

PATIENT BLOOD MANAGEMENT AS A PUBLIC HEALTH ISSUE: A MULTIDISCIPLINARY DECISION PROCESS REQUIRING CALL FOR ACTION

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INTRODUCTION

The use of red blood cell per 1,000 inhabitants may vary 3 folds between European countries, revealing that there may be substantial room for blood optimization strategies^[1]. Patient Blood Management (PBM) is an evidence-based, multidisciplinary approach aiming to preserve and optimise patients’ own blood in order to improve clinical outcomes. The implementation of this approach has been reported to reduce blood components utilization, avoiding transfusion complications while achieving better patient outcomes^[2-4]. The objective of our study was to assess the effect of a nationwide PBM program on public health in Portugal.

METHODS

The first phase of this research project involved a group of 18 key opinion leaders (KOL) in a stated preference inquiry using multi-criteria decision analysis (MCDA) to assess the relative value of specific PBM strategies (Table 1), grouped in PBM pillars, to highlight the need for strategy prioritization in the implementation of a nationwide PBM policy. This methodology presupposes the identification of relevant criteria in decision-making and the elicitation of individual preferences in order to determine their aggregated preference.

Table 1: Strategies included in the questionnaire

Pillar 1	Pillar 2	Pillar 3
Optimise haematopoiesis	Minimise blood loss	Optimise tolerance to anaemia
Administration of erythropoiesis stimulating agents	Administration of antifibrinolytics	Red blood cell restrictive transfusion strategy
Iron administration	Administration of crystalloid or colloid solution	Platelets restrictive transfusion strategy
Administration of vitamin B12 and folic acid	Administration of fibrinogen concentrate	Plasma restrictive transfusion strategy
	Administration of prothrombin complex	

In the second phase a decision analysis model was used to estimate the impact of PBM implementation across two scenarios: “current clinical practice” and “with PBM implementation” over one year. The population considered includes hospital-assisted patients from various therapeutic areas (Figure 1).

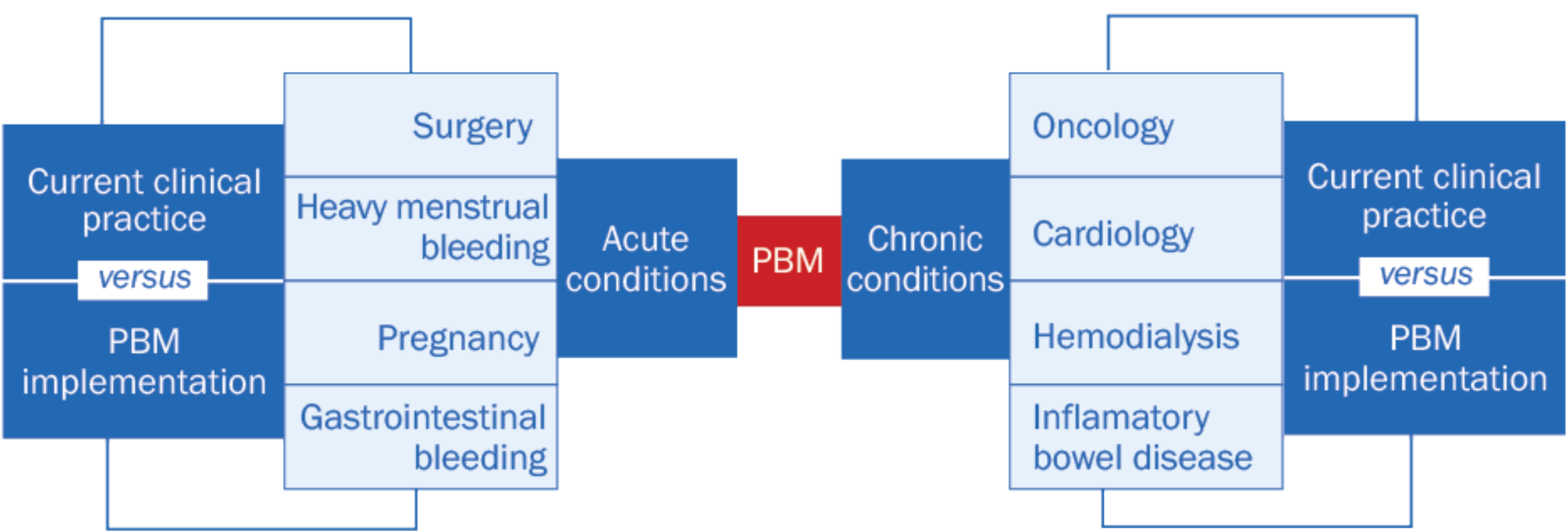


Figure 1: Population considered in the model

Model inputs included effectiveness data regarding transfusion utilization, health resource consumption and mortality obtained from Portuguese national health databases and literature review. An expert panel was held to validate both the conceptual model and the inputs.

