DOSES BELOW

Pre-start briefing

START HERE · Brief before induction
Confirm identity, procedure, surgical phase and who leads each rescue pathway.

↓

Is the team ready to induce?

Gap in access, monitoring or airway rescue	Pause. Correct the gap and repeat the briefing. Confirm capnography, suction and backup access.
Bleeding or hemodynamic risk	Confirm blood release, rapid infuser, warming, baseline testing and the vasoactive plan. Read back concentrations.
Ready to proceed	Confirm antibiotics and immunosuppression timing, then agree when to call the prereperfusion pause.

DOSE AND ADMINISTRATION

Norepinephrine · local preparation Local order	**Local preparation: 8 mg norepinephrine base equivalent in a final 250 mL = 32 micrograms/mL. Verify the vial. IV rate per order.** [39] [16]
Vasoactive infusions Local order	**IV vasoactive infusion rate and target per prescription.** [16] [2]
Calcium chloride Local order	**Central IV calcium chloride dose per order and ionized calcium.** [15] [18]
Methylprednisolone Local order	**IV methylprednisolone dose and timing per transplant order.** [17]

Reassess and escalate · Repeat the briefing after a major change in plan, personnel or equipment.

Clinical scope · The norepinephrine concentration reflects the owner-confirmed local preparation. Confirm the prescribed steroid regimen and stocked-device instructions with the local team.

Source index

DOSES BELOW

Before graft reperfusion

START HERE · Call the prereperfusion pause
Confirm timing with the surgeon. Check arterial pressure, rhythm, oxygenation, blood gas and ionized calcium.

↓

Correct, proceed or activate rescue?

Uncontrolled bleeding or unstable circulation	→ Ask the surgeon to pause if feasible. Treat the cause and recheck before agreeing to unclamp.
Correctable electrolyte or ventilation issue	→ Correct and verify the response. Confirm the prescribed immunosuppression and rescue drugs are ready.
Proceeding to reperfusion	→ Announce unclamping time. Follow the arterial waveform and rhythm continuously. If circulation collapses, open the reperfusion rescue pathway. Collapse after graft reperfusion

DOSE AND ADMINISTRATION

Vasoactive and electrolyte rescue Local order	**Vasoactive or electrolyte rescue dose per order and clinical indication.** [2] [16]
Methylprednisolone Local order	**IV methylprednisolone dose and timing per transplant order, if indicated.** [17]

Reassess and escalate · Repeat blood gas and hemodynamic assessment promptly after unclamping.

Clinical scope · This is a readiness pause, not a mandatory prophylactic drug bundle. Reperfusion timing alone does not establish the cause of cardiovascular collapse.

Source index

DOSES BELOW

Liver transplant handover from OR to ICU

START HERE · Keep support connected during transfer
Assign escort, verify airway, pumps, oxygen and monitoring, and identify the receiving clinician.

What must happen before the OR team leaves?

Unstable on arrival	Treat first with both teams present. State the immediate threat, target and next escalation.
Possible bleeding or graft flow issue	Agree who reassesses bleeding and arranges Doppler. State when to call transplant surgery immediately. Suspected early graft failure or loss of graft flow
Stable enough to hand over	Read back support, ischemia and reperfusion events, blood loss, labs, drugs and what is due next.

DOSE AND ADMINISTRATION

Ongoing infusions Local order	**Record dose and pump rate. Local example: 8 mg norepinephrine base equivalent in a final 250 mL = 32 micrograms/mL. Verify the label.** [53] [39] [16]
Scheduled drugs and next doses Local order	**Read back each actual drug, dose, route and next time. Use the approved transplant order and local policy.** [53] [17]

Reassess and escalate · The receiving clinician confirms ownership, monitoring targets and escalation triggers.

Clinical scope · Record the actual orders and who will reconcile them. Use the center’s product, dose and monitoring schedule, including the graft-imaging plan.

Source index

DOSES BELOW

Uncontrolled bleeding

START HERE · Activate major hemorrhage response
Call surgery and the blood bank. Control the source, maintain perfusion, warm the patient and obtain point-of-care tests.

