



# Clinical Indicators in Monitoring Progress of Patient Blood Management

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On behalf of Patient Blood Management Steering Committee

Hospital Authority



# Patient blood management is important

- PBM is a patient-focused, evidence-based and multi-disciplinary approach to improve transfusion of blood products and patient outcomes<sup>1</sup>
- Improvement of patient outcomes<sup>2</sup>
  - Faster recovery → Shorter hospital stay → Reduce cost
- Implementation guideline by WHO in 2025<sup>3</sup>



1. Chow, Y. F., et al. "Hong Kong Society of Clinical Blood Management recommendations for implementation of patient blood management." *Hong Kong medical journal*, vol. 26, no. 4, 2020, pp. 331–38  
2. Froessler, Bernd et al. "The Important Role for Intravenous Iron in Perioperative Patient Blood Management in Major Abdominal Surgery: A Randomized Controlled Trial." *Annals of surgery* vol. 264,1 (2016): 41-6.  
3. Guidance on implementing patient blood management to improve global blood health status



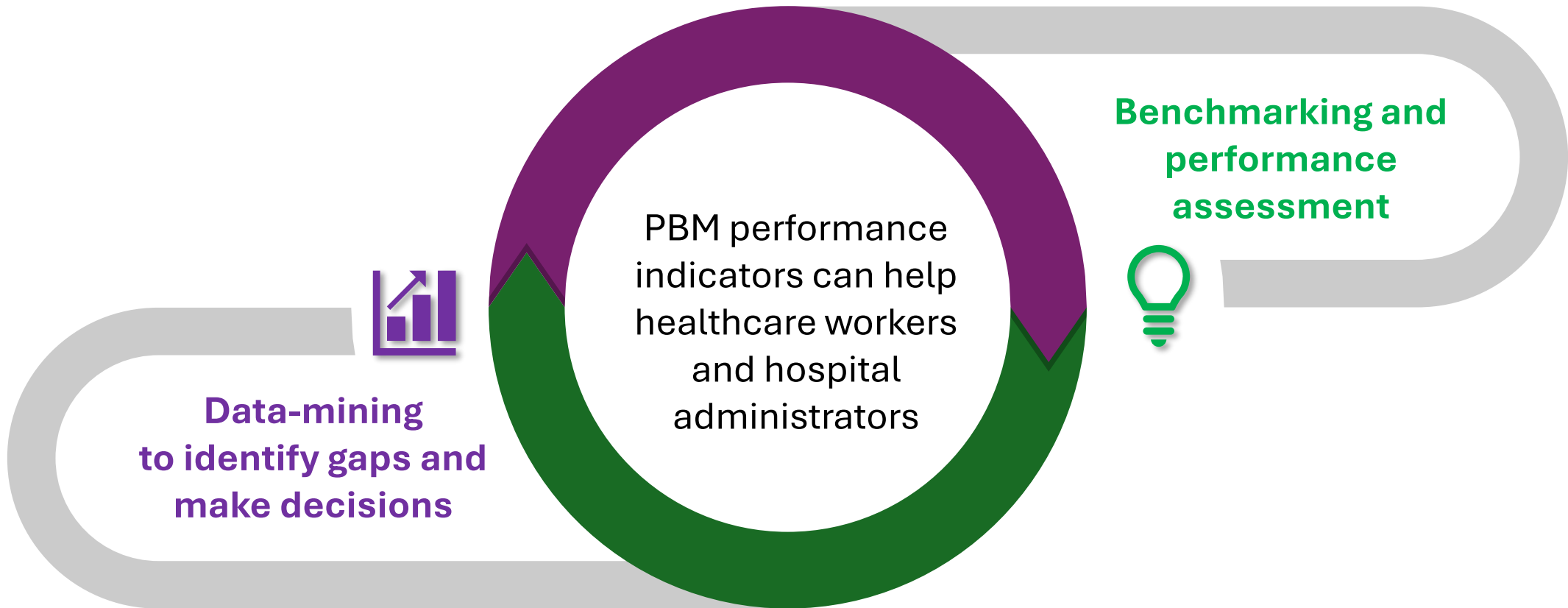
# 4 strategic PBM directions by HA



- PBM has been developed in HA since 2014
- PBM Steering Committee was formed in 2018



# Why PBM performance indicators are important?





# PBM performance indicators since 2018

- Anaemia rate on admission
    - Anaemia definition: Hb < 13 g/dL for M and < 12 g/dL for F
    - First Hb within -7 to 2 days of admission
  - Transfusion rate
    - No. of episodes with transfusion/no. of episodes of deaths and discharges
  - Hb threshold for transfusion
    - Pre-transfusion Hb thresholds: < 7 g/dL vs. 7-10 g/dL vs. > 10 g/dL
  - Single unit transfusion rate
    - Unit of blood product issued is 1 without overlapping with another blood product transfusion before or after 8 hours of the transfusion time
- Available at Management Information Portal (MIPo)
  - Can be categorized by clusters, hospitals, specialties
  - Trend can be showed in terms of quarters, months or years



# PBM key performance indicators since 2025

- Anaemia rate on admission
    - First Hb within -7 to 2 days of admission
    - Anaemia definition: Hb < 13 g/dL for M and < 12 g/dL for F
  - Transfusion rate
    - No. of episodes with transfusion/no. of episodes of deaths and discharges
  - **Hb threshold for transfusion**
    - Pre-transfusion Hb thresholds: < 7 g/dL vs. 7-10 g/dL vs. > 10 g/dL
  - **Single unit transfusion rate**
    - Unit of blood product issued is 1 without overlapping with another blood product transfusion before or after 8 hours of the transfusion time
- Become **key performance indicators** with effect from 1Q 2025
  - By cluster data is released to public
  - By hospital data is available at HA Management Information System (HAMIS)



