surface markers, and explain the matching process for organ transplants.

LESSON OBJECTIVE

Students will understand how the body recognizes its own cells and knows to attack foreign cells. They will be able to articulate the importance of matching donor tissue with recipient tissue in organ transplants.

COMMON CORE STATE STANDARDS

CCSS.ELA-LITERACY.RST.9-10.1, 2, 7;

CCSS.ELA-LITERACY.SL.11-12.1.C

PREPARATION

- Biology or anatomy resource reviewing cell structures
- Photocopies of **In Focus: Organ Transplants** section, found in Advanced Readings (pp. 73-77).
- Index cards, prepared in advance with the following (scale to class size) and placed in

large envelope:

- 5 blue triangles, 5 red triangles; 5 blue circles, 5 red circles; 5 "Donor" cards, 5 "Antibody" cards

LESSON

1. Introduce the topic by asking students to write/discuss an anticipatory set of questions:
 - a. Assume you are the referee at a football game. How would you know which players belong on the field when the game starts? (Color of the jerseys)
 - b. If a player didn't have the correct jersey, what would you do? (Get rid of him!)
 - c. How do you know where the player should be? (By the number on his jersey, certain numbers are allowed to be in certain areas and do certain things.)
 - d. Relate this to the human body. The body must be able to recognize which cells belong to it (good), which cells don't (bad), where the cells should be and which job the cell should be doing.
2. Utilize biology or anatomy references to review the structure of the cell membrane. The proteins in the cell membrane have several functions. One of these is to act as a cell marker, identifying each cell as belonging to your body. These markers, organized before you were even born, tell your cells where to go and which cells to join. If a cell has a different marker, the body's defenses recognize it as being foreign and attack and destroy it.
3. Distribute **In Focus: Organ Transplants** reading section to review the role which cell surface markers play in transplantation, ABO compatibility, HLA compatibility, and crossmatching.



4. **Have students complete Activity #1**

Students draw a card that has a specific shape and color out of an envelope. At the signal, all students (cells) with the same shape and color on their card cluster together. Students with the word “donor” on their card join the different groups. As the students are in the groups, the students playing “antibodies” move around the room and remove any “cells” that don’t have the correct marker on them. They are “destroyed.” “Antibody” students explain what they are looking for and how they recognize “foreign” cells.

5. **Have students complete Activity #2**

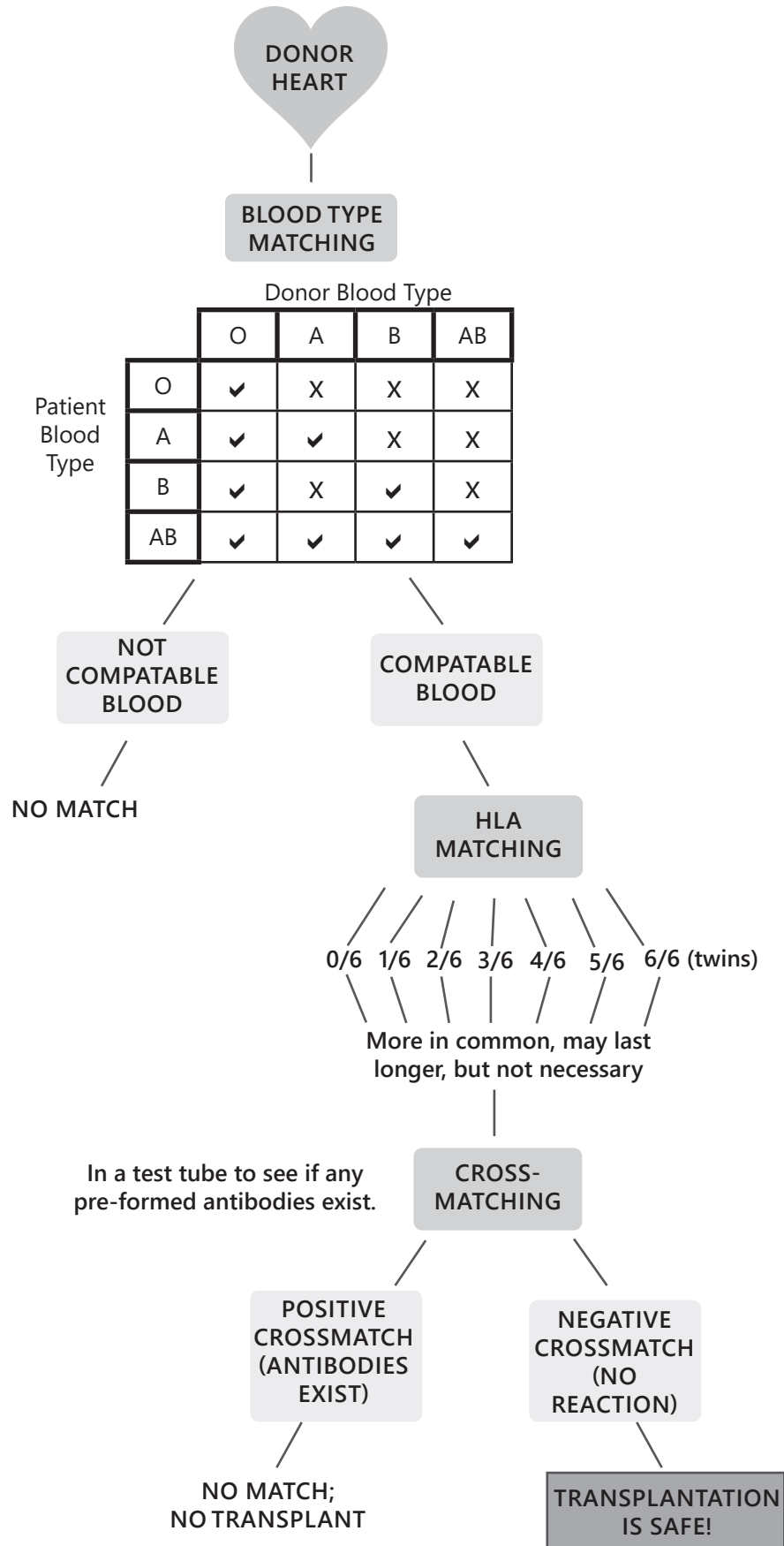
Using readings and online research as necessary, students will design a Compatibility Flowchart following the steps in selecting an appropriate donor for a recipient of a new heart.

- The role of antigens
- Blood type compatibility
- HLA compatibility
- Crossmatching

ASSESSMENT

- Compatibility Flowchart (**example** and **rubric** provided; p. 106 and p. 107)

Compatibility Flowchart (example)





Rubric for Evaluating Compatibility Flowchart

	QUALITY OF INFORMATION	SOURCES	INTERNET USE	DIAGRAMS & ILLUSTRATIONS	EXPLANATORY TEXT	MECHANICS
EXCEEDS STANDARD	Information clearly relates to the main topic. It includes several supporting details and/or examples.	All sources (information and graphics) are accurately documented in the desired format.	Successfully uses suggested internet links to find information and navigates within these sites easily without assistance.	Diagrams and illustrations are neat, accurate and add to the reader's understanding of the topic.	All explanatory texts include introductory sentence, explanations or details, and concluding sentence.	No grammatical, spelling or punctuation errors.
MEETS STANDARD	Information clearly relates to the main topic. It provides 1-2 supporting details and/or examples.	All sources (information and graphics) are accurately documented, but a few are not in the desired format.	Usually able to use suggested internet links to find information and navigates within these sites easily without assistance.	Diagrams and illustrations are neat and accurate and usually add to the reader's understanding of the topic.	Most explanatory texts include introductory sentence, explanations or details, and concluding sentence.	A few grammatical, spelling or punctuation errors
BELOW STANDARD	Information has little or nothing to do with the main topic.	Some sources are not accurately documented.	Needs assistance or supervision to use suggested internet links and/or to navigate within these sites.	Diagrams and illustrations are not accurate or do not add to the reader's understanding of the topic.	Explanatory texts are not clear and sentences were not typically related within the paragraphs.	Many grammatical, spelling, or punctuation errors.

DONATION FOR THE MIDDLE SCHOOL CLASSROOM

SUBJECT AREAS

Middle School Health or Science

GRADE LEVEL

6-8

TIME

One to two class sessions, 45-60 minutes each.

OVERVIEW

This lesson introduces students to the concept of organ donation in the United States, emphasizing anatomical and philanthropic vocabulary.

LESSON OBJECTIVE

Students will use texts and multimedia resources to understand the meaning of and apply key vocabulary in order to organize, summarize, and present main ideas in both written and oral form.

COMMON CORE STATE STANDARDS

CCSS.ELA-LITERACY.RI.9-10.1, 2, 4;
 CCSS.ELA-LITERACY.W.9-10.1 or
 CCSS.ELA-LITERACY.SL.9-10.4

PREPARATION

- Make copies of handouts for students
 - **Stories of Donation and Transplantation** (pp. 167-180)
 - **Your Decision to Donate** (p. 137)
 - Optional: **Letter to Family/Carta para mi Familia** homework (pp. 155-156)
- Optional: At least two weeks prior to lesson, visit donatelifenw.org to request free educational brochures and/or a hard copy DVD of Your Decision to Donate.

LESSON

1. Place key vocabulary on the board. Assign students to create flashcards with either textual or pictorial representations.

THE BODY – Organ: heart, liver, kidneys, lungs, pancreas, intestine. Tissue: skin, bone, tendon,

ligament, vein, heart valve. Eye: cornea.

DONATION – deceased donor, living donor, registration, lifesaving, life-enhancing, gift of life, hope, death, pass away, stranger

TRANSPLANT – second chance, health, mobility, sight, survive

DONATION IN THE UNITED STATES – waiting list, national allocation system, altruism

2. Distribute photocopies of one or several **Stories of Donation and Transplantation**. Encourage students to read their stories and summarize them in their own words. Then, find a student who has a different story, and take turns sharing the stories.
3. Distribute the one-page handout **Your Decision to Donate**.
4. Writing/Reading exercise: Ask students the following questions:
 - a. If you were sick and needed an organ transplant to survive, would you accept a donated organ? How would you feel?
 - b. Do you think organ transplants are a good thing or a bad thing? Why?
 - c. Would you allow the organs of a loved one to be donated after they die?
 - d. Would you donate a kidney to save the life of a friend? A family member? A stranger?
 - e. How would you feel if you were told you needed a cornea transplant in order to see?
 - f. How would you feel if you were told you needed a bone transplant in order to save your arm from cancer?

ASSESSMENT

- Oral and written responses to questions (**rubric** provided on p. 152)
- Optional: **Letter to Family/Carta para mi Familia** homework (pp. 155-156)



RECYCLEYOURSELF

An Organ, Eye, and Tissue Donation Curriculum

SECTION FIVE : ACTIVITIES AND HANDOUTS

Additional activities, prompts, and handouts to
complement or extend a lesson, unit, or presentation.

WARM-UP ACTIVITIES

SPEAKING & LISTENING

Common Core State Standards: CCSS.ELA-LITERACY.SL.9-12.1, 1.A, C, D, 2, 3, 4, 5

- Ask students if they have had any direct experience with donation or transplantation. Many students may know someone who has waited for or received transplants, who became an organ or tissue donor, or who is a living kidney donor. Offer the students the option of sharing this information with the class, but do not press for details. While sharing such experiences can benefit the class by providing a “close-to-home” perspective, it can also raise powerful emotions.
- Utilize questions or discussion prompts to launch a class or small group discussion activity:
 - **The Waiting List** (p. 111)
 - **Donation Ethics** (p. 112)
 - **Fact or Fiction: Organ, Eye, and Tissue Donation** (p. 113), plus **Teacher Master** (p. 114)
- Navigate to GoRecycleYourself.com for educational videos.

READING

Common Core State Standards: CCSS.ELA-LITERACY.RI.9-12.1, 2, 3, 4; RI.9-10.8, RI.9-10-7; CCSS.ELA-LITERACY.W.9-10.9; CCSS.ELA-LITERACY.SL.9-10.1.A

- Select one or several **Stories of Donation and Transplantation** (pp. 167-180) to share with students.
- Distribute **Foundational Readings** (pp. 25-52) to students prior to a formal lesson. Assign students to provide written responses to the **Questions for Reading Comprehension** found at the end of each section.

WRITING

Common Core State Standards: CCSS.ELA-LITERACY.W.9-12.1, 1.A, 1.B., 1.E, 10.2, 10.2.A, 10.2.D, 2.F, 6, 7, 8, 9

- Have students develop one to three questions that come to mind regarding organ, eye, and tissue donation.
- Have students complete the prompt: “I am/am not/plan to be a registered organ, eye and tissue donor because...” Ask students to exchange their prompt with another student. Have students underline or highlight factual reasons given vs. opinions. Have students mark reasons which require evidence.
- Distribute a pre-lesson quiz. Students may correct their responses throughout the lesson using a different colored pen or pencil; correct the quiz in-class to assign participation points.
 - **Organ, Eye, and Tissue Donation Quiz** (p. 115), plus **Teacher Master** (p. 116)
- Have students guess at statistics regarding waiting times and number of people waiting. Navigate to UNOS.org for real-time data.
 - **Waiting List Statistics** (p. 117)



The Waiting List

Questions for students (#1-4), with teacher talking points below.

TALKING POINTS

1. Why do you think that over 100 Americans die every week waiting for a transplant?

The number of the people on the waiting list far outweighs the number of donated organs available.

- Less than 1% of the population passes away under the specific conditions necessary to donate organs.
- Improvements in motor vehicle safety, and a decrease in viable organs in younger generations, due to inactive lifestyles and poor diets, further shrink the pool of potential organ donors.
- The number of living kidney donors remains fairly flat. Fears and misconceptions about the ability to donate a kidney include: impact on lifespan, impact on ability to have children, expense.

2. What do you think is the hardest part of being on the waiting list for an organ?

You may wish to prompt students to think about the impact waiting has:

- On the patient's daily routine, school, work.
- On the family and friends of the patient.
- On the patient, if they live in a rural area or must move to another city or state to wait.*

3. Why might families who are approached about donating their loved one's organs and tissues say no?

Answers will vary. People are afraid, and most have never been exposed to education about donation, have gleaned inaccurate information from Hollywood or media portrayals, or learned about it a very long time ago, when the science was less advanced. Common fears and misunderstandings about donation include:

- that doctors will not save their life,
- that they are too old or not healthy enough to donate,
- that there is a black market for organs in the United States,
- that a person can recover from brain death,
- that donation is against their religion.

Additionally, if someone has not registered as a donor, a grieving family may not remember, or may never have discussed, what their loved one wanted.

4. What can we do to help decrease the size of the waiting list for organs?

Educate people about the need for organ and tissue donation and the positive impact it can make on someone else's life. Register as a donor, online or at the DMV. If you have a family history or predisposition for hypertension or Type II Diabetes, educate yourself about preventative measures you can take to care for your kidneys.

*There are four transplant centers in Oregon, all located in Portland. Due to the scarcity of specialized transplant surgeons, not all kinds of transplant surgeries are performed in Oregon. For example, someone needing a lung transplant may need to relocate to California (Stanford) or Seattle (University of Washington) while they are waiting for a transplant.

Adapted from Donate Life New Jersey

Donation Ethics

The following questions are meant to engage critical thinking, debate, and reasoning skills. There is no right or wrong answer.

The [Organ Procurement and Transplantation Network](#) is an excellent resource to extend or prepare students for this discussion. Refer to policy reports developed by the [United Network for Organ Sharing's Ethics Committee](#).

1. How would you handle it if someone you loved were brain dead and wanted to donate their organs and tissue, but no one in your family could agree whether to authorize the donation?
2. Should inmates be eligible for organ and tissue donation?
3. Should drug addicts and alcoholics be eligible for the waiting list?
4. Should children be given precedence on the waiting list? Why?
5. Do you think people should have the right to sell their kidneys for money? Why or why not?
6. Should parents or family members have the right to override someone's desire to donate their organs and tissue at their time of death?
7. Do you think that it is a personal or a religious decision to donate organs and tissue? Why?
8. Should a person in whom a transplant has failed be given a second organ, or should a different person have a first chance?
9. Would you be willing to donate a kidney to someone you loved? To a neighbor? What about to a stranger?
10. What if you knew that the person that was going to receive an organ donated by you was of a religion or culture that you did not like? Would you still agree to donate? Why or why not?

Adapted from Pennsylvania Department of Education



NAME: _____

DATE: _____

Fact or Fiction: Organ, Eye, and Tissue Donation

Read the following statements, then choose if you think the statement is true (FACT), false (FICTION), or if you're unsure.