RESULTS

KOL elicited iron utilisation followed by restrictive transfusion of red blood cells (RBC) as the most preferred strategies (14.4% and 14.0%) (Figure 2).

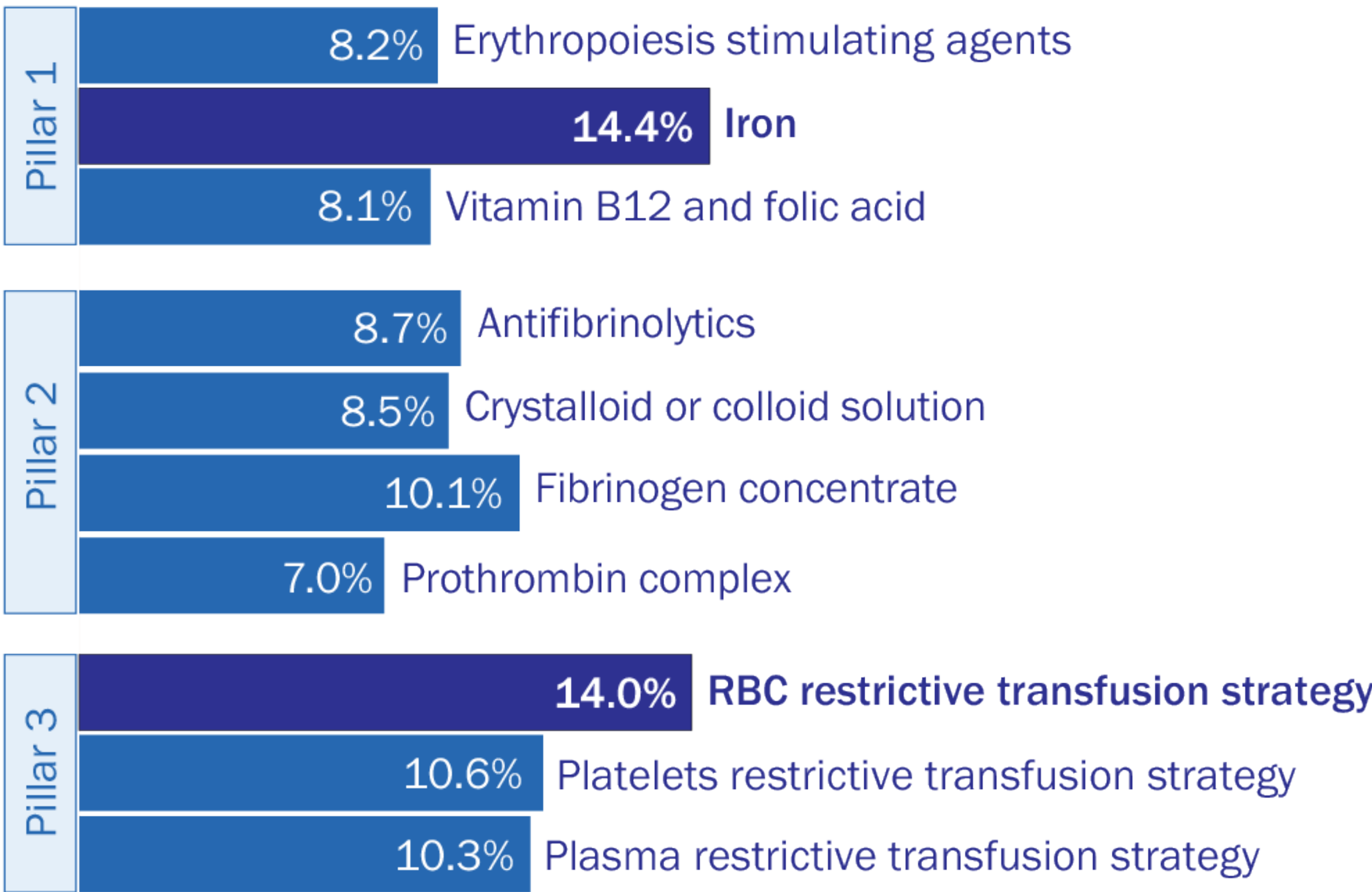


Figure 2: Relative importance distribution of PBM strategies

We estimate that 384,704 patients would be eligible for PBM strategies in one year time horizon, resulting in 594 premature death avoided (3.8% reduction) corresponding to a gain of approximately 1,500 life years and a reduction of 3,660 (6.0%) disability adjusted life years (DALY) relative to the current clinical practice. A decrease of 233,141 in-hospital days (10.3%) is expected mainly due to a reduction in hospital length of stay and in 30-day readmission rate. PBM closer monitoring would result in 295,577 (14.4%) additional physician visits (Figure 3).

