



Patient Blood Management

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Conflict of interest

- instruktor ATLS a (kurzy viskoelastických metod)

Kdo pracuje v nemocnici, kde se využívá PBM?

Patient Blood Management

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UPDATES IN >

**Blood Conservation
and Transfusion
Alternatives**

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Contents

> **WHY SHOULD HEALTH PROFESSIONALS BE CONCERNED
ABOUT BLOOD MANAGEMENT AND BLOOD
CONSERVATION?**

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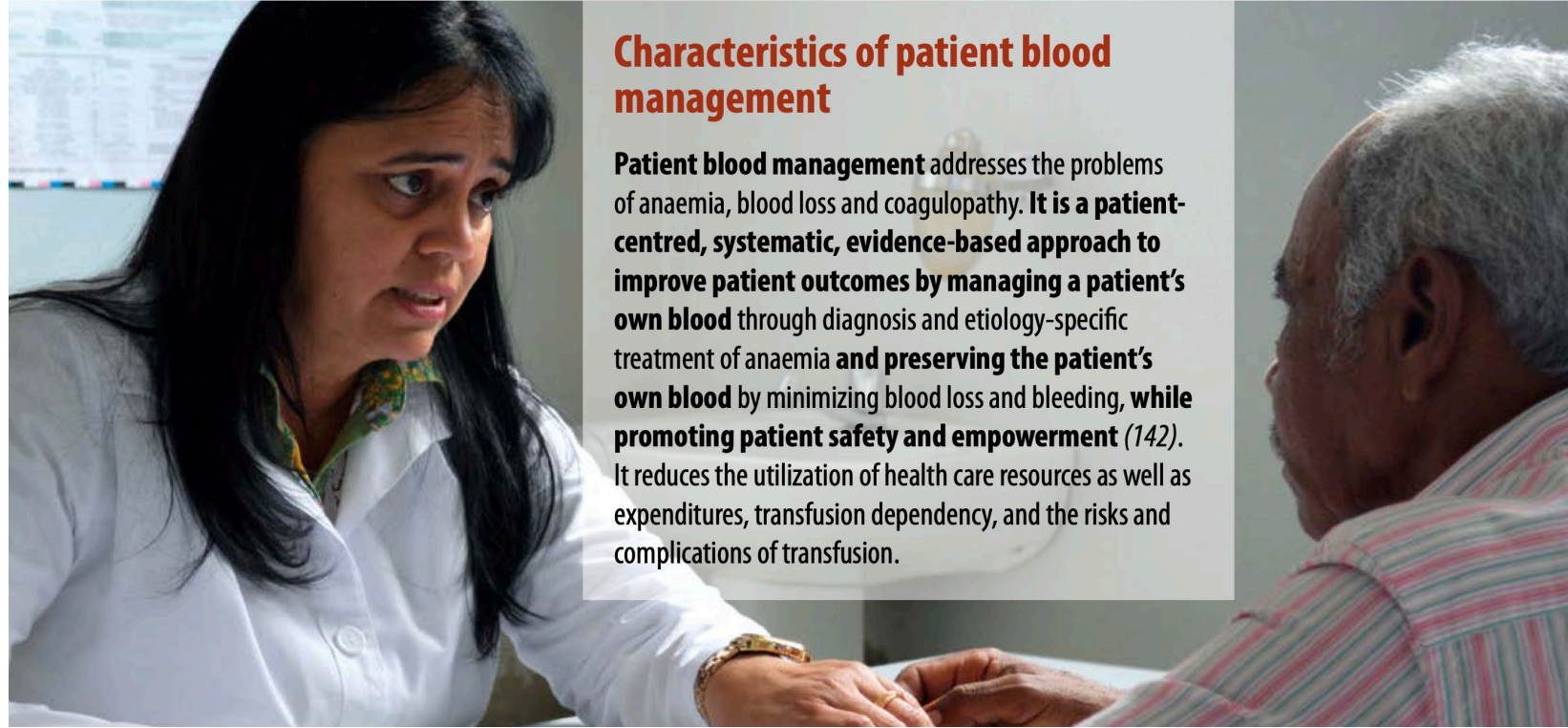
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Princip PBM:

transfuze každého jednotlivého
transfuzního přípravku
zhoršuje outcome pacienta
(a zvyšuje náklady)

