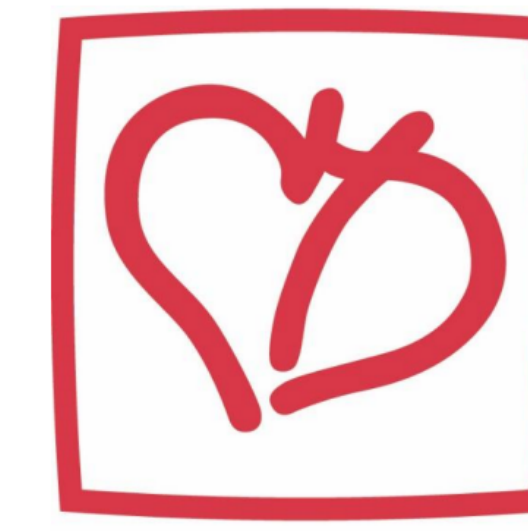




# Streamlining Pre-Admission Testing for Cost-Reduction in the Cardiac Catheterisation Lab

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## Background

Optimisation of catheterisation lab function impacts quality of care, patient outcomes and translates to overall costs to both patient and the institution. Pre-admission tests (PAT) are done to prepare patients for procedures, so that they can be performed safely. While the costs entailed by PAT do not appear large, accumulatively they translate to higher costs for the operation of the catheterisation lab as well as for each individual patient. Furthermore, a review of current guidelines and recommendations can help to shave off unnecessary PAT.

**Objective:** To review and streamline the necessary PAT to reduce procedural related costs.

## Methodology

- 01 Review Current PAT Practice**  
 Pre-intervention, the PAT included: Full blood count (FBC), full renal panel (U/E/Cr), prothrombin time and activated partial thromboplastin time (PT/aPTT), hepatitis B/C and HIV screen, blood type group and cross-match (GXM).
- 02 Benchmark Study Based on Society for Cardiac Angiography & Interventions (SCAI) Expert Consensus**
  - FBC and Metabolic profile within 30 days of procedure is acceptable.
  - Routine PT/aPTT and international normalized ratio (INR) is not needed for healthy patients with no underlying significant renal or liver dysfunction, or warfarin use.
  - Chest radiographs are not routinely required before procedures but are appropriate for pre-procedural evaluation based on symptoms and suspected pathology.
  - Screening for blood borne pathogens is not routinely performed.
- 03 Stakeholders Engagement in New Protocol Development**  
 In discussion with procedurists, the new protocol was developed taking into consideration procedurists' comfort level and safety concerns.
- 04 Streamlined Protocol & Recommendations Developed**  
**Routine tests required were streamlined to FBC, potassium and creatinine.** All other tests were not routinely required, based on specific criteria.

Review of Pre-admission Tests Done in a 1-month Period

	APTT/ PT	HBV screen	HCV screen	HIV screen	Renal panel
No. of tests ordered (%)	117 (95)	85 (69)	84 (68)	53 (43)	123 (100)
No. of potentially unnecessary tests (%)	73 (62)	15 (18)	11 (13)	6 (11)	89 (72)

### Pre-Intervention Findings

We reviewed 124 cases between 18 July to 12 August 2022 based on our updated protocol to evaluate the potential impact of intervention.

We found 42.6% (196/460) of tests were unnecessary, with a potential cost saving of \$7,849.00 for the period with new protocol.

## Conclusion

### Summary of Positive Impacts

- Reduction in unnecessary tests done overall and individual tests
- Translated to cost savings to patients and catheterisation lab
- No significant trade-off in terms of safety

## Intervention

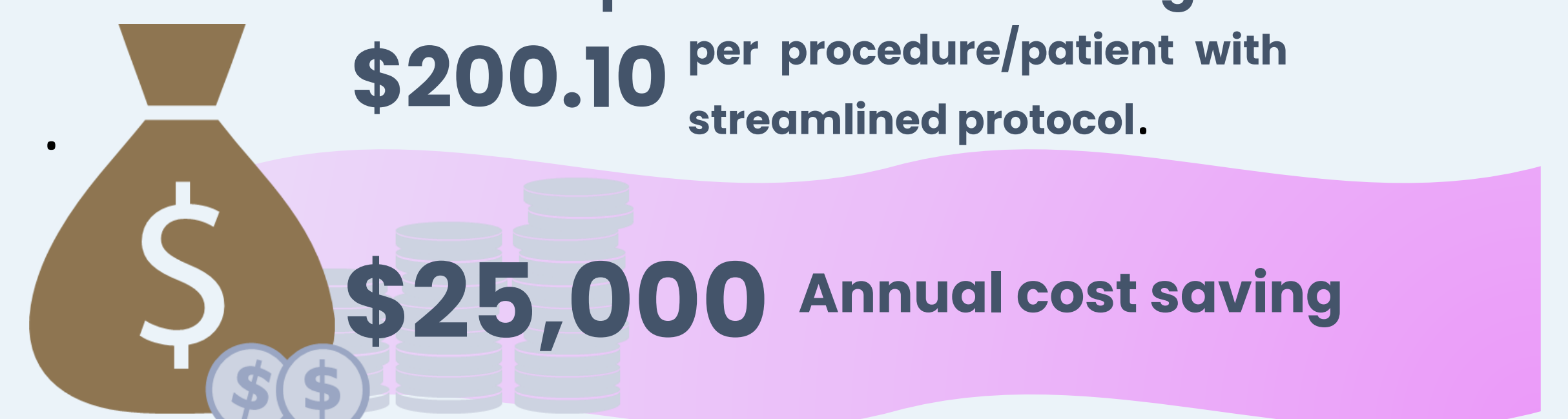
- Intervention Period: 1 month
- Dissemination of Information: Conveyed during department meetings, Information sheets made available in clinic rooms, reminders to ground staff
- Data Collection Period: 2 months after initial intervention, data collected for 1 month

