

Patient Blood Management

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Outline

- Introduction
- Definition
- Rational
- Aims
- Strategies
 - Pre operative strategies
 - Intraoperative strategies
 - Post operative strategies

What is Patient Blood Management?

PATIENT BLOOD MANAGEMENT (PBM) IS THE SCIENTIFIC USE OF SAFE AND EFFECTIVE MEDICAL AND SURGICAL TECHNIQUES DESIGNED TO PREVENT ANEMIA AND DECREASE BLEEDING IN AN EFFORT TO IMPROVE PATIENT OUTCOME.



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- Blood transfusion could be life saving but also comes with its complications
 - Unnecessary blood transfusion is shown to be associated with worse patient outcomes
 - Wide variation in transfusion practice and blood overuse is present in different health care organizations
 - This has lead to increased focus on blood component utilization in different organizations

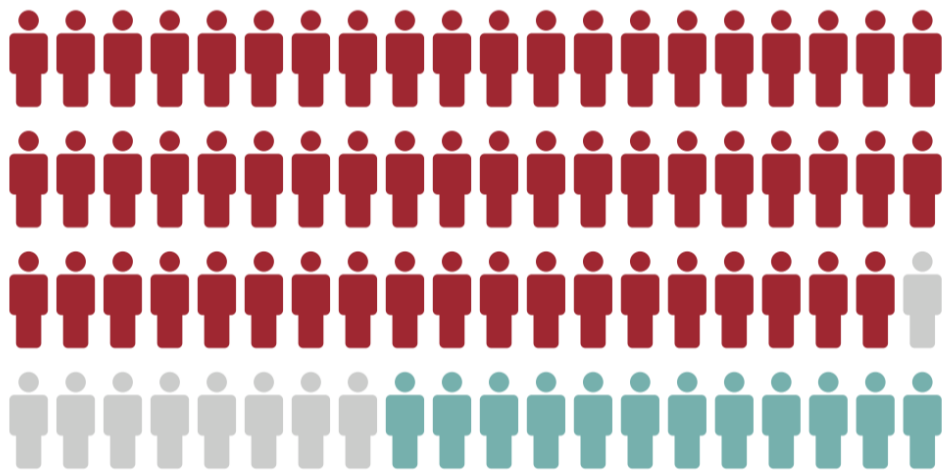
Why Patient Blood Management?

- CONSERVES A PRECIOUS COMMUNITY RESOURCE.
 - REDUCES UNNECESSARY HOSPITAL & PATIENT CARE COSTS.
 - IMPROVES PATIENT SAFETY BY MINIMIZING EXPOSURE TO BLOOD.
 - CAN REDUCE THE RISK OF HOSPITAL-ACQUIRED COMPLICATIONS AND INFECTIONS.
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- INCREASING CONSUMER INTEREST IN SAFETY.

Risks of Transfusion

- Incorrect unit transfused – may lead to ABO incompatibility
- Incorrect type of blood component transfused eg plasma instead of platelets
- Allergic or anaphylactoid reaction
- Haemolytic transfusion reaction
- Transfusion-associated circulatory overload (TACO)
- Transfusion transmitted infection
- Transfusion related acute lung injury (TRALI)
- Febrile reaction

When considering improved patient outcomes, the majority of blood transfusions may be inappropriate.^Δ



59%

INAPPROPRIATE

UNCERTAIN

12%

APPROPRIATE

PBM PROGRAMS IMPACT ON PATIENT OUTCOMES

PBM has significantly reduced...[#]

Transfusions



Mortality



Average LOS



Reoperation



Readmissions



Complications (composite morbidity)