	FACT	FICTION	UNSURE
1. Doctors won't try to save your life if they learn that you are an organ and tissue donor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Elderly people can't be donors - you have to be young and healthy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Most major religions support donation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Being an organ or tissue donor disfigures the body.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. You can make a lot of money in the United States by selling a kidney.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Organ donation is expensive and burdens a grieving family with a lot of medical bills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Rich and famous people in need of an organ transplant get preferential treatment and don't have to wait as long as "regular" people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. The need for kidney transplants among Hispanic and African American populations is disproportionately high.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Transplant recipients inherit personality traits from their donor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Only a blood relative can donate a kidney to someone waiting for a kidney transplant.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TEACHER MASTER

Fact or Fiction: Organ, Eye, and Tissue Donation

1. Doctors won't try to save your life if they learn that you are an organ and tissue donor.
FICTION. Medical staff does everything they can to save someone's life. They do not know if you are a donor because they do not have access to the confidential donor registry. It is only *after* every attempt has been made to save your life that a completely separate team of organ, eye and tissue donation specialists is called in to consider donation options. Only this team has access to the donor registry.
2. Elderly people can't be donors – you have to be young and healthy.
FICTION. Age does not disqualify anyone from being a donor. In fact, having a history of medical illness does not necessarily disqualify you from being a donor, either. Even if someone cannot donate organs, they may be able to donate corneas or tissues. Donation specialists can only determine what can be donated at the time of death. People of all ages should consider themselves potential donors.
3. Most major religions support donation.
FACT. Most major religions, with the exception of Shinto and some Native American religions, support donation for transplant, considering it either an expression of love for your neighbor or as a personal decision. Refer to the **Appendix** (pp. 185-186) for a listing of specific religious views on donation.
4. Being an organ or tissue donor disfigures the body.
FICTION. Donation recovery is a type of surgery. After surgery, the body is put back together with care – the process does not disfigure the body or change the way it looks in a casket. Every donor is treated with great care and dignity during the recovery process, including careful reconstruction. Donation does not delay or prevent any type of funeral service.
5. You can make a lot of money in the United States by selling a kidney.
FICTION. Buying and selling organs for the purpose of transplantation is illegal in the United States. Under the Uniform Anatomical Gift Act of 1984, human organs cannot be bought or sold, and violators are subject to fines and imprisonment. Medically speaking, illegal sales are not possible in the United States because recovered organs must be appropriately matched to recipients and distributed according to national policy, established by the United Network of Organ Sharing.
6. Organ donation is expensive, and burdens a grieving family with a lot of medical bills.
FICTION. Donation costs nothing to the donor's family. Organ and tissue donation is a gift. All costs and expenses incurred after your death and related to donation through the recovery of organs, eyes and tissues will be the responsibility of the recovery agency. Medical costs not related to donation, and funeral costs are the responsibility of your estate.
7. Rich and famous people in need of an organ transplant get preferential treatment, and don't have to wait as long as "regular" people.
FICTION. The United Network of Organ Sharing's waiting list identifies people by an ID number, not their name – it is a 'blind' list. In most cases, blood type, height and weight, geography, and medical urgency are determining factors in who receives a transplant. Factors such as race, gender, and income or celebrity status do not determine who receives a transplant.
8. The need for kidney transplants among Hispanic and African American populations is disproportionately high.
FACT. High incidences of conditions such as high blood pressure or diabetes, both of which can lead to the eventual need for a kidney transplant, are disproportionately high among Hispanic and African American populations.
9. Transplant recipients inherit personality traits from their donor.
FICTION. Receiving a donated organ is a powerful and life-changing experience on many levels: physical, emotional, and social. While many films and TV shows use this motif in order to dramatize the impact of transplantation, there is no science to support the notion that an individual's personality or habits can be transmitted within an organ.
10. Only a blood relative can donate a kidney to someone waiting for a kidney transplant.
FICTION. While the best tissue match often is someone of the same ethnic background as the recipient, a living kidney donor does not need to be biologically related to the recipient. They can be blood relatives, spouses, friends, acquaintances or a stranger. What matters is that the individual is healthy, educated about their decision, and a compatible blood and tissue type match.



NAME: _____

DATE: _____

Organ, Eye, and Tissue Donation Quiz

1. List six organs that can be used in transplants.
 - a.
 - b.
 - c.
 - d.
 - e.
 - f.
2. List three tissues that can be used in transplants.
 - a.
 - b.
 - c.
3. Name three organs and/or tissues which can be donated by a living donor.
 - a.
 - b.
 - c.
4. Nationally, how many people die every week waiting for an organ transplant?
5. How many lives can be saved by a single organ donor? _____ By a single tissue donor? _____
6. The final decision about whether someone can be a donor and what they can donate is made by a medical professional...
 - a. Before death
 - b. After death
7. Which organ is in greatest demand?
8. How long does an organ transplant recipient have to take anti-rejection medicine?
9. Name one way to register as a donor:
10. Kidney donors can be:
 - a. Living
 - b. Deceased
 - c. Both, either living or deceased

TEACHER MASTER

Organ, Eye, and Tissue Donation Quiz

- List six organs that can be used in transplants.
 - Heart**
 - Liver**
 - Lungs**
 - Kidneys**
 - Intestine**
 - Pancreas**
- List three tissues that can be used in transplants.
 - Bones**
 - Corneas**
 - Tendons**
 - Heart valves**
 - Skin**
 - Veins**
- Name three organs and/or tissues which can be donated by a living donor.
 - Partial liver**
 - Partial lung**
 - One kidney**
 - Blood**
 - Bone marrow**
- Nationally, how many people die every week waiting for an organ transplant?
119 per week (or 17 per day)
- How many lives can be saved by a single organ donor? **8** By a single tissue donor? **125**
- The final decision about whether someone can be a donor and what they can donate is made by a medical professional...
 - Before death
 - After death**
- Which organ is in greatest demand?
Kidney
- How long does an organ transplant recipient have to take anti-rejection medicine?
Every day for the rest of their lives
- Name one way to register as a donor:
DMV, paper form, smart phone, or online (donatelifenw.org; GoRecycleYourself.com; RegisterMe.org)
- Kidney donors can be:
 - Living
 - Deceased
 - Both, either living or deceased**



NAME _____

Waiting List Statistics

Have students guess at statistics to complete the following chart. Navigate to [UNOS.org](https://unos.org) for real-time data:

ORGAN	MEDIAN NATIONAL WAITING TIME (MONTHS)		# OF PEOPLE IN OUR STATE WAITING	
	GUESS	ACTUAL	GUESS	ACTUAL
HEART				
LUNGS				
INTESTINE				
PANCREAS				
LIVER				
KIDNEY				

KINESTHETIC ACTIVITIES

TIME IS RUNNING OUT

Time Required: 2 minutes for instructions

Materials Needed: A kitchen timer, stop watch, or cell phone timer

Instructions: At the beginning of class time, assign one student to set the timer/clock for 10 minutes. When the timer goes off, they should draw a “stick person” on the board and reset the timer for another 9 minutes. They should continue this throughout the class time.

Curriculum Connection: This activity signifies how another person is added to the national organ transplant waiting list every 9 minutes.

Adapted from Donate Life Indiana

EVERY BREATH I TAKE

Time Required: 5 minutes

Materials Needed: Small straws or stir sticks

Instructions: Give a small straw/stir stick to each student. Have the students hold their nose and breathe through their straw for 15-20 seconds. This demonstrates what it's like to be waiting for a lung transplant and struggling for each breath. Ask your students to imagine what it would be like to wait this way, often needing to use an oxygen tank, for months.

Curriculum Connection: Discuss the impact smoking has on lung function and the increased risk of lung cancer and emphysema.

Adapted from Donate Life Indiana

VISION IMPAIRMENT

Time Required: 5 minutes

Materials Needed: Safety glasses, recycled frames, swimming goggles. Rough up lens with steel wool or cover with wax paper to simulate cataracts.

Instructions: Pass prepared eyeglasses around the classroom and have each student try them on.

Curriculum Connection: Discuss how someone with damaged corneas may feel when they receive a corneal transplant.

Adapted from Donate Life Indiana



IN-CLASS ACTIVITIES

SPEAKING & LISTENING

Applicable Common Core State Standards: CCSS.ELA-LITERACY.SL.9-12.1, 1.A, C, D, 2, 3, 4, 5

- Assign Health Careers students to create flash cards based on **Key Vocabulary**, found in each section of **Foundational** (pp.25-52) and **Advanced Readings** (pp. 53-90). Assess via an oral quiz.
- In small groups, ask students to examine fictional cases regarding donation, and justify their final recommendation for the patient in question.
 - Activity Prompt: **Case Studies*** (pp. 121-123)
- If inviting a guest speaker, have your students complete one of the following activities:
 - **Guest Speaker Summary** (pp. 124-125), plus **rubric** (p. 126)
 - **Go Recycle Yourself Crossword** (p. 127), plus **Teacher Master** (p. 128)
- If showing Oregon's "Your Decision to Donate" video, have students complete the following handout:
 - **"Your Decision to Donate" Video [OREGON]: Listening Comprehension** (pp. 129-130)
- In small groups, have students complete an activity about decision-making regarding registering as a donor.
 - Use **Decision Making: Definitions and Examples** (p. 131) to frame the conversation.
 - Have students complete the **Making a Decision about Donation** handout (p. 132) before discussing.
- Assign students, either individually or in groups, **Donation Scenarios** (p. 133) to discuss and debate organ allocation policies.
 - Worksheet: **Donation Debate Organizer** (p. 134)
 - **Scenario Outcomes Under Current Organ Allocation Policies** (pp. 135-136)

READING

Applicable Common Core State Standards: CCSS.ELA-LITERACY.RI.9-12.1, 2, 3, 4; RI.9-10.8, RI.9-10-7. CCSS.ELA-LITERACY.RST-9-12.1, 2, 6, 7, 9

- Have students read **Your Decision to Donate** (p. 137) to provide a brief overview of the topic.
- Distribute **Foundational** (pp. 25-52) and/or **Advanced Readings** (pp. 53-90) as packets. Assign students to respond to **Questions for Reading Comprehension**, either orally or in writing. All questions can be answered through close reading.
- Distribute **Recyclable Organs Worksheet*** (p. 138) to accompany **Advanced Readings**.
- Encourage students to visit websites on donation, including GoRecycleYourself.com.
 - Handout: **Top 10 Misconceptions About Donation*** (p. 139). Challenge students to debunk all myths.
 - See Appendix for **Most Commonly Asked Questions about Donation** (pp. 183-184).
 - The handout: **Addressing Misconceptions** (pp. 140-141) may be helpful to provide as well.
- Utilize UNOS.org to examine statistics in your state or across the nation. UNOS provides real-time data about the number of Americans on the waiting list, sortable by organ, gender, ethnicity, age, and so on. You can also view the number of transplants which have taken place, per organ, by either state or nationally.
 - **Donation in My State*** (p. 142)
 - **Donation Data*** (pp. 143-145)
 - Extend the conversation by using the **Kidneys in Crisis*** activity (p. 146). A **rubric** that can be used for the Kidneys in Crisis poster presentation can be found on page 147.

**Denotes activities that could be done in class or assigned as homework.*

- Visit the U.S. Office of Minority Health's website and look up "organ donation data". Assign students to take notes, comparing information regarding the following groups: Hispanic Americans, African Americans, Native Americans, Asian Americans, Pacific Islanders.
 - Students may benefit from the addition of the **Addressing Misconceptions** handout (pp. 140-141).
 - Extend the conversation by using the **Kidneys in Crisis*** activity (p. 146). A **rubric** that can be used for the Kidneys in Crisis poster presentation can be found on page 147.
- To combine a lesson on health and media literacy, have students locate three news stories and two film or television clips depicting donation. Have students discuss their reactions to the representations and identify inaccuracies.
- Have students read **What is Health Literacy** (p. 148) and respond to the accompanying questions (p. 149).
- Individually or in groups, have students read **Considering the Cost of a Transplant** (p. 150). Have students choose an organ to research the cost of the transplant and how a patient pays for these incurred costs. Then have students create a regional user's guide for those considering a transplant.*
 - A **rubric** that can be used for this assignment can be found on page 151.

WRITING

Applicable Common Core State Standards: CCSS.ELA-LITERACY.SL.9-12.1, 1.A, C, D, 2, 3, 4, 5;
CCSS.ELA-LITERACY.W.9-12.2.D

- Have students design an educational brochure or poster specific to organ, eye, and/or tissue donation, responding to the most common questions the public has about donation.*
 - A **rubric** that can be used for this assignment can be found on page 151.
- Have students create visual representations of the organ allocation process, illustrating the sequence of events in relation to the medical professionals involved.*
- A **Rubric for Assessing Written Assignments** can be used for many of these activities and can be found on page 152.

**Denotes activities that could be done in class or assigned as homework.*



Case Studies

Instructions for educators:

These fictional case studies can be used to launch small group discussion about various facets of donation awareness. Assign one case study per group. The questions which follow each scenario can be answered by distributing the **Foundational** (pp. 25-52) and/or **Advanced Reading** (pp. 53-90) chapters, or by directing students online for research (see **Online Resources**, p. 182).

After providing time for students to read and discuss their scenario, and research their responses, have students present their findings orally.

CASE STUDY 1: ORGAN DONATION

At 10 months old, Antwan was diagnosed with chronic kidney disease. By his first birthday, his right kidney was so damaged that it had to be removed. He spent the next 12 years of his life doing everything a healthy kid does. But at age 13 his left kidney began to fail and he was put on the list for a transplant. Three years later, at the age of 16, he received a kidney from an anonymous deceased donor.

Today, Antwan is grateful for the gift of restored health and to his anonymous donor.

1. Antwan was on the waiting list for a kidney for several years. What do you think would be the hardest part of being on the waiting list?
2. How can we help decrease the amount of time that people have to wait for their life-saving transplant?
3. Research the leading causes of kidney failure; list the two leading causes. How can people suffering from these conditions decrease their chance of experiencing kidney failure?

Adapted from Donate Life New Jersey

CASE STUDY 2: LIVING DONATION

It was summertime when a new friend offered Morgan the one thing she needed most: a kidney. Morgan met her friend Kelly during a break between classes at Oregon State University. As they grew to be close friends, the 24-year-old Kelly learned that Morgan, at age 23, was suffering from a life-threatening condition called polycystic kidney disease, requiring a strict diet and medication regimen. Her schedule of lengthy hemodialysis treatments were so exhausting that even taking just one class per term was a challenge. When she heard that none of Morgan's immediate family members were suitable kidney donors, Kelly offered her friend the ultimate gift. After extensive testing at a transplant center, Kelly was able to donate a kidney to Morgan.

1. Why did Morgan need a kidney transplant?
2. What other living transplants can you give or receive?
3. Morgan received a living kidney transplant. Research the difference between a living kidney transplant and a deceased kidney transplant. How are these types of transplantation different?

Adapted from Donate Life New Jersey

CASE STUDY 3: ORGAN DONATION

Ryan didn't feel any different that December. A junior at Monroe High School and an avid soccer player, he was playing in an outdoor soccer tournament when he came home with a bad cold that turned into bronchitis. The doctor recommended a few days of rest. However, Ryan's conditions got worse and he was admitted to the hospital, where he was diagnosed with cardiomyopathy.

The plan was to put him on medication to improve his heart function and implant a defibrillator as added protection. Unfortunately, when the defibrillator was implanted, Ryan's heart was too weak to handle it and he went into cardiac arrest. Ryan's only option was to be put on the transplant list. Two months later Ryan and his family received word that a donor heart had been located and was a match. Ryan received his heart transplant and was out of the hospital within a few weeks.

1. Why do people need heart transplants? Perform research to define the causes and symptoms of cardiomyopathy, and identify two other conditions which result in needing a heart transplant. Prepare to talk about the causes of these conditions.
2. Ryan was put on the transplant list after he went into cardiac arrest. Perform research to describe the criteria used to determine and prioritize the allocation of donated organs in the United States.

Adapted from Donate Life New Jersey

CASE STUDY 4: TISSUE DONATION

When Kate was four, her family doctor discovered that she had an aortic deficiency. Growing up, she always knew that she would one day need surgery. After her 22nd birthday, she was told that she would need her aortic valve replaced. Her cardiologist determined that a human aortic valve replacement, rather than a mechanical valve, would be her best option, because a mechanical valve would require her to take medications for the rest of her life – medications that would make it challenging for her to have children, should she want to in the future.

1. Why, in Kate's case, was a human tissue graft a better option than a mechanical valve? Research the differences between autografts, allografts, and xenografts.
2. Tissue can be used to either save or enhance lives. Explain two ways tissue saves lives, and explain four ways tissue can enhance lives by restoring mobility and independence.

Adapted from fiftylives.org

CASE STUDY 5: CORNEA DONATION

At the age of three, Scott's mother left the room – and it was just enough time for the curious toddler to strike himself in the eye with a sharp dinner utensil, piercing the cornea. Scott was rushed to the hospital, but the damage was extensive. Scott lived the first ten years of his life blind in his left eye. When Scott turned 11, his doctor recommended him for a corneal transplant surgery. After surgery, Scott's vision returned, thanks to the gift of an anonymous donor.

1. Why did Scott need a donated cornea? Identify three common reasons for which people require corneal transplants.
2. Could someone who has undergone LASIK surgery or developed cataracts be a cornea donor? Why or why not?



CASE STUDY 6: HEALTH LITERACY

Rocio is a loving mother of four and a native Spanish speaker. She is also diabetic. After a few months of feeling particularly tired and nauseous, she went to see a doctor for a check-up and learned that she was now suffering from a “silent” disease: chronic kidney disease. Over time, her kidney function began to rapidly decline and she was faced with a decision: whether to opt for dialysis, transplant, or no treatment at all.

After being placed on the transplant waiting list, Rocio chose to undergo hemodialysis treatment while waiting for a deceased donor. She had heard a little bit about living kidney donors in the news, but she did not want to ask anyone in her family to donate a kidney – she had heard terrible rumors that it would hurt the donor. Her local hospital offered a brochure about living kidney donation in Spanish, but it did not alleviate her fears and she was too shy to ask more detailed questions. After six years of undergoing dialysis treatment and hoping for a match with a deceased kidney donor, Rocio passed away.

