

“DoseDOACsRight” Improving Safety of Direct Oral Anticoagulant Therapy

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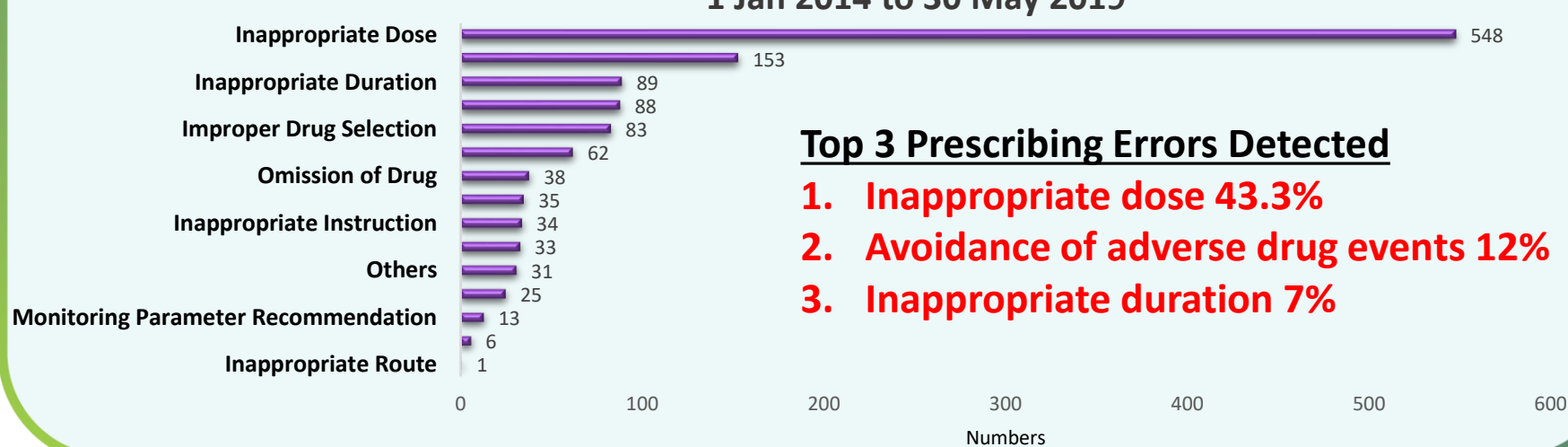


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Problem Statement

- Direct oral anticoagulants (DOACs) are recognized as high alert medications with one of the highest locally reported medication errors¹.
- Prescribing errors from DOACs can lead to catastrophic events such as bleeding and thrombosis.
- In Singapore General Hospital (SGH), there were 1,267 prescribing errors related to DOACs detected by pharmacists between year 2017 to 2019.
- The top error detected was inappropriate dose.

Types of prescribing errors detected (Total 1,267 DRPs)
1 Jan 2014 to 30 May 2019