↓

What is sustaining bleeding now?

Surgical source or shock	→ Prioritize surgical control and emergency blood release per hospital protocol. Treat hypothermia and check ionized calcium.
Diffuse bleeding with a specific deficit	→ Use viscoelastic tests and labs to target replacement. Recheck after each round. Use the factor concentrate guide for product-specific decisions. Coagulation factor concentrates during bleeding
Hyperfibrinolysis supported and clinically relevant	→ Discuss tranexamic acid under the transplant pathway. Review renal function and thrombotic risk.

DOSE AND ADMINISTRATION

Emergency blood components Local order	**Product units or pools per hospital major-hemorrhage protocol. For fibrinogen concentrate, see the factor concentrates card.** [18] [3]
Tranexamic acid · selected cases Local order	**Tranexamic acid IV dose per approved transplant pathway, taking renal function and thrombotic risk into account.** [3] [4]

Reassess and escalate · Track source control, perfusion, temperature, pH, calcium and clot stability. Stop empirical rounds when no longer needed.

Clinical scope · No universal fixed transfusion ratio, stable-patient hemoglobin target, VCM/TEG/ROTEM interchangeability or routine early cryoprecipitate is implied. Follow the hospital major-hemorrhage protocol.

Official algorithm
Source index

DOSES BELOW

Suspected perioperative anaphylaxis

START HERE · Give oxygen and stop likely triggers
Call for help. Give 100% oxygen, verify ventilation and treat shock promptly. Skin signs may be absent.

↓

Pulse present and IV route available?

Pulse and working IV	→ For monitored perioperative anaphylaxis, give IV epinephrine in the specified dilution and rapid IV crystalloid. Reassess each dose.
Pulse, IV unavailable	→ Give IM epinephrine into the anterolateral thigh while securing IV or IO access.
Persistent shock despite boluses	→ Start a monitored epinephrine infusion using the local preparation. Check alternative causes and consider glucagon with beta blockade.
Pulseless	→ Start CPR and switch immediately to adult cardiac arrest dosing. Cardiac arrest in the operating room

DOSE AND ADMINISTRATION

Epinephrine · IV, pulse present Guideline	**Adrenaline 50 micrograms IV (0.5 mL at 100 micrograms/mL).** [7]
Epinephrine · IM, no IV Guideline	**Adrenaline 10 micrograms/kg IM, maximum 500 micrograms, using 1 mg/mL.** [7]
Crystalloid · initial bolus Guideline	**Crystalloid 500-1,000 mL IV initially.** [7]
Epinephrine · refractory shock infusion Guideline	**RCUK fallback: 0.5 mg in a final 50 mL (10 micrograms/mL). Start at 0.5–1 mL/kg/h and titrate under continuous monitoring.** [7]
Glucagon · selected beta blockade Guideline	**If indicated for refractory shock in an adult taking beta blockers: glucagon 1 mg IV.** [7]

Reassess and escalate · After stabilization, arrange serial tryptase per local timing and allergy referral.

Clinical scope · The IV dose is specific to monitored perioperative care with trained staff and IV access. Use the linked algorithm for absent IV access, infusion, refractory shock and arrest.

Official algorithm

Source index

DOSES BELOW

Suspected malignant hyperthermia

START HERE · Stop triggers and bring the MH cart
Unexplained rising $ETCO_2$, rigidity or acidosis: stop volatile agents and succinylcholine. Ventilate with 100% oxygen at 10 L/min and give dantrolene.

↓

What persists after starting dantrolene?

Hypermetabolism persists	→ Repeat dantrolene until controlled. If more than 10 mg/kg is required, consider other diagnoses while continuing assessment.
Hyperthermia or hyperkalemia	→ Cool if core temperature is above 39 °C or rising rapidly. Stop cooling below 38 °C. Treat hyperkalemia and acidosis. Acute hyperkalemia in adults
Controlled	→ Transfer to monitored ICU care and continue maintenance dantrolene. Monitor temperature, CK, potassium, gases and urine.

