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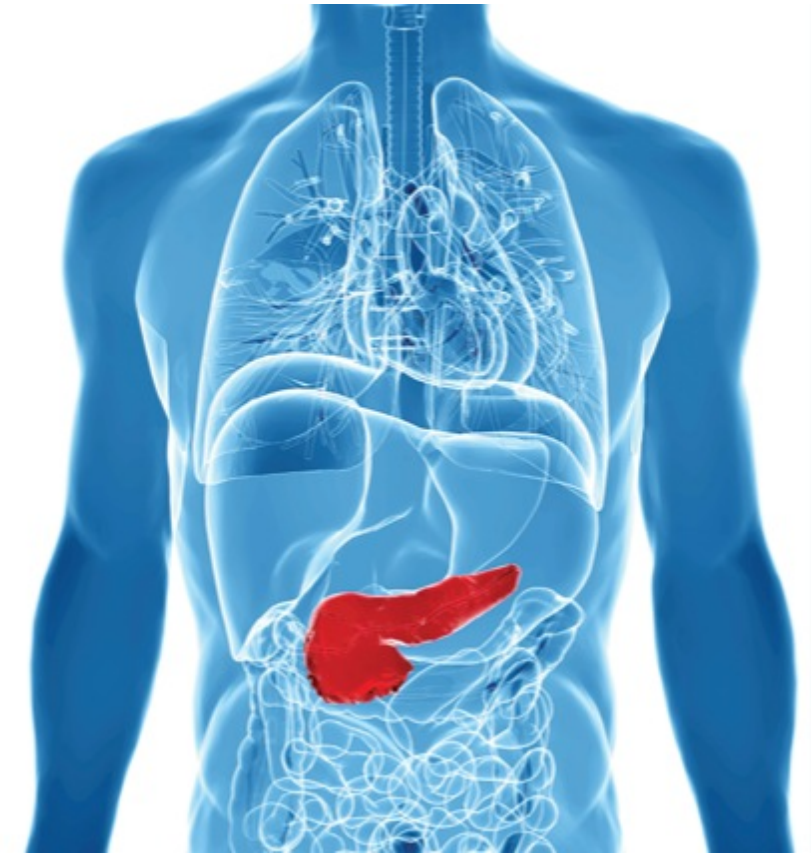
Clinical Pathway for Pancreatic Surgical Patients Lowers Transfusion Rates

San Diego—A goal-directed fluid therapy (GDFT) algorithm, introduced by physicians at the University of North Carolina (UNC) as part of an enhanced recovery after surgery (ERAS) clinical pathway, has successfully lowered transfusion rates for patients undergoing pancreatic surgery. Implementation of the guidelines reduced the rate of transfusions by approximately 16% in this patient population.

“An ERAS clinical pathway for pancreatic surgery that includes GDFT and transfusion guidelines helps avoid excess volume administration and unnecessary blood product administration, which are critical goals for this patient population,” said Timothy P. Rohman, MD, an anesthesiology resident at the UNC School of Medicine in Chapel Hill.



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Beyond the risks of allogeneic exposure, blood transfusion for surgical cancer patients has

Beyond the risks of allogeneic exposure, blood transfusion for surgical cancer patients has been associated with decreased survival and increased tumor recurrence, Dr. Rohman reported. While many patients still require blood products for major surgeries, blood transfusion is thought to have both an immunosuppressive and tumor-promoting effect, and thus should be more thoughtfully administered.

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A retrospective chart review of the UNC Health Care system, however, revealed that 27% of patients who were undergoing pancreatic surgery were receiving blood transfusions intraoperatively.

“We thought that our 27% transfusion rate was pretty high in the surgical population,” said Dr. Rohman. “So, as part of their ERAS protocol, we developed a GDFT algorithm based on pulse pressure variation (PPV).” Dr. Rohman presented the study at the 2015 annual meeting of the American Society of Anesthesiologists (abstract A4113).

If PPV exceeded 13 and the patient was hypotensive, then it was thought the patient could benefit from volume expansion with a colloid such as albumin. This judicious use of the proper type of fluid prevents dilutional anemia and the unnecessary administration of blood products. Dr. Rohman noted that, because patients usually get an arterial line for the surgery itself, recording the PPV was just a matter of turning on the software in the monitors.

All patients having major laparoscopic or open pancreatic surgery (Whipple, n=18; distal pancreatectomy, n=17) were included in the ERAS clinical pathway. Patients who had major pancreatic surgery over just the past year were used as historical controls (Whipple, n=42; distal pancreatectomy, n=17) so that any significant change in surgical practice did not influence results.

According to Dr. Rohman, the rollout of the process took several months.

“We started by picking our surgical population and getting the surgeons on board,” he said.

"We then narrowed it down to one surgeon who was very interested in the pathway. That also decreased the amount of variability in the surgery itself. Finally, we picked a small group of attending anesthesiologists that would be the providers for these cases initially, just to limit the amount of variability in terms of following the protocol.

"Once we got things rolling and started seeing how well the patients were doing postoperatively," he added, "everyone was buying into the ERAS algorithms. We then expanded it to include the entire department."

Whereas Whipple patients in the control group (n=42) were transfused packed red blood cells (PRBC) 33% of the time (n=14), only 11% of Whipple patients in the ERAS group (n=18) were transfused PRBC (n=2; *P*=0.0016).

"In patients undergoing the Whipple procedure, we were able to show that the GDFT algorithm does lead to decreased rates of transfusion in the patient population," Dr. Rohman concluded.

In addition, 6% of the distal pancreatectomy patients in the ERAS group and 12% of the same patients in the control group were transfused PRBC (*P*=0.30). Also, there was a significant decrease in intraoperative crystalloid administration (*P*=0.31) and a significant increase in intraoperative colloid administration (*P*=0.36) in the ERAS group versus the control group.

A Compliance Quandary

Moderator Nitin Mehdiratta, MD, an anesthesiologist at Brigham and Women's Hospital in Boston, said that while ERAS protocols throughout the country have been shown to decrease stays consistently by 1.5 days or more, the biggest issue with instituting these protocols is compliance.

"People are used to practicing a certain way," said Dr. Mehdiratta, "so it's hard to ensure they are doing the things you are asking them to do. For Dr. Rohman's study, having a very specific group of anesthesiologists, a very specific group of residents and one surgeon made implementing the protocols a lot easier.

"You can't control someone in an intraoperative setting; you can just suggest that they do certain things," he explained. "But, when you have people buy into these programs, I think the data become a lot stronger."

In the end, said Dr. Mehdiratta, the results should speak for themselves.

"You can make all these changes," he concluded, "but what really matters is the outcome. If you can show that people are getting out of the hospital quicker, I think that's beneficial."

—Chase Doyle

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