# The importance of PBM KPIs

- **Hb threshold for transfusion < 7g/dL**
  - Reduces perioperative transfusion without added postoperative morbidity and mortality in 12 trials<sup>1</sup>
- **Single unit transfusion**
  - Reduces transfusion-associated complication as the risk is dose-dependent
  - Reduces blood product wastage<sup>2</sup>
  - Reduces in-hospital mortality<sup>3</sup>

1. Lenet, Tori, et al. "A Systematic Review and Meta-Analysis of Randomized Controlled Trials Comparing Intraoperative Red Blood Cell Transfusion Strategies." *Annals of Surgery* [United States], vol. 275, no. 3, March 2022, pp. 456–66, <https://doi.org/10.1097/SLA.0000000000004931>.

2. Yang, William W., et al. "Single-unit Transfusions and Hemoglobin Trigger: Relative Impact on Red Cell Utilization." *Transfusion (Philadelphia, Pa.)*, vol. 57, no. 5, 2017, pp. 1163–70

3. Salpeter, Shelley R., et al. "Impact of More Restrictive Blood Transfusion Strategies on Clinical Outcomes: A Meta-Analysis and Systematic Review." *The American Journal of Medicine*, vol. 127, no. 2, 2014, pp. 124–131.e3



# More pharmaceutical products for PBM

- Intravenous iron
  - Ferric saccharate (Venofer<sup>®</sup>)
  - Iron isomaltoside (Monofer<sup>®</sup>)
  - Ferric carboxymaltose (Ferinject<sup>®</sup>)

- Fibrinogen concentrate (FC)
  - Haemocomplettan P<sup>®</sup>

- Prothrombin complex concentrate (PCC)
  - Beriplex<sup>®</sup>

For iron deficiency anaemia

For hypofibrinogenemia

For factor deficiency or reversal of FXa inhibitors

Utilization data available at CDARS

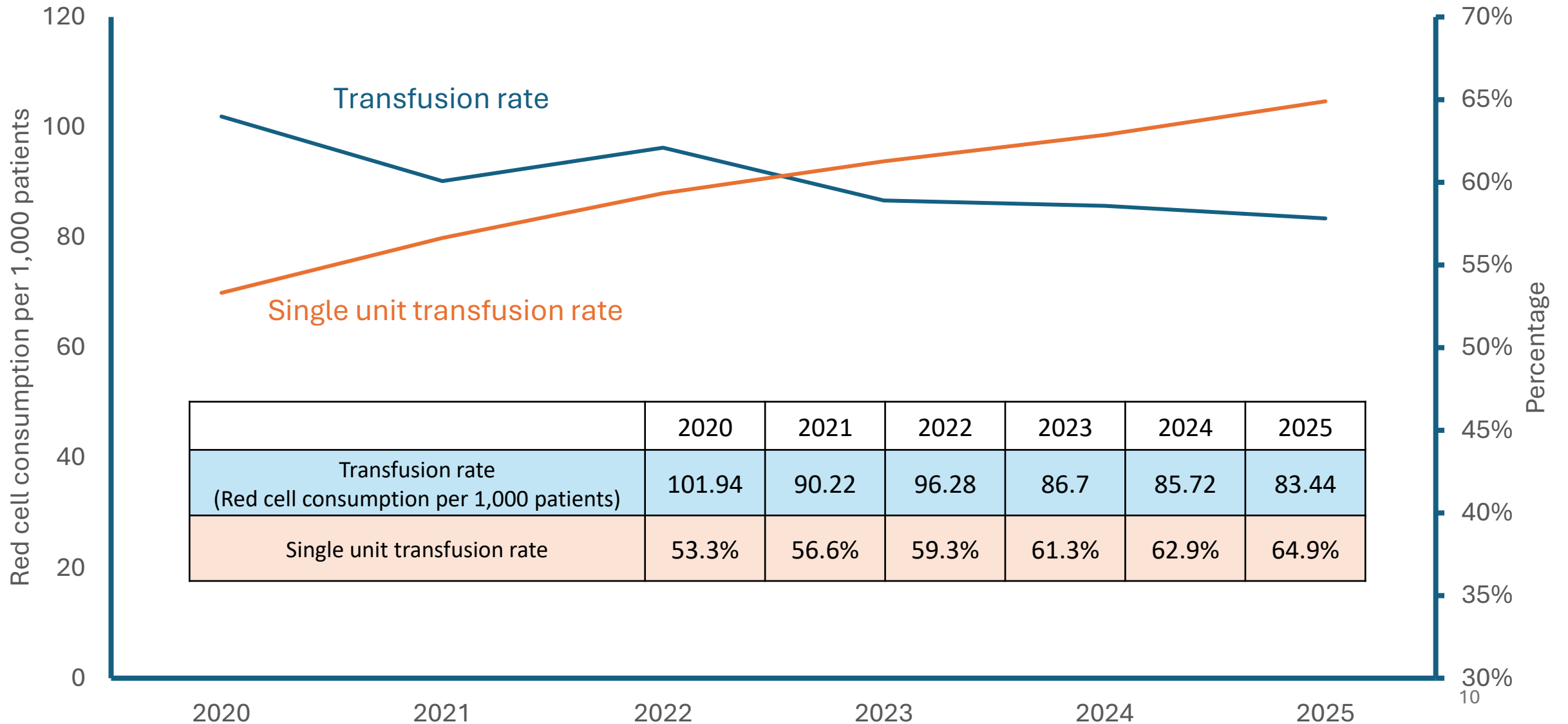


# Objective and Method

- To review the present PBM progress in a public healthcare system in a densely populated city with more than 7.5 millions of people
- Retrospective data retrieval from CDARS and MIPo was done from 1 Jan 2020 to 31 Dec 2025