DOSE AND ADMINISTRATION

Dantrolene · initial rescue Guideline	**Dantrolene 2.5 mg/kg IV initially. Repeat to clinical response. Reconstitute according to the stocked product.** [8]
Insulin and glucose · MH hyperkalemia Guideline	**For MH-associated hyperkalemia in adults, MHAUS uses regular insulin 10 units IV with 25 g dextrose IV (50 mL of 50%). Check glucose at least hourly under the local pathway.** [8]
Dantrolene · after initial control Guideline	**Maintenance dantrolene 1 mg/kg IV every 4-6 h for at least 24 h. Use MHAUS clinical criteria to space or stop.** [8] [40]

Reassess and escalate · Use the stocked dantrolene formulation’s reconstitution instructions. Avoid calcium-channel blockers with dantrolene.

Clinical scope · Follow the formulation-specific reconstitution and the full MHAUS crisis algorithm. Some cases require more than 10 mg/kg. Arrange monitored post-crisis care.

Official algorithm
Source index

DOSES BELOW

Local anesthetic systemic toxicity (LAST)

START HERE · Stop the local anesthetic
Call for the LAST kit and help. Secure oxygenation and ventilation, limit acidosis and prepare IV 20% lipid emulsion.

↓

Which complication is present?

Seizure →	Use a benzodiazepine per the seizure pathway. Start lipid early for serious toxicity.
Cardiovascular instability or arrest →	Give lipid. If pulseless, start CPR. Use the reduced epinephrine dose below. Avoid vasopressin, beta blockers, calcium-channel blockers and local anesthetics.
Still unstable after initial lipid →	Repeat lipid bolus and double the infusion within the total ceiling. Mobilize bypass or extracorporeal support early.

DOSE AND ADMINISTRATION

20% lipid emulsion · IV loading and infusion Guideline	**Under 70 kg: about 1.5 mL/kg IV over 2-3 min, then 0.25 mL/kg/min. Over 70 kg: about 100 mL IV over 2-3 min, then about 250 mL over 15-20 min.** [9]
Lipid · maximum cumulative volume Guideline	**Total lipid ceiling: 12 mL/kg.** [9]
Epinephrine · LAST modification Guideline	**Adrenaline initial dose below 1 microgram/kg IV.** [9]
Seizure medication Local order	**Benzodiazepine dose per the local seizure protocol and clinician order.** [9]

Reassess and escalate · Continue lipid for more than 15 min after stability. Observe under the ASRA pathway.

Clinical scope · Use the current linked ASRA checklist for the complete sequence, escalation and post-event monitoring. Propofol is unsuitable as replacement lipid emulsion.

Official algorithm
Source index

DOSES BELOW

Unanticipated difficult intubation

START HERE · Call for help and maintain oxygen delivery
After unexpected difficulty, declare the problem. Call the next plan aloud, optimize position and confirm ventilation by waveform capnography.

↓

Move to the next plan when the current one fails

A · Tracheal intubation fails →	Optimize each attempt. Limit to three, with one additional attempt by a more experienced operator if appropriate. Then declare failed intubation and move to B.
B · Supraglottic rescue →	Try a second-generation device, up to three attempts. If ventilating, stop and decide with the team. If it fails, move to C.
C · Final optimized mask ventilation →	Use two-person technique and adjuncts after ensuring adequate block. If ventilation works, maintain oxygenation and plan the next step.
D · Cannot intubate, cannot oxygenate →	Declare the emergency and perform emergency front-of-neck access per DAS and the hospital pathway.

DOSE AND ADMINISTRATION

Neuromuscular blockade Local order	**Neuromuscular blocker and dose per anesthetic plan and monitoring.** [5]

Reassess and escalate · Reconfirm sustained waveform capnography after rescue. Debrief, document and advise the patient.

Clinical scope · This is not an emergency front-of-neck procedure tutorial. Use the full adult algorithm and local airway training; do not delay escalation while repeating failed attempts.

Official algorithm
Source index

DOSES BELOW

Cardiac arrest in the operating room

START HERE · Start CPR and call the arrest team
Use 100% oxygen and attach the defibrillator. Check the arterial waveform if present. Ask for the surgical phase and likely reversible causes.

