

# Implementation of an interprofessional pre-operative medication management program in cardiac surgery – a pre post quality improvement study

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## Background

Nearly every second patient admitted to surgery regularly takes drugs that need to be addressed during a pre-operative medication management to ensure the safety and efficacy of the prescribed drug regimen during the surgical period. However, recommendations often are based on expert opinions. In addition, data is lacking on how to best implement such strategies in daily practice. Especially cardiac surgery patients are often treated with multiple drugs including high risk medication (e.g. anticoagulants, platelet aggregation inhibitors, antidiabetics etc.) highlighting the particular importance in this patient population. Consequently, suitable and effective approaches are needed to enable a safe management of these patients in clinical practice.

## Methods

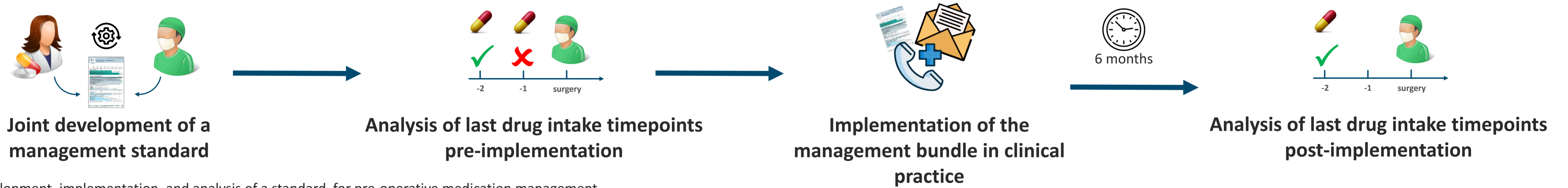


Fig. 1: Development, implementation, and analysis of a standard for pre-operative medication management

After obtaining a positive vote of the ethics committee, an evidence-based pre-operative medication management standard of the most common drugs prescribed in cardiac surgery patients (i.e. antiplatelets, oral anticoagulants, and antidiabetics) was jointly developed and implemented in routine care. Before and after implementation, the timepoints of last pre-operative drug intake were assessed by pharmacists and cardiac surgeons in two samples of consecutively admitted patients.

### Management bundle

- Inclusion of the management standard in the admission letter for the primary care physician
- Distribution of the standard to referring hospitals
- Pocket cards for in-house physicians
- Interprofessional hotline by cardiac surgeons and pharmacists for inquiries on management (i.e. by patients, primary care physicians, other hospital)

## Results

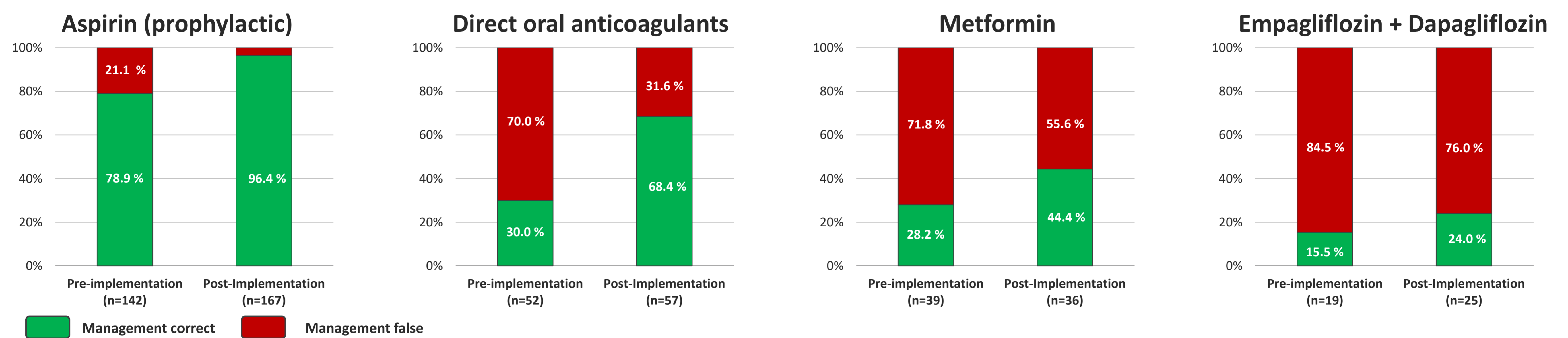


Fig. 2: Correct and false pre-operative management of 4 drug groups in patients referred from other hospitals and admitted from primary care pre-and post-implementation.

Pre-implementation 222 of 273 patients (81.3 %) and post implementation 249 of 290 included patients (85.9 %) had at least one drug that needed an active pre-operative management.

### Pre-implementation

- Only 30.0 % of direct oral anticoagulants (DOAC), 28.2 % of metformin, and 15.5 % sodium glucose transporter 2 (SGLT-2) - inhibitors were paused correctly (Fig 2.)
- In patients with inadequate DOAC pauses, pauses were too short in 88.6 % of the cases.
- Every 5<sup>th</sup> patient unnecessarily paused prophylactic acetylsalicylic acid (aspirin).

### After implementation:

- Correct management significantly increased to 68.4 % of pre-operatively correctly handled DOAC and nearly every patient managed aspirin correctly.
- This effect was less prominent for metformin (44.4 %) and SGLT-2-inhibitors (24.0 %).
- Management especially improved in patients who were admitted from primary care receiving an admission letter (Fig. 3).

