DMS's Kent Hymel, M.D., led a study of head trauma in children under 3 years of age. The deeper the injury, his team found, the more likely it was to have been the result of abuse.

Tool quantifies pancreatic transplant risk

Pancreas transplantation can save the life of patients with type 1 diabetes, offering a possible cure for those whose pancreas does not produce enough insulin on its own. Unfortunately, the failure rate for donated pancreases is higher than for kidneys or livers. Furthermore, the number of pancreases available for donation is not only insufficient to meet the demand, but the supply is declining. The need is most pressing for patients awaiting a simultaneous kidney and pancreas transplant, as they are usually on dialysis and may die before suitable organs are available.

To try to make sure patients who need a pancreas can get the one best suited for them, David Axelrod, M.D., chief of transplantation surgery at DHMC, has developed a method to systematically assess pancreases available for donation. Working with collaborators at the University of Michigan and Northwestern, Axelrod identified risk factors suggesting when a donated pancreas won't last long in the patient receiving the transplant, which could help surgeons select appropriate organs and develop improved policies for allocating them.

The tool includes 10 factors that affect the likelihood of success.

Factors: Called the pancreatic donor risk index (PDRI), the tool includes 10 factors that can affect the likelihood of a successful transplant. These include the donor's age, gender, race, body mass index, height, and cause of death. Another factor is whether the donor's death falls into the category of "cardiac death," meaning that the donor was declared dead because of a loss of heart function rather than brain function. The index also considers how much time passed between harvesting the organ and transplantation.

Index: The factors are entered into a formula, producing a number that allows for a simple comparison of different pancreases. The index uses 1.0 as the median risk. An organ with a PDRI above 1.0 would be at greater risk of failure within the first year after surgery, while one with a PDRI below 1.0 would be more likely to remain viable.

The factors that have the greatest influence are age, body mass index, and donation after cardiac death. For example, if a 28-year-old donor's pancreas has a PDRI of 1.0, keeping everything the same but increasing the donor's age to 45 raises the PDRI 56%, to 1.56.

The index can be used to determine which organs might be a good option for which patients. Pancreas transplants are performed in three circumstances: at the same time as a kidney transplant, following an earlier kidney transplant, or alone in a patient without kidney failure.

Simultaneous: Axelrod found that organs with a higher PDRI are more likely to survive a year in patients who have a simultaneous kidney transplant than in those who undergo a pancreas transplant alone or after a kidney transplant. Doctors can use this information to increase the pool of acceptable organs for patients having simultaneous transplants, possibly reducing the number of people awaiting the life-saving procedure. Roger P. Smith, Ph.D.

MARK WASHBURN

Axelrod, right, is chief of transplantation surgery.

Backdrop

Back surgeries are getting increasingly complex, according to a team of researchers that included Dartmouth-Hitchcock orthopaedist Sohail Mirza, M.D. The overall rate of surgery for lumbar spinal stenosis—a narrowing of the spinal canal in the lower back—dropped between 2002 and 2007 among Medicare beneficiaries, but the rate of the most complex surgeries for this condition grew rapidly. As a result, Mirza and his coauthors noted, "although the overall procedure rate fell 1.4%, aggregate hospital charges increased 40%."

Knife point

After nine years of waiting, surgeons and cardiologists at Dartmouth-Hitchcock and around the country finally got the results of a much-anticipated clinical trial. DHMC was one of 117 institutions that took part in the Carotid Revascularization Endarterectomy versus Stenting Trial (CREST), which assessed whether endarterectomy (a surgical procedure) or stenting (a minimally invasive procedure) is more effective at preventing strokes and heart attacks in at-risk patients. The trial showed that, overall, the procedures are equally effective. But patients older than 70 did somewhat better with surgery, while those 69 and under did better with stenting.