↓

Which rhythm or arrest pathway applies?

Shockable · VF or pulseless VT →	Shock, then immediately resume CPR for 2 min. After shock 3 give epinephrine and amiodarone. Recheck rhythm every cycle.
Nonshockable · PEA or asystole →	Give epinephrine as soon as feasible. Continue CPR cycles and correct reversible causes.
Highly monitored arrest with continuous arterial pressure →	If using the dedicated RCUK pathway, consider small initial IV epinephrine increments as shown below.

DOSE AND ADMINISTRATION

First biphasic shock Guideline	**First shock: at least 150 J for rectilinear or truncated exponential biphasic; 130–150 J for pulsed biphasic. If the setting is unknown, use the highest energy.** [6]
Epinephrine · standard adult ALS Guideline	**Adrenaline 1 mg IV. Consider IO if rapid IV access fails after two attempts. Repeat every 3-5 min.** [6]
Epinephrine · highly monitored pathway Guideline	**Adrenaline 50-100 micrograms IV per initial increment. After 1 mg total without response, consider 1 mg IV every 3-5 min.** [6]
Amiodarone · shockable arrest Guideline	**Amiodarone 300 mg IV after 3 shocks, then 150 mg IV after 5 shocks.** [6]

Reassess and escalate · Look for hemorrhage, potassium disturbance, embolism, tamponade and surgical compression. After ROSC, stabilize and hand over.

Clinical scope · The complete ALS algorithm contains rhythm- and setting-specific drug/defibrillation sequences. This aid is not a replacement algorithm or a rule for ending resuscitation.

Official algorithm

Source index

DOSES BELOW

Suspected life-threatening PE or intracardiac thrombosis

START HERE · Mobilize transplant, echo and rescue teams
Sudden collapse, falling $ETCO_2$ or RV failure: support oxygenation and circulation. Use TEE when available without interrupting resuscitation.

↓

Arrest, shock with pulse, or clot without shock?

Pulseless with suspected PE	Start CPR. Activate the local PE-arrest decision for thrombolysis or mechanical rescue with the team. After lysis, consider 60–90 min of CPR in selected cases. Cardiac arrest in the operating room
Shock with pulse or obstructing clot	Confirm cause by echo if possible. Decide reperfusion with surgery and the rescue team. Consider mechanical options and the operative bleeding risk.
Thrombus without shock	Assess site and progression with repeat echo. Agree anticoagulation and surveillance with surgery after reviewing bleeding risk.

DOSE AND ADMINISTRATION

Alteplase · labeled systemic PE regimen Product or evidence specific	**US Activase label for acute massive PE: 100 mg IV over 2 h. Arrest dosing follows the local PE-arrest pathway.** [24] [23] [21]

Reassess and escalate · There is no established intraoperative transplant clot or PE-arrest alteplase dose. Reassess RV function, clot and bleeding after each intervention.

Clinical scope · Off-label intracardiac thrombus doses come from observational reports. Confirm the indication, contraindications and local rescue protocol. Graft-vessel thrombosis follows a separate pathway.

Official algorithm
Source index

DOSES BELOW

Acute hyperkalemia in adults

START HERE · Check ECG and start continuous monitoring
Measure potassium and glucose. Repeat a suspect sample promptly while treating immediately if ECG toxicity or arrest is present.

Which threat needs treatment first?

Hyperkalemic cardiac arrest	Start ALS. Give arrest calcium chloride and bicarbonate as below through separate lines or flush between them. Cardiac arrest in the operating room
ECG toxicity with a pulse	Give IV calcium. Choose chloride in peri-arrest and gluconate in other settings. Repeat ECG and assess for a further dose. Continue to potassium shift when indicated.
Severe K^+ ≥6.5 mmol/L, with or without ECG change	Shift potassium with insulin and glucose. Use nebulized salbutamol as an adjunct. Discuss urgent dialysis if refractory or severe kidney failure.