6. Why is it important to distinguish between PBM and the concept of “optimal blood use”?

The goal of PBM is not reducing blood transfusions or restricting the use of transfusion or any other therapy per se. Rather than transfusion being a default decision based on a specified haemoglobin concentration, PBM may pre-empt the use of blood transfusion by placing importance on the patient's own blood as a valuable resource, long before transfusion is even considered (147). A reduction in the numbers of transfusions simply follows as a direct result of PBM. Strict adherence at the bedside to the principles of “optimal blood use”, that is, clinically indicated transfusions at the minimal effective dose, helps to further minimize transfusion. However, these “optimal blood use” programmes, designed to reduce “the need for transfusion,” have a narrow focus compared with the broader clinical approach of PBM to overall patient care and outcomes.¹ A thorough understanding of the difference between PBM and optimal blood use will help shift the focus “from the product to the patient” and sustain efforts to implement PBM.



Characteristics of patient blood management

Patient blood management addresses the problems of anaemia, blood loss and coagulopathy. **It is a patient-centred, systematic, evidence-based approach to improve patient outcomes by managing a patient's own blood** through diagnosis and etiology-specific treatment of anaemia **and preserving the patient's own blood** by minimizing blood loss and bleeding, **while promoting patient safety and empowerment** (142). It reduces the utilization of health care resources as well as expenditures, transfusion dependency, and the risks and complications of transfusion.

PBM je zacílen na pacienta

Průkopníci PBM:



Netherlands (Nizozemsko)
Country in Europe

The image shows the flag of the Netherlands, which consists of three horizontal stripes of red, white, and blue. To the right is a map of the Netherlands, with major cities like Amsterdam and Brussels labeled. The map also shows parts of Germany (Hamburg) and Belgium.



Australia (Austrálie)
Country in Oceania

The image shows the flag of Australia, which features a blue field with the Union Jack in the canton and five white stars. To the right is a map of Australia, showing the continent and surrounding oceans (Indian Ocean and Pacific Ocean). The word 'OCEANIA' is written on the map.



1st Pillar Optimize erythropoiesis

Preoperative

- Detect anemia
- Identify underlying disorder(s) causing anemia
- Manage disorder(s)
- Refer for further evaluation if necessary
- Treat suboptimal iron stores/iron deficiency/anemia of chronic disease/iron-restricted erythropoiesis
- Treat other hematinic deficiencies
- Note: Anemia is a contraindication for elective surgery

Intraoperative

- Timing surgery with hematological optimization

Postoperative

- Stimulate erythropoiesis
- Be aware of drug interactions that can increase anemia

2nd Pillar Minimize blood loss & bleeding

- Identify and manage bleeding risk
- Minimizing iatrogenic blood loss
- Procedure planning and rehearsal
- Preoperative autologous blood donation (in selected cases or when patient choice)
- Other

- Meticulous hemostasis and surgical techniques
- Blood-sparing surgical techniques
- Anesthetic blood conserving strategies
- Autologous blood options
- Pharmacological/hemostatic agents

- Vigilant monitoring and management of post-operative bleeding
- Avoid secondary hemorrhage
- Rapid warming/maintain normothermia (unless hypothermia specifically indicated)
- Autologous blood salvage
- Minimizing iatrogenic blood loss
- Hemostasis/anticoagulation management
- Prophylaxis of upper gastrointestinal hemorrhage
- Avoid/treat infections promptly
- Be aware of adverse effects of medication

