Management algorithm for pancreas transplantation

Preoperative

Review admission amylase and lipase values
Review admission blood glucose
Ask the patient about their current insulin regimen

Insulin Pump

Remove the insulin pump

Ask about the 24-hour insulin requirements and calculate hourly insulin needs and bolus doses (1,800 rule).

1,800 Rule

Correction factor: 1800 / Total daily insulin dose = mg/dL by which one unit of insulin reduces the patient's blood glucose.

Exp: The patient's total daily insulin dose is 50 U:
1800 ÷ 50 = 36 mg/dL (1 unit of insulin will reduce blood glucose by 36 mg/dL)

Basal-bolus regimen

Anesthesia induction

- Obtain arterial blood gases and an initial blood glucose measurement
- Initiate immunosuppression according to the transplant checklist
- Initiate antibiotic prophylaxis according to the transplant checklist
- Adjust intravascular volumes to maintain:
  -CVP at 12–14 cmH_2O (using albumin, mannitol, and minimal crystalloids; do not use colloids)
  -Blood pressure targets: systolic 120–130 mmHg, mean 70 mmHg
- Begin bicarbonate infusion and mild hyperventilation to keep the patient alkalotic with a normal base excess
- Start insulin infusion (within one hour of discontinuing the insulin pump) as follows:

Before clamping

Target Blood Glucose 140–180 mg/dL

Check the initial blood glucose level.

If <70 mg/dL or the patient is symptomatic

Administer a 50–100 ml bolus of 10% dextrose and measure blood glucose every 15 minutes until pre reperfusion targets (140–180 mg/dL) are reached.

Prereperfusion targets (140–180 mg/dL) are met

Review hourly insulin requirements

< 1U/h

Start insulin infusion at 0.5 U/h.

> 1U/h

Begin an insulin infusion two-thirds of the hourly requirement.

> 180 mg/dl

Blood Glucose Level (g/dL)	Regular Insulin Infusion (U/h)
>350	3 - 5
250 -350	3
150 -250	2
100 - 150	2
70 - 100	1-2
< 70	0

Obtain blood glucose measurements every 15 minutes and maintain prereperfusion targets (140–180 mg/dL).

Administer heparin (70 U/kg) before clamping

Before clamping

180 – 200 mg/dl

Prepare for reperfusion with blood glucose levels between 180–200 mg/dL
Check glucose every 15 minutes.
Twenty minutes before unclamping, turn off the insulin infusion.
Twenty minutes before unclamping, start a 10% dextrose infusion at 30–50 ml/h.
Monitor for hypokalemia and initiate correction if necessary.
Ensure the availability of packed red blood cells.

Reperfusion

Target blood glucose for reperfusion: 180–200 mg/dl

Check for significant bleeding at the surgical site
Measure blood glucose and arterial blood gases 10 minutes after reperfusion
Verify that blood glucose has begun to decrease compared to pre-reperfusion levels

Blood glucose is decreasing

Post reperfusion

Target blood glucose for: 80 – 130 mg/dl

Ye

Adjust the 10% dextrose infusion to maintain post-reperfusion blood glucose targets (80–130 mg/dL).

Check blood glucose every 15 minutes after reperfusion until levels stabilize.

Stable blood glucose

Once stable, continue checking blood glucose every 30 minutes until the end of surgery, aiming for 80–130 mg/dL.

Decreasing blood glucose levels

If levels are still fluctuating, continue to measure every 15 minutes and adjust the 10% dextrose infusion until stabilized.

No

Take a new blood glucose measurement at 15 minutes

If blood glucose is decreasing

Yes

No

Discontinue the 10% dextrose infusion
Consider organ rejection
If blood glucose >150 mg/dL, start insulin infusion according to the chart
Take another blood glucose measurement in 15 minutes
Measure amylase and lipase

AVOID correcting the drop in blood glucose with dextrose boluses. Only adjust the infusion to find the correct dose unless absolutely necessary.