DOSE AND ADMINISTRATION

Calcium · ECG toxicity with pulse Guideline	**Calcium gluconate 10%, 30 mL IV over 10 min. In peri-arrest: calcium chloride 10%, 10 mL IV over 5 min.** [38]
Calcium chloride and bicarbonate · arrest Guideline	**RCUK 2025: calcium chloride 10%, 10 mL IV, and sodium bicarbonate 50 mmol IV (50 mL of 8.4%).** [21] [38]
Insulin and glucose · potassium shift Guideline	**Regular soluble insulin 10 units with glucose 25 g by IV infusion.** [38]
Glucose infusion · baseline <7 mmol/L (126 mg/dL) Guideline	**Glucose 10% IV at 50 mL/h for 5 h.** [38]
Salbutamol · adjunct only Guideline	**Salbutamol 10-20 mg nebulized.** [38]

Reassess and escalate · UKKA: recheck K^+ at 1, 2, 4, 6 and 24 h. After insulin, check glucose at 0, 30, 60, 90 and 120 min, then hourly through 6 h.

Clinical scope · Read back the calcium salt, concentration and route, and insulin in units. The guideline addresses adults. Use the full local emergency and renal-replacement pathway.

Official algorithm

Source index

DOSES BELOW

Coagulation factor concentrates during bleeding

START HERE · Confirm active bleeding and measure clot deficits
Control the source, correct reversible conditions and use viscoelastic or lab results to guide replacement.

↓

Which deficit has been identified?

Low fibrinogen or impaired fibrin clot →	Use the stocked fibrinogen concentrate or cryoprecipitate under the assay-guided pathway. Product thresholds differ.
Specific indication for PCC →	Confirm the indication, formulation and contraindications with the team. An elevated INR alone in liver failure is insufficient.
Still bleeding after targeted therapy →	Recheck the source and deficits. Reserve recombinant factor VIIa for specialist-directed rescue.

DOSE AND ADMINISTRATION

Cryoprecipitate or fibrinogen · local order Local order	**Cryoprecipitate units/pools or concentrate dose per local product and assay-guided order.** [26] [27]
FIBRYGA · acquired bleeding, US label Product or evidence specific	**FIBRYGA US label: 4 g IV initially in adults. If bleeding persists, the label permits another 4 g as needed at fibrinogen ≤200 mg/dL or FIBTEM A10 ≤10 mm.** [29]
PCC · indication-specific dose Local order	**PCC dose per specific indication, stocked product and transplant protocol.** [26] [27] [28]
Recombinant factor VIIa · rescue Local order	**Rescue dose per specialist order.** [26]

Reassess and escalate · Read back product, IU or grams, volume and route. Repeat clot assessment and monitor for thrombosis.

Clinical scope · The example dose applies to the named product and indication. Follow the actual hemostatic assay and local transplant pathway for further replacement. PCC has separate product-specific indications and dosing.

Official algorithm

Source index

After a death: family and team

START HERE · Confirm the facts and name a lead
Confirm identity and death, agree what is known, and arrange a private space, interpreter and support person as needed.

↓

What does the family or team need now?

Family notification	→ Introduce yourself, give a brief warning and say clearly that the person died. Pause. Listen, show sympathy and check understanding.
Unanswered questions or possible unexpected harm	→ State known facts and uncertainty separately. Activate the institutional response and name who will follow up.
Team needs relief or support	→ Arrange coverage and offer peer support. Hold a separate, non-blaming operational review with named actions.

Reassess and escalate · Offer the family written contacts. Agree when to follow up with the family and staff. Do not require personal trauma narratives.

Clinical scope · Adapt family notification, documentation and team support to institutional policy and Chilean requirements. Investigate unexpected harm through the applicable institutional process.

Source index

DOSES BELOW

Collapse after graft reperfusion

START HERE · Announce collapse and call for help
Confirm arterial waveform and rhythm, give oxygen, ask surgery to assess immediately, and get blood gas, potassium and ionized calcium.

↓

Pulse present? If so, what is the dominant cause?

