What is Patient Blood Management (PBM) and why should we make it a standard of care at our hospital?
PBM definition

The goal of Patient Blood Management is to improve outcomes for each patient by minimising or avoiding unnecessary transfusion.

A multidisciplinary team determines, with the patient, the specific management plan, which makes every reasonable endeavor to:

- optimise the patient’s own blood volume, especially red cell mass
- minimise the patient’s blood loss
- optimise the patient’s physiological tolerance of anaemia
Why is PBM important worldwide?

Best practice: healthcare professionals want to ensure good outcomes for the patients/public they serve

Transfusion reduction potentially:
- shortens hospital length of stay
- reduces risk of infection, and or pulmonary complications
- reduces risk; product related infection, donor contamination, or human error of delivery of product
Why is PBM important worldwide?

- Blood supply shortage: decreases burden on blood product shortage

- Safety: helps satisfy regulatory agency requirements related to blood product dissemination, delivery, and administration (eg. Standard 7)

- Financial: costs have continually increased due to advances in collection, testing, processing, delivery and administration of transfusion
WHA63.12 adopted by resolution May 21, 2010:

“... patient blood management means that before surgery every reasonable measure should be taken to optimise the patient’s own blood volume, to minimise the patient’s blood loss and to harness and optimise the patient-specific physiological tolerance of anaemia ... (three pillars of patient blood management)”
Reducing the number of transfusions – appropriate use, avoiding need for transfusion and using possible alternatives to transfusion

Transfusion is appropriate only for the treatment of a condition leading to significant morbidity and mortality that cannot be prevented or managed effectively by other means.

Health care providers and clinicians should aim toward the prevention, early diagnosis, and treatment of diseases and conditions that may lead to the need for transfusion.

‘Patient Blood Management’

- Transfusion free care
- Anaemia prevention
- Anaemia treatment
- Blood conservation
- Preoperative assessment
- Intraoperative reduction of blood loss
- Postoperative assessment

- Transfusion tracking/blood utilisation
- Appropriate use of blood products
- Transfusion safety and competency
Questions:

- What does Patient Blood Management look like when it is the ‘standard of care’ in a hospital?

- What measures / indicators / qualities need to be in place to ensure true value is present?
Indicators of quality: on paper

Policy/procedures/protocols in place to support day to day activity, e.g. *(but not restricted to):*

- reducing line blood sample wastage
- massive transfusion
- minimising volume of blood samples
- single unit rule
- random audit and education
- minimum level of training for those that administer, transport, or handle blood products
- roles and responsibilities for PBM staff
Indicators of quality: on paper (cont)

Policy/procedures/protocols in place to support day to day activity, e.g. *(but not restricted to)*:

- perioperative autologous blood handling/recycling
- consent process
- blood refusal process
- consultative services in place to assist with anaemia management and iron deficiency
- appropriate use of IV iron and erythropoietic stimulating agents
- after hours transfusion rules
Indicators of quality: *processes and culture*

Examples that reflect embedded culture (*but not restricted to*):

- Education program for all staff with regular updates and regular review of blood utilisation
- Process for addressing transfusion outliers by specialty, procedure, and clinician with regular assessment of patient outcomes
- Purchasing of products that may influence blood use, and or handling, is addressed with PBM staff and Transfusion Medicine Director
- Benchmarking of transfusion rates with like-centres
Indicators of quality: perioperative setting

- There are mechanisms of action in place that assist in the successful compliance with National Patient Blood Management Perioperative Guidelines:
  - Preoperative timing and preparation of patients scheduled for elective surgery is done within the recommended timeframe
  - Infusion/injection areas are available for preoperative optimisation of the preoperative patients’ RBC or iron stores when necessary
  - Postoperative services available to assist in alternatives to transfusion anaemia treatment

