

MAPBM a Maturity assessment model to assist hospitals to develop “Patient Blood Management” to avoid unnecessary transfusion and improve safety

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INTRODUCTION

Patient Blood Management (PBM) is worldwide recognized as the best strategy to avoid unnecessary transfusions. It is a WHO recommendation for elective surgery since 2010, however, there is still limited implementation of PBM programs across hospitals and NHS, mainly due to the implicit challenges of its implementation. The purpose of this project is to validate a PBM maturity scorecard to serve the healthcare providers to assess, implement, measure and benchmark their PBM programs with the aim to reduce transfusion overuse and improve outcomes.

METHODS

For the validation of the tool, a total of **18 hospitals** and 2 years of data (2014-2015) were included in the study with **30.017 procedures**.

The scorecard model is based on a **maturity matrix** including the four dimensions required in any transformation process – **organization, processes, training and information systems** – and classified in 4 stages - Basic, Initial, Advanced, Excellent.

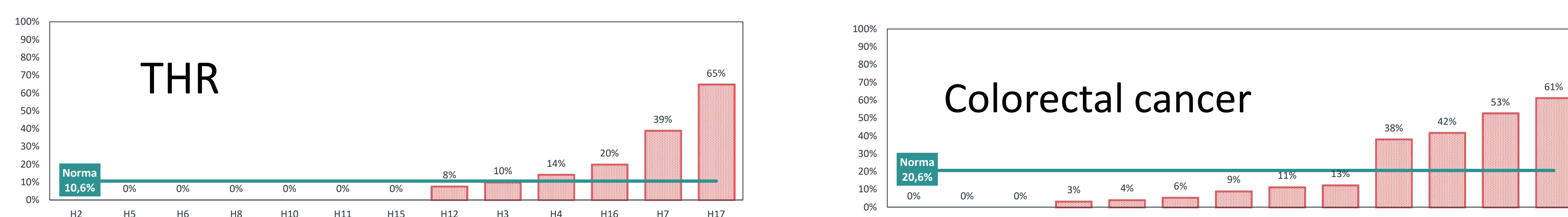
- Calculation of *structural drivers* was based on a self-assessment questionnaire covering the 3 dimensions organized in 8 drivers and 66 levers. Each one is ranked in an scale of 4 (between 0 - completely disagree to 3 -completely agree), unless a quantitative scaling answer applies.
- Calculation of *process drivers* structured in 3 PBM Pillars, were run extracted from hospital database of the 5 most blood consuming clinical processes: Hip and Knee arthroplasty, Colorectal cancer resection, Cardiac valve replacement, hip fracture surgery, digestive hemorrhage.
- Transfusion results and outcomes were also run extracted from hospital database

Above dimensions were correlated with transfusion results adjusted by case-mix and comorbidities

RESULTS

The **structure results** were summarized in Figure 1. We found hospitals in different maturity level, according to the structure drivers. No one could be categorized as *excellent* but near 50% of them were *advanced*.

Process drivers results. EX. Preoperative anemia treatment



Process KPIs (correlation of some process drivers with RBC transfusion)

- Pillar 1:TKA patients with some preoperative iron metabolism parameters 42.7% (0-94%). **Corr.34, R2 11.6**
- Pillar 2: TKA patients treated with perioperative tranexamic acid 58% (0-100%). **Corr. 28.9, R2 8.3**
- Pillar 3: % of TKA patients with nadir Hb >8 g/dl 84% (65-100%). **Corr. 12.5, R2 1.6**

Many PBM process KPIs showed a good correlation with transfusion rate. Some qualitative structure drivers show a tendency of correlation with transfusion rate but the number of measures (centers) is still insufficient.

Conclusions

This work has demonstrated the feasibility of transforming the wealth of evidence and PBM clinical recommendations into a set of Key Performance Indicators from existing hospital available data. The KPIs map the patient pathway in a given clinical process, while ensuring homogeneous risk-adjusted comparisons among hospitals.