1. Why did Rocio need a kidney transplant? Why, as a Hispanic American, was she at a disproportionately high risk for kidney failure?
2. What obstacles made it difficult for Rocio to receive information about living kidney donation?
3. What ideas do you have that might have helped her to overcome these obstacles?

CASE STUDY 7: REGISTERING AS A DONOR

Nick had always loved biking. One day, when he was 19 years old and on his way to class at the local university, a car struck him as he was crossing an intersection on his bike. He was not wearing a bike helmet. Nick’s injuries were very severe.

His parents rushed to the hospital to find that Nick had been placed on a mechanical ventilator. Tragically, Nick’s brain had begun to swell so much that all oxygen and blood circulation to his brain were cut off. This resulted in his death.

After Nick’s death, his vital organs remained functional due to the mechanical ventilator. A small team of organ recovery professionals, trained in grieving and trauma, approached the family with the option of donating Nick’s organs to save the lives of strangers on the waiting list. They had checked the Oregon Donor Registry, but Nick’s name had not appeared as a registered donor. Furthermore, Nick and his parents had never spoken about donation, so his parents were not sure what he would have wanted.

1. Why is it critical to talk to your family about donation, regardless of whether or not you register as a donor?
2. Because Nick was 19 and not indicated his decision about donation, his parents were faced with a difficult choice. Why might they say no? Why might they say yes?

NAME _____

DATE _____

Guest Speaker Summary

Name and professional title of speaker:

My questions:

I agree with:

I disagree with:

I was surprised that:

On the back of this sheet, write a 5-6 sentence paragraph summarizing the key points of today's presentation.

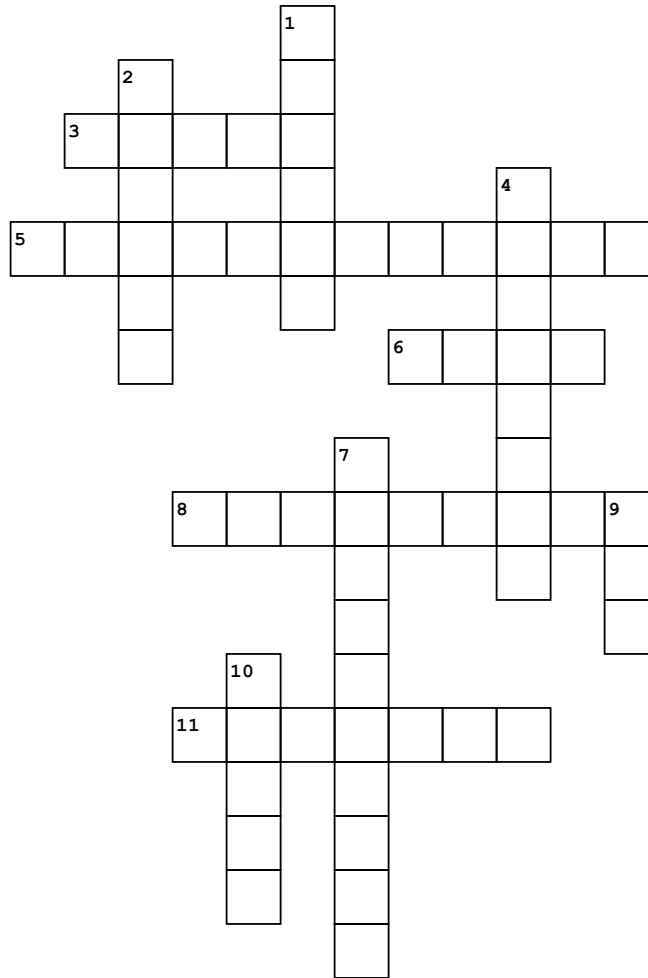
Rubric for Evaluating Student Guest Speaker Summaries & Listening Behaviors

	LISTENING BEHAVIORS	NOTE TAKING	QUESTIONS
EXCEEDS STANDARD	<p>Student consistently minimizes/avoids behaviors that interfere with their listening.</p> <p>Student consistently attends to speaker.</p>	<p>Notes consistently demonstrate their ability to identify main ideas.</p> <p>Consistently demonstrate their ability to supply several supportive details for each main idea.</p> <p>Student's notes consistently demonstrate their ability to provide a meaningful record of information presented.</p>	<p>At least 3 questions are based on opinions, judgments or inferences made by the student rather than upon information explicitly presented.</p> <p>Questions are intended to add new information about the facts rather than just repeat facts already presented.</p>
MEETS STANDARD	<p>Student usually minimizes/avoids behaviors that interfere with their listening.</p> <p>Student usually attends to speaker.</p>	<p>Notes usually demonstrate their ability to identify main ideas.</p> <p>Usually demonstrate their ability to supply several supportive details for each main idea.</p> <p>Student's notes usually demonstrate their ability to provide a meaningful record of information presented.</p>	<p>At least 2 questions are based on opinions, judgments or inferences made by the student rather than upon information explicitly presented.</p> <p>Questions are intended to add new information about the facts rather than just repeat facts already presented.</p>
BELOW STANDARD	<p>Student seldom or never minimizes/avoids behaviors that interfere with their listening.</p> <p>Student seldom or never attends to speaker.</p>	<p>Notes seldom or never demonstrate their ability to identify main ideas.</p> <p>Seldom or never demonstrates their ability to supply several supportive details for each main idea.</p> <p>Student's notes seldom or never demonstrate their ability to provide a meaningful record of information presented.</p>	<p>No questions are based on opinions, judgments, or inferences made by the student rather than upon information explicitly presented.</p> <p>Student is unable to ask questions intended to add new information; too much information is missing or inaccurate notes.</p>



NAME _____

Go Recycle Yourself Crossword



Across

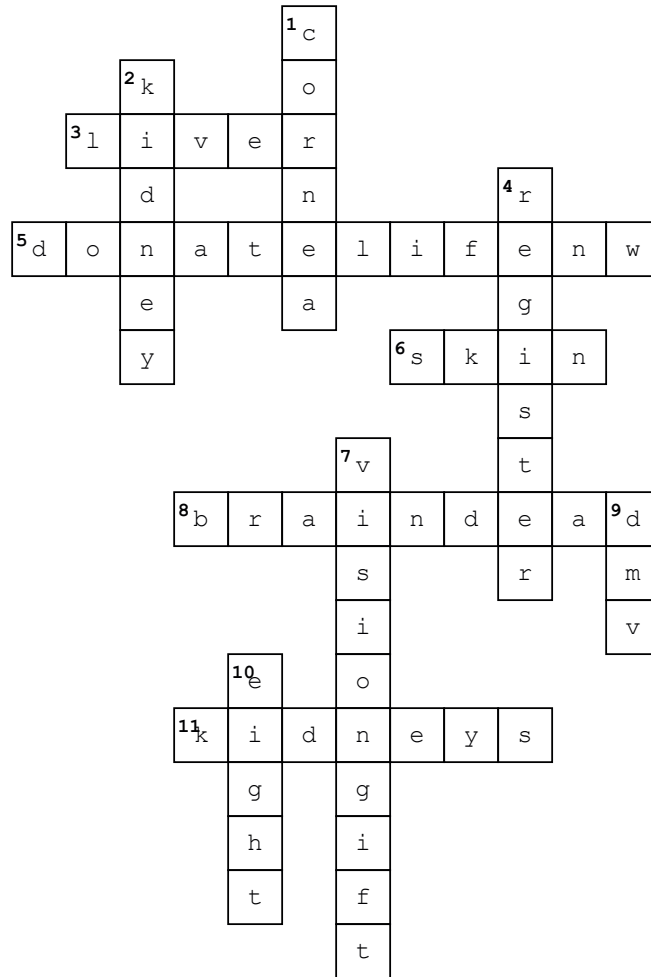
2. You can donate a portion of your _____ while still alive and it will grow back!
5. Where can you get resources about organ, eye, and tissue donation?
6. A burn victim might need _____ from a tissue donor.
8. After someone is declared _____ _____ and meets the criteria to become a donor, the registry is checked.
11. Most people have two _____ and can donate one while they are still alive to anyone who matches their blood and tissue type.

Down

1. What part of the eye can be donated?
2. For which organ are most people waiting?
4. You can go to GoRecycleYourself.com to learn more and _____ to be an organ donor.
7. What is the name of the cornea bank for our region?
9. Where can you register while getting your driver's permit, license, or state ID?
10. One organ donor can save up to _____ lives.

TEACHER MASTER

Go Recycle Yourself Crossword



Across

- 2. You can donate a portion of your LIVER while still alive and it will grow back!
- 5. Where can you get resources about organ, eye, and tissue donation? DONATE LIFE NW
- 6. A burn victim might need SKIN from a tissue donor.
- 8. After someone is declared BRAIN DEAD and meets the criteria to become a donor, the registry is checked.
- 11. Most people have two KIDNEYS and can donate one while they are still alive to anyone who matches their blood and tissue type.

Down

- 1. What part of the eye can be donated? CORNEA
- 2. For which organ are most people waiting? KIDNEY
- 4. You can go to GoRecycleYourself.com to learn more and REGISTER to be an organ donor.
- 7. What is the name of the cornea bank for our region? VISIONGIFT
- 9. Where can you register while getting your driver's permit, license, or state ID? DMV
- 10. One organ donor can save up to EIGHT lives.



NAME _____

"Your Decision to Donate" Video [Oregon]: Listening Comprehension

1. What is an organ transplant?
2. How many Oregonians are already registered organ and tissue donors?
3. How old was Sara when she received her second liver transplant?
4. How old do you have to be to register as a donor?
5. Name three ways you can register as a donor:
6. What is dialysis?
7. How did Janine's tissue transplant help her?
8. What is brain death?
9. What causes brain death?
10. If you do not make a decision about donation, whose responsibility will it be to make the decision, should the worst happen?

Turn this piece of paper over and write a short paragraph describing your beliefs about organ, eye and tissue donation. Provide two specific examples to justify your position. Then, explain why you agree or disagree with the concept of registering as an organ, eye and tissue donor.



Decision Making: Definitions and Examples

1. Decision Making = the cognitive process of making a choice or decision
 - Options = choice among alternatives
 - Having too many options makes me feel...
 - Having few options makes me feel...
 2. Goal Conflicts = when two goals get in the way of succeeding
 - Afterschool job versus joining a club or sports team
 - Your goals versus those of your family or friends
 - Give an example
 3. Value Conflicts = when two or more values clash; e.g., when what you want and what is right conflict
 - Honesty versus loyalty
 4. Role Conflict = when you play different roles in different systems
 - Social system roles
 - Family system roles
 - Educational system roles
 5. Types of Decisions
 - Social decision:
 - Economic decision:
 - Emotional decision:
 - Others?
 6. Time
 - Society and cultures experience time differently
 - Delayed gratification – not looking for immediate satisfaction
 7. Weighing Risks = costs must be weighed against the benefits which you anticipate
 - Benefit ratio
 - Risk analysis
 8. Accepting Responsibility = whether positive or negative, one must process the information and accept outcomes as a mature adult.
 - Why do people make excuses?
 9. Procrastination = putting things off
 - Why do people procrastinate?
- SOME DECISIONS RELATED TO ORGAN, EYE AND TISSUE DONATION**
- Should I register as a donor or not?
 - Should I tell my family whether I want to be an organ and tissue donor or not?
 - How will I bring up this conversation with my family? Will it be easy or difficult?
 - Should I talk to my faith leader about donation?
 - I am in need of an organ transplant. Should I accept an organ from a deceased donor?

NAME _____

Making a Decision about Donation

Answering the questions below will help you consider organ and tissue donation. Use the back of this paper if needed to write out your thoughts.

1. What are your options in terms of registering as a donor?

2. Does the idea of donating organs and/or tissues after you pass away conflict with or complement your personal values? Why or why not?

3. If you needed an organ transplant in order to live, do you think organ donation would conflict with or complement your values?

4. Who would be impacted by your decision to donate or not to donate?

5. Are there any risks to registering? What, if any, are they?
 - a. Where did you hear about this risk? Can you verify that your concerns are based in fact?

6. Is time a factor in whether or not to register? In other words, does it matter if you register today, or ten years from today?

7. How do you register as a donor in your state?
 - a. Are there any barriers or challenges which make it difficult to register as a donor in your state?

8. My next course of action:



Donation Scenarios

1. Michael, a 23-year-old male, is serving the third year of a 20-year jail sentence for three armed robberies and needs a lung transplant. Michael has been on the waiting list for 4 years. Roberta, a 30-year-old teacher and mother of four, also needs a lung transplant and has been on the waiting list for 2 years. An organ procurement organization (OPO) has identified a lung that matches both Michael and Roberta. Michael and Roberta are equally ill. Who do you believe most probably would receive the organ in this situation?
2. Carmella, a 45-year-old billionaire CEO of a software company, recently discovered she needs a heart transplant. She has offered an organ procurement organization \$30 million if she receives a heart transplant immediately. Martha, a 33-year-old-receptionist, also needs a heart transplant and has been on the waiting list for one year. The OPO has just identified a heart matching both Carmella and Martha. Martha is sicker than Carmella. Who do you think most probably would receive the organ in this situation?
3. Sophia, a 73-year-old retired nurse who needs a kidney transplant, has been on a waiting list for a kidney for two years. Navid, a 21-year-old college student, also needs a kidney transplant and has also been on the waiting list for two years. An organ procurement organization has just identified a kidney matching both Sophia and David. Sophia and Navid are equally ill. Who do you think most probably would receive the organ in this situation?
4. Preston is a 35-year-old male living with human immunodeficiency virus (HIV). Can he be placed on the waiting list to receive a liver for transplantation?
5. Kevin, a three-time scoring champion and recent Most Valuable Player of the National Basketball Association who is 29 years old, has recently been diagnosed with a pancreatic disorder and placed on a waiting list for an organ transplant. Jason, a 31-year-old security guard, has a similar pancreatic disorder and has been on the waiting list for three years. An organ procurement organization has just identified a pancreas matching both Kevin and Jason. Kevin and Jason are equally ill. Who do you think most probably would receive the organ in this situation?

NAME _____

Donation Debate Organizer

Scenario # _____

Position/Person Assigned _____

Three reasons we/I support this position:

1.

2.

3.

People who disagree with this position would probably argue these three points:

1.

2.

3.

We/I would respond to their three points by arguing:

1.

2.

3.



Scenario Outcomes Under Current Organ Allocation Policies

Note to educators: you can find White Papers regarding bioethics and organ allocation policies on the following OPTN websites: optn.transplant.hrsa.gov/professionals/by-topic/ethical-considerations/ and optn.transplant.hrsa.gov/governance/policies/

1. 23-year-old male prisoner and 30-year-old female teacher and mother

In 1976, the Supreme Court ruled that States cannot bar prisoners from access to health care, which would include organ transplants, without violating the Eighth Amendment (“Excessive bail shall not be required, nor excessive fines imposed, nor cruel and unusual punishments inflicted”). The OPTN UNOS Ethics Committee has stated “Convicted criminals have been sentenced only to a specific punishment, and have not been sentenced by society to an additional punishment of an inability to receive consideration for medical services.” Thus, while both patients are equally ill, Michael, the 23-year-old prisoner would most likely receive the organ over Roberta because he has been on the waiting list longer.

2. Billionaire offers \$30 million for preferential treatment

The National Organ Transplant Act of 1984 made it illegal to buy or sell human organs. Although the \$30 million would be going to a good cause, the money cannot be accepted in return for preferential treatment. Martha is sicker and has been on the waiting list longer and would most likely receive the organ.

3. 73-year-old and 21-year-old both need a kidney

According to UNOS, the process of kidney allocation begins based on the characteristics of the donated kidney. The decision of who should get the donated organ would be resolved by following OPTN allocation policies that provide a formula to weigh all characteristics, such as time on the waiting list, medical condition of both potential recipients, and geographic proximity to the donor. The OPTN Kidney Transplantation Committee has recommended adjusting the current kidney allocation policy in order to maximize the potential survival of every transplanted kidney. By more accurately attempting to match the characteristics of a donor’s kidney to the candidate’s characteristics, it is expected that post-transplant survival rates will be maximized. There is no clear recipient in this scenario because the medical characteristics of the donated kidney have not been revealed.

4. 35-year-old living with HIV

The OPTN/UNOS Ethics Committee has stated that “transplantation should be carefully considered if the candidate’s reasonable life expectancy is significantly shorter than the reasonably expected ‘life span’ of the transplanted organ.” Advances in medicine and treatment mean that HIV is no longer considered a fatal disease, but rather a chronic condition that can be controlled with medications and healthy choices. If Preston’s physicians believe he is a good candidate to receive a liver transplant, he can be listed. Additionally, the HIV Organ Policy Equity (HOPE) Act of 2013 addresses the right of HIV patients to obtain donated organs and tissues. The HOPE Act permits donated, HIV-positive organs to be used for transplantation in HIV-positive patients, a medical procedure formerly prohibited by federal law.

5. NBA basketball star needs a pancreas transplant

According to United Network for Organ Sharing, “Factors such as race, gender, age, income, or celebrity status are never considered when determine who receives an organ.” According to this reasoning, a professional athlete, who has celebrity status, should not be given preferential treatment in this scenario. The organ would be allocated according to the OPTN allocation polices, which in this scenario, would likely go to Jason, as he has been on the waiting list longer.



Your Decision to Donate

When you receive your license or permit, you will be asked if you want to be an anatomical donor. What does it mean to be a registered donor?