Pulseless →	Start CPR and open the arrest pathway. Correct the reversible cause in parallel. Cardiac arrest in the operating room
Vasodilation, bradycardia or metabolic disturbance →	Titrate support with the team. Treat hyperkalemia or low ionized calcium from the current results. Reassess each intervention. Acute hyperkalemia in adults
Low filling, new RV failure or embolism →	Check bleeding, surgical inflow and outflow, and use focused echo where available. Match volume and rescue to the cause. Suspected life-threatening PE or intracardiac thrombosis

DOSE AND ADMINISTRATION

Epinephrine · pulse present, published example Product or evidence specific	**Published early-reperfusion rescue example: epinephrine 10-20 micrograms IV per increment, reassessing after each.** [2] [43]
Norepinephrine · local preparation Local order	**Local preparation: 8 mg norepinephrine base equivalent in a final 250 mL = 32 micrograms/mL. Verify the vial. IV rate per order.** [2] [39] [16]

Reassess and escalate · Repeat rhythm, arterial pressure, echo as indicated and blood gas. Reconsider the cause if support needs increase.

Clinical scope · Treat the demonstrated cause. The published epinephrine increments are a monitored example for a patient with a pulse. Use the dedicated arrest and hyperkalemia guides when indicated.

Source index

DOSES BELOW

Suspected early graft failure or loss of graft flow

START HERE · Notify transplant surgery and ICU now
If lactate, acidosis, INR or support requirements worsen, repeat labs, treat shock and arrange urgent graft Doppler.

↓

What do imaging and the clinical trend show?

Absent or suspicious hepatic arterial or portal flow	Escalate immediately for repeat expert imaging and a decision on urgent intervention. Agree imaging or intervention with surgery without delaying rescue.
Doppler inconclusive or flow present but graft worsening	Reassess perfusion and alternatives. Escalate for further imaging or urgent review of graft failure and retransplant options.
Hypoglycemia during evaluation	Give prescribed IV glucose when oral treatment is unsafe. Recheck glucose and titrate ongoing support.

DOSE AND ADMINISTRATION

IV glucose · adult rescue example Guideline	**Adult IV rescue example: glucose 20 g (200 mL of 10%) over 15 min. Use the prescribed formulation.** [46] [57]
Anticoagulation · after surgical decision Local order	**Anticoagulant, dose and timing per transplant surgery order after review of anatomy and bleeding risk.** [44]

Reassess and escalate · Follow glucose, lactate, INR, gases and vasopressor needs. Share trends with transplant surgery.

Clinical scope · Coordinate early with transplant surgery. Primary nonfunction requires evaluation for reversible causes. Anticoagulation and retransplant decisions follow the transplant team and local pathway.

Source index

DOSES BELOW

Hyponatremia and sodium overcorrection

START HERE · Establish baseline and correction already given
Review timed sodium values, chronicity, symptoms and ODS risk. Count correction before OR and all planned sodium loads.

↓

Severe symptoms, planned correction or overcorrection?

Severe symptoms attributable to hyponatremia →	Activate the monitored hypertonic saline pathway. Recheck sodium after each bolus and stop rapid correction after the initial goal.
Chronic or uncertain duration, no severe symptoms →	Use the high-risk correction target below when indicated. Plan transfusion, fluids and renal support with the team.
Correction ahead of target or new brisk diuresis →	Stop active correction where safe, measure sodium and urine output frequently and call for expert-guided relowering.

DOSE AND ADMINISTRATION

NaCl 3% · severe symptoms Guideline	**European emergency example: sodium chloride 3%, 150 mL IV over 20 min. Reassess symptoms and sodium. Initial rise goal about 5 mmol/L.** [47] [48]
High-risk chronic correction limit Guideline	**Chronic or uncertain duration, high risk of osmotic demyelination: aim for 4–6 mmol/L in 24 h and do not exceed 8 mmol/L. Include earlier correction.** [47] [49] [67]
Relowering · specialist-directed example Product or evidence specific	**European specialist example: glucose 5%, 10 mL/kg IV over 1 h under strict monitoring. Consider adding desmopressin 2 micrograms IV, at least 8 h apart.** [47] [48]

Reassess and escalate · Follow the rolling 24-hour change across handover. Document the value, time, target and person checking next.

