

Organ Donation-It's Gotta Match!

Activity Suggestion

Activity 3H

Note:

This activity suggestion describes how specific content might be taught to middle school students. It does not contain fully developed lesson materials, which we hope to develop under future funding in this content area. Any feedback on how you are able to use this lesson suggestion would be greatly appreciated. Your comments can be sent to us at teachhealthk-12@uthscsa.edu.

Activity Focus:

The focus of this activity is exploring the factors involved in matching organ donors with recipients and becoming aware, by utilizing statistics, of the shortage of organ donors.

Activity Rationale:

Every year thousands of lives are saved or enhanced because someone gave the gift of life in the form of an organ donation. One donor can save 8 lives with his or her gift. Unfortunately, as of March 2008, the ratio of donors to those in need of organs was 14,395 to 98,634.

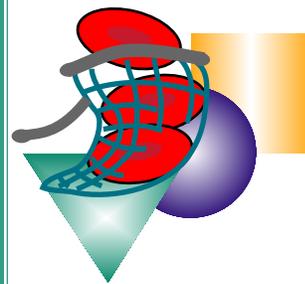
Almost anyone of any age and in reasonably good health can donate. There are numerous organs and tissue types that can be used to save a life or treat an illness. Some examples are kidneys, hearts, lungs, skin, bone and bone marrow, corneas, tendons, and heart valves.

The three major matching criteria are *blood type*, *tissue type*, and *cross matching* of antigens, though age, size of the donated organ, and need based upon waiting time and severity of the disease process are also taken into consideration.

This activity affords students the opportunity to understand the process of organ donation with all of its current inequities while learning to apply statistics to a real world problem and utilize a statistical data base.

Activity Suggestion:

Students gain background information through guided research or teacher-provided materials to prepare them for the activity. A research focus on the factors involved in matching organs for donation is crucial to success in understanding the mathematics at the heart of this activity.



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After obtaining background information, students can then utilize the **Organ Procurement and Transplantation Network** data base to collect statistical information. They will use this statistical information to determine the probability of different types of recipients receiving a donation. The students' numerical information can then be used to provide a graphical representation of their data.

Teachers can prepare cards containing fictional patient scenarios; students will draw a card. Using information from their background research, students will choose factors that determine the chance of a donor receiving an organ or tissue they need. Some of the factors students can choose from are blood type or organ type. Utilizing the data base and other sources, students will find statistics on donor to recipient ratios for that factor. The ratios will be used to calculate the percent chance that a donor with a particular factor (or combination of factors for upper level students) will receive a donated tissue or organ that is a good match. The students will then graph their results, utilizing the graphs to make a comparison between different factors of match in organ transplantation.

Depending upon time and student ability, the teacher can choose to have a pair of students work on a factor of their choice. A given class will produce numerous graphs which can then be compared and analyzed by the class.

Another option would be single students working on two or more factors and making an individual comparison presentation. These are just two of the many ways to adapt this activity to the number and ability level of students in your classroom.

Suggested Resources:

NOTE OF CAUTION:

This topic involves potentially sensitive subjects; therefore the teacher must carefully monitor the information used by students from these and other sources.

A good narrative and factual resource about organ donation:
www.nlm.nih.gov/medlineplus/organdonation.html

Organ and Tissue Donation Initiative: an excellent jumping off point with a multitude of links: www.organdonor.gov/

Organ Procurement and Transplantation Network: provides constantly updated database on donor availability and organ recipient searchable by organ –excellent!: <http://www.optn.org/latestdata/step2.asp>



Activity Suggestion, continued



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Cast Your Net: Adventures With Blood