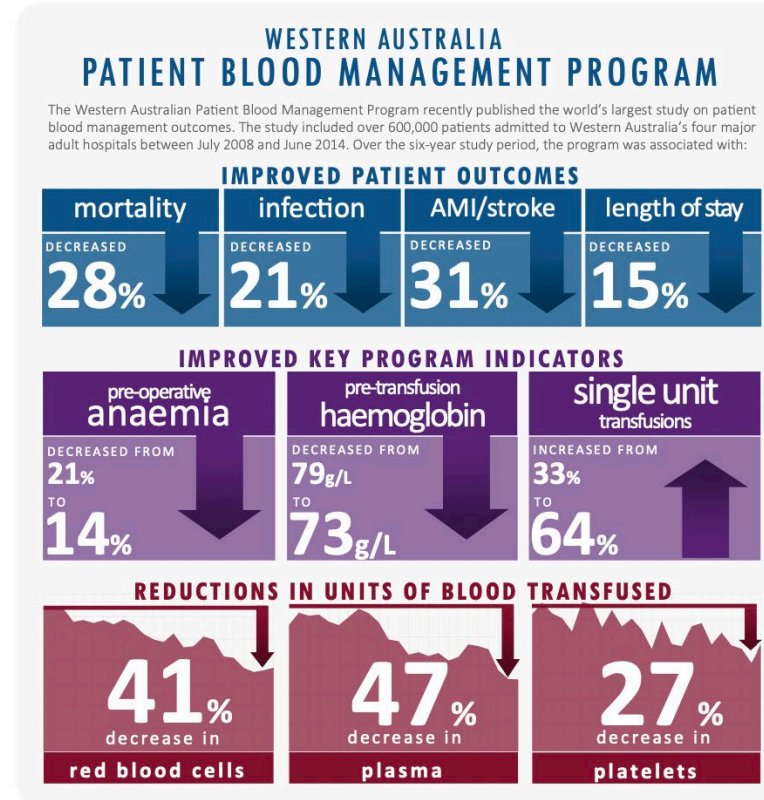
3rd Pillar Harness & optimize physiological reserve of anemia

- Assess/optimize patient's physiological reserve and risk factors
- Compare estimated blood loss with patient-specific tolerable blood loss
- Formulate patient-specific management plan using appropriate blood conservation modalities to minimize blood loss, optimize red cell mass, and manage anemia
- Restrictive transfusion thresholds

- Optimize cardiac output
- Optimize ventilation and oxygenation
- Restrictive transfusion thresholds

- Optimize anemia reserve
- Maximize oxygen delivery
- Minimize oxygen consumption
- Avoid/treat infections promptly
- Restrictive transfusion thresholds

Fig. 2. Clinical and economic outcomes of the Western Australia patient blood management programme, 2008–2014



PRODUCT COST SAVINGS

Over the six-year study period blood product cost savings were:

\$18.5M

ACTIVITY BASED COST SAVINGS

...however with the hospital costs of administering a transfusion added, the gross savings are estimated to be between:

\$80M–\$100M

For more information see: Leahy MF et al. Improved outcomes and reduced costs associated with a health system-wide Patient Blood Management Program. *Transfusion*.

