Alteplase (Activase, TPA, Actilyse, Actiplas, Besopartin, Lysatecrt-PA)
Route: IV
Dosage: For acute myocardial infarction 6 mg IV bolus followed by 54 mg within the first hour, followed by 20 mg/hour for 2 hours for a total dose of 100 mg. Patients <65 kg should receive a total of 65 mg. Alternatively: 15 mg IV bolus then 50 mg IV over 30 minutes, followed by 35 mg over 60 minutes ("front loading" regimen).

Anistreptase (Eminase, Iminase) Route: IV
Dosage: For acute myocardial infarction 30 units IV over 2-5 minutes

Atenolol (Tenormin, Atenil, Atenolan, Betatop, and others)
Route: IV
Dosage: Following acute myocardial infarction, 5 mg IV over 5 minutes every 10 minutes for a total IV dose of 10 mg. Oral atenolol therapy should be initiated immediately after the second IV bolus with 50 mg, followed by another 50 mg oral dose 12 hours later. Oral maintenance therapy is continued with 100 mg daily for at least 10 days.
**Benztropine (Cogentin)** Route: IV, IM, PO
Dosage: For acute dystonic reactions secondary to neuroleptic drugs, 1-2 mg IM or IV push.

**Calcium** Route: IV
Dosage: Magnesium intoxication: 4.5-9 mEq via IV infusion at a rate not to exceed 200 mg/minute. Hypocalcemic tetany: 4.5-16 mEq via IV infusion at a rate not to exceed 200 mg/minute. Calcium channel blocker overdose: 5-10 mL (6.8-13.6 mEq) of 10% calcium chloride or 10-20 mL (4.65-9.3 mEq) of 10% calcium gluconate IV over 5 minutes. Hyperkalemia with secondary cardiac toxicity: 2.25-14 mEq IV. Repeat after 1-2 minutes as necessary.

**Dalteparin (Fragmin)** Route: SC
Dosage: For patients undergoing abdominal surgery who are at risk of thromboembolic complications 2500 IU SC daily

**Diltiazem (Cardizem)** Route: IV
Dosage: For atrial fibrillation or flutter or supraventricular tachycardia 0.25 mg/kg IV push over 2 minutes. A second bolus dose of 0.35 mg/kg may be administered after 15 minutes if response to first bolus was not adequate. The bolus dose(s) is followed by a continuous IV infusion at an initial rate of 10 mg/hour. The dosage may be increased by 5 mg/hour up to a maximum recommended infusion rate of 15 mg/hour.

**Diphenhydramine (Benadryl)** Route: IM, IV, PO
Dosage: For acute dystonic reactions secondary to neuroleptic drugs, 10-50 mg (up to 100 mg if required) deep IM or IV push.
For adjunctive treatment of anaphylaxis, 10-50 mg (up to 100 mg if required) deep IM or IV push.

**Dopexamine (Dopacard)** Route: IV Dosage: Heart failure associated with cardiac surgery 0.5-6 mg/kg/minute. **Enoxaparin (Lovenox)** Route: SC
Dosage: For prophylaxis of venous thromboembolism in patients undergoing hip replacement surgery 30 mg SC BID.
**Ephedrine**  
Route: IM, SC, IV  
Dosage: For hypotension associated with spinal anesthesia, sympathectomy overdosage with ganglionic-blocking or antiadrenergic drugs, penile erection during spinal anesthesia for transurethral resection of the prostate. The usual dose is 25-50 mg IM or SC. The IV route (slow IV push) may be used if an immediate effect is required. Alternatively, 10-25 mg may be given slow IV push. Additional doses may be given at 5-10 minute intervals up to a maximum of 150 mg.

**Epinephrine (Adrenalin)**  
Route: IV, ET, SC  
Dosage: Cardiac arrest (VF/unstable VT, EMD/PEA, asystole): 1 mg IV every 3-5 minutes (AHA guidelines)  
Respiratory distress or hypersensitivity reactions: 0.3-0.5 mg (0.3-0.5 mL of 1:1,000 solution) IM or SC every 20 minutes to 4 hours or 0.5-1.5 mg (0.1-0.3 mL of 1:200 suspension) every 6 hours. Shock: 1-4 mg/minute by continuous IV infusion.

**Heparin** Route: IV, SC  
Dosage: Venous thrombosis: 75-100 units/kg (approximately 5,000-10,000 units) IV bolus followed by a continuous IV infusion of 1,680 units/hour (use 1,240 units/hour if one or more of the following risk factors for bleeding are present: Recent surgery or stroke (within last 2 weeks), thrombocytopenia, history of peptic ulcer disease, GI hemorrhage, or genitourinary bleeding; other conditions that increase the risk of bleeding (eg. hepatic failure or invasive lines)). Alternatively, a infusion rate of 18 units/kg/hour has also been used. Titrate to maintain APPT in range that corresponds to heparin concentrations (by protamine titration) in the range of 0.2-0.4 units/mL (Hirsh J. Heparin. N Engl J Med 1991;324:1565-74). DVT prophylaxis: 5,000 units SC q 8-12 hours

**Ipecac syrup** Route: PO  
Dosage: 15-30 mL followed by 3-4 glasses of water. Do not administer concurrently with activated charcoal since activated charcoal will adsorb ipecac. If both are indicated, induce vomiting with ipecac first then administer the charcoal.