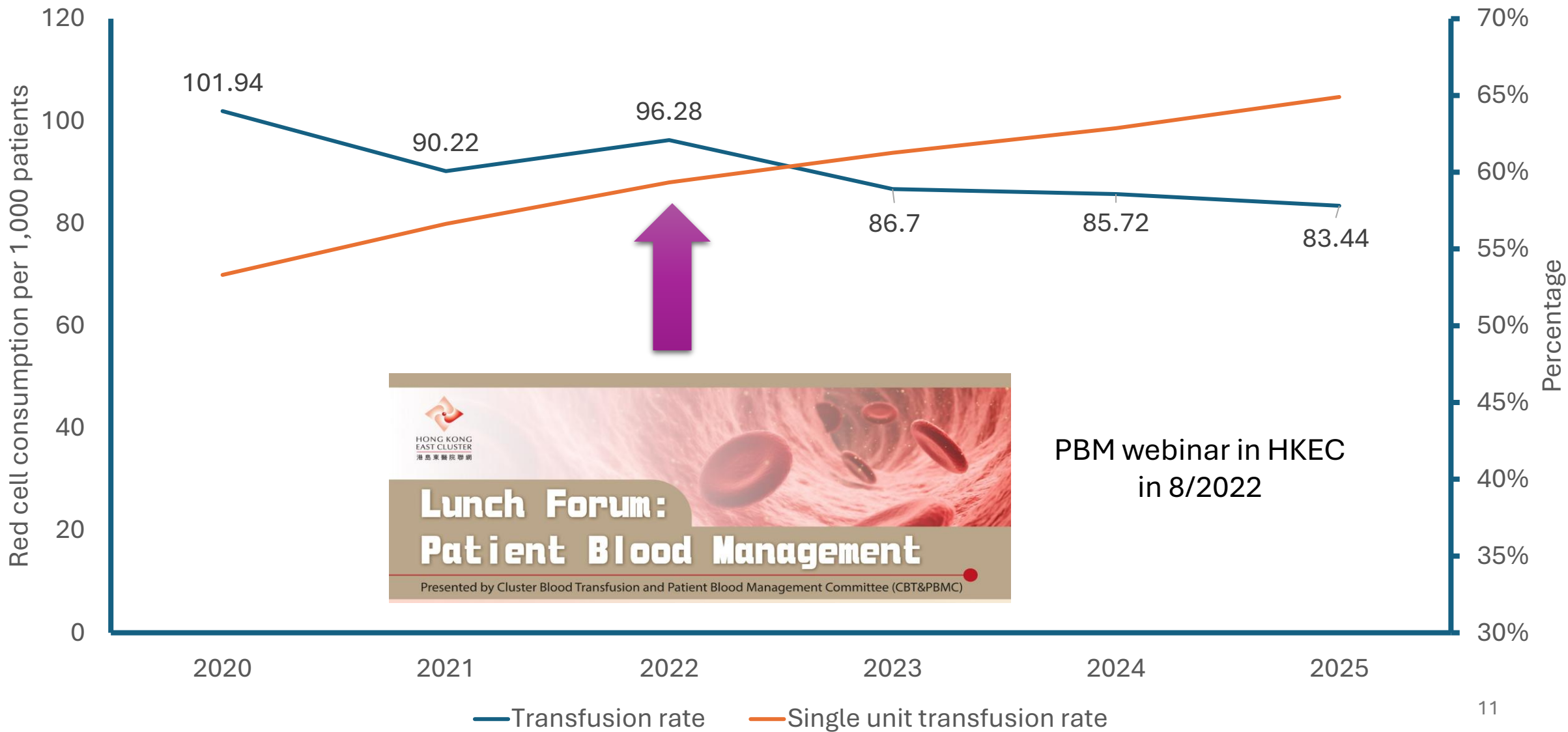


# Less red cell used and more single unit transfusion



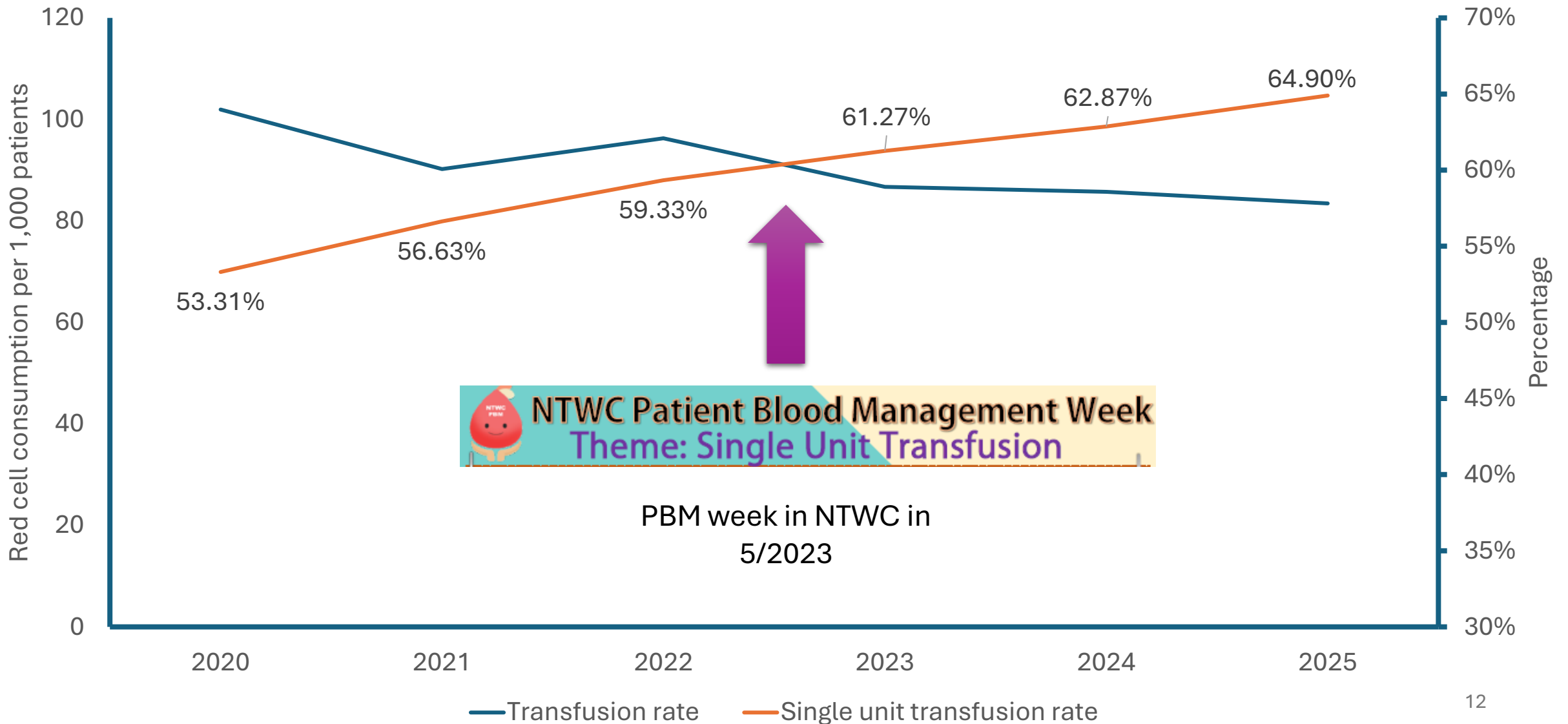