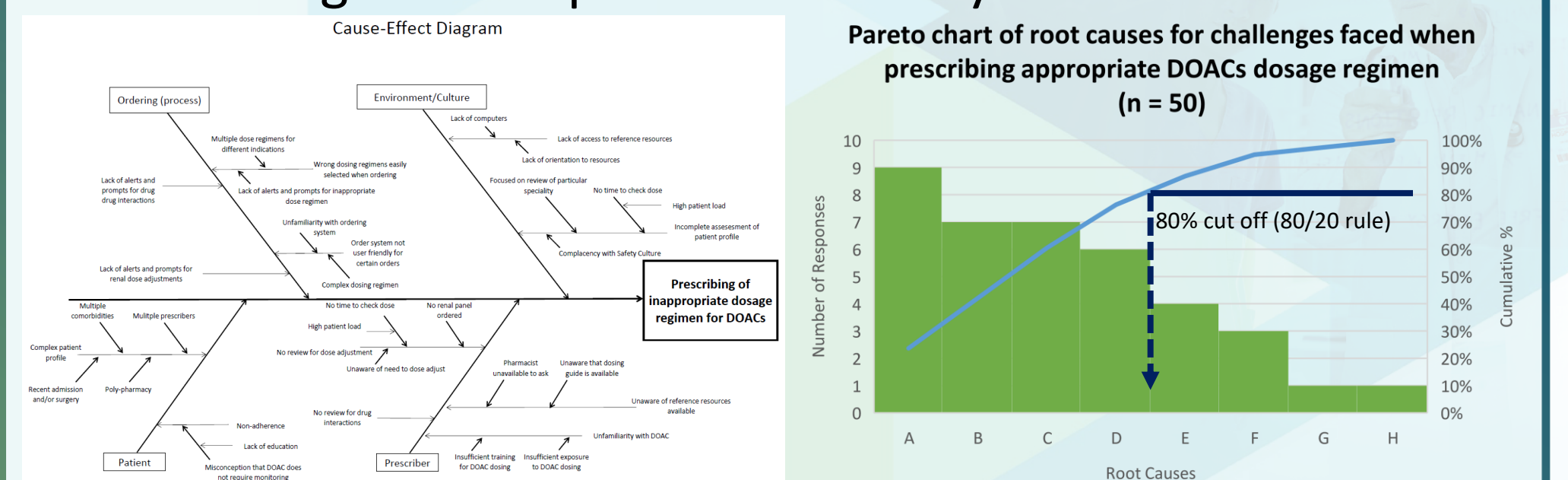


Top 3 Prescribing Errors Detected

- Inappropriate dose 43.3%
- Avoidance of adverse drug events 12%
- Inappropriate duration 7%

Potential Solutions

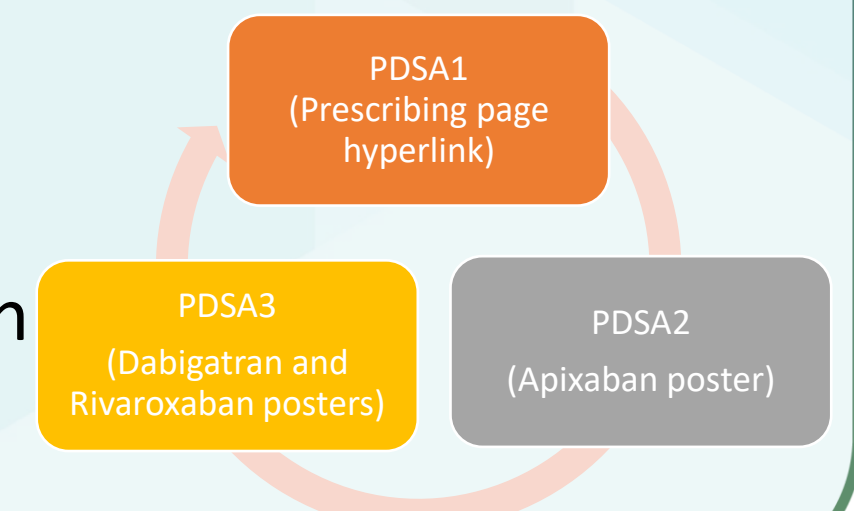
- Root causes were identified using the fishbone cause-and-effect diagram and prescriber survey.



Based on Pareto Principle (80/20 rule), about 80% of the effects (ie. Inappropriate prescribing of DOAC dosage regimen) come from 20% of the root causes (A to D).

Root Cause	Description
A	During ordering, the IT has overwhelming number of drug interaction prompts
B	During ordering, the IT does not prompt that drug required dose adjusted for renal impairment
C	Unawareness of dosing guide available for DOACs on SGH Intranet
D	During ordering, the IT does not prompt that patient has severe renal impairment (CrCl < 30ml/min) and/or on dialysis

- Three Plan-Do-Study-Act (PDSA) cycles were performed:
 - PDSA 1:** Hyperlink was created at the prescribing page for quick access to DOACs prescribing guide.
 - PDSAs 2 & 3:** Apixaban, and combined dabigatran and rivaroxaban educational posters were sent to prescribers. Pre- and post-poster quizzes were conducted.
- In each PDSA cycle, percentages of inappropriate DOACs dosage regimen prescribed in the 3 months before and after solution implementation were collected.
- Overall effect of PDSA 1 to 3 was also measured similarly.