WHY REGISTER?

As of January 2024, There are nearly 104,000 patients on the national organ transplant waiting list, each one reliant on the compassion and generosity of another for a life-saving gift of organ donation from a deceased donor. While many will be transplanted, there are some who sadly will not. 119 people die every week while waiting for an organ transplant. Current statistics can be found at optn.transplant.hrsa.gov/

SHOULD THE UNTHINKABLE HAPPEN...

Registering as a donor indicates that you wish to donate any viable organs or tissues which could save someone else's life, or to restore a stranger's vision or mobility, through transplantation after you pass away. When individuals document this decision by registering – whether at the DMV or directly on their state's confidential, online registry – their family can take comfort in knowing their loved one's wishes. One organ donor can save up to eight lives and one tissue donor can help up to 125 people!

Learn more by watching educational videos on YouTube.com/@GoRecycleYourself

[YOUR DECISION TO DONATE](#)

Oregon Donor Registry

[IT'S YOUR CHOICE](#)

Washington Donor Registry



Registering as a donor does not necessarily mean you will become a donor after you pass away. In fact, less than 1 percent of the American population die under the specific, and rare, medical circumstances necessary to support organ donation. This video explains why:

[DONATION AND TRANSPLANTATION: HOW DOES IT WORK?](#)

U.S. Department of Health and Human Service

TALK TO YOUR FAMILY

If you are under the age of 18, donation never occurs without parental/guardian authorization. This is why it is important to talk to your family about your decision – whether or not you wish to be a donor, you and your family should know what everyone's wishes are. Do you know what your loved ones think about organ and tissue donation?

If you wish to document your decision to be an organ and tissue donor, you can elect to have your driver's permit/license coded at the DMV, or register directly on your state's online registry (see below). You do not need parental permission to register.



More information about your state's registry and donation:

National GoRecycleYourself.com or RegisterMe.org

Washington Donor Registry Lcnw.org

NAME: _____

DATE: _____

Recyclable Organs

Read **Advanced Readings** (pp. 53-90) closely to identify and describe, *in your own words*, common diseases that may lead to the need for an organ transplant.

THE HEART

Describe coronary heart disease.

Causes:

Describe cardiomyopathy.

Causes:

THE LUNGS

Describe cystic fibrosis.

Causes:

THE LIVER

Describe non-alcoholic fatty liver disease.

Causes:

Describe hepatitis.

Causes:

THE KIDNEYS/THE PANCREAS

Describe hypertension.

Causes:

Describe diabetes.

Causes:

THE INTESTINE

Explain why a baby born with defects in the intestine may need a transplant.



NAME: _____

Top 10 Misconceptions about Donation

These are the most prevalent myths regarding organ, eye and tissue donation (in no particular order). Find reliable sources to debunk all of these myths.

MYTH: If I'm in an accident and the hospital knows I want to be a donor, the doctors won't try to save my life.

FACT: _____

MYTH: Rich and famous people get moved to the top of the waiting list, while 'regular' people have to wait a long time for a transplant.

FACT: _____

MYTH: My religion does not approve of donation.

FACT: _____

MYTH: My family would be burdened with expenses if I donated my organs.

FACT: _____

MYTH: If I donate, the recipient and/or the recipient's family would discover my identity and contact my family, causing them more grief.

FACT: _____

MYTH: I have a history of medical illness. You wouldn't want my organs or tissues.

FACT: _____

MYTH: I'm too old to be a donor.

FACT: _____

MYTH: I signed up to be a donor. That's all I have to do.

FACT: _____

MYTH: Organ and tissue donation means my body will be disfigured and I won't be able to have a normal funeral.

FACT: _____

MYTH: There is a black market for kidneys in the United States - if you need one, you can just buy one.

FACT: _____

Addressing Misconceptions

Data from January 2024. Current donation statistics can be found at optn.transplant.hrsa.gov/.

WHY IS IT IMPORTANT FOR MINORITIES TO BECOME DONORS?

- Ethnic minorities are in desperate need of more organ and tissue donors.
- There are more than 62,000 minority individuals currently listed on the U.S. organ transplant waiting list. This number includes African Americans, Asian Americans, Hispanic Americans, American Indians, Pacific Islanders Americans and people of multiracial descent.
- Minorities comprise 60 percent of individuals on the national organ transplant waiting list and 30 percent of living and deceased organ donors, while making up 40 percent of the U.S. population.
- Many of the conditions leading to the need for a transplant - such as diabetes and hypertension - occur with greater frequency among minority populations.
- Tragically, every 9 minutes another patient is added to the waiting list and 17 people die each day due to lack of organ donors.

WHAT PREVENTS SOME MINORITIES FROM REGISTERING AS DONORS?

- Many communities of color lack accurate information or information in their native language on organ, eye, and tissue donation.
- Most are not aware of the large number of minorities who are waiting for transplants.
- In many communities of color there is a lack of access to adequate health care as well as a mistrust of the medical and healthcare system.
- Some are afraid that they will not receive the best medical treatment in a life-threatening emergency if they were a known organ donor. Often there is historical mistrust on the part of minorities of medical establishments and institutions.

DOES THE CHURCH SUPPORT ORGAN, EYE, AND TISSUE DONATION?

- Every major religion in the United States supports organ, eye, and tissue donation as one of the highest expressions of compassion and generosity.

IS THERE A GREATER NEED FOR ANY PARTICULAR ORGAN AMONG MINORITIES?

- Yes. Kidneys are at the top of the list. While 40 percent of the U.S. population is comprised of ethnic minorities, approximately 64 percent of those waiting for kidney transplants are minorities.
- Currently, nearly 60,000 minority individuals are waiting for kidney transplants. For these patients, the lack of available organs means longer waiting periods on transplant lists, more time spent on dialysis, and sometimes death.



WHY IS THE NEED FOR KIDNEYS SO HIGH AMONG MINORITIES?

- Minorities are disproportionately affected by illnesses that can lead to end-stage renal disease and the need for dialysis or a kidney transplant due to systemic racism and the social determinants of health. These diseases include high blood pressure [hypertension] and diabetes.

IS IT TRUE THAT RICH PEOPLE AND CELEBRITIES GET PREFERENTIAL TREATMENT WHEN IT COMES TO GETTING A DONOR ORGAN?

- No. When you are on the transplant waiting list for a donor organ, what really counts is the severity of your illness, time spent waiting, blood type, and other important medical information.
- One's celebrity status does not play a part in the decision. The transplant waiting list is "blind" to ethnicity, gender, and connections.
- When a celebrity needs an organ, it tends to get more attention from the media, so it may seem like they are getting special consideration. However, they have been placed on the waiting list like everyone else.

WHAT ARE THE BENEFITS OF BEING AN ORGAN, EYE, AND TISSUE DONOR?

- Successful transplants are more likely with high match between blood and tissue type. A greater diversity in the donor pool helps create conditions for more successful matches.
- Knowing that you have the power to give someone else a chance to live a healthy productive life is the greatest gift of all.
- A single donor can save or heal the lives of more than 125 people.
- Donation is a consolation to the donor family knowing that their loved one helped to save and heal the lives of others.

HOW CAN I BECOME AN ORGAN, EYE, AND TISSUE DONOR?

- Sign up in your state donor registry. Visit GoRecycleYourself.com.
- It is important to tell your family members that you have decided to become a donor so that they will understand and support your decision.

WHAT CAN I DO TO INCREASE ORGAN, EYE, AND TISSUE DONATION IN MY COMMUNITY?

- Tell family and friends about your decision to donate life. Ask them to get the facts, and consider registering as a donor.
- Go to donatelifenw.org for tools to educate and inspire members of your local community about the lifesaving gift of organ, eye, and tissue donation.

Donation in My State

Using data pulled from unos.org/data/ create and present reports according to your state's current data on organ donation, transplant and waiting list. Use a spreadsheet to create numeric and visual reports showing:

DONORS

- Number of deceased donors last year
- Number of living donors last year

TRANSPLANTS

- Number of transplants made possible thanks to deceased donors last year
- Number of transplants made possible thanks to living donors last year

THE WAITING LIST

- Number of people waiting for organ transplants/kind of organ needed
- Age, gender, and ethnicity of people waiting for transplants

PERCENTAGES

Use data from census.gov as needed

- Total population
- % of overall population who became organ donors
- % of overall population who became living kidney donors

CHALLENGE! FIND THE ANSWERS TO THE FOLLOWING:

- What state has the highest need for organ transplants? Which state has the lowest need?
- What organ is in highest need? Lowest?
- Do you notice any trends regarding age, gender or ethnicity?



NAME _____

Donation Data

For this activity, you will use data from the United Network of Organ Sharing (unos.org/data) to find and analyze real-time data about individuals waiting for an organ transplant.

Under OPTN data & reports, select National data or State data.

NATIONAL DATA

The number of people waiting for organ transplants in the United States:

OVERALL BY ORGAN

ALL ORGANS	KIDNEY	LIVER	PANCREAS	HEART	LUNG	INTESTINE

ORGAN BY AGE

	KIDNEY	LIVER	HEART	LUNG
UNDER 5 YEARS OLD				
6-17 YEARS OLD				
18-49 YEARS OLD				
50+ YEARS OLD				

ORGAN BY ETHNICITY

	KIDNEY	LIVER	HEART	LUNG
CAUCASIAN				
AFRICAN AMERICAN				
HISPANIC AMERICAN				
ASIAN AMERICAN				
NATIVE AMERICAN				
PACIFIC ISLANDER				
MULTIRACIAL				

ORGAN BY GENDER

	KIDNEY	LIVER	HEART	LUNG
MALE				
FEMALE				

STATE DATA

Select your state* to find the following data:

OVERALL BY ORGAN

ALL ORGANS	KIDNEY	LIVER	PANCREAS	HEART	LUNG	INTESTINE

ORGAN BY AGE

	KIDNEY	LIVER	HEART	LUNG
UNDER 5 YEARS OLD				
6-17 YEARS OLD				
18-49 YEARS OLD				
50+ YEARS OLD				

ORGAN BY ETHNICITY

	KIDNEY	LIVER	HEART	LUNG
CAUCASIAN				
AFRICAN AMERICAN				
HISPANIC AMERICAN				
ASIAN AMERICAN				
NATIVE AMERICAN				
PACIFIC ISLANDER				
MULTIRACIAL				

ORGAN BY GENDER

	KIDNEY	LIVER	HEART	LUNG
MALE				
FEMALE				

*Not all kinds of transplants can be performed in every state. This is why, for example, Oregonians in need of a lung transplant do not appear – the closest lung transplant centers are located in Washington and California. The same is true for some kinds of pediatric transplants.



ANALYZING THE DATA

What trends or patterns did you notice regarding the following?

Organ in highest need:

Age and transplant:

Ethnicity and transplant:

Gender and transplant:

CONCLUSION

Write an essay to explain visible trends in organ transplants both nationally and in your state. Select impactful statistics to illustrate the issue clearly to a general audience. Then, write a short “elevator speech,” crafting a 30-second persuasive speech regarding donation.

NAME _____

Kidneys in Crisis

Over 80 percent of Americans waiting for an organ donation need a kidney transplant.

1. Why is this? What are the leading causes of kidney failure, which in turn lead to the need for a lifesaving transplant?

2. What groups are most at risk in terms of ethnicity, gender, and age? Why?

3. What, if anything, can be done to prevent the need for a kidney transplant?

Use online educational resources to develop a poster presentation answering these critical healthcare questions above.

Identify at least three online resources specific to kidneys. Write one to two sentences explaining what the resource is and why it is credible.

1.

2.

3.



Rubric for Poster Presentation

	COVERAGE OF ASSIGNED TOPIC	USE OF GRAPHICS	ORGANIZATION	LAYOUT AND DESIGN	SOURCES	MECHANICS	PRESENTATION
EXCEEDS STANDARD	Details on the poster capture important information about topic and increase the audience's understanding.	Graphics are related to the topic and make it easier to understand.	Information is very organized with clear titles and subheadings.	All information on the poster is in focus and can be easily viewed from a distance.	All sources are accurately documented.	No grammatical, spelling or punctuation errors.	Appropriate length. Not hurried or too slow. Clear diction and eye contact with audience.
MEETS STANDARD	Details on the poster include important information but audience needs more information.	Graphics are related to the topic.	Information is very organized.	Most information is in focus and can be easily viewed from close up.	All sources are documented, but information is incomplete or not in the correct format.	Some grammatical, spelling or punctuation errors.	Appropriate length, but speaker was sometimes unclear or avoided eye contact.
BELOW STANDARD	Details have little or nothing to do with topic.	Graphics are not related to the topic.	Information is disorganized.	All information on the poster is unclear or too small.	Sources are not accurately documented.	Many grammatical, spelling and punctuation errors.	Too long or too short. Speaker spoke unclearly and established little eye contact.

What is Health Literacy?

The Centers for Disease Control and Prevention (CDC) define health literacy as the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others (2020).

WHY DOES HEALTH LITERACY MATTER?

Every day, people confront situations that involve life-changing decisions about their health. But upon what do they base their decisions? While it is essential for Americans to first obtain correct information about health decisions, research shows that this is not enough. 90 percent of adults have difficulty using the health information available to them. Individuals with limited or low health literacy skills:

- Are more likely to skip preventative measures and tests, like flu shots.
- Are more likely to have chronic illness, but have less knowledge of how to manage it.
- Report a sense of shame or embarrassment about having low health literacy skills.
- Are more likely to be hospitalized or end up in the emergency room.

(Centers for Disease Control and Prevention, 2020).

HEALTH LITERACY AND DONATION

Organ, eye, and tissue donation provides an interesting portrait of health literacy in action. Studies indicate that fictional portrayals of organ donation on television are overwhelmingly negative, exacerbating myths about or misrepresenting the organ donation process (National Survey of Organ Donation Attitudes and Practices, 2019). The most common misconceptions about donation include:

- Doctors hope patients die so that they can use their organs for someone awaiting transplant.
- Doctors find organs for their patients.
- Organ recipients take on the characteristics of their donor.
- People with money or fame move up quickly on the waiting list.
- Organs are stolen from people and sold on the black market.

In 2019, the National Survey of Organ Donation Attitudes and Behavior revealed that the top three sources of information regarding organ donation were: news coverage, their Motor Vehicles Office, a discussion with a family member, and/or a discussion with a friend (U.S. Department of Health & Human Services, 2019).



QUESTIONS TO CONSIDER

1. Consider the definition of health literacy. Why might someone have a low level of health literacy? A high level?
2. Where do you get information about organ, eye and tissue donation? Where have your friends and/or family members gotten their information about organ, eye and tissue donation?
3. Does it surprise you to learn that fictional representations of donation are usually negative? Why do you think this is?
4. The 2009 study states that negative fictional representations impact the public's beliefs about organ donation and their willingness to register as a donor. Use what you have learned about donation to reflect on how high/low levels of health literacy may impact someone's beliefs about donation.

Considering the Cost of a Transplant

Mr. Smith of Burns, Oregon, had been diagnosed with a progressive liver condition that would eventually destroy his liver and end his life. In an attempt to deal with this outcome, Mr. and Mrs. Smith worked with two different doctors following the procedures that could lead to a transplant. Mr. and Mrs. Smith completed the transplant application procedure to be placed on the liver transplant list in Seattle, Washington, and San Francisco, California, and then waited. They waited for six years.

The call telling them that a liver was available came unexpectedly one evening. San Francisco had procured a liver! The call came just as Mrs. Smith had lost most of her hope for her husband's life. He had been hospitalized with liver disease complications for most of the last seven months. His life at home required 24 hour care as the toxins began to destroy his brain functions.

Mrs. Smith had the telephone numbers of every airline flying from Burns to San Francisco or Seattle via Portland taped on her wall by the telephone. She immediately began the process of calling every carrier to obtain two tickets to Portland, then on to San Francisco within the eight hour transplant time line.

Unfortunately, booking the flight became an impossible task. No flights to Portland were available. Desperate for airline transportation, Mrs. Smith contacted a private flight service. For a pre-payment of \$9,000, air transport could be secured. Knowing that her husband was acutely ill and closer to death than any other time in his life, Mrs. Smith agreed to the deal. She utilized her savings and three different credit cards to meet the \$9,000 price tag.

An ambulance transported Mr. and Mrs. Smith to the airport. The flight safely delivered them to Portland, where they boarded a plane for San Francisco. Once they had arrived in California, another ambulance whisked them to the hospital for the transplant procedure. The procedure was a complete medical success.

Mrs. Smith made the choice to stay with her husband in San Francisco during the six week transplantation follow-up and rehabilitation. This required great sacrifice on her part. Because Mrs. Smith was employed as a full time teacher, she first exhausted her sick leave for which she was paid. The next step was for her to apply for Family Medical Leave. She received approval for an unpaid leave of absence. Mrs. Smith would be available to help with her husband's recovery and rehabilitation, but she would not have an income. Her medical benefits remained intact and her job would be held open for her.

Mrs. Smith now had to negotiate a deal for herself with a hotel in San Francisco for the six week rehabilitation period. Her hotel stay, transportation to and from the hospital, and all other living expenses such as food had to be paid from her own pocket. Her children, who were at home, needed food. Her bills at home for phone, cable, heat, water, and even her house payment continued and needed to be paid.