# PBM performance indicators trigger and assess PBM initiatives



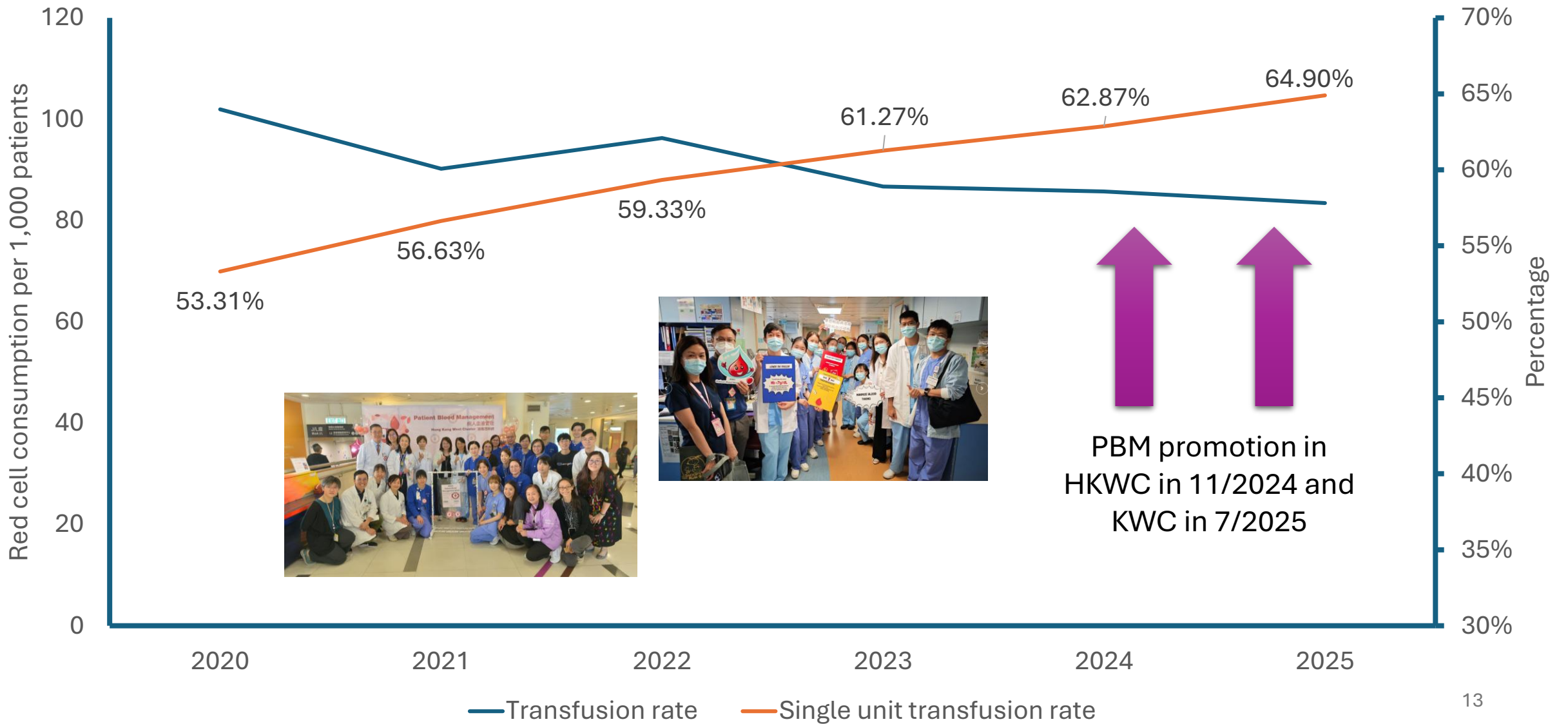


# PBM performance indicators trigger and assess PBM initiatives