Clinical scope · Plan a smaller correction target for this high-risk population. The daily ceiling is a safety limit. Relowering requires ICU or nephrology supervision and close sodium and fluid monitoring.

Source index

DOSES BELOW

Pulmonary hypertensive crisis and right ventricular failure

START HERE · Support RV perfusion and remove triggers
Treat hypoxemia, hypercapnia and acidosis. Maintain systemic pressure and use echo or invasive data to assess the RV.

↓

Which mechanism is limiting perfusion?

Interrupted pulmonary vasodilator	→ Restore the verified continuous therapy with the specialist and check the pump and line. Pulmonary vasodilator withdrawal can provoke rebound.
High RV afterload with low output	→ Use an inhaled pulmonary vasodilator when indicated. Maintain coronary perfusion, select inotropy and avoid indiscriminate volume loading.
Shock persists or pulse is lost	→ Escalate early for arrest or extracorporeal support per local pathways. Start ALS if pulseless. Cardiac arrest in the operating room

DOSE AND ADMINISTRATION

Inhaled nitric oxide · specialist range Guideline	**Inhaled nitric oxide 10-40 ppm per ISHLT perioperative consensus. Titrate under local specialist protocol.** [41] [50] [58]
Established pulmonary vasodilator Local order	**Continue the verified agent, concentration and dose per specialist order. Arrange pump and drug backup.** [41] [50]
Vasopressor or inotrope Local order	**IV vasopressor or inotrope dose and target per individual prescription.** [41] [50]

Reassess and escalate · Trend systemic pressure, RV size and output. Wean inhaled vasodilators under monitoring and avoid abrupt withdrawal.

Clinical scope · Select support by the mechanism and local capability. The inhaled nitric oxide range comes from general perioperative consensus. Use the local delivery and monitoring protocol.

Source index

DOSES BELOW

Suspected intraoperative air embolism

START HERE · Stop further gas entry and give 100% oxygen
Alert the surgeon and stop the suspected source. Discontinue nitrous oxide. Support circulation and evaluate by echo when feasible.

What is the consequence of gas entry?

Pulse present with hemodynamic compromise	Maintain perfusion and coordinate surgical control. Consider aspiration if gas is accessible through an existing suitable central catheter.
Pulseless	Start CPR and standard ALS with the appropriate monitored-arrest modification. Address the entry source in parallel. Cardiac arrest in the operating room
Arterial gas or neurologic deficit	Keep high-concentration oxygen, stabilize and contact hyperbaric medicine urgently.

DOSE AND ADMINISTRATION

Epinephrine · standard adult ALS Guideline	**Standard adult ALS: epinephrine 1 mg IV, repeated every 3-5 min. Give early if nonshockable, after shock 3 if shockable. In highly monitored arrest use its dedicated pathway.** [52] [6]

Reassess and escalate · Recheck hemodynamics, end-tidal CO_2 and neurologic status. Arrange monitored transfer and communicate the suspected route.

Clinical scope · Gas embolism requires source control and oxygen. Use the designated arrest pathway if pulseless. Escalate suspected arterial gas or neurologic findings urgently.

Source index

DOSES BELOW

Acute variceal bleeding in a transplant candidate

START HERE · Activate endoscopy and resuscitate
In suspected variceal hemorrhage, start a vasoactive agent and empiric antibiotic coverage promptly. Assess airway risk and perfusion.

What is the next hemostatic step?

Initial endoscopic control	Protect the airway if needed. After initial resuscitation, scope within 12 h of presentation, as soon as possible if unstable. Band esophageal varices and treat gastric varices by site.
Index bleeding controlled, high-risk criteria met	Discuss preemptive TIPS within 72 h, ideally <24 h. For esophageal/GOV1 bleeding: Child–Pugh C 10–13, B ≥8 with active bleeding, or HVPG ≥20 mmHg.
Persistent or recurrent bleeding despite treatment	Call for rescue TIPS or a center-specific alternative. Use a bridge only with a defined definitive pathway.