Mrs. Smith had a tremendous financial burden, but she also had an increasingly healthy husband. Friends, neighbors, and relatives of Mr. and Mrs. Smith held a community benefit to raise funds to help with the living expenses. Mrs. Smith contends that the kindness, compassion, and generosity of others were necessary components of the healing process for her husband and herself.

Mr. Smith continues to recover his health and regain a positive approach to living. Mrs. Smith continues to be by his side. She says that "he had it in his head for so long that he was dying that he did not know how to live."

Adapted from U.S. Department of Health and Human Services



Rubric for Public Health Education Brochure/Booklet

NAME _____

BROCHURE TITLE _____

PURPOSE OF BROCHURE _____

	DESIGN	CONTENT	EFFECTIVE TOOL FOR TARGET AUDIENCE
EXCEEDS STANDARD	<p>Selected template or style is skillfully modified to engage a multicultural (age, gender, ethnicity, language) audience.</p> <p>Bars, boxes, spaces and color contribute to powerful visual design.</p> <p>Font size and style clear, emphasize information in an intentional way.</p> <p>Placement and use of graphics or objects powerfully supports information in brochure.</p>	<p>Effectively and clearly presents critical information.</p> <p>Images enhance impact of the information and engage a multicultural audience.</p>	<p>Informative and uniquely appeals to its target audience.</p> <p>Professional in quality, free of grammar, spelling, layout or printing errors.</p>
MEETS STANDARD	<p>Selected template or style interests a multicultural (age, gender, ethnicity, language) audience.</p> <p>Bars, boxes, spaces and color are effectively used.</p> <p>Font size and style clear, support importance of information.</p> <p>Placement and use of graphics or objects supports information in brochure.</p>	<p>Contains relevant information.</p> <p>Images support information and are placed in appropriate positions.</p>	<p>Informs the target audience.</p> <p>Grammatical, spelling, layout or print errors do not distract from information communicated in the brochure.</p>
BELOW STANDARD	<p>Selected template or style is inappropriate for audience.</p> <p>Bars, boxes, spaces and color distracting.</p> <p>Font size and style unclear or inappropriately sized, distract from information.</p> <p>Placement and use of graphics or objects distracts from information in brochure.</p>	<p>Information is confusing or loosely connected.</p> <p>Images do not relate effectively to content.</p>	<p>Leaves the target audience asking questions and needing additional information.</p> <p>Grammatical, spelling, layout or print errors distract from information communicated in the brochure.</p>

Rubric for Assessing Written Assignments

	SENTENCES & PARAGRAPHS	IDEAS	GRAMMAR & SPELLING	LENGTH	CAPITALIZATION & PUNCTUATION
EXCEEDS STANDARD	Sentences and paragraphs are complete, well-constructed and of varied structure.	Ideas were expressed in a clear and organized fashion.	Writer makes 1-2 errors in grammar and/or spelling.	The responses are at least 4-6 sentences long.	Writer makes no errors in capitalization and punctuation.
MEETS STANDARD	All sentences are complete and well-constructed (no fragments, no run-ons). Paragraphing is generally done well.	Ideas were expressed in a pretty clear manner, but the organization could have been better.	Writer makes 3-4 errors in grammar and/or spelling.	The responses are at least 2-3 sentences long.	Writer makes 3-4 errors in capitalization and punctuation.
BELOW STANDARD	Many sentence fragments or run-on sentences or paragraphing needs lots of work.	It was very difficult to figure out what the responses were trying to say.	Writer makes more than 4 errors in grammar and/or spelling.	The responses are too short.	Writer makes more than 4 errors in capitalization and punctuation.



EXTENSION ACTIVITIES & PROJECTS

TAKE HOME ASSIGNMENTS FOR WRITING, SPEAKING & LISTENING

Applicable Common Core State Standards: CCSS.ELA-LITERACY.W.9-12.1, 1.A, 1.B., 1.E, 10.2, 10.2.A, 10.2.D, 2.F, 6, 7, 8, 9, CCSS.ELA-LITERACY.SL.9-12.1, 1.A, C, D, 2, 3, 4, 5

- **Letter to Family** (p. 155). Students will articulate their decision about donation in writing, and discuss this decision with their family. Also available in **Spanish** (p. 156).
- **Beliefs about Donation** (p. 157). Students will interview a family member or guardian regarding their knowledge about donation. A class poll can reveal trends about local beliefs and attitudes.

MANY OF THE ASSIGNMENTS IN THE "IN-CLASS ACTIVITIES" SECTION CAN BE EASILY MADE TAKE HOME/EXTENSION ASSIGNMENTS.

- Distribute **Foundational** (pp. 25-52) and/or **Advanced Readings** (pp. 53-90) as packets. Assign students to respond to **Questions for Reading Comprehension**, either orally or in writing. All questions can be answered through close reading.
- Distribute **Recycleable Organs** worksheet (p. 138) to accompany **Advanced Readings** (pp. 53-90).
- Assign students select **Case Studies** (pp. 121-123) and have them answer the associated questions, backing up their answers with research from **Foundational** (pp. 25-52) and/or **Advanced Readings** (pp. 53-90) or using **Online Resources** (p. 182).
- Challenge students to do online research to debunk all myths on the **Top 10 Misconceptions About Donation handout** (p. 139)
- Utilize UNOS.org to examine statistics in your state or across the nation. UNOS provides real-time data about the number of Americans on the waiting list, sortable by organ, gender, ethnicity, age, and so on. You can also view the number of transplants which have taken place, per organ, either by state or nationally.
 - **Donation in My State** (p. 142)
 - **Donation Data** (pp. 143-145)
 - Extend the conversation by using the **Kidneys in Crisis** activity (p. 146). A **rubric** that can be used to assess the Kidneys in Crisis poster presentation can be found on page 147.
- Individually or in groups, have students read **Considering the Cost of a Transplant** (p. 150) Have students choose an organ and research the costs of the transplant and how a patient pays for these incurred costs. Then have students create a regional user's guide for those considering a transplant.
 - A **rubric** that can be used for this assignment can be found on page 151.
- Have students design an educational brochure or poster specific to organ, eye, and/or tissue donation, responding to the most common questions the public has about donation.
 - A **rubric** that can be used for this assignment can be found on page 151.
- Have students create visual representations of the organ allocation process, illustrating the sequence of events in relation to the medical professionals involved.
- A **Rubric for Assessing Written Assignments** can be used for many of these activities and can be found on page 152.

ACADEMIC PROJECTS

Applicable Common Core State Standards: CCSS.ELA-LITERACY.SL.9-12.1.C, 1.D, 2, 3; CCSS.ELA-LITERACY.RST.9-12.1, 2, 6, 7, 9; CCSS.ELA-LITERACY.W.9-12.7, 8, 9

- **Donation Research and Presentation** (p. 158). Students will choose an organ to research and present. Recommended for Health Careers and Science classrooms. Their peers can score them using the **rubric** provided on page 159.
- **The Power of a Story** (Journalism & Public Health Career Exploration) (pp. 160-161): Students will document the story of someone personally impacted by donation, and craft the story in a journalistic way so as to illustrate the importance of donation awareness. A **Journalism Writing Rubric** can be found on page 161.
- **Interviewing Donation & Transplantation Professionals** (p. 162): If you wish to connect students with local donation and transplantation professionals, please contact Donate Life Northwest to inquire about the availability of recovery organizations and transplant center professionals in regards to informational interviews. Recommended for Health Careers classrooms.

COMMUNITY SERVICE PROJECTS

Applicable Common Core State Standards: CCSS.ELA-LITERACY.RI.9-12.7; CCSS.ELA-LITERACY.SL.9-12.1.C, 1.D., 2, 3, 4, 5

- **Organize a Donor Drive** (p. 163)
- **Campus Service Project Ideas** (p. 164)
- **Community Service Project Ideas** (p. 165)
- **Volunteer with Donate Life** (p. 166)



NAME: _____

DATE: _____

Letter to Family

Dear Parent or Guardian:

During _____ class, I learned facts about organ, eye and tissue donation and transplantation. An important part of the lesson was the need for me to share my decision about donation with you. In the event of a tragedy, as members of my immediate family, you may be asked for authorization to donate my organs and tissues.

_____ Yes, I want to be an organ, eye, and tissue donor. I plan to, or have already, registered as a donor.

_____ No, I do not want to be an organ, eye and tissue donor.

_____ I am undecided about donation at this time.

These are the reasons for my decision:

I'd also like to know how you feel about this subject and to talk with you about your wishes.

Student signature _____

Parent/Guardian signature _____

For information on organ, eye and tissue donation and to register online: GoRecycleYourself.com

NOMBRE: _____

FECHA: _____

Carta para mi Familia

Queridos padres o guardianes:

Durante la clase de _____, aprendí información sobre la donación de órganos, ojos y tejidos. Es muy importante que comparta mi decisión acerca de la donación con ustedes. En caso de una tragedia, como miembros de mi familia, se les podría pedir permiso para donar mis órganos ojos y tejidos.

_____ Sí, quiero ser un donante de órganos, ojos y tejidos, si posible, después de que haya fallecido. Penso, inscribirme o ya estoy inscrito como donante.

_____ No quiero donar mis órganos, ojos o tejidos después de mi fallecimiento.

_____ Estoy indeciso sobre la donación en este momento.

Estas son las razones por mi decisión:

También quiero saber cómo sienten acerca de este tema y hablar con ustedes acerca de sus deseos.

Firma del Estudiante _____

Firma de uno de tus padres o guardianes _____

Para aprender más e inscribirse en línea: DoneVida.org



NAME: _____ DATE: _____

Beliefs about Donation

Interview a family member or guardian regarding their knowledge and opinions about donation.

1. Does anyone in your family know someone who is currently waiting for or has received a lifesaving organ transplant?
 - Yes, we know someone waiting. Which organ(s)? _____
 - Yes, we know someone who has received. Which organ(s)? _____
 - No.
2. Does anyone in your family know someone who became an organ and/or tissue donor after their death?
 - Yes. If yes, do you know which organ(s) and/or tissue(s) they donated?
 - No.
 - Don't know.
3. If you or someone in your family were ill or injured, would you/they consider receiving an organ or tissue transplant? Why or why not?
 - Yes.
 - No.
4. Is anyone in your family already registered to be an organ and tissue donor (online or at DMV)?
 - Yes. Who? _____
 - No. If not, why did they say no? _____
 - Don't know.
5. From whom would you feel most comfortable receiving information about organ, eye, and tissue donation?
 - Doctor/physician
 - Friend or family member
 - Someone who has experienced donation or had a transplant
 - Religious leader
 - News received on TV/internet
 - Other: _____

NAME: _____

DATE: _____

Donation Research & Presentation

Select an organ or tissue to research. Use **Foundational** (pp. 25-52) and **Advanced Readings** (pp.53-90) and online research as needed.

Answer the following questions:

1. What system does this organ/tissue come from?
2. What is its function?
3. What could cause this organ/tissue to fail?
4. Must this organ/tissue be recovered from a deceased (brain dead) donor, or can it be recovered from a living donor?
5. How long is the recovered organ/tissue viable after brain death? After living donation (if applicable)?
6. How is the recovery done surgically?
7. What is done with the organ/tissue after it is recovered and prior to transplantation into the recipient?
8. How is it surgically transplanted into the recipient/patient?

Go online and identify two trustworthy sources of information. List them here:

-
-

Design a presentation (PowerPoint, Prezi, Google Slides, etc.) to be presented to your class.

You will create a 10-slide show.

- Be sure to include an introduction, conclusion, and a combination of cited text and images. Check with your instructor regarding the use of video.

Possible organs/tissues to research:

Heart, liver, kidneys, lungs, pancreas, intestine, skin, bone, corneas, heart valves

Adapted from Pennsylvania Department of Education



Peer Evaluation Rubric

	USE OF GRAPHICS	CONTENT - ACCURACY	EFFECTIVENESS	OVERALL PRESENTATION
EXCEEDS STANDARD	Graphics are attractive and support theme/ content.	Accurate, no factual errors	I feel I have a very good understanding of their topic.	Student presented with confidence.
MEETS STANDARD	Graphics support presentation, not all are attractive or fully support theme.	Most content is generally accurate.	I feel I have an adequate understanding of their topic.	Student could have been more confident.
BELOW STANDARD	Graphics are unattractive, inaccurate or detract from presentation.	Content is confusing or contains more than one major error.	Based on this presentation, I do not understand their topic.	Student needs to focus on improving presentation skills.

PEER FEEDBACK

What is one thing that the presenter did well?

What is one thing that the presenter could improve?

Any other feedback:

The Power of a Story

Public health professionals often interview donor families and transplant recipients in order to document their experience. These stories can in turn be crafted to help raise awareness and compassion surrounding donation in the local media.

In this assignment, you will interview family members and friends to document their experience with donation, craft a journalistic article, and submit for possible publication.

1. IDENTIFY AN INDIVIDUAL CONNECTED TO ORGAN OR TISSUE DONATION:

Recipients/Potential Recipients

- a. An organ or tissue transplant recipient
- b. Someone waiting for a transplant
- c. A friend or family member of a patient waiting for an organ or tissue transplant
- d. A friend or family member of a transplant recipient
- e. A friend or family member of a patient who died while waiting for a transplant

Donors

- a. A living kidney donor
- b. A friend or family member of a deceased organ or tissue donor

2. CONDUCT A GUIDED INTERVIEW.

You may use suggested questions, available from donatelifenw.org/content/share-your-story.

3. DEVELOP YOUR INTERVIEW INTO A PROFESSIONAL JOURNALISTIC ARTICLE.

Your goal is to introduce the topic of donation, incorporate a compelling story about an individual impacted by donation, and direct readers to reliable resources to learn more.

- Incorporate and cite statistics and facts from GoRecycleYourself.com and/or unos.org.
- Craft your interviewee's story to illustrate the "face" of donation.
- Check with your teacher regarding length.

4. SUBMIT YOUR ARTICLE FOR PUBLICATION. SOME IDEAS:

- Submit to your state's Donate Life organization.
- Submit to your local newspaper.
- Submit to your campus newspaper.



5. BONUS: WHEN POSSIBLE, MEASURE THE IMPACT OF YOUR STORY.

- Did the media source receive questions or comments on your story?
- Did the story produce positive or negative responses regarding the idea of donation?
- Was there an increase in people wanting to learn more about donation and/or registering as a donor?

Journalism Writing Rubric

	CONTENT	USE OF QUOTES & ATTRIBUTION	ORGANIZATION & FLUENCY	STYLE/GRAMMAR
EXCEEDS STANDARD	Content is clear and developed for the reader.	There are at least three quotes in the article, and two cited facts about donation, and everything is attributed correctly.	Paragraphs are appropriate length for a journalistic piece.	Article is error-free and it is clear that the student edited prior to submission.
MEETS STANDARD	Content is adequately developed for the reader.	There is at least one quote in the article, and two cited facts about donation, and everything is attributed correctly.	Paragraphs are too long/short for a journalistic piece.	Article contains errors and the student may or may not have edited prior to submission.
BELOW STANDARD	Content is not clear and creates more questions than answers for reader.	There are no quotes in the article, and no cited facts about donation. Attributions are lacking.	Paragraphs do not reflect length of typical journalistic pieces.	It is clear that the student did not edit prior to submission.

Interviewing Donation & Transplantation Professionals

An informational interview is one of the best ways to learn more about an occupation. They can help you explore careers and clarify your career goals.

Many professionals are happy to grant a student an informational interview. Remember that the purpose is to gain information, not to get a job!

HOW TO CONDUCT AN INFORMATIONAL INTERVIEW

1. Identify a specific occupation you wish to learn about.
2. Prepare for the interview by reading about the profession and preparing questions to ask. Plan for a 20-30 minute interview. Face to face interviews are best, if possible.
3. Identify people to interview. If you are interested in donation or transplantation, you may contact Donate Life Northwest for recommendations on transplant centers or recovery agencies with whom you can connect.
4. Arrange the interview. Once you have identified the professional, discuss whether the interview can be done in person, on the phone, or via email. If you can, send the questions in advance as a courtesy to the interviewee.
5. Conduct the interview. Be professional and courteous, and above all – on time! If you are conducting a phone interview, pay attention to the tone of your voice – communicate your own professionalism.
6. Send a thank you letter or note.

SUGGESTED QUESTIONS

1. Please describe your typical workday for me.
2. What do you like most about your job? Least?
3. How important is writing for your job? Reading? Math? Technology?
4. In your opinion, are there too few or too many people entering this profession?
5. What developments on the horizon may affect future opportunities?
6. What educational preparation would you recommend for someone interested in this field?
7. How do most people enter this profession?
8. Can you recommend any courses or degrees I should consider?
9. Is there anything else you think I should know?

Adapted from Oregon State University Career Services



Organize a Donor Drive

GOALS:

To register 50 new donors on your campus or in your community.

To encourage 75 registered donors to talk to their loved ones about their decision to donate.