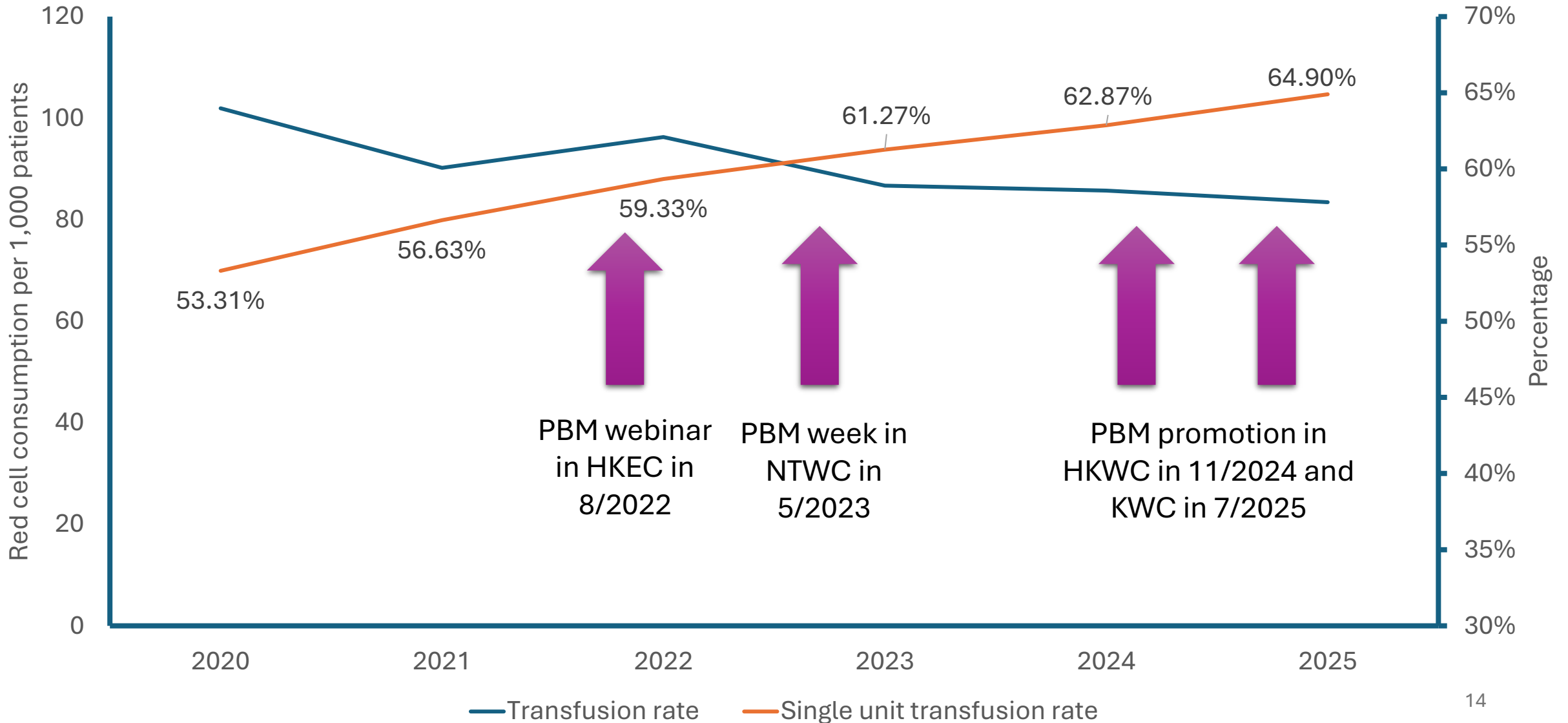


# PBM performance indicators trigger and assess PBM initiatives



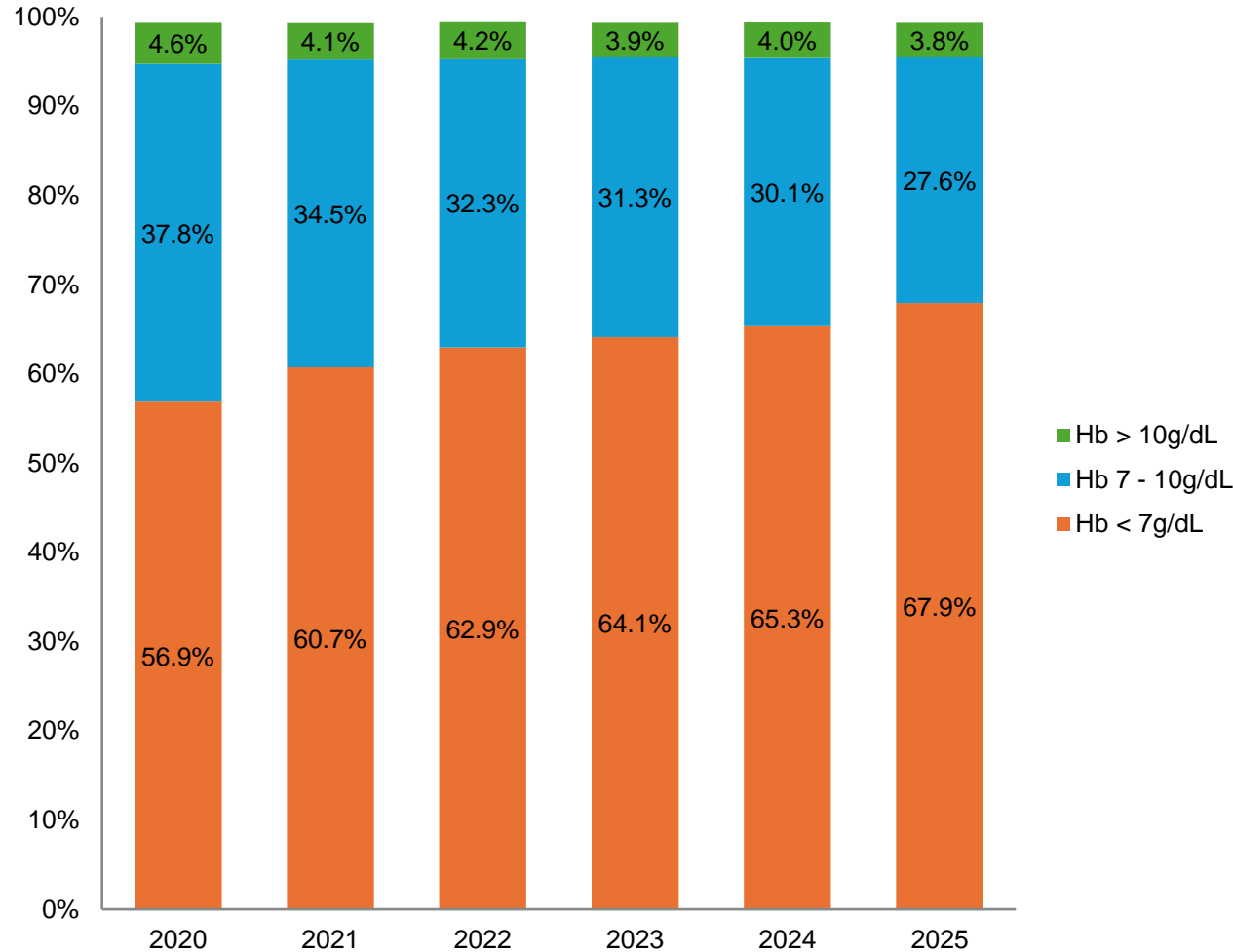