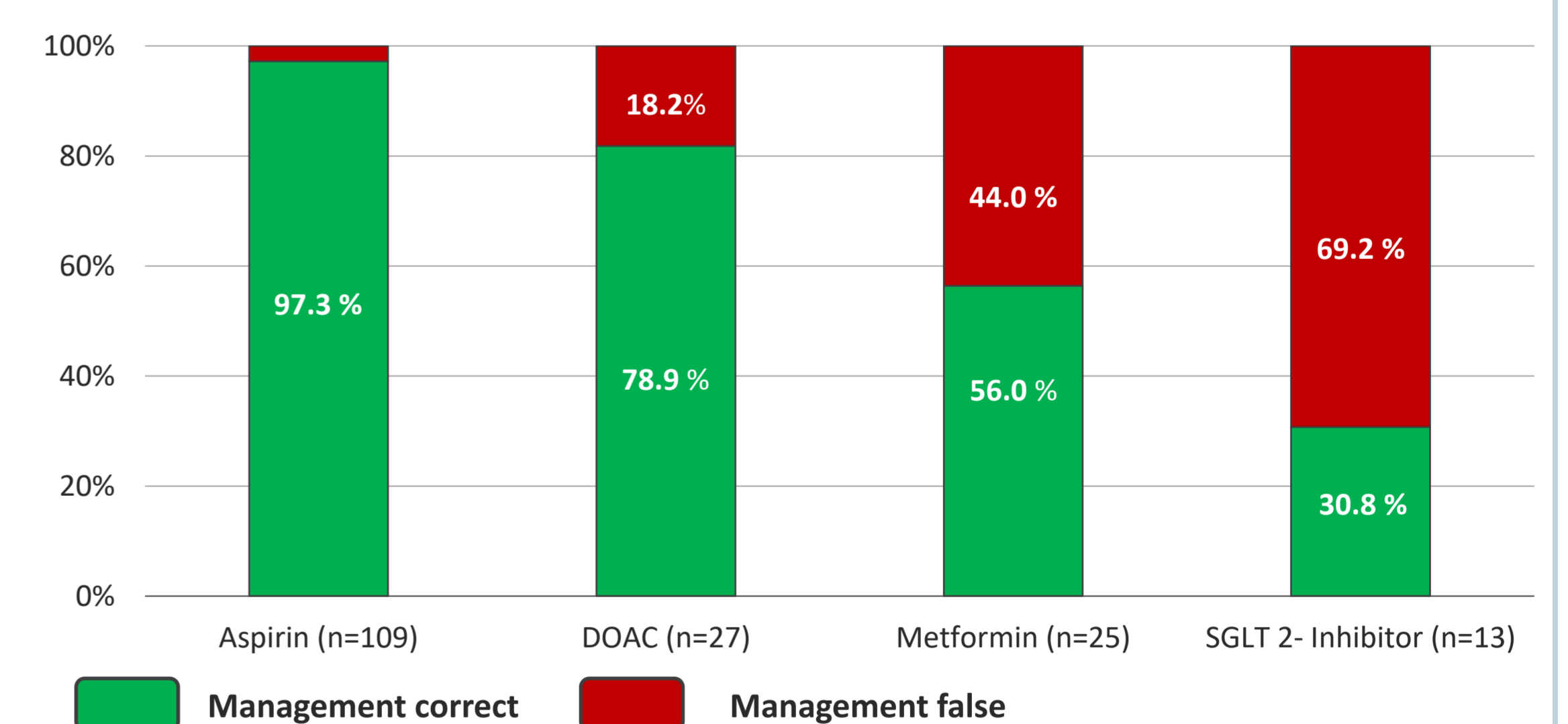


Fig. 3: Subgroup analysis after implementation of the pre-operative management in patients admitted from primary care receiving an admission letter.

Legend: Aspirin: Acetylsalicylic acid | DOAC: Direct oral anticoagulants | SGLT-2: Sodium glucose transporter 2

## Conclusion

In patients electively admitted for cardiac surgery, 4 in 5 patients take a drug that needs to be addressed during the pre-operative period. The standardized interprofessional approach improved the pre-operative management of these drugs. Especially, DOAC were often paused too late before surgery putting patients at risk for increased bleeding, unnecessary blood transfusions, and cost-intensive coagulation management. Interestingly, prophylactic aspirin still was paused in 1 of 5 patients before surgery, although not recommended by the guidelines. The management of these drugs increased due to the holistic management approach involving pharmacist and cardiac surgeons. However, the effect was not so prominent for metformin and SGLT-2-inhibitors. This will

become even more important as SGLT-2-inhibitors will be increasingly used over the next years in patients with heart failure. Also, patients admitted from primary care, who had seen the primary care physician before admission, adhered closer to the recommended management than patients referred from other hospitals. Although the standard was distributed to other hospitals, it might not always be readily available, or in the scope of the referring physicians. Therefore, strategies are needed to improve pre-operative management of patients that are directly referred from other hospitals to surgery. This could be in form of a reminder which is sent to the referring physicians contacting the department to request a referral.