Project Aim

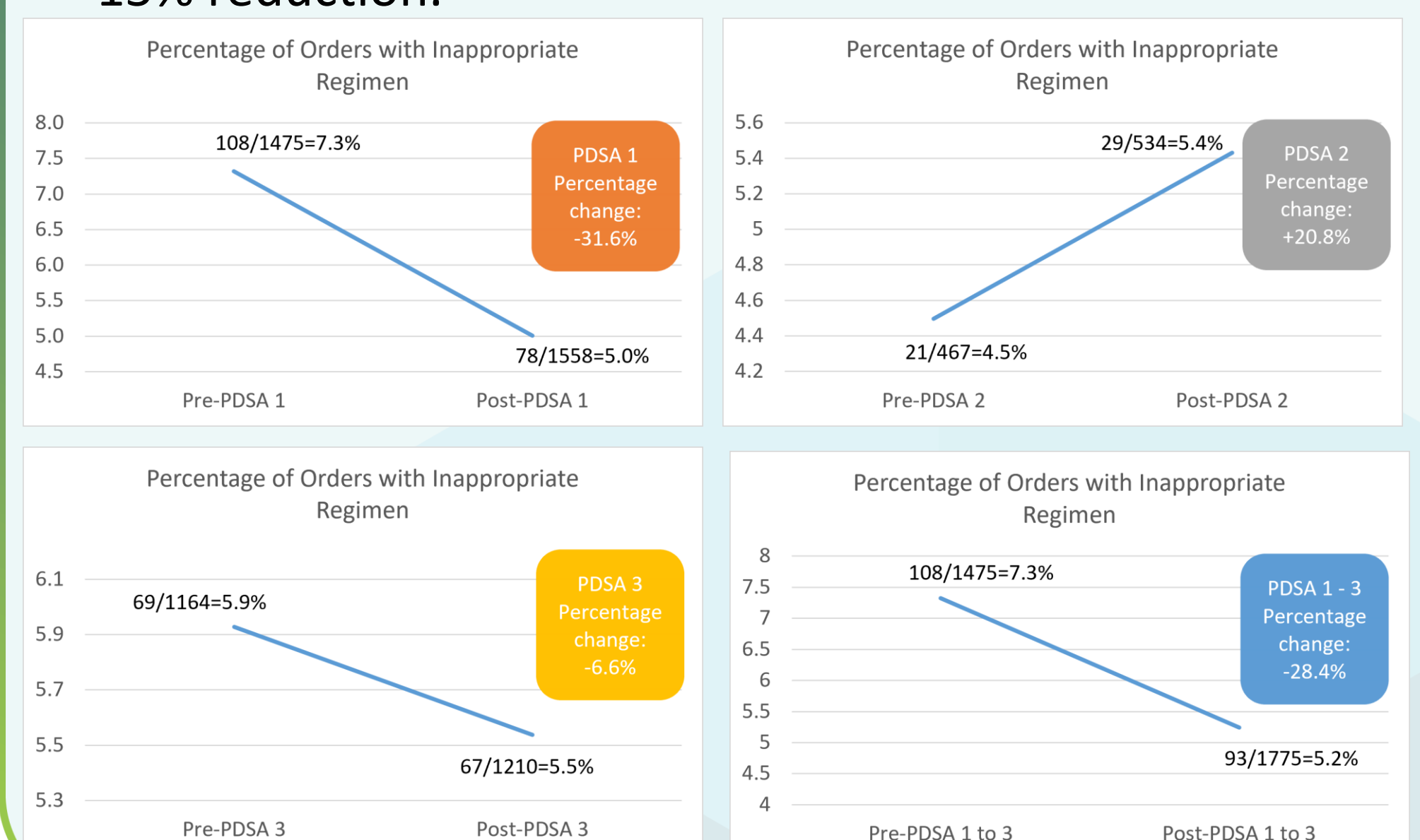
- To reduce the percentage of prescribing errors due to inappropriate DOACs dosage regimen by 15% in 6 months.
- The measured outcome was the number of prescribing errors due to inappropriate DOACs dosage regimen over total number of DOACs orders as a percentage.

Lessons Learnt

- PDSA 2 & 3 did not achieve the expected reduction in prescribing of 15%. This is likely due to the low participation of the education activity from the quiz responses (n=41). It would have been better if this exercise is made mandatory for all prescribers and be incorporated into the induction programs for all new prescribers joining the institution. Periodic re-education may help prescribers refresh their previous learning and further strengthen the foundation of their knowledge of DOACs.

Outcomes & Impacts

- All PDSAs resulted in decrease in percentage of inappropriate DOACs dosage regimen prescribed, except for PDSA 2.
- Looking at the overall effect of all solutions implemented, a 28.4% reduction in percentage of inappropriate DOACs dosage regimen prescribed showed that the solutions were overall effective and did achieve the aim of at least 15% reduction.



References:
1. Ministry of Health (MOH) (2021) The National Guidelines on High Alert Medications. Available at: <https://www.moh.gov.sg/docs/librariesprovider4/default-document-library/national-guidelines-on-high-alert-medications.pdf> (Accessed: 13th June 2022)