Figure1: Maturity Model Framework

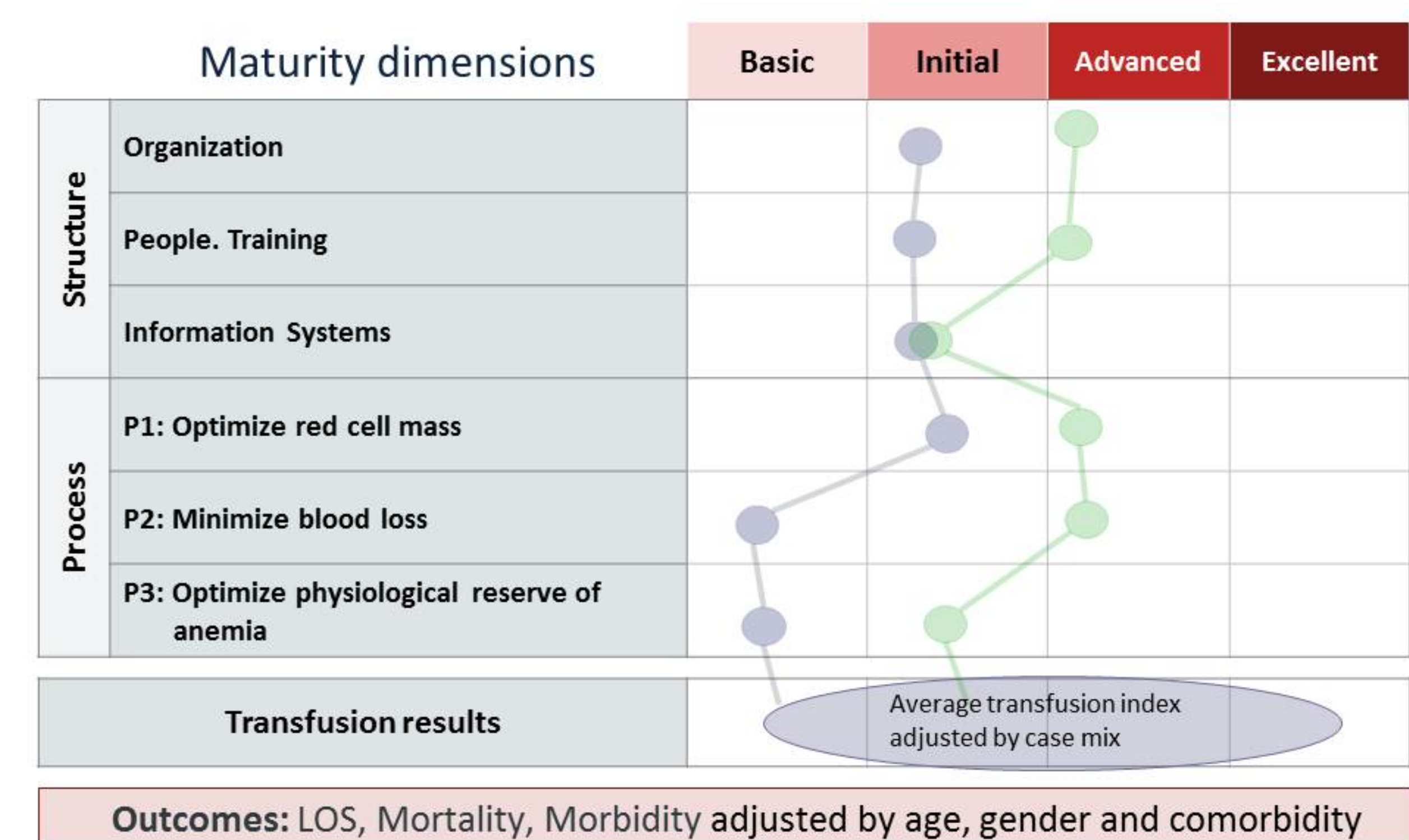


Figure 1: Structure results per hospital