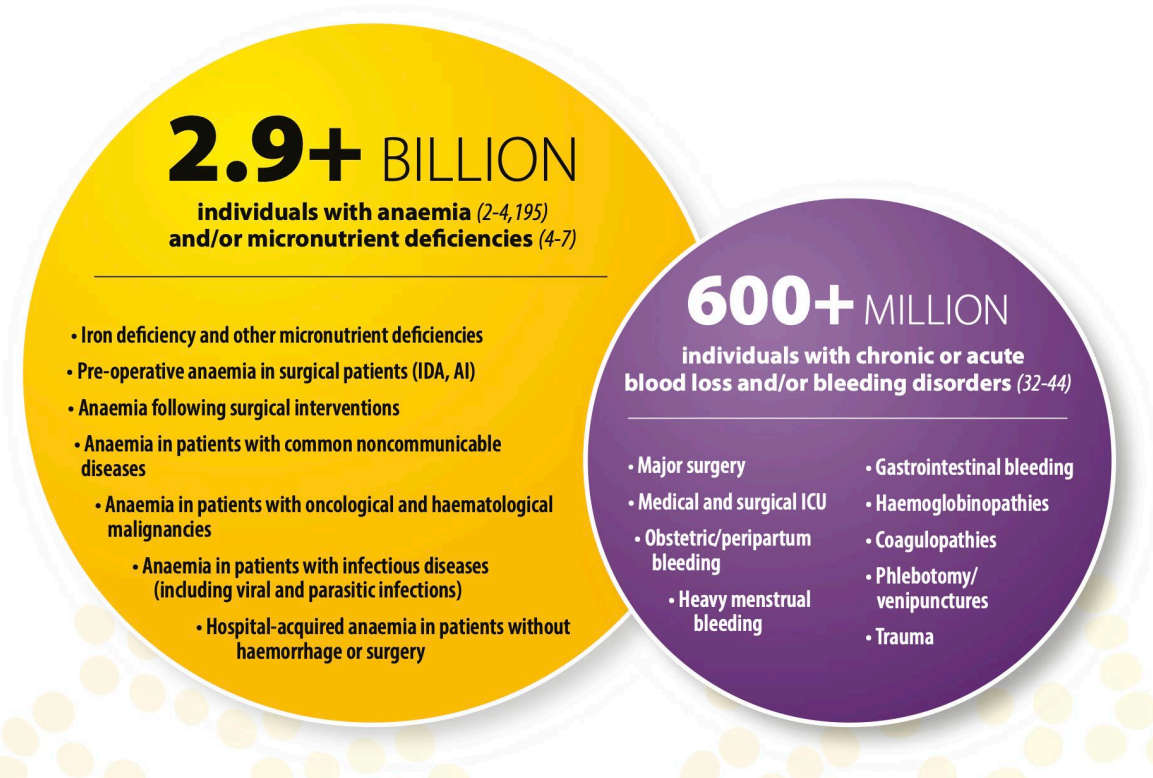
PBM - jasný profit (pro pacienta i systém)

POLICY BRIEF

THE URGENT NEED TO IMPLEMENT PATIENT BLOOD MANAGEMENT



Fig. 1. Global prevalence of anaemia, blood loss and bleeding disorders and their etiologies