# PBM performance indicators trigger and assess PBM initiatives





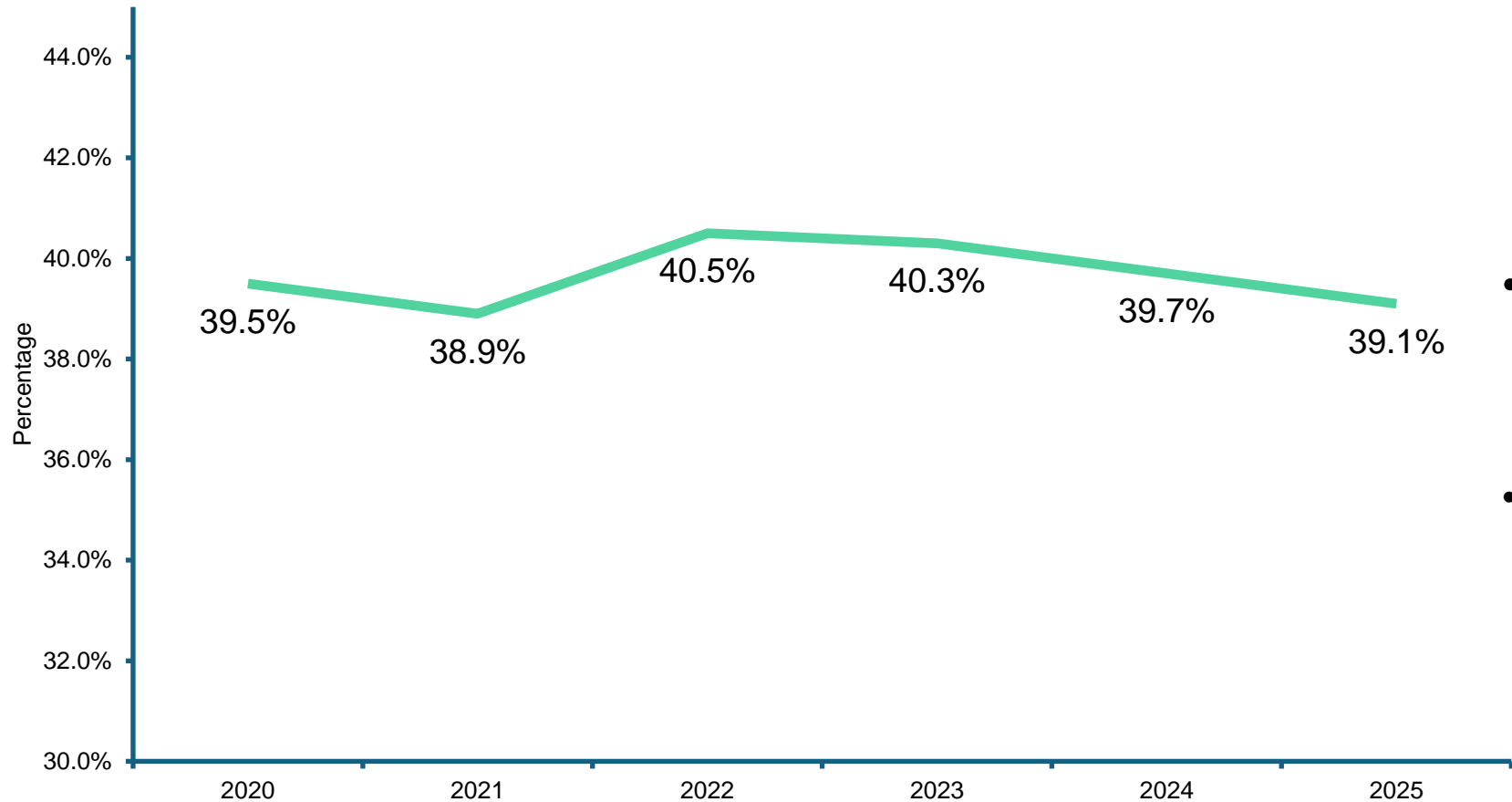
# More restrictive red cell transfusion in HA