DOSE AND ADMINISTRATION

Octreotide · vasoactive option Guideline	**Octreotide 50 micrograms IV bolus, then 25-50 micrograms/h IV. Usual course 2-5 days or until indicated TIPS.** [54] [55]
Terlipressin · Chilean product option Product or evidence specific	**Everpressin 1 mg/5 mL (Chile), initial acetate dose IV over 1 min: <50 kg, 1 mg; 50–70 kg, 1.5 mg; >70 kg, 2 mg. May reduce to 1 mg IV every 4–6 h. Limit to 2–3 days. Approx. maximum 120 micrograms/kg per day.** [54] [56]
Ceftriaxone · antibiotic example Guideline	**AASLD example: ceftriaxone 1 g IV every 24 h for up to 5 days. Reassess after bleeding control and if infection is present.** [54] [55]
Red cells · stable patient target Guideline	**Restrictive red-cell strategy. In stable patients, aim for hemoglobin about 7-8 g/dL. Individualize for shock, ongoing bleeding and cardiac disease.** [54] [55]

Reassess and escalate · Reassess bleeding and perfusion, drug adverse effects and antibiotic need. Individualize transfusion during shock.

Clinical scope · Choose one portal vasoactive drug. Adapt resuscitation and antibiotics to the patient. Cardiofundal gastric varices have a separate endoscopic and radiologic pathway. TIPS is a transjugular intrahepatic portosystemic shunt.

Source index

DOSES BELOW

Oral anticoagulant reversal

START HERE · Stop the drug and assess bleeding severity
Resuscitate and control bleeding. Identify drug, last dose, renal function and tests. Delay urgent surgery for clearance when safe.

Which anticoagulant is active?

Vitamin K antagonist	Life-threatening bleeding with active effect: slow IV vitamin K and 4F-PCC. If PCC is unavailable, use plasma.
Dabigatran	Give idarucizumab for life-threatening or uncontrolled bleeding or when indicated for emergency surgery.
Factor Xa inhibitor	Discuss 4F-PCC per local policy. For andexanet, verify indication, availability and thrombosis risk. Avoid before planned heparinization.

DOSE AND ADMINISTRATION

Vitamin K1 and Kcentra · VKA Guideline	**Vitamin K1 5–10 mg slow IV per product. Use 10 mg for life-threatening bleeding.** **Kcentra, IV factor IX IU/kg, actual weight up to 100 kg:** **INR 2 to <4: 25 (max 2,500 IU)** **INR 4–6: 35 (max 3,500 IU)** **INR >6: 50 (max 5,000 IU)** [59] [28]
Plasma · no PCC Guideline	**Plasma 10–15 mL/kg IV.** [59] [28]
Idarucizumab · initial Guideline	**5 g IV: two consecutive 2.5 g/50 mL vials.** [62] [61] [60]
Idarucizumab · repeat Guideline	**If clotting tests are prolonged, consider 5 g IV again for recurrent bleeding, risk of life-threatening rebleeding or a second emergency procedure.** [62]
4F-PCC · Xa, off label Product or evidence specific	**4F-PCC 25–50 factor IX IU/kg IV per hospital protocol.** [60] [61] [66]
Andexanet · EMA label Guideline	**Low: 400 mg IV bolus, then 4 mg/min for 120 min.** **High: 800 mg IV bolus, then 8 mg/min for 120 min.** **Bolus ≈30 mg/min. Low if apixaban ≤5 mg, rivaroxaban ≤10 mg, or last dose ≥8 h ago. High if the dose exceeds these limits and was taken <8 h ago. No EMA dose if dose or time is unknown.** [63] [64] [65]

Reassess and escalate · Recheck source control and relevant assays. Agree when to reassess thrombosis risk and restart anticoagulation.

Clinical scope · Use the approved hospital pathway. Brand names identify examples. Verify the local product and availability. Elective interruption and neuraxial procedures have separate thresholds.

Source index

Source index

Numbered citations link to the original sources.

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