World Health Organization

POLICY BRIEF

THE URGENT NEED TO IMPLEMENT PATIENT BLOOD MANAGEMENT



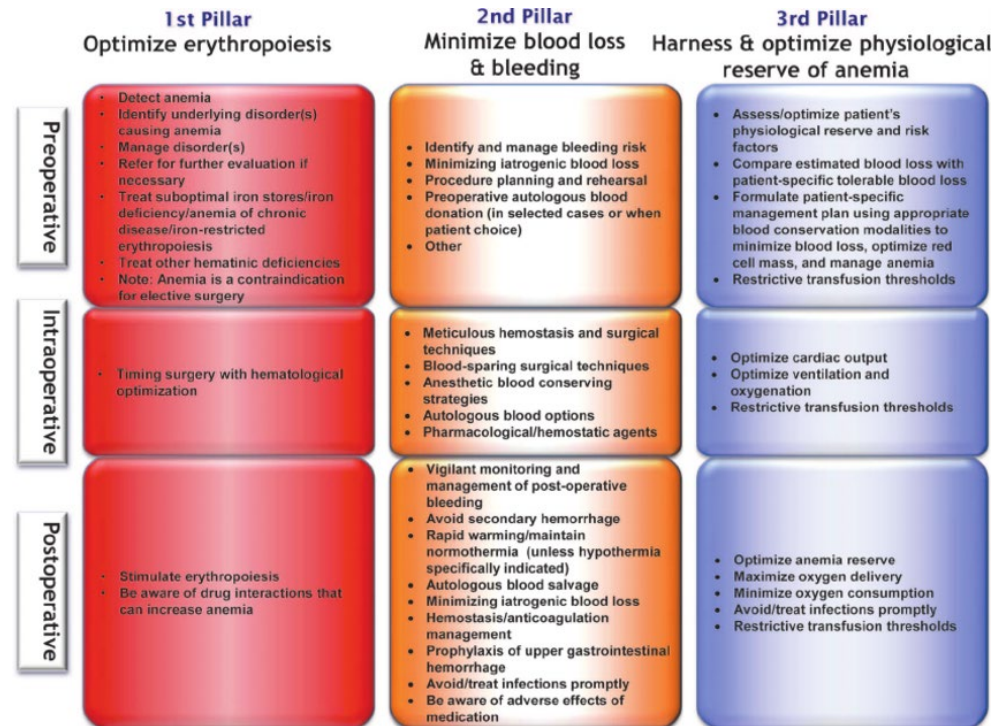
implementace

- návody jsou dostupné

	1st Pillar Optimize erythropoiesis	2nd Pillar Minimize blood loss & bleeding	3rd Pillar Harness & optimize physiological reserve of anemia
Preoperative	<ul style="list-style-type: none">• Detect anemia• Identify underlying disorder(s) causing anemia• Manage disorder(s)• Refer for further evaluation if necessary• Treat suboptimal iron stores/iron deficiency/anemia of chronic disease/iron-restricted erythropoiesis• Treat other hematinic deficiencies• Note: Anemia is a contraindication for elective surgery	<ul style="list-style-type: none">• Identify and manage bleeding risk• Minimizing iatrogenic blood loss• Procedure planning and rehearsal• Preoperative autologous blood donation (in selected cases or when patient choice)• Other	<ul style="list-style-type: none">• Assess/optimize patient's physiological reserve and risk factors• Compare estimated blood loss with patient-specific tolerable blood loss• Formulate patient-specific management plan using appropriate blood conservation modalities to minimize blood loss, optimize red cell mass, and manage anemia• Restrictive transfusion thresholds
Intraoperative	<ul style="list-style-type: none">• Timing surgery with hematological optimization	<ul style="list-style-type: none">• Meticulous hemostasis and surgical techniques• Blood-sparing surgical techniques• Anesthetic blood conserving strategies• Autologous blood options• Pharmacological/hemostatic agents	<ul style="list-style-type: none">• Optimize cardiac output• Optimize ventilation and oxygenation• Restrictive transfusion thresholds
Postoperative	<ul style="list-style-type: none">• Stimulate erythropoiesis• Be aware of drug interactions that can increase anemia	<ul style="list-style-type: none">• Vigilant monitoring and management of post-operative bleeding• Avoid secondary hemorrhage• Rapid warming/maintain normothermia (unless hypothermia specifically indicated)• Autologous blood salvage• Minimizing iatrogenic blood loss• Hemostasis/anticoagulation management• Prophylaxis of upper gastrointestinal hemorrhage• Avoid/treat infections promptly• Be aware of adverse effects of medication	<ul style="list-style-type: none">• Optimize anemia reserve• Maximize oxygen delivery• Minimize oxygen consumption• Avoid/treat infections promptly• Restrictive transfusion thresholds