- The percentage of transfusion with Hb < 7 g/dL increased from **56.9%** in 2020 to **67.9%** in 2025 in HA



# Static anaemia rate on admission at 39.5%



## Static anaemia rate despite

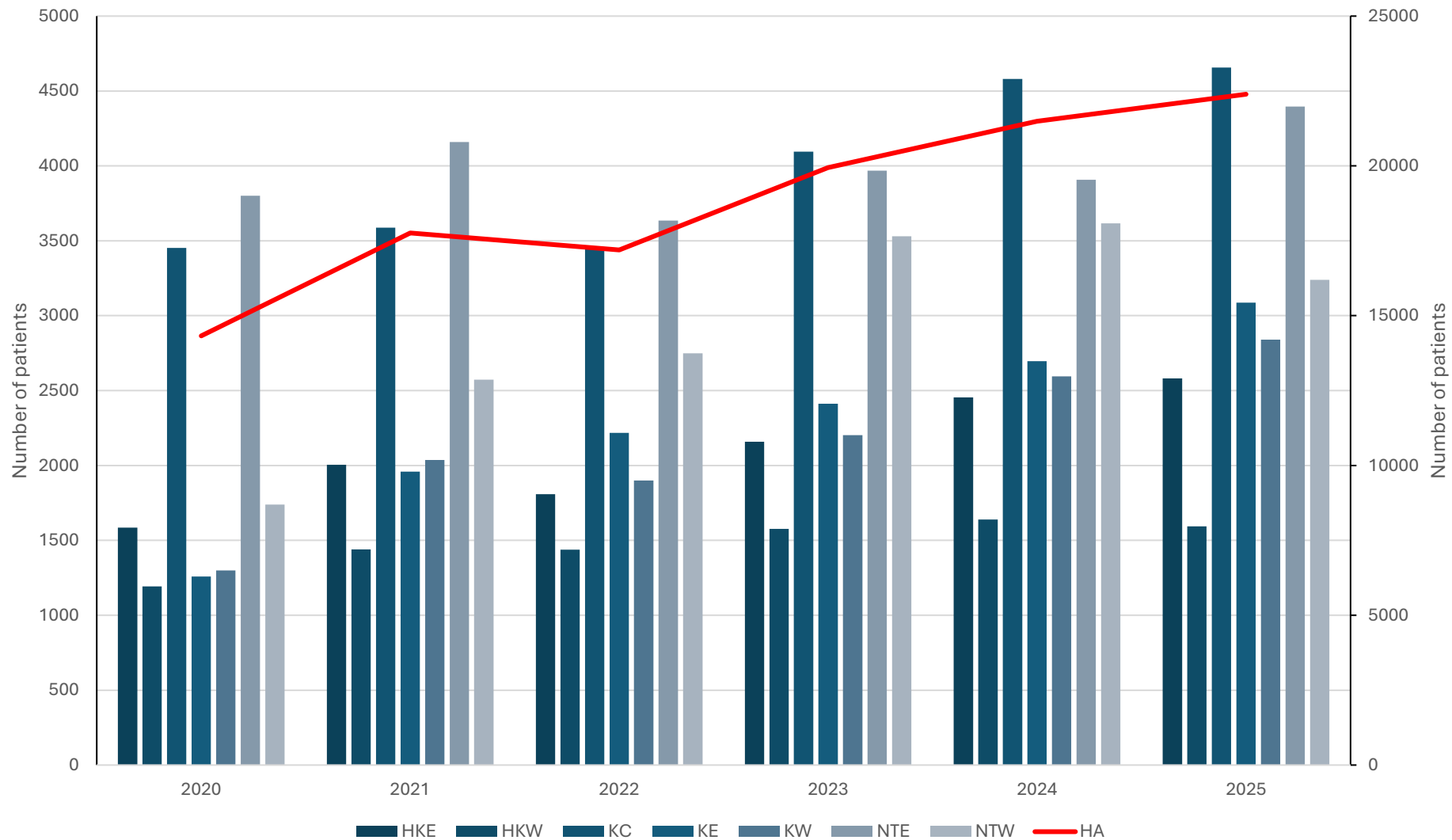
- HA service expansion with 1,389 increment of hospital beds from 2020 to 2025<sup>1</sup>
- HK elderly ( $\geq 65$  years old) population increase of 337,500 from 2020 to 2024<sup>2</sup>