1st Pillar
Optimise blood volume & red cell mass

- As early as possible, anaemia should be identified, evaluated and managed; optimise haemoglobin and iron stores (R2,3, PP1,4,5, S3.4)
- Iron therapy is recommended in patients with or at risk of iron deficiency (R4, PP7)
- Where an ESA is indicated, it must be combined with iron therapy (R5)
- Suboptimal iron stores (ferritin level <100 μg/L) should be treated with preoperative iron therapy (PP6)

Preoperative

Intraoperative

Postoperative

2nd Pillar
Minimise blood loss

- Optimise coagulation status (R1)
- Evaluate need/timing for cessation of medications that affect haemostasis (R7,8,9, PP8,9,10, S3.5)
- Routine use of PAD is not recommended (R11)
- Prevent hypothermia (R12, S3.6.2)
- Prophylactic use of FFP not recommended (R21)
- Restrictive platelet count trigger (PP17,18)

Meticulous haemostasis and surgical technique (R1, S3.6)
- Anaesthetic techniques (S4)
- Prevent of hypothermia (R12, S3.6.2)
- Appropriate patient positioning (PP11, S3.6.3)
- Deliberate induced hypotension (R13)
- ANH (R14, PP12, S3.6.5)
- Intraoperative cell salvage (R15, PP13)
- Haemostasis analysis (R16)
- Antifibrinolytics (R17, R18, R19, PP15,16)
- Prophylactic use of FFP not recommended (R21)

Postoperative cell salvage (R20)
- Prevent hypothermia (R12, S3.6.2)
- Point-of-care testing for haemostasis analysis (R16)
- Prophylactic use of FFP not recommended (R21)
- Prophylactic use of platelets not supported (PP19)
- Prophylactic or routine use of rFVIIa not recommended (R22), however, may be considered in life-threatening haemorrhage (PP20)

3rd Pillar
Optimise the tolerance of anaemia

- Coordinate the multidisciplinary, multimodal perioperative programmatic approach to patient assessment and management (R1, S3.1)
- Anaesthetic techniques (S4)
- Fluid replacement (PP12)

- Patient-specific restrictive RBC transfusion trigger (PP2,3)
- Single RBC unit transfusion policy (PP3)

Leadership

- Who are the leaders of PBM in a hospital?
  - Medical Director, Patient Blood Management
  - Clinical Nurse Consultant, Patient Blood Management
Who are the champions of PBM?

- Hospital PBM Committee members
  - Surgery (e.g. cardiac surgery, general surgery, orthopaedic surgery, anaesthesia)
  - Medicine (e.g. haematology, general medicine, GP)
- Transfusion Medicine Staff
- Lab staff
- Nursing
- Data analysts
- Pharmacy
- Nutrition
- Administrative representative
What does the structure of a PBM look like?
Building the foundation of your PBM structure

First layer of the foundation:

- Executive/administration buy-in and support
- PBM Medical Director in place
- PBM Clinical Nurse Consultant in place
- Transfusion Medicine buy-in and supportive participation
- Data analysis started (where are we before we start?)
- Pharmacy buy-in and willing to be active participant
Building the mid section of your PBM structure

The following are willing to be the voice of PBM in their areas of practice. They are willing to participate in the dissemination of PBM.

- Major surgery division representation (orthopaedics, cardiac surgery, general surgery)
- General medicine (haematologists, intensivists)
- Anaesthesia
- General nursing
- General lab staff
Top floor of the PBM structure

Ancillary support:

- GP representation available
- Outpatient infusion/injection facilities coordinated and available for preoperative therapy
- Preop flow of patient assessment and scheduling altered to optimise patients prior to surgery
- Educating staff (medical and nursing)
- Process is in place to assist with inpatient anaemia consultation with goal to avoid transfusion
- Policies and procedures in support of making PBM a standard of care; reflecting culture change and support
The Roof: a constant cover to secure safety and longevity of the structure of embedded PBM

Ongoing data support
- Patient outcomes
- Financial expenditure
- Treatment modalities
- Transfusion data