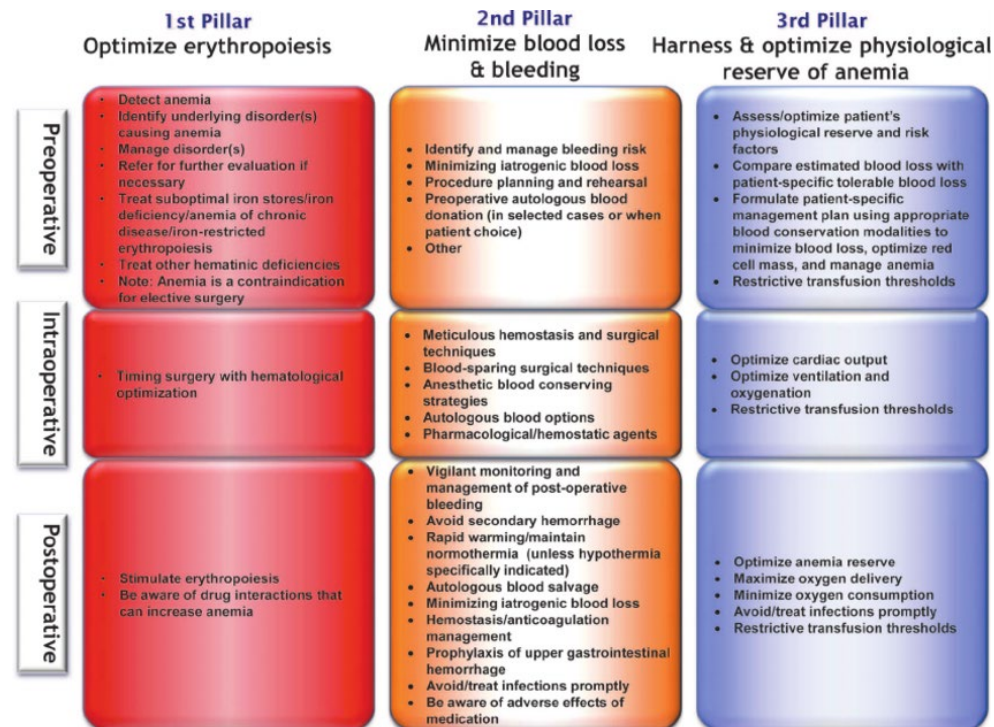
První pilíř

- Časná detekce a terapie anemie před operačním výkonem
- Anemie je kontraindikací elektivního výkonu
- Timing operace
- Příprava pacientů s antikoagulační a antiagregační medikací na operační výkon