1. Annual survey on hospital beds in public hospitals 2024/25, Statistics and Data Science Department, Strategy and Planning Division, HAHO

2. Population estimates, Census and Statistics Department, The Government of the Hong Kong Special Administrative Region



# More patients are using IV iron

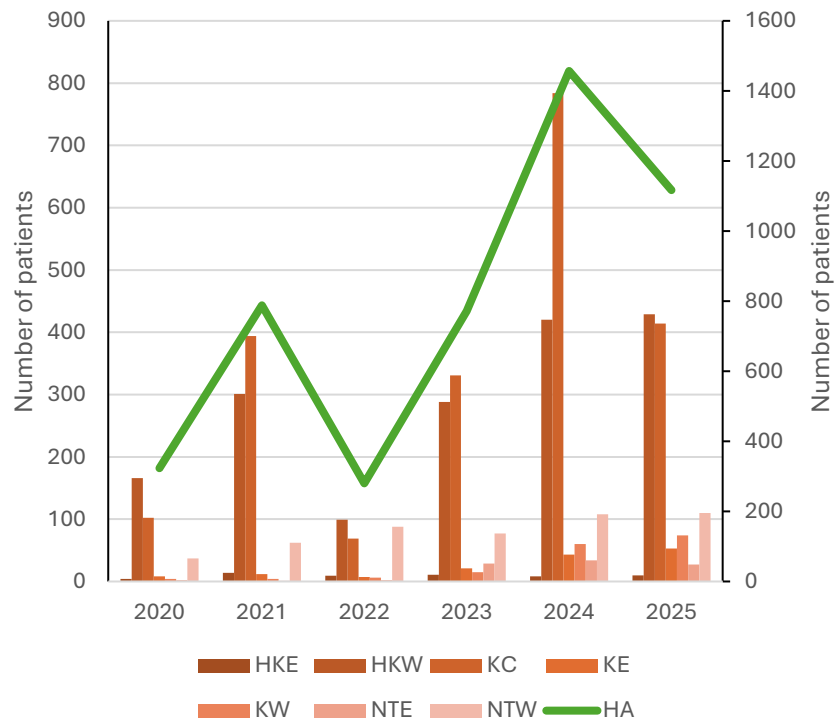


- The number of patients given IV iron increased by **56.3%** from 2020 to 2025

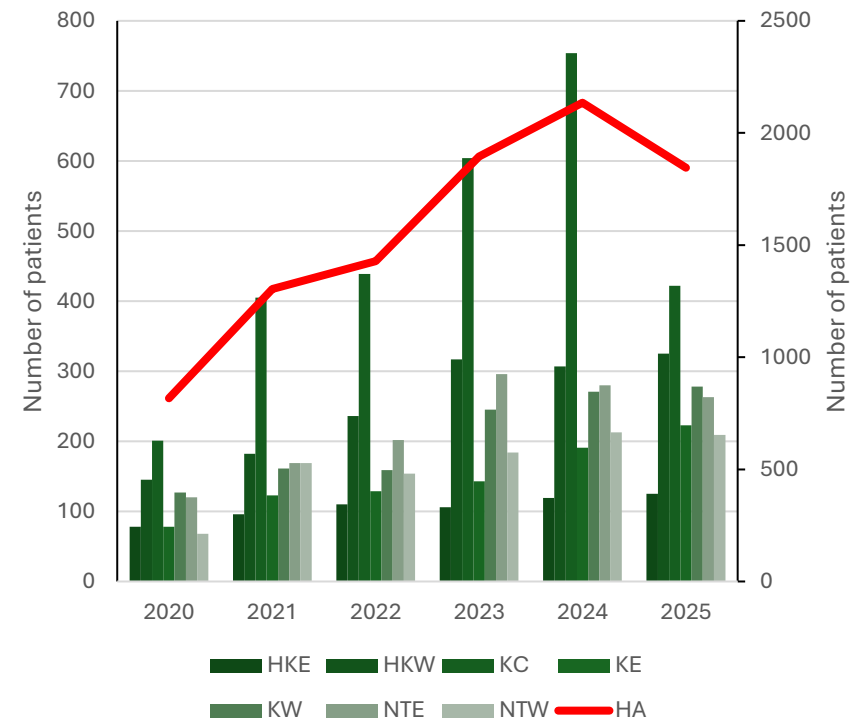


# More patients are using FC and PCC

- The number of patients given fibrinogen concentrate increased by **245.8%** from 2020 to 2025



- The number of patients given prothrombin complex concentrate increased by **125.8%** from 2020 to 2025





# Conclusion and way forward

- PBM clinical indicators play a key role in progress monitoring
- Early detection and management of anaemia
- Incorporation of blood collection and blood product utilization at BTS command centre



# Acknowledgement

Quality and Safety Division, HAHO

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***Everyone who contributes to PBM!***