Use of product
- Appropriateness
- Outlier identification
- Specialties that require attention
- Practitioner to practitioner
PBM STRUCTURE
Improved patient outcomes

Regular ongoing data analysis and patient outcomes

<table>
<thead>
<tr>
<th>Acute care anaemia assessment</th>
<th>Preop assessment</th>
<th>Outpatient infusion capability</th>
<th>Preop time allowance</th>
<th>Education dept</th>
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<td>GP rep</td>
<td>Transfusion guidelines</td>
<td>Policy and Procedures</td>
<td>Pre printed orders</td>
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Executive / Administrative support

- Acute care
- Preop assessment
- Outpatient infusion capability
- Preop time allowance
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- Nursing
- Surg General
- Data analyst
- TM
- Preop time
- Pharmacology
- CNC
Common question

“We have transfusion safety and competency and education in place in our centre. So are we already doing Patient Blood Management?”
Pre-existing activities

- Approximately 25% of activities within a complete PBM program were previously embedded in the hospital prior to PBM adoption
  - Examples (not limited to)
    - Staff education prior to administration of blood products
    - Demonstrate skills independently
    - Transfusion administration policies and procedures are in compliance with regulatory agencies
Pre-existing activities

- Approximately 25% of activities prior to PBM may need some minor reassessment with a mindset to transfusion reduction
  - Examples (*not limited to*)
    - Anaemia assessment
    - Ordering blood
    - Dispensing blood
    - Transfusing blood
PBM and the degree of change when it is adopted

<table>
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<th>HAEM</th>
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<td>Transfusion Committee, reporting to agencies of oversight</td>
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<td>`PBM + HAEM' reflects activity that would be best taken on by the Transfusion Committee and PBM Committee or representatives jointly, performing this activity such as the transfusion officer/nurse and the PBM CNC</td>
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Start with.....

- Educate
- Educate
- Educate
Regulatory / guidance publications


- ACHS EQuiP5 2011

- NSQHS Standards June 2011

- NHMRC/ NBA Patient Blood Management Guidelines (Critical Bleeding; Perioperative)

- Consent to Treatment Policy for the Western Australian Health System 2011
Required items satisfied with ‘complete’ PBM embedded in an institution

- **Hand over** safety steps for blood products ordered
- Consent process in place and regular audits are performed
- Blood collection is done appropriately in minimum amounts
- Tracking of blood sampling follow protocol as well as transport/handling and storage of product
- Perioperative assessment of patient is done in a time appropriate manner and needs assessed for optimisation of RBC and or iron
- Transfusion of blood products adverse events are monitored/ assessed with transfusion committee.
Required items satisfied with ‘complete’ PBM embedded in an institution (cont)

- Mechanism of action in place to address specific events
- Trigger/transfusion decision is tracked for appropriate use of: RBC, platelets, FFP
- Policy and use of Recombinant VIIA are documented and addressed
- Multidisciplinary perioperative PBM team is in place
- Treatment plan is in place for process of preoperative assessment and treatment
- Guidelines in place for advising patients preoperative to discontinuing use of drugs/nutritional aides
Required items satisfied with ‘complete’ PBM embedded in an institution (cont)

- Policy and guidance of iron treatments available are in place
- Policy and guidance of ESA treatments are available and in place
- Intraoperative use of particular agents for coagulation and or clotting are available in policy / guidance
- Policy and procedure are in place and compliant with recommended perioperative blood collection during ANH
Required items satisfied with ‘complete’ PBM embedded in an institution (cont)

- Policy and procedure are in place and compliant with recommended perioperative blood collection during cell salvage
- Policy and procedure are in place and compliant with recommended perioperative blood collection during TEG analysers
- Policy and procedure are in place to evaluate and administer postoperative anaemia treatment
- All staff that handle, assist in administration, administer, or transport blood products are to be assessed at least annually for competency / safety / haemovigilance
Every cell counts