1. Pick a preferred date(s) and two alternatives. You will need at least a month to coordinate materials, organize, and advertise your drive.
2. Determine the venue, obtain the appropriate permission, and set the date/time.
 - a. Choose a location and time that will be busy. It is recommended that you plan to run your drive for at least two or three days in a row.
3. At least two weeks ahead of time, contact education@donatelifenw.org or 503-494-7888 to request free donor drive materials (for Oregon or SW Washington Donor Drives).
4. Do your homework! People often have many questions about donation. You do not have to know everything about donation to run a drive (you can always refer questions to Donate Life Northwest).
5. Promote the drive. Get creative and have fun with posters, school announcements, and social media! Check Recycle Yourself on Facebook for ideas.
6. Recruit, train, and schedule your volunteers.
7. Gather necessary tools: table, chairs, pens, paper registration forms, and laptops (if you want to offer online registration).
8. Register people! If someone is already registered, thank them and ask them to talk to their family about donation, or offer them take-home information about donation.
9. Upload pictures and/or video of your event: #recycleyourself #donatelife #volunteer #donordrive
10. Contact Donate Life Northwest to let them know how the drive went and how many donors you registered. Collect all paper registration forms and mail them to Donate Life Northwest (or your local organization if out of Oregon/SW Washington).
11. (Bonus) Pat yourself on the back!



Campus Service Project Ideas

Donate Life Northwest supports students in Oregon and Southwest Washington (Clark, Cowlitz, Skamania, and Walla Walla Counties) with free project mentoring and tools year-round.

- Organize a **campus donor drive** to register new donors. Contact Donate Life Northwest to arrange free speakers and materials.
- Organize a **school-wide assembly** to raise awareness about donation and registration. Contact Donate Life Northwest to arrange free speakers and materials.
- **Provide peer education** through your school newspaper, daily announcements, hallway or health center posters, assemblies, etc. Escribe un artículo en español.
- Partner with your school's Red Cross Club to have a **Donate Life Northwest donor registration table** during campus blood drives. Contact Donate Life Northwest to request brochures and paper registration forms.
- Give a **persuasive speech** on donation. Contact Donate Life Northwest for brochures and registration forms to distribute to your audience.
- **Design** educational or inspirational posters or infographics, or create videos for GoRecycleYourself.com's social media channels.
- Create an **educational display** about donation for your library, classroom, or health center. Translate important messages into the languages spoken in your community.
- Ask health, science, and driver's education teachers to invite Donate Life Northwest to give a **free classroom or all-school presentation**.
- For other ideas, visit donatelife.net/education-resources/

Share your projects, photos, and successes with Donate Life Northwest!

For ideas, to get started, to request materials, or find a project mentor, contact:

Donate Life Northwest
donatelifenw.org
education@donatelifenw.org
503-494-7888

For information about starting a student-led organ, eye and tissue donation club or organization, contact:

SODA (Student Organ Donation Advocates)
sodanational.org.



Student-organized Donor Drive held at the University of Oregon, 2014



Community Service Project Ideas

Donate Life Northwest supports students in Oregon and Southwest Washington (Clark, Cowlitz, Skamania, and Walla Walla Counties) with free project mentoring and tools year-round.

- **Give a presentation** to a community group. Visit donatelifenw.org to find presentations and videos, and contact Donate Life Northwest for registration forms and brochures to distribute to your audience.
 - Adapt your presentation to reflect the languages spoken in your community, especially non-English speakers.
- **Document the story** of someone whose life has been impacted by organ and/or tissue donation. Submit to Donate Life Northwest or directly to your local media.
- Ask **faith leaders** to devote a day to donation awareness. Contact Donate Life Northwest to participate in local Donor Sabbath celebrations.
- **Create an educational display** about donation for a public library, hospital or health center, or community center. Contact Donate Life Northwest for brochures and registration forms.
- **Host a table at a community event** to educate the public and raise awareness about organ donation. Contact Donate Life Northwest for brochures and other materials to hand out.
- Contact your local sports team or arts organization to organize a **Donation Awareness Night**. Contact Donate Life Northwest for support and materials.
- Request permission to display a **Threads of Life Quilt** in a health center, library, community center, or church. These quilts are made every year to celebrate the individuals and families who have made the decision to donate.

Share your projects, photos, and successes with Donate Life Northwest!

For ideas, to get started, to request materials, or find a project mentor, contact:

Donate Life Northwest
donatelifenw.org
education@donatelifenw.org
 503-494-7888



A volunteer hosts a Donate Life table at a community fair in Portland, Oregon.

Volunteer with Donate Life

Donate Life Ambassadors spread the word and register donors in their local communities!

If you live in Oregon or Southwest Washington (Clark, Cowlitz, Skamania, and Walla Walla Counties), please visit donatelifenw.org to get started.

- If you or a family member has been impacted by donation, **share your story** with Donate Life Northwest. We are always seeking stories to share with local and national media.
- Organize a **Spanish-language** donation education and registration drive in your community. Contact Donate Life Northwest for free materials.
- **Create a quilt square** in memory of a donor or on behalf of a recipient for our Threads of Life quilt.
- **Organize a fundraising event** to raise money for our life-saving mission.
- Plan a **local awareness event** during one of our national campaigns:
 - April is National Donate Life Month
 - National Donor Day is February 14th
- Attend a Donate Life 101 training. Visit our website for upcoming trainings in your area!
- "Like" Go Recycle Yourself and/or Donate Life Northwest channels: Facebook, X, Instagram, YouTube

[Donate Life Northwest](#)

Facebook: /DonateLifeNorthwest

Instagram: @donatelifenw

X: @donatelifenw

YouTube: /donatelifenw

[Go Recycle Yourself](#)

Facebook: /recycleyourself

Instagram: @gorecycleyourself

X: @gorecycleyslfr

YouTube: /gorecycleyourself



Photos courtesy of Donate Life Northwest



RECYCLE**YOURSELF**

An Organ, Eye, and Tissue Donation Curriculum

SECTION SIX: STORIES OF DONATION
AND TRANSPLANTATION

JUSTIN BOYCE, DONOR

STORY COURTESY OF MELISSA EIDEN, MOTHER OF JUSTIN BOYCE

Justin Boyce was a happy, healthy 17-year-old from Battle Ground, Washington, who enjoyed the outdoors, as well as the love of his close family and friends. He was an avid ice hockey player, BMX rider, skateboarder, guitar player, and beat-boxer. He was also the class-clown at his school and could be found wearing crazy Christmas and Halloween sweaters, just to get a smile out of his peers.

What Justin didn't joke about was his decision to donate when he acquired his driver's permit. His mother couldn't have been more proud to know that her son would think of others should something happen to him. Tragically, his family lost him a short time later at the young age of 17. While this has forever altered their lives, it has also altered the lives of several others in a different way.

"We didn't have to think about making the decision, as it was our son's wish," says Justin's mother, Melissa Eiden. "We met with the amazing staff from the Cascade Life Alliance to help facilitate the donation process while we were at the hospital with Justin. They were amazingly empathetic in helping us navigate through our grief during the process and have continued to be there to support us along the way."

In the end, Justin was able to donate his heart, lungs, kidneys, pancreas and liver, saving the lives of more than six people. Justin was also able to donate his corneas and tissue, impacting countless lives. While Justin left behind the memories of an active young man that brought smiles to his classmates and family, it was his legacy of being an organ donor that left the biggest impact.

"It has changed our lives in knowing that our beautiful son is still living on in others. We're so proud of him and his decision to help others. He couldn't have known what a difference he has made in his recipient's lives. This has helped us become even stronger advocates of organ, eye and tissue donation."





EVAN BURKE, DONOR

STORY COURTESY OF JIM BURKE, FATHER OF EVAN BURKE

Evan was just two months past his 21st birthday when he was struck by a car while skateboarding in our town of Ashland, Oregon. He was airlifted to OHSU in Portland for advanced trauma treatment. The plane had room for only one more person, so my wife Lucille flew with him, and I drove the 300 miles to join them. Evan was pronounced brain dead before I arrived.

My wife was actually the first to bring up the subject of organ donation to the hospital staff, who apparently thought his body might be too damaged to be able to donate viable organs. But they called the organ recovery organization and the process of arranging for Evan to be a donor was begun.

Evan was kept on mechanical support for another day until the recovery and transplant team took over. They were incredibly sensitive and empathetic to our family and friends. Before the surgery, we were able to meet one transplant surgeon who had come down from Washington, and that proved to be a very emotional yet positive experience, actually putting a face to the person who would save a life with Evan's liver.

They were able to save three of Evan's organs: his heart, liver, and one kidney. We since have had the honor of getting to know the wonderful heart and liver recipients, and we are still waiting to meet the kidney recipient. Evan also gave sight to two blind people, and his bone and tissue donation helped many others.

With our experience came the realization that the donation of a single organ not only saves one life, but it also profoundly influences the lives of a huge circle of humanity – including spouses, partners, parents, children and siblings and their families, close friends, co-workers, schoolmates, neighbors. ... Just imagine how many people are affected when you total all 8 organs, plus eyes, and tissue that just one person can give.

Evan did have a "D" on his license, but we didn't find it until we had unbagged his belongings from the Medford hospital, after we returned to Ashland. But Lucille had remembered having a discussion with Evan about organ donation. So that was the key – discuss the subject with your loved ones, even if you think you are immortal.

We wish to thank the Wilderness Charter School, part of Ashland High School, for having such a positive impact on Evan. He loved to be in the wilderness and also to act as a steward to protect it. He enjoyed mountain biking or climbing to the highest peak, but he was just as happy to sit quietly and meditate beside a stream at the base of a waterfall.

Before his death, Evan was enrolled as an art major at Southern Oregon University and was especially passionate about ceramics. His accomplishments in that field were way beyond his years, so much so that the school put on a posthumous show of some of his work.

One final note: Evan liked to doff his clothes when out in nature. When we phoned one of his best friends, through our tears, to tell him that Evan's heart had been transplanted, his friend said, "The guy shouldn't be surprised if he has the sudden urge to rip off his clothes and run around naked." We're still watching the headlines.



DANIEL INDRA, DONOR

STORY COURTESY OF ALISSA INDRA, MOTHER OF DANIEL INDRA

My name is Alissa Indra. I live in Monmouth, Oregon. And my son, Daniel, donated two kidneys, a liver, and a heart on September 22, 2014. He was eight years old.

I've always been a huge fan of organ donation. Since I was fifteen, I have had it on my license. Parents don't always think about it... I wish as a new parent, we would have had more information, more understanding, more warning that while this is not something you want to think about, it's something that you need to think about. If your child dies, what is going to happen? What are you going to do?

That Saturday, I went to work. My husband went to a wedding. And Daniel went to his grandparents'. He was eight, full of energy, very outgoing and loving. He played soccer and baseball, and he loved building; he LOVED Legos. And that Saturday, he was really excited because he was going to hang out with Grandpa and help fix a hole in the floor of the second floor of my Dad's barn. A bee came through the window and it scared Daniel. He fell through the hole – 18 feet – and had major head trauma.

The brain doctor came in and said, "There's nothing we can do." And I said, "I am very adamant about organ donation, so please, whatever you do, don't ruin his chances to save someone else."

We were able to give his heart, his liver, and two kidneys. Daniel saved four people. It's been one of the saving graces that my husband and I have – knowing that our son is still alive, and he is alive in four people... to know that my son may not be here next to me, but I prevented another family from going through the same grief and the same pain I'm going through.





KATY PORTELL, TISSUE RECIPIENT

"When I was born into this world, I did not come whole," Katy Portell explains. Katy has been sharing the story of her birth and the reason for her survival since she could learn the words. On February 19, 1990, she was born one month premature. With blue skin and weighing only 3lbs 9oz, the doctors soon discovered she had two holes in her heart. Even more alarming, her heart valves were switched and her pulmonary artery was nonexistent. "To this day, I don't understand how I was even alive," she said.

Unable to even hold her for the first ten days of her life, all her parents could do was wait and watch. On that tenth day, Katy underwent her first surgery. The operation was a success, and ten months later another shunt was inserted to keep her alive until she was old enough to receive a pulmonary artery. At a mere four-years-old, Katy was deemed strong and old enough for open-heart surgery. It was then that she received a pulmonary artery, the gift of an anonymous tissue donor, which has given her a chance at a full and healthy life.

Although she was only an infant during her transplant experience, the connection and gratitude Katy feels for her donor is one that words can never fully describe. She strives to live every day in a way that would make her donor proud: "All of the big moments and the little moments, every laugh, triumph, failure, good grade, and bad grade...my donor gave me life."



JAN SCHUMACHER, TISSUE RECIPIENT

Jan Schumacher of Portland, Oregon, has the kind of personality that lights up a room. As a Donate Life Northwest volunteer, you'll often find her speaking to community groups, or in high school classrooms, sharing her incredible story of survival – and gratitude for the countless anonymous donors whose gift of tissue saved her life.

Jan's busy life revolved largely around her successful bridal gown business. But during a business trip to Europe – meeting with the designers in Spain – she began to feel ill. Upon her return to the United States, it was discovered that a mysterious blood infection had struck. With her family gathered to say goodbye, physicians had no diagnosis and one last hope. The massive steroid injection kept blood flowing to her organs, but it also cut off the flow to her extremities and destroyed her fingers, and much of the skin and muscle in her arms and legs.

Schumacher holds up her hands, showing finger stubs on one hand, and the other hand with a thumb, but no digits. "I spent six months at the Oregon Burn Center, and had 25 surgeries in 24 weeks."

What helped her begin to heal was donated skin tissue from anonymous deceased donors. "They call it a biological bandage; these strips covered up to 35% of my body. When you think about it, this amounts to one very large and deep wound."

"I am so blessed to have received my donated tissue. To think that 75% of Oregonians are donors – it was the donated tissue that kept me alive until I healed enough to become my own donor."

"I really got a miracle," says Schumacher.





BRITNEY WHITING-LOOZE, TISSUE RECIPIENT

Before April 2010, by all appearances, life seemed to be on track and going well for Britney. She finished her master's degree in Arts Administration at the University of Oregon, moved back to Boise, and was working for a nonprofit. She felt like she was putting down roots after a long time in school, reconnecting with Boise friends and family, and getting settled into my career path. Her life involved a lot of normal things: making art, baking/cooking, working, getting exercise at the gym and paddling around on Idaho's stunning rivers.

In April 2010, Britney's left shoulder started to hurt. The initial diagnosis was tendinitis, and she was sent off to physical therapy. Basic tasks like holding a book open, drying her hair, or picking up grocery bags, all became excruciatingly painful and then impossible. Britney's life became a whirlwind of x-rays, MRI, bone and CT scans in rapid succession. Britney recalls sitting in an armchair in her living room: "I was in intense pain and afraid to move, and I wondered if life could ever go back to normal." Finally, in June, her arm broke.

An MRI showed a large tumor in her upper humerus. The tumor had eaten away the bone until it was as thin as an eggshell. The tumor had to come out, and the bone had to be essentially rebuilt with bone from her hip as well as donor bone. Fortunately, she didn't have to wait for the donor bone. It was readily available, and she was able to go into surgery immediately! Britney doesn't know anything about her donor, just that she is carrying around a little part of someone else and it saved her arm.

Britney now enjoys playing her ukulele, hugging with both arms, and sending text messages a lot faster-- "it's all the simple things you don't really miss until you can't do them."

Britney says, "I didn't register as an organ and tissue donor until after my surgery. I hesitated every time I renewed my driver's license. Maybe I thought the chance of actually BEING a donor was highly unlikely. Maybe I just didn't know the statistics. But I checked that box so fast after my surgery! It's not just the need to pay it forward, it's the realization that every little bit matters to someone. The word DONOR on my license means I could help someone else, like some anonymous person helped me."

"I have a huge scar on my left arm now, it spans from just above my collar bone to the middle of my bicep. Every time I wear short sleeves, I get looks and questions. Every time, I tell people about my experience and how a little piece of bone restored my mobility. I think people don't realize the entire range of donation and I like to enlighten them!"



BROTHER JAMES BARTOS, CORNEA RECIPIENT

STORY COURTESY OF VISIONGIFT

Brother James Bartos of Mt. Angel Abbey knows a thing or two about keeping faith. When you make your first vows at the age of 18, and celebrate more than 50 years of service to the community and church, you build up a catalogue of experiences that inform your world view. But even a man of Brother James' convictions can wrestle with the implications of failing vision and he remembers after being diagnosed with Fuch's Dystrophy; thinking to himself – in his typically restrained manner – "You're going to go blind."



It's hard for Brother James to pinpoint when his vision began failing him. The progression was so gradual that he just made concessions without even realizing it. The font on his Psalm handouts kept getting larger and larger – 12 point font grew to 14, to 16. He took to wearing tinted glasses. When he told people about his difficulty driving at night in the rain, they just said, "Yeah, it's like that for me too," so James thought this was all just a part of normal aging.

Among his many other roles at the Abbey, including ministry with the church's elderly clergy, Brother James is the community's locksmith as well. With more than six hundred lock sets between the monastery, the library, the school, and resident areas – a great majority of them intricate old-fashioned mechanisms – Brother James had his hands full. He remembers noticing how much shinier and fuzzier the lock components seemed to be; he had slowly developed a great deal of difficulty pinning locks – something he'd done many, many times over the years.

Brother James comes from a family of seven siblings, and while discussing his eyesight with his sister, she asked him, "Well, maybe you have what I have?" She was referring to Fuch's Dystrophy, which is a hereditary condition. This conversation prompted Brother James to seek out a new ophthalmologist – VisionGift's Medical Director, Dr. John Wilkins. Corneal transplants had been discussed before, but always as a solution for down the line, and Brother James still remembers Dr. Wilkin's telling him very matter-of-factly that, "It's time."

A man of many talents, Brother James is also a Registered Nurse. From a clinical perspective, he knew there was very little to worry about with the transplant procedure. He understood the projected healing timeframes and what he needed to do to help that healing go as smoothly as possible. One aspect of recovery that Brother James hadn't anticipated was the realization of where his gift had come from. "I hadn't thought about it much before, but I realized that someone had to die for me to receive this gift. I pray for them and their family every day, for everyone involved in the whole process. It's just, a really significant thanks giving," says Brother James.