## Post Intervention & Results

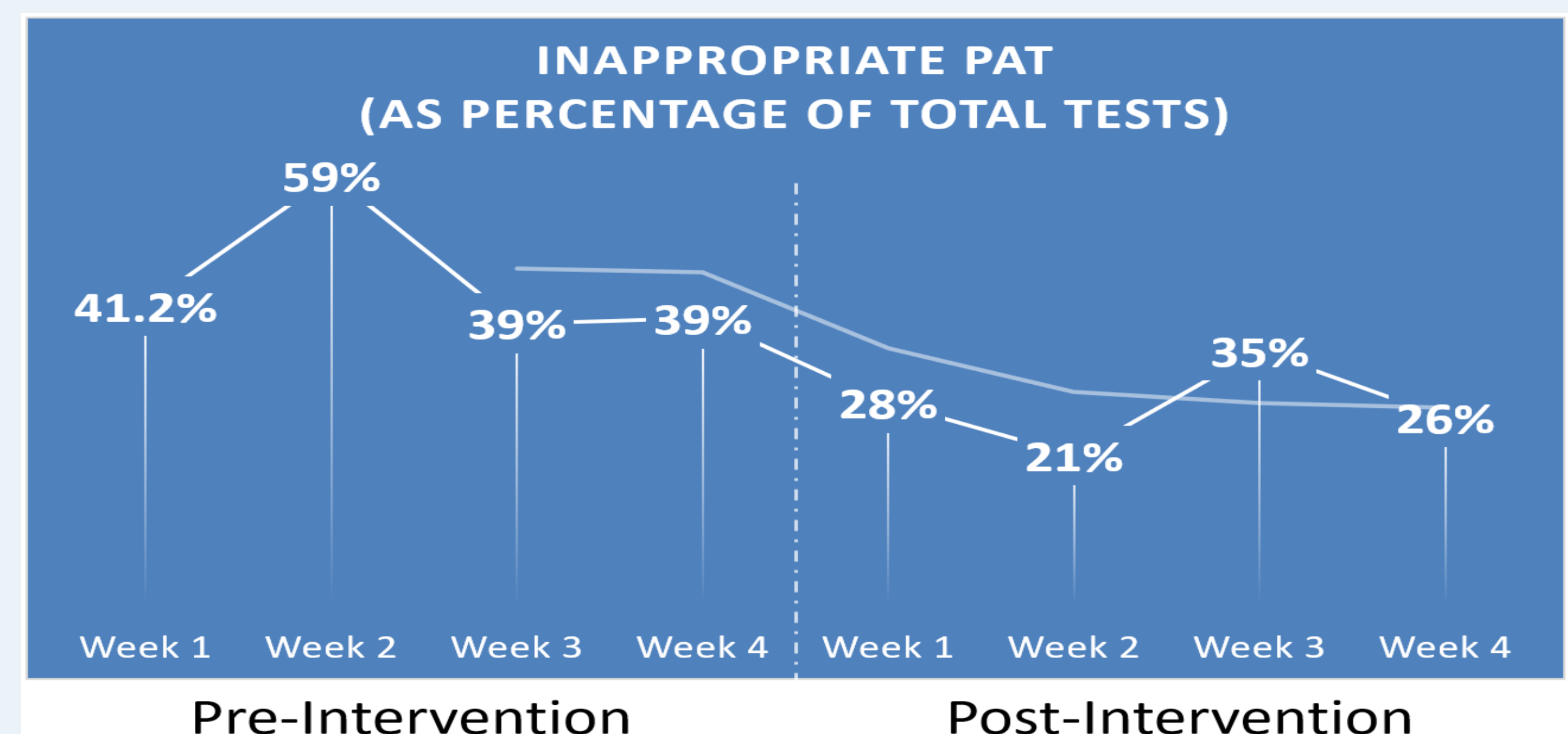
Total 149 cases were reviewed post intervention from 1<sup>st</sup> to 31<sup>st</sup> December 2022. There was an overall reduction in unnecessary tests from **42.6% to 27.6%**.

Pre-Procedural Tests Done	Before Intervention	After Intervention
APTT/PT	73 (62.4%)	43 (43.4%)
HBV Screen	15 (17.6%)	6 (6.1%)
HCV Screen	11 (13.1%)	6 (5.9%)
HIV Screen	6 (11.3%)	2 (2.7%)
U/E/Cr	91 (75.2%)	84 (60.4%)
<b>Overall</b>	<b>196 (42.6%)</b>	<b>141 (27.6%)</b>

This translated to a potential cost saving



There was also sustained reduction in unnecessary tests done over the weeks post-intervention, as demonstrated by the run chart below.



### Safety Assessment

5 cases of intra- and post-procedure complications occurred (2 vascular access complications, 2 cases of no-reflow phenomenon, 1 case of acute pulmonary edema), however the management of these cases were not affected by the change in PAT protocol.

### Follow Up

- Interval assessment of compliance
- Identification of and targeted reminder for groups of doctors with high non-compliance
- Extension to other procedures and inpatient management