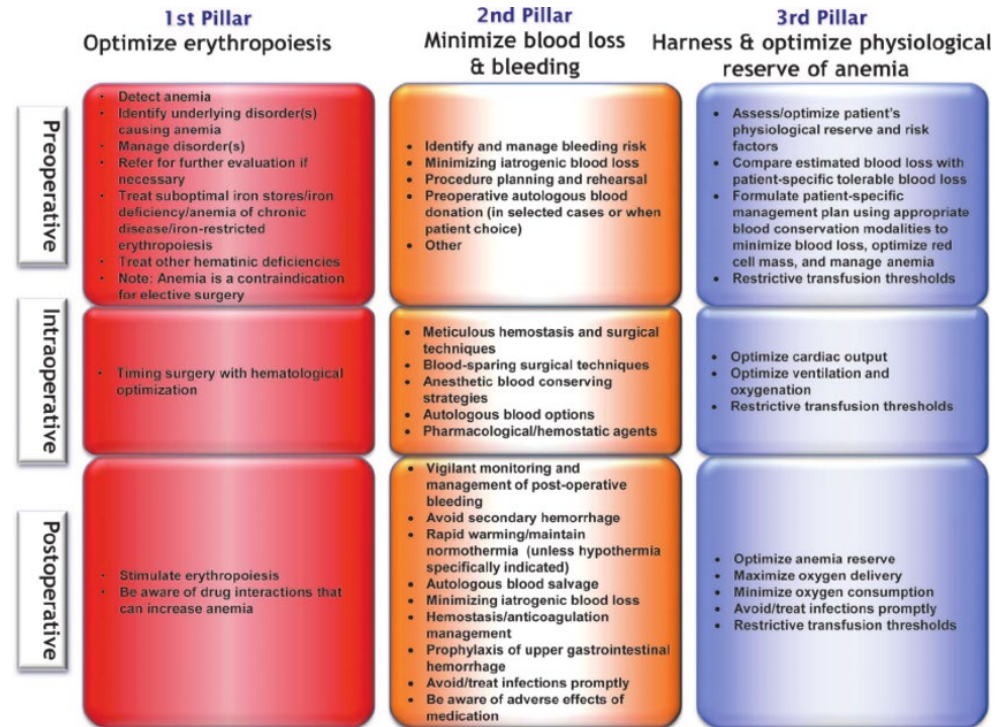
Druhý pilíř

- Minimalizace krvácení
- Správná léčba krevních ztrát a krvácení (TXA, viskoelastické metody, krevní deriváty, lokální standardy na léčbu ŽOK, ..)
- "Podávání jedné ERD"
- Minimalizace odběrů – indikován jen odběr, který ovlivní léčbu pacienta (ICU)



Třetí pilíř

Optimalizace stavu pacienta



Co je pro implementaci
nejdůležitější?

podpora zdravotního systému a státu

Postup

- Národní doporučené postupy
- Podpora pojičtoven a ministerstva zdravotnicví,
... .
- Vlastní implementace
- (řešení předoperační anemie: praktický lékař x anesteziolog)

- Edukace pacientů, patientské organizace

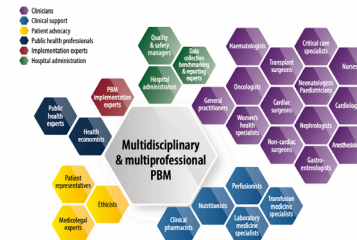
Vlastní implementace

- Vzdělávání – semináře pro jednotlivá oddělení, lékaře i nelékaře
- Jednoduché postupy – bundles of care
- Změnit přístup lékařů k podávání transfuzních přípravků
- Spolupráce mezi odděleními
- Lokální standard na léčbu ŽOK
- Konkrétní lékař na oddělení – PBM

10. How can PBM be integrated into health care?

As demonstrated by successful PBM programmes, the use of a proven implementation methodology, supported by local epidemiological and patients-level hospital data for reporting and benchmarking purposes, is pivotal (18, 20). Ideally, reporting and benchmarking is done at hospital level and at an individual physician level. The pace of change in medicine is historically slow and adoption of new practices often lags several decades behind discovery of new evidence. This delay is even more marked with PBM implementation, where the challenge lies in changing clinical culture and physician behaviour. Physicians and others must unlearn and abandon some old practices to enable them to adopt the broad, integrated approach of scientifically based PBM. Also, the effective management of the unusually broad range of different stakeholder groups needs to be well supported through formal implementation methodology (Fig. 4). These are all important aspects that will be covered in the PBM implementation guidelines being developed by WHO.

Fig. 4. Stakeholders in multidisciplinary and multiprofessional PBM



Vlastní implementace

- Analýza spotřeby transfuzních přípravků
- Pilotní projekt

Předoperační anemie

- Anemie je často náhodný nález (I při předoperačním vyšetření)
- Anamneza:
 - Chronická onemocnění
 - Anamneza krvácení (včetně menstruace)
 - Medikace,...
 - Předchozí výsledky odběrů, dárcovství krve, transfuze,..
- Fyzikální vyšetření

Předoperační anemie

- Pacienti s předpokladem peroperačních krevních ztrát
- 6 týdnů před operačním výkonem KO a zásoby železa
- Terapie: ve většině případů jednorázové podání i.v. železa
(500-1000 mg Fe (Ferinject))

Antikoagulace a antiagregace

- Elektivní a akutní postup – lokální guidelines

Léčba krvácení a koagulopatie

- Změna přístupu k podávání transfuzních přípravků (spolupráce s operačními obory,...)
- Podávání ERD (I jedna stačí 😊)
- Lokální postup na th ŽOK
- Využití POCT testování, viskoelastických metod

Audit výsledků

- Předpokládaný pokles podávání transfuzí o 1/3

Není, co odkládat.....



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