Today, Brother James notices more beautiful colors around the Abbey, and more sharpness and clarity in his locks. And though there have been some bumps in the road during his transplant process, Brother James is sure he, "wouldn't trade it for the world."



AMITY TIRIEL, LIVER RECIPIENT

Amity was Alex and Sheryl Williams' first child, and so when Amity arrived in the world, everything about her was new and amazing to them – and also, worrisome. Especially the symptoms Alex and Sheryl found odd – like jaundice. Their pediatrician insisted that their baby was healthy, but soon, it became clear that something was going on with Baby Amity. After a series of tests, they had a diagnosis: biliary atresia.

Baby Amity and her parents faced a fight for life.

She was small and weak with yellow-green jaundiced skin. And she was only four months old when doctors added her to the transplant waiting list for a liver.

The list was long and Amity's health was deteriorating rapidly when the family learned that Sheryl's best friend, Charity, was a compatible living donor. Charity gave a portion of her liver to tiny Amity and saved her life.

Today, Amity is healthy and active and can often be found assisting with Donate Life Northwest events – always with a smile on her face. Amity is grateful for the gift of life she received, and never hesitates to share her story and encourage others to give the gift of life.



CARLOS AGUILAR, KIDNEY RECIPIENT

Carlos Aguilar of Hillsboro, Oregon, used to see his doctor so often that he called the medical clinic his second home. His trips to the doctor's office began when he was five years old, when a simple problem with his knee led to a doctor's exam. Something was wrong, and his condition slowly worsened as he entered his teenage years. It was not until 2008 that the real problem was diagnosed: kidney failure.

"At first it all overwhelmed me: finding out what was happening with my kidneys; then I couldn't graduate on time from high school... realizing that I wasn't going to be able to do what I had wanted to was difficult. I had a lot of help from my family, but it was hard," he said.

Because the "silent" symptoms of kidney failure can progress so slowly, Carlos lived a normal life for many years. He played basketball and attended Glencoe High School, whose Sparrow Club sponsored a fundraiser and Donate Life donor designation drive. "The lucky thing is I never had super bad symptoms from kidney failure," he said. "I was sickest during the last year on dialysis. It really took a lot of energy out of me."

Carlos spent about 10 hours every week for a full two years at a dialysis center, where he was hooked up to a hemodialysis machine. The machine filters toxins out of the blood and removes excess liquid, performing the work of a healthy pair of kidneys. Carlos explains that having kidney disease meant that he was limited to drinking 40 ounces of liquid per day – slightly bigger than a large cup at McDonald's. Drinking more than the limit risked forcing excess liquid into his lungs, making it difficult to breathe.

Four of Carlos's family friends stepped forward as living kidney donors, but were ultimately unable to donate to him. He was listed on the U.S. national waiting list to wait for a match from a deceased donor. Then, out of the blue, a Peruvian woman who works with his mother got tested and approved. She was a perfect match.

"I was shocked," he said. "I just thought she was going to get rejected like everybody else. I guess after all that time of days going by when you're not getting a call saying 'we found a donor,' I was not expecting anything."

Now, post-transplant, Carlos is on the road to recovery and "normalcy." The emotional and financial support of his family, classmates, and community bolstered Carlos throughout the years as his need for a transplant became more urgent.





AMANDA BIEDERMAN, LUNG RECIPIENT

Since she was 4 years old, Amanda and her family had known she had Cystic Fibrosis. But for more than two decades, she had been mostly healthy, even as her chronic, progressive lung disease remained stable. Amanda grew up, went to school, and got her nursing degree. Then, just 4 years into her career as an oncology nurse, her lungs began to fail. In 2017, Amanda made the difficult decision to stop working. By the time she was added to the lung transplant waiting list in July 2018, she was on supplemental oxygen full time.

“I was fighting every day to survive,” Amanda shares. “My lungs were constantly filled with congestion and crud. I had fevers constantly. Showers were the main event of the day and took all of my energy. Eating made me short of breath. I relied on family and friends to help me with almost everything.”



Amanda’s wait for donor lungs was only five and a half months, but it was grueling. She describes it: “I could feel my breath being stolen from me every day, and I didn’t know when or if the call would come. I didn’t know how to pray. How do you ask God for someone else’s lungs? I had to let go of dreams, future plans, my life, and found peace while still somehow holding onto the hope that I would get a call in time.”

Amanda did receive the call in time – at 5:45 AM on January 2, 2019. She felt gratitude and excitement, but it was tempered by the knowledge that there was a family experiencing a tremendous loss. Before she told her own family that her gift of life had arrived, Amanda cried and prayed for her donor and their grieving family.

Amanda calls her double lung transplant a miracle. She says, “It has not just changed my life, it has given me life. For the first time in my life, I take clear, deep breaths. I never knew breathing could feel like this.”

Amanda encourages us all: “Even in the darkest of pits, there is still hope. Organ donation is such an incredible, selfless way to love another person and give them hope.”

GLORIA LITTLE, KIDNEY RECIPIENT

Gloria Little's life took a dramatic turn in 2000, when she was diagnosed with kidney disease. The newly divorced single mother of three already had a very full life – a demanding job, a calendar filled with her children's sports and activities, as well as her own regimen of three trips to the gym each week. And then, doctors added medication and dietary changes, which Gloria did while continuing to manage her very busy schedule.

At the end of 2015, Gloria's nephrologist delivered some unwelcome news. She needed to begin dialysis. But there was no time for that! Gloria's life was more full and busy than ever. She was still working.

And after the devastating loss of her dad to Cancer, her mother began to develop dementia, prompting Gloria to move in to take care of her. Gloria's physical symptoms couldn't be ignored, and so she visited numerous doctors and naturopaths, seeking ways to slow the progress of her kidney disease and stay off dialysis. It was to no avail, and in 2017, the dialysis portion of her journey began.

For Gloria, the years of dialysis and waiting on the transplant list were extremely difficult. Dialysis treatment itself is grueling – both physically and emotionally taxing. Her life, taking care of herself and her mother, was no less hectic than it had ever been. Now, Gloria also had three treatments each week and the tiredness, nausea, vomiting, and pain that accompanied them. 2020 brought multiple major blows on top of dialysis, when Gloria first lost her mother to complications of dementia and COVID, and then immediately contracted COVID herself and had to fight it while mourning her mother and coping with dialysis.

When Gloria had gone on the waiting list, she had expected that her transplant would come pretty quickly. It didn't happen that way. But as the months passed, there were a couple of things that encouraged her. First, she attended an Erase the Wait mentorship program class, which helped her to create a website and video to share her story. And second, she met Alison. In December 2019, *The Skanner* in Portland, Oregon, published an article by a woman named Alison Wiley. Alison was a White woman who felt strongly that she should become a living kidney donor, specifically to a Black person. Gloria's friend and then-board member at Donate Life Northwest, Balinda Olive-Beltran, brought the article to Gloria's attention, and Gloria quickly reached out to Alison. Several of Gloria's close friends and family members had been tested as potential living donation matches and had not been compatible matches. As it turned out, Alison wasn't a match either. However, Alison did have an idea that changed everything. She suggested that the two of them join a paired kidney exchange program – there is one locally at Legacy Transplant Services in Portland. This would allow Alison to donate a kidney to a compatible patient in the program, and then Gloria would receive a kidney from a compatible donor in exchange. It worked! In December 2020, Alison donated a kidney on Gloria's behalf, and in May 2021, Gloria received her lifesaving gift.

"It's a huge difference," she says. "My family is so overjoyed. They see a huge difference in me, in my energy level and being able to play with the kids. And just do the normal things that people take for granted."





STEPHANIE HOLLADAY, LIVING KIDNEY DONOR

A wife, a mother, a Zumba instructor, and a blood and platelet donor, Stephanie Holladay's journey to becoming a living kidney donor began when she learned that a woman from her hometown needed a kidney transplant. Stephanie thought she might be interested in donating one of hers and began the testing process only to learn that she wasn't a match. The story could end there, but Stephanie's heart had been touched by the suffering of those with kidney disease. She Googled "Oregon kidney donor" and that is where she found Scott.



Scott Warren's life was a bit of a tightrope walk. He was married with two grown step-sons, one of whom lives at home with a traumatic brain injury. Scott also worked full time. He did not have time to be sick, but sick was what he was. Scott found himself in kidney failure caused by a disease called IgA Nephropathy, and for four years, Scott continued the delicate balance of family and work while he also endured in-center dialysis treatments three days a week, four hours each time. Scott faced chronic fatigue and the constant worry of heart attack or stroke.

On April 4, 2016, Scott received a call from Legacy Transplant, telling him that a woman named Stephanie – a woman he did not know and had never met – was a match for a living kidney donation. A little more than a month later, on May 9, their surgeries occurred, and life will never be the same for either of them.

Stephanie awoke from surgery with little pain, asking the nurses how Scott was doing. The next day, she shocked the doctors and nurses by being strong and well enough to go home. But before she left the hospital, she visited Scott in the ICU. She found a smiling Scott – with good color and more energy than he'd had in a long time and with a new kidney that was doing its job well in its new home.

Scott says, "The greatest rewards I've experienced have been the knowledge that my donor is recovering nicely, and experiencing renewed energy. I'll be able to return to work better than I've been in years, and I have the opportunity to spend many more wonderful years with my wife and family."

Meanwhile, Stephanie was a little worried about one thing. "A strange thought crossed my mind...that once I donated a kidney, I would no longer be useful to a person with kidney disease, or the kidney community. I was wrong! I have shared my personal experience on Facebook, was interviewed by local TV, have had many personal conversations with both friends and strangers, and have shared my experience and insights in online support groups." And both Stephanie and Scott are continuing each day to support each other and advocate to the community that giving the gift of life doesn't just save lives – it enriches the life of the donor in ways they could never imagine.

"It's humbling to set aside your own life for a while so that another person can reclaim theirs." – Stephanie Holladay

MORE STORIES

By facilitating donor registration and public education, Donate Life Northwest represents the voices of all those touched by donation and transplantation in our region: those on the waiting list; organ, cornea and tissue recipients; living donors; and the families who have courageously supported their loved one's decision to donate. We have provided several sample stories to frame the subject of donation as we encounter it every day: the stories of individuals on transformative journeys.

These stories are always changing and evolving. For updates on the stories included or to read new stories, visit donatelifenw.org/stories-of-hope. For national stories, visit GoRecycleYourself.com, organdonor.gov/statistics-stories/donation-stories.html, or unos.org/transplantation/stories-of-hope.



RECYCLE**YOURSELF**

An Organ, Eye, and Tissue Donation Curriculum

SECTION SEVEN : APPENDIX

ONLINE RESOURCES

REGISTERING AS A DONOR

Oregon: Donate Life Northwest - donatelifenw.org
Washington: LifeCenter Northwest - lcnw.org
Donate Life America - donatelife.net or registerme.org
Go Recycle Yourself - GoRecycleYourself.com

CORNEA DONATION & TRANSPLANT

PACIFIC NORTHWEST

VisionGift - visiongift.org

NATIONAL

Cornea Research Foundation of America - cornea.org
The Discovery Eye Foundation - discoveryeye.org
Eye Bank Association of America - restoresight.org
National Kerataconus Foundation - nkcf.org

TISSUE DONATION & TRANSPLANT

PACIFIC NORTHWEST

Solvita - solvitaorg

NATIONAL

The American Association of Tissue Banks - aatb.org

DECEASED ORGAN DONATION

PACIFIC NORTHWEST

Cascade Life Alliance - cascadelifealliance.org

NATIONAL

Scientific Registry of Transplant Recipients - srrt.org
Transplant Living - transplantliving.org
U.S. Department of Health & Human Services - organdonor.gov
United Network for Organ Sharing - unos.org

LIVING DONATION

American Red Cross - redcrossblood.org
Bloodworks NW - bloodworksnw.org
National Bone Marrow Donor Program - bethematch.org

LIVING KIDNEY DONATION

PACIFIC NORTHWEST

Oregon Health & Science University Kidney Transplant - ohsu.edu/transplant

Legacy Health Kidney Transplant Program - legacyhealth.org

Living Donation California - livingdonationcalifornia.org

NATIONAL

Alliance for Paired Donation - paireddonation.org
National Kidney Foundation - kidney.org
National Kidney and Urologic Diseases Information Clearinghouse - niddk.nih.gov
Transplant Living - transplantliving.org

ANATOMY

American Heart Association - heart.org
American Liver Foundation - liverfoundation.org
American Lung Association - lung.org
American Thoracic Society - thoracic.org
National Kidney Association - kidney.org

MULTICULTURAL HEALTH AND HEALTH LITERACY

PACIFIC NORTHWEST

Asian Health & Service Center - ahscpx.org
Multicultural Integrated Kidney Program - mikeprogram.org
Northwest Portland Area Indian Health Board - npaih.org
Oregon Latino Health Coalition - orlh.org

NATIONAL

Association for Multicultural Affairs in Transplantation - amat1.org
EthnoMed: Ethnic Medical Information - ethnomed.org
Healthy People.gov - healthypeople.gov
National Kidney Disease Education Program - nkdep.nih.gov
U.S. Department of Health and Human Services HealthFinder - healthfinder.gov
United States Renal Data System - usrds.org
U.S. Office of Minority Health - minorityhealth.hhs.gov



MOST COMMONLY ASKED QUESTIONS

WILL DOCTORS SAVE MY LIFE IF THEY KNOW I'M AN ORGAN DONOR?

Yes. The decision to be a donor in no way affects the medical care of a sick or injured person. The #1 priority of hospital staff is to save your life! Doctors and nurses do not know if you are a registered donor – they cannot even access the state's confidential donor registry. A separate recovery/transplant team oversees the entire donation process, and they are called only after death has occurred.

People sometimes fear that hospital staff will look at their driver's license, and "figure out" that someone is a registered donor. In reality, most potential organ donors arrive at the hospital in traumatic, life-threatening situations. His or her ID is most likely to be at the scene of the accident or with police, who are using it in order to notify the victim's family. If in the event it is still with the patient, it is irrelevant to emergency room staff. They do not need to know who someone is in order to initiate the life-saving resuscitation protocols which assess and treat all acute trauma patients.

DOES MY RELIGION SUPPORT ORGAN AND TISSUE DONATION?

All major organized religions approve of organ and tissue donation, and consider it an act of charity that is the individual's choice. Refer to *Faith Perspectives on Donation* (pp. 185-186) to learn more.

IF I DONATE MY ORGANS AND TISSUES, WILL MY FAMILY BE ABLE TO HOLD A NORMAL FUNERAL SERVICE FOR ME?

Yes. Donation doesn't affect funeral arrangements. Highly trained medical professionals recover organs, corneas and tissue through surgical procedures performed in a respectful manner; organ recovery is similar to gallbladder or appendix removals. Reconstructive surgery is performed, if needed. In most cases, traditional funeral practices – including open-casket viewing – may follow, if the family desires.

WILL IT COST MY FAMILY MONEY TO DONATE MY ORGANS?

No. Donation costs your family nothing. The local recovery organization is responsible for all costs related to the donation process. Medical treatments prior to the declaration of death, funeral costs, and memorial services or burial plans remain the family's responsibility.

DO DONOR FAMILIES EVER MEET THE RECIPIENTS OF THEIR LOVED ONE'S ORGANS?

Organ and/or tissue donor families have the option of writing an anonymous letter to the recipients of their loved one's organs if they choose to. The recipients may also choose to write anonymously to their donor family. If both of them decide that they would like to waive anonymity, they can do so, and then they may talk on the phone or meet in person.

CAN TRANSPLANTS BE "BOUGHT" BY THE WEALTHY AND POWERFUL?

No. Organs are computer matched according to the compatibility of donor and recipient tissue, determined by various tests, waiting time, and the medical need of the recipient. Social or financial data are not part of the computer database and, therefore, are not factors in the determination for who receives an organ.

I HAVE A HISTORY OF MEDICAL ILLNESS/I THINK I'M TOO OLD. WILL MY ORGANS OR TISSUES BE UNFIT FOR DONATION?

At the time of death, the appropriate medical professionals will review your medical and social histories to determine whether you can be a donor. With recent advances in transplantation, many more people than ever before can be donors. You should not rule yourself out as a potential donor due to age or medical condition!

WHAT'S THE DIFFERENCE BETWEEN REGISTERING AT DMV OR ONLINE?

Registering at DMV establishes your consent for *universal* anatomical donation – organs, eyes and tissue – for the purposes of life-saving transplantation, upon death. A special code will appear on your license. Changing your donor designation will entail purchasing a new license.

Registering online enables you to restrict what you wish to donate upon death, if you would like. Registering online is free. No code will appear on your license.

IS THERE A BLACK MARKET FOR ORGANS IN THE UNITED STATES?

We've all heard the urban legend about waking up in a bathtub of ice after a party, missing a kidney. However, there is absolutely no evidence of such activity occurring in the United States. The buying and selling of organs is illegal in the United States. Although Hollywood portrayals simplify the transplant process, thereby lending the appearance of credibility to the myth of a black market, the reality is that organ matching and transplant surgery are extraordinarily complex procedures requiring the expertise of a full team of professionals.

The United States has an organ matching and allocation system in place which is federally regulated, and which has developed over the past 50 years. Other countries have systems equally or less developed, in terms of ethics and medical utility. It is important to distinguish between practices in the United States and abroad!