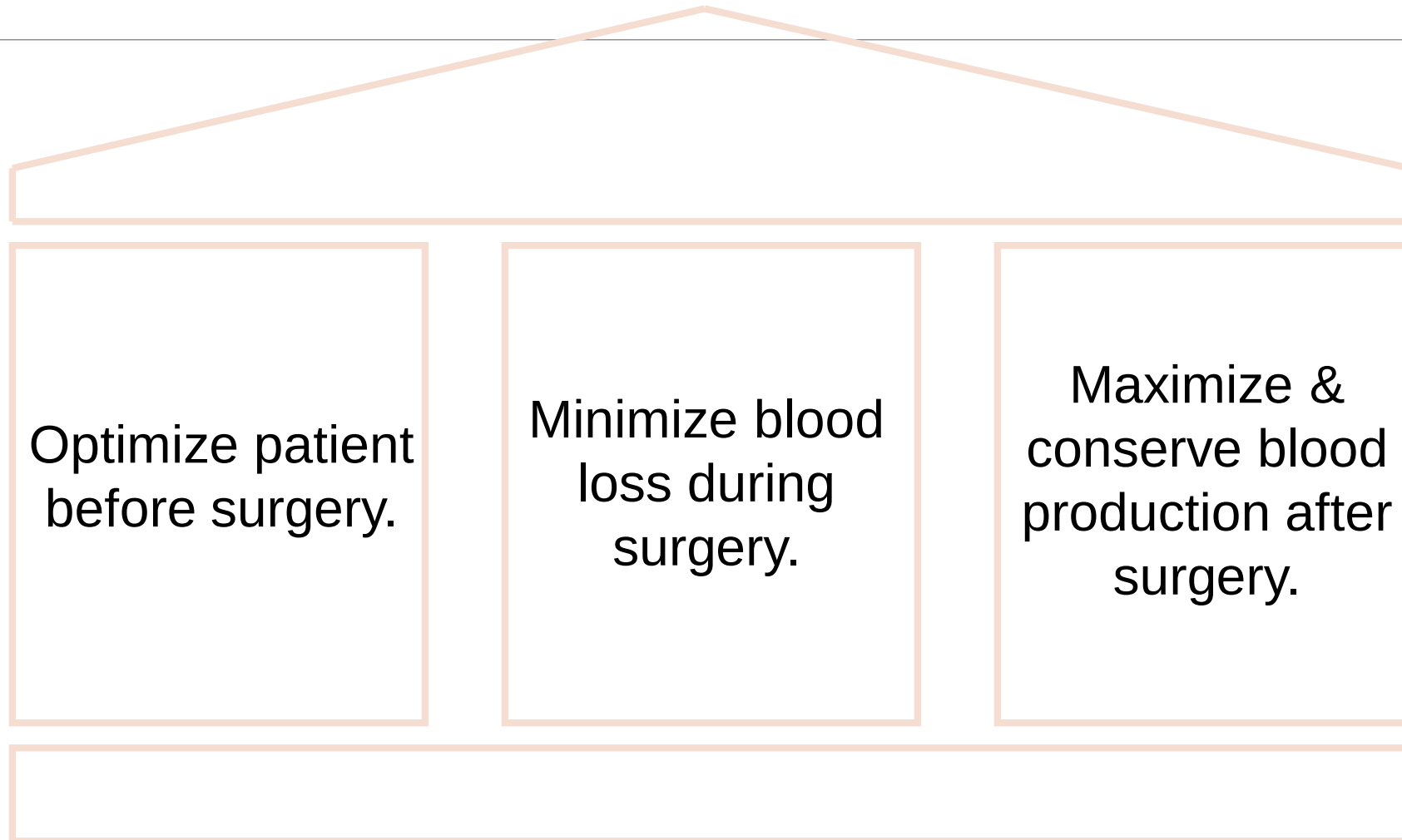
Complications (infections rate)



Costs



PBM in surgery



PBM surgical Strategies

Optimize patient before surgery.

- ✓ Assess patient fitness for surgery.
- ✓ Correct bleeding disorders.
- ✓ Assess medications and herbs that increase bleeding.
- ✓ Correct anemia.
- ✓ Develop individualized plan of care.

Preoperative Strategies

- Anemia screening and management
 - – iron therapy
 - – cautious use of EPO
- Screen for bleeding risks and optimize coagulation
 - – discontinue anticoagulants and antiplatelet drugs
 - – discontinue herbal supplements, some vitamins
 - – address genetic coagulation abnormalities
- Minimize crystalloids in acute bleeding
- Limit phlebotomy
- Preoperative autologous donation

Pharmacologic Therapies for Supporting Patient Blood Management

- Intravenous (IV) Iron Therapy
 - Iron high-molecularweight dextran
 - iron lowmolecular- weight dextran
 - iron gluconate
 - iron sucrose
 - iron carboxymethyl dextran
- Erythropoietic Stimulating Agents (ESAs)
 - Epoetin alfa
 - darbepoetin alfa

PBM surgical Strategies

Minimize blood loss during surgery.