**Ketorolac (Toradol)** Route: IM, IV, PO  
Dosage: For post-operative pain, 30 mg (IM or IV) or 60 mg IM followed by 15-30 mg IM or IV every 6 hours.
**Magnesium sulphate** Route: IV, IM used a lot for OB patients
Dosage: Seizure prevention and control in pre-eclampsia or eclampsia: 4-5 gm of 50% solution IM every 4 hours.

**Metoprolol (Lopressor, Betaloc, Arbralene, Beprolo, and others)** Route: IV, PO
Dosage: Following acute myocardial infarction, 5 mg IV push every 2 minutes for a total IV dose of 15 mg. Oral metoprolol at a dose of 50 mg every 6 hours should be started 15 minutes after the last IV bolus dose and continued for 48 hours. The maintenance dose is 100 mg twice daily for at least 3 months.

**Milrinone (Primacor, Corotrop, and Corotrope)** Route: IV
Dosage: For short term management of congestive heart failure a loading dose of 50 mg/kg is infused IV over 10 minutes followed by a continuous IV infusion in the range of 0.375 to 0.75 mg/kg/minute.

**Nalmefene (Revex)** Route: IV
Dosage: Postoperative opioid depression: 0.25 æg/kg IV every 2-5 minutes until the desired degree of opiate reversal is attained.
Known or suspected opioid overdose: 0.5 mg/70 kg.

**Naloxone (Narcan, Narcanti)** Route: IV, IM, SC
Dosage: Postoperative opioid depression: 1.0 æg/kg IV every 2-5 minutes until the desired degree of opiate reversal is attained.
Known or suspected opioid overdose: 0.4-2mg IV, may repeat up to 10 mg. Continuous IV infusion at 4-5 æg/kg/minute may be used.

**Nicardipine (Cardene)** Route: IV
Dosage: For acute hypertensive episodes 5 mg/hour via continuous infusion. This initial dosage may be increased by 2.5 mg/hour every 5-15 minutes up to a total of 15 mg/hour.
Nicardipine has been administered in small IV push doses in the range of 1.25-2.5 mg when immediate antihypertensive action is required although this mode of administration is not FDA approved in the U.S.
Nimodipine (Nimotop) Route: PO
Dosage: For subarachnoid hemorrhage begin 60 mg PO every 4 hours within 96 hours of SAH and continue for 21 days.

Phenytoin (Dilantin, Fenantoin, Di-Hydan, Epanutin, Epilan-D, and others) Route: IV
Dosage: For status epilepticus, a loading dose of 15-20 mg/kg (approximately 1 gm) IV at a rate not to exceed 50 mg/minute should be given.

Physostigmine (Antilirium) Route: IM, IV
Dosage: For life-threatening toxicity secondary to anticholinergic agents, 2 mg IM or IV over 2 minutes. A second dose may be given if no reversal has occurred and if cholinergic signs and symptoms are not present.

Rocuronium (Zemuron) Route: IV
Dosage: For intubation, 0.6 mg/kg (approximately 50 mg) IV push. For maintenance of blockade, a continuous infusion of 5-10 mg/kg/minute may be used and titrated to the desired degree of blockade.

Sodium thiosulphate Route: IV
Dosage: For cyanide poisoning, 12.5 gm IV over about 10 minutes. Repeat at one-half the original dose if signs reappear within 24-48 hours.

Streptokinase (Kabikinase, Streptase) Route: IV
Dosage: For acute myocardial infarction 1.5 million units IV over 1 hour

Urokinase (Abbokinase, Alphakinase, Actosolv, Uronase, and others) Route: IV
Dosage: For acute myocardial infarction, 2 million units IV bolus followed by 1 million units over 60 minutes.

Vasopressin (Pitressin) Route: IV
Dosage: For bleeding esophageal varices (unlabeled use in U.S.), 0.2 units/minute
Initially. The infusion rate may be increased by 0.2 units/minute every hour if bleeding continues and up to 1 unit/minute, although doses of up to 2 units/minute may be tolerated.

**Verapamil Route: IV**
Dosage: For supraventricular tachyarrhythmias 5-10 mg IV push over 2 minutes. A second bolus dose of 10 mg may be administered after 30 minutes if the response to the first bolus was not adequate. Although not an FDA approved route of administration, verapamil has been administered via continuous IV infusion at a rate of 5 mg/hour.

The science of medicine is constantly evolving. Every attempt has been made by the authors to ensure that this article includes the latest recommendations from the medical literature. Doses of drugs have been carefully reviewed. However, it is strongly recommended that the reader become completely familiar with the manufacturer's product information when prescribing any of the drugs described in this article. This recommendation is particularly important with new or infrequently used drugs. As new information becomes available, changes in treatment modalities invariably follow; therefore, when choosing a particular treatment, the reader should consider not only the information provided in this article but also any other recently published medical literature on the subject.

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