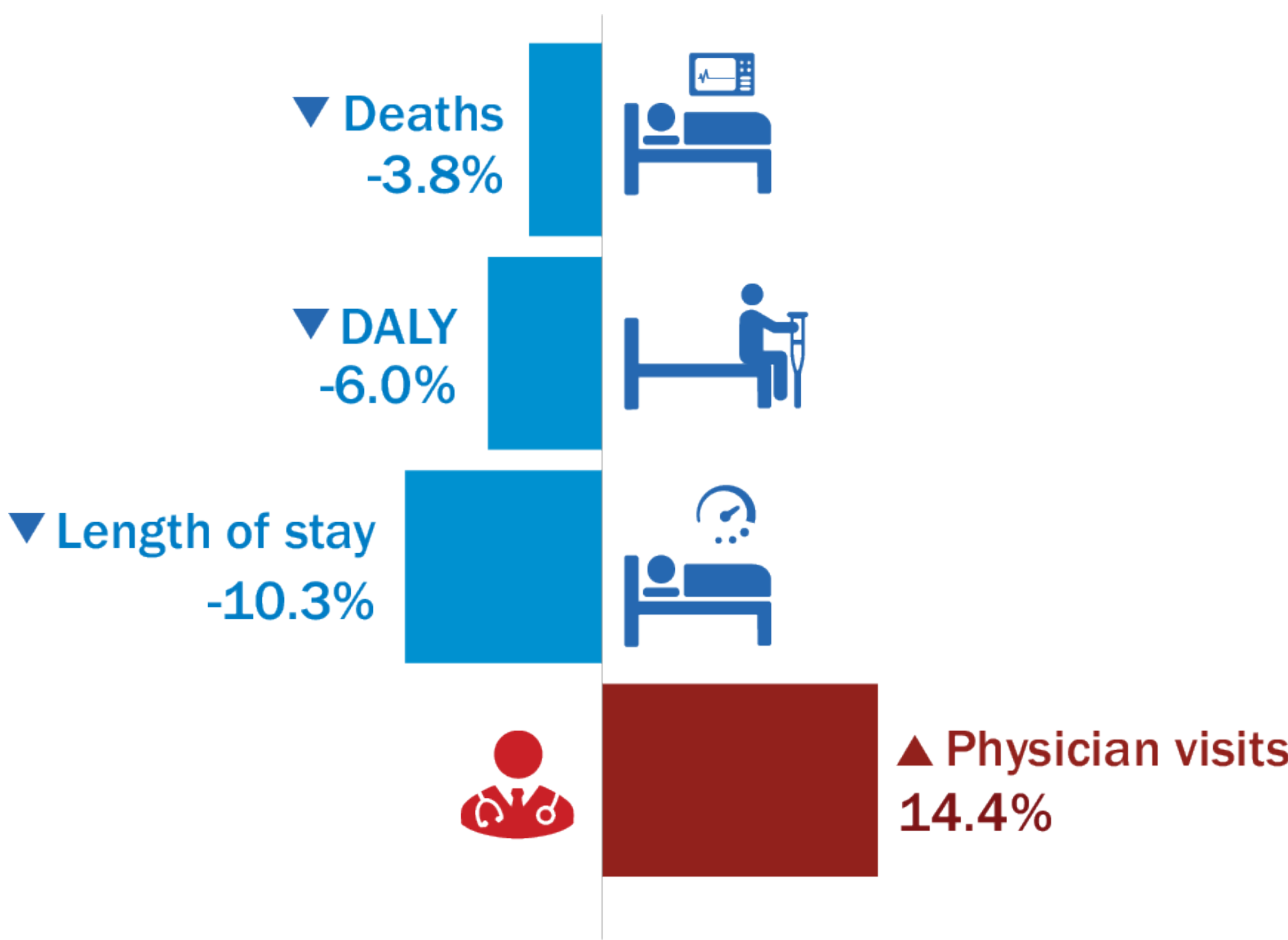


Figure 3: PBM impact on mortality and health resources consumption

In this population the overall transfusion rate could decrease to 4.3% from the current 8.7% (51.2% reduction) implying 17,202 blood transfusion avoided and 65,214 red blood cells units spared. It is also anticipated that plasma and platelet transfusion rate could decrease after PBM implementation (Table 2).

Table 2: PBM impact on transfusion and blood components use

Patients transfused		Units transfused
- 17,202	RBC	- 65,214
- 323	Plasma	- 3,162
- 51	Platelets	- 359

CONCLUSION

We anticipate that the implementation of a nationwide Patient Blood Management program will represent a paramount improvement in clinical outcomes in terms of morbidity and mortality and may have a substantial public health impact while contributing a more efficient use of health resources.

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