- ✓ Precise surgical technique.
- ✓ Surgical devices that control bleeding.
- ✓ Drugs that control bleeding.
- ✓ Minimally invasive technology.
- ✓ Anesthesia & fluid management.
- ✓ Blood salvage.

Intraoperative

- Replacement fluids
- Surgical techniques
- Acute normovolemic hemodilution
- Intraoperative blood recovery
- Hemostatics
- Point-of-care testing
- Monitor acute bleeding and manage coagulation
- Tolerate low hemoglobin
- Avoid hypothermia

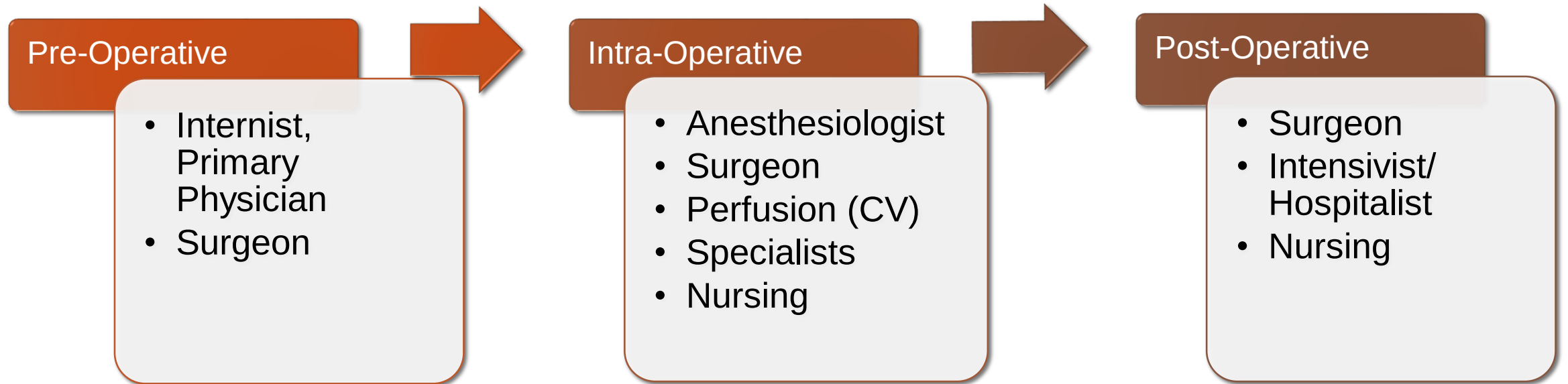
Pharmacologic Therapies for Supporting Patient Blood Management

- Antifibrinolytics
 - Epsilon-aminocaproic acid (EACA)
 - Tranexamic acid (TA) (Similar to EACA, but 10 times as potent)
- Reversal Agents
 - Vitamin K
 - Protamine
- Coagulation Factor Concentrates
 - Prothrombin complex concentrate (PCC)
 - Recombinant Factor VIIa (rFVIIa)

PBM surgical Strategies

- **Maximize & conserve blood production after surgery.**
- Monitor and correct bleeding.
- Tolerance of permissive anemia.
- Increase patient blood production.
- Minimize blood sampling.

PBM Programs: A Team Approach



PBM Programs

A hospital-based philosophy that

every drop of blood counts

ICU and Postoperative

- Postoperative Blood Recovery
- Limiting Phlebotomy-Related Blood Loss
- Increased Tolerance of Anemia and Transfusion Thresholds

BLOOD UTILIZATION REVIEW AND CHANGING PHYSICIAN BEHAVIOR

- Interventions can be broadly grouped into:
 - 1) education
 - 2) adoption of guidelines
 - 3) reminders
 - 4) audits with feedback.
- Education can be in the form of scheduled conferences or one-on-one teaching.
- Providing repeated sessions and easy access to educational inform.
- Issuing a memo of the transfusion guidelines to physicians without follow-up
 - typically fails to reduce blood usage.
- auditing or monitoring
- Blood utilization reports that incorporate benchmarking

Medical Education

- Because behavioral change is sometimes difficult to achieve, repetition
 - and reinforcement over time are typically required for success.
- Because PBM is multidisciplinary, different audiences may respond to different approaches.
- Educational delivery options may include:
 - journal club
 - grand rounds
 - webinars, online courses,
 - guest lecturers, conference attendance,
 - one-to-one instruction