LIVING DONATION

HOW DO YOU GO ABOUT DONATING A KIDNEY TO SOMEONE?

Individuals interested in living kidney donation should contact local hospitals which host a kidney transplant program. If you know the individual to whom you wish to donate, contact their transplant center. If you wish to donate anonymously, there exists an Anonymous Living Donor Program in Oregon (see *Online Resources*, p. 182).

Individuals must undergo extensive physical and mental evaluations to determine whether they are eligible to donate. There is a minimum age for being a living kidney donor, which varies by center. In Oregon, it is no younger than 18.

WOULD DONATING A KIDNEY HAVE A LONG-TERM IMPACT ON MY HEALTH?

Living donation is a major surgical operation. All complications of major surgery apply!

In a study of 80,437 living kidney donors followed for 15 years, the risk of death following live donation was 3.1 per 10,000 donors in the first 90 days with no increased risk thereafter. The study concludes that live kidney donation is safe (Segev, et al., 2010).

CAN I GET PAID TO BE A LIVING KIDNEY DONOR?

No. Paid donation is illegal in the United States.

WHO PAYS FOR LIVING KIDNEY DONATION?

Medical costs are generally covered by the recipient's insurance. The donor is responsible for all non-medical costs – such as travel, accommodation, child care and loss of income – incurred in conjunction with donation. Living kidney donors currently miss four to six weeks of work, although thanks to new surgical procedures, recovery time has been greatly reduced. The Paid Leave Oregon program does cover payroll benefits for qualifying individuals taking any period of absence due to the donation of body part, organ, or tissue.



FAITH AND DONATION

The death of a loved one often raises spiritual and religious issues. When faced with the decision of organ and tissue donation during the trauma of a family member's death, a person's religious group's position on the subject suddenly becomes very important. Contact Donate Life Northwest for more information.

AME & AME ZION (AFRICAN METHODIST EPISCOPAL)

Organ and tissue donation is viewed as an act of neighborly love and charity by these denominations. They encourage all members to support donation as a way of helping others.

BAHÁ'Í

There is no prohibition in the Bahá'í Faith on organ donation. It is a matter left to the individual's conscience.

BAPTIST

Though Baptists generally believe that donation and transplantation are ultimately matters of personal conscience, the nation's largest protestant denomination, the Southern Baptist Convention, adopted a resolution in 1988 encouraging physicians to request organ donation in appropriate circumstances and to "encourage voluntarism regarding organ donation in the spirit of stewardship, compassion for the needs of others and alleviating suffering."

BUDDHISM

Buddhists believe that donation is a matter of individual conscience and place high value on acts of compassion. The importance of letting loved ones know your wishes is stressed.

CATHOLICISM

Roman Catholics view organ and tissue donation as an act of charity and love. Transplants are morally and ethically acceptable to the Vatican. Pope John Paul II stated, "The Catholic Church would promote the fact that there is a need for organ donors and that Christians should accept this as a 'challenge to their generosity and fraternal love' so long as ethical principles are followed."

CHRISTIAN CHURCH (DISCIPLES OF CHRIST)

The Christian Church encourages organ and tissue donation, stating that individuals were created for God's glory and for sharing of God's love.

CHRISTIAN SCIENCE

The Church of Christian Science does not have a specific position regarding organ donation. According to the First Church of Christ, Scientist in Boston, Christian Scientists normally rely on spiritual instead of medical means of healing. They are free, however, to choose whatever form of medical treatment they desire, including a transplant. Organ and tissue donation is an individual decision.

EPISCOPAL

The 70th General Convention of the Episcopal Church recommends and urges "all members of this Church to consider seriously the opportunity to donate organs after death that others may live, and that such decision be clearly stated to family, friends, church and attorney."

GREEK ORTHODOX

According to Reverend Dr. Milton Efthimiou, Director of the Department of Church and Society for the Greek Orthodox Church of North and South America, "the Greek Orthodox Church is not opposed to organ donation as long as the organs and tissue in question are used to better human life; i.e., for transplantation or for research that will lead to improvements in the treatment and prevention of disease."

HINDUISM

According to the Hindu Temple Society of North America, Hindus are not prohibited by religious law from donating their organs. This act is an individual's decision.

ISLAM

Based on the principles and the foregoing attributes of a Muslim, the majority of Islamic legal scholars have concluded that transplantation of organs as treatment for otherwise lethal end stage organ failure is a good thing. Donation should be considered as an expression of the believer's altruism and Islam encourages the virtuous qualities which are supportive of donation: generosity, duty, charity, co-operation, etc.

JEHOVAH'S WITNESSES

Jehovah's Witnesses do not believe that the Bible comments directly on organ transplants; hence: decisions made regarding cornea, kidney, or other tissue transplants must be made by the individual. The same is true regarding bone transplants. Jehovah's Witnesses are often assumed to be opposed to donation because of their belief against blood transfusion. However, this merely means that all blood must be removed from the organs and tissues before being transplanted.

JUDAISM

All four branches of Judaism (Orthodox, Conservative, Reform and Reconstructionist) support and encourage donation. According to Orthodox Rabbi Moses Tendler, "If one is in the position to donate an organ to save another's life, it's obligatory to do so, even if the donor never knows who the beneficiary will be. The basic principle of Jewish ethics – 'the infinite worth of the human being' – also includes donation of corneas, since eyesight restoration is considered a life-saving operation."

LUTHERAN

In 1984, the Lutheran Church in American passed a resolution stating that donation contributes to the well-being of humanity and can be "an expression of sacrificial love for a neighbor in need."

MORMON (CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS)

The Church of Jesus Christ of Latter-Day Saints believes that the decision to donate is an individual one made in conjunction with family, medical personnel, and prayer. They do not oppose donation.

NATIVE AMERICAN BELIEFS

The diversity of tribes and their spiritual practices signifies that there are various beliefs, taboos, and practices regarding organ and tissue donation. Many believe that the body should be left whole for the afterlife, while others believe that donations can be made in the spirit of healing and sharing life.

PRESBYTERIANS

Presbyterians encourage and support donation. They respect a person's right to make decisions regarding his or her body.

ROMA

Gypsies are a people of different ethnic groups without a formalized religion. They share common folk beliefs and tend to be opposed to organ donation. Their opposition is connected with their beliefs about the afterlife. Traditional belief contends that for one year after death the soul retraces its steps. Thus, the body must remain intact because the soul maintains its physical shape.

SEVENTH-DAY ADVENTIST

Donation and transplantation are strongly encouraged by Seventh-Day Adventists. They have many transplant hospitals, such as Loma Linda in California. Loma Linda specializes in pediatric heart transplantation.

SHINTO

In Shinto, the deceased's body is considered to be impure and dangerous, and thus quite powerful. "In folk belief context, injuring a dead body is a serious crime," according to E. Namihira in his article, *Shinto Concept Concerning the Dead Human Body*. "To this day it is difficult to obtain consent from bereaved families for organ donation or dissection for medical education or pathological anatomy ... the Japanese regard them all in the sense of injuring a dead body." Families are often concerned that they not injure the *itai*, the relationship between the dead person and the bereaved people.

UNITARIAN UNIVERSALIST

Organ and tissue donation is widely supported by Unitarian Universalists. They view it as an act of love and selfless giving, according to the Unitarian Universalist Association.

UNITED METHODIST CHURCH

The United Methodist Church issued a policy statement regarding organ and tissue donation. It states, "The United Methodist Church recognizes the life-giving benefits of organ and tissue donation, and thereby encourages all Christians to become organ and tissue donors by signing and carrying cards or driver's licenses, attesting to their commitment of such organs upon their death, to those in need, as a part of their ministry to others in the name of Christ, who gave his life that we might have life in its fullness."



REFERENCES

- Ahmann, A. (2014). *Diabetes: Facing the Future*. Presentation, Portland, OR.
- Allen, M.B., & Reese, P.P. (2013). Financial Incentives for Living Kidney Donation: Ethics and Evidence. *Clinical Journal of the American Society of Nephrology*, 8(12), 2031-2033. <http://doi.org/10.2215/CJN.09820913>
- American Red Cross. (2014). Retrieved March 2014, from American Red Cross—redcrossblood.org
- Barry, T. (2011, February 11). Sister bravely gave kidney to twin. *KGW.com*. Retrieved March 2014, from kgw.com/lifestyle/making-a-difference/stories/Sister-bravely-gave-kidney-to-twin-116006564.html
- BBC. (2009, July 31). *Saint Lucy*. Retrieved April 2014 from bbc.co.uk/religion/religions/christianity/saints/lucy.shtml
- Breitkopf, C.R. (2009). Attitudes, beliefs and behaviors surrounding organ donation among Hispanic women. *Current Opinion in Organ Transplantation*, 14(2), 191-195. <http://doi.org/10.1097/MOT.0b013e328329255c>
- Carew, R. (2014, February 6). Communications Director, Lions VisionGift. (V. Egan, Interviewer)
- Centers for Disease Control and Prevention. (2014). Health Literacy. Retrieved April 2014 from www.cdc.gov/healthliteracy/
- Classic Literature: The Three Army-Surgeons by the Brothers Grimm (1884). (2014). Retrieved April 2014, from About.com—classiclit.about.com/library/bl-etexts/grimm/bl-grimm-3surgeons.htm
- Crawford, A.X., Patel, D.V., & McGhee, C.N. (2013). A brief history of corneal transplantation: From ancient to modern. *Oman Journal of Ophthalmology*, 6(4), 12-17. <http://doi.org/10.4103/0974-620X.122289>
- Donate Life America. (2014). *Donate Life America*. Retrieved March 2014, from donatelife.net
- Donate Life California. (2013). *Donate Life California Educator Resource Guide*. California.
- Donate Life North Carolina. (2014). *Materials for Educators*. Retrieved March 2014 from Donate Life North Carolina—donatelifenc.org/content/materials-educators
- Donate Life Ohio. (2012). *Together We Can Save Lives*. Ohio.
- Donor Alliance. (2013). *Transplantation Science*. Denver, CO.
- Douzidjan, D. V. (2014, March 3). (V. Egan, Interviewer)
- Fix, M. (n.d.). *Kidney Transplantation: Past, Present, and Future*. Retrieved March 2014 from stanford.edu/dept/HPST/transplant/index.html
- Goldberg, D.S., Halpern, S.D., & Reese, P.P. (2013). Deceased organ donation consent rates among racial and ethnic minorities and older potential donors. *Critical Care Medicine*, 41(2), 496-505. <http://doi.org/10.1097/CCM.0b013e318271198c>

- Grimm, J.L & Grimm, W.C. (1812). Grimm's fairy tales: The three army surgeons. Retrieved June 2018 from <http://pinkmonkey.com/dl/library1/story171.pdf>
- Halachic Organ Donor Society. (2011). *Halacid Organ Donor Society*. Retrieved April 2014 from hods.org
- Illinois State Board of Education. (n.d.). *Listening to a guest speaker*. Retrieved March 2014 from isbe.net/Documents/4AE.pdf
- Journalism Education Association. (2013). Lesson plan: Understanding news literacy. Retrieved April 2014 from jea.org/blog/2013/07/24/lesson-plan-understanding-news-literacy/
- Klein, R. (2014, March 7). Kidney Transplant Program, Oregon Health & Science University. (V. Egan, Interviewer)
- Legacy Health. (2014). *Kidney Transplant*. Retrieved March 2014 from legacyhealth.org/health-services-and-information/health-services/for-adults-a-z/kidney-transplant.aspx
- Miller, L. (2014, April). End-Stage Renal Disease: How Medicare's Most Expensive Diagnosis is Contributing to Health Reform.
- Miller, L. (2014, March 6). Hospital Services Coordinator, Pacific Northwest Transplant Bank. (V. Egan, Interviewer)
- Moffatt, S.L., & Cartwright, V.A., (2005). Centennial review of corneal transplantation. *Clinical and Experimental Ophthalmology*, 33(6), 642-657. <http://doi.org/10.1111/j.1442-9071.2005.01134.x>
- Morgan, S.E., Movius, L., & Cody, M.J. (2009). The power of narratives: The effect of entertainment television organ donation storylines on the attitudes, knowledge, and behaviors of donors and nondonors. *Journal of Communication*, 59(1), 135-151. <http://doi.org/10.1111/j.1460-2466.2008.01408.x>
- Morgan, S.E., Harrison, T.R., Chewing, L., Davis, L., & DiCorcia, M. (2007). Entertainment (mis)education: The framing of organ donation in entertainment television. *Health Communication*, 22(2), 143-151. <http://doi.org/10.1080/10410230701454114>
- National Institute of Diabetes and Digestive and Kidney Diseases. (2012). *Kidney disease statistics for the United States*. Retrieved April 2014 from kidney.niddk.nih.gov/KUDiseases/pubs/kustats/index.aspx
- National Institute of Health, National Institute of Diabetes and Digestive and Kidney Diseases. (2013). 2012 Volume two: USRDS annual data report: Atlas of End-Stage Renal Disease in the United States. *American Journal of Kidney Diseases*, 61(1) supplement 1 pp. e1-e480. <https://doi.org/10.1053/j.ajkd.2012.11.012>
- National Kidney Disease Education Program. (2014, March). *Race, ethnicity and kidney disease*. Retrieved March 2014 from nkdep.nih.gov/learn/are-you-at-risk/race-ethnicity.shtml
- National Marrow Donor Program. (2014). Be the Match. Retrieved March 2014, from—bethematch.org
- National Network of Libraries of Medicine. (2013). *Health literacy*. Retrieved April 2014 from nnlm.gov/outreach/consumer/hlthlit.html



- New York Organ Donor Network. (2014). *Tissue transplant history*. Retrieved April 2014 from donatelifeny.org/all-about-transplantation/tissue-transplant-history/
- Office of Minority Health. (n.d.). *Organ and tissue donation 101*. Retrieved March 2014 from <https://minorityhealth.hhs.gov/omh/content.aspx?ID=3123>
- Office of Minority Health Research Coordination. (2012). *9-12 Health*. Retrieved March 2014 from Diabetes Education in Tribal Schools kbocc.org/index/index.php/2011-12-24-18-54-16/dets-downloads
- Oregon Health & Science University. (2014). *Body donation program*. Retrieved March 2014 from ohsu.edu/xd/education/schools/school-of-medicine/bodydonation/
- Oregon Health & Science University. (2014). *Transplant services*. Retrieved March 2014 from ohsu.edu/xd/health/services/transplant
- Oregon State University Career Services. (n.d.). *Informational Interviewing*. Retrieved June 2018 from http://career.oregonstate.edu/sites/career.oregonstate.edu/files/informational_interviewing.pdf
- Organ Procurement and Transplantation Network. (2014). *Organ Procurement and Transplantation Network*. Retrieved March 2014 from optn.transplant.hrsa.gov
- Pennsylvania Department of Education. (2014). *Organ and tissue donation awareness education*. Retrieved March 2014 from iu13.org/StudentsandParents/Pages/OrganandTissueDonationAwareness.aspx
- Sack, K. (2012, February 18). 60 lives, 30 kidneys, all linked. *New York Times*. Retrieved from <https://www.nytimes.com/2012/02/19/health/lives-forever-linked-through-kidney-transplant-chain-124.html>
- Segev, D.L., Muzaale, A.D., Caffo, B.S., Mehta, S.H., Singer, A.L., Taranto, S.E., ... Montgomery, R.A. (2010). Perioperative mortality and long-term survival following live kidney donation. *Journal of the American Medical Association*, 303(10), 959-966. <http://doi.org/10.1001/jama.2010.237>
- Shaw, C. (2014, March 5). Donation Specialist, Pacific Northwest Transplant Bank. (V. Egan, Interviewer)
- The Huffington Post. (2012, February 21). *Largest kidney donor chain saves 30 lives across the country*. Retrieved April 2014 from huffingtonpost.com/2012/02/21/kidney-donor-chain-saves- n_1290827.html
- U.S. Department of Health & Human Services. (2004). *Decision: Donation*.
- U.S. Department of Health & Human Services. (2010). *State organ donation legislations*. Retrieved March 2014 from organdonor.gov/legislation_micro/
- U.S. Department of Health & Human Services. (2012). *Diabetes and American Indian/Alaska Native Health*. Retrieved March 2014 from kbocc.org/index/dets/9-12_Health_book.pdf
- U.S. Department of Health and Human Services. (2014). *OrganDonor.gov*. Retrieved 2014 from organdonor.gov

U.S. Department of Health and Human Services, Health Resources and Services Administration, Healthcare Systems Bureau. (2013). *2012 national survey of organ donation attitudes and behaviors*. Rockville, Maryland: U.S. Department of Health and Human Services.

United Network for Organ Sharing. (2016). *What every patient needs to know*. Richmond, Virginia: United Network for Organ Sharing.

United Network for Organ Sharing. (2014). *Transplant Living*. Retrieved March 2014 from transplantliving.org

United Network for Organ Sharing. (2014). *Data*. Retrieved March 2014 from <https://unos.org/data/>

Western Upper Peninsula Center for Science, Mathematics and Environmental Education. (2014). *Conducting a Community Survey*. Retrieved April 2014 from wupcenter.mtu.edu/education/land_use/Land_use_Looks_Count/Looks_Count_lesson7.pdf

World Health Organization. (2014). *Xenotransplantation*. Retrieved April 2014 from who.int/transplantation/xeno/en/