

BACKGROUND

- Determining the optimal antithrombotic (AT) regimen for patients with non-valvular atrial fibrillation (NVAF) undergoing percutaneous coronary intervention (PCI) is challenging due to the coexisting risks of thrombotic and bleeding events.
- Bleeding rates are significantly higher with triple therapy (TT).
- Recent literature suggests that dual therapy (DT) with a single antiplatelet + oral anticoagulant (OAC) may have similar efficacy with less bleeding compared to TT.^{1,2}

OBJECTIVES

- To characterize recent practice patterns regarding anticoagulant and antiplatelet therapy in NVAF patients undergoing PCI at Sunnybrook Health Sciences Centre (SHSC).
- To understand cardiologist rationale behind trends in prescribing practices.
- To describe short-term safety and efficacy outcomes associated with these practices, including bleeding and thrombotic events.
- To identify opportunities to optimize current practices.

METHODS

- Study Design**
- Retrospective chart review + electronic survey
- Retrospective Chart Review**
- Inclusion Criteria** (patients must meet all criteria)
 - Age ≥18 years old
 - Diagnosis of NVAF (i.e. in the absence of rheumatic mitral stenosis, mitral valve repair, or mechanical or bioprosthetic heart valve)
 - Admitted to SHSC
 - Undergoing PCI between September 1, 2016 and January 31, 2018
- Exclusion Criteria**
- PCI without stent insertion
 - Cardiovascular surgery or death during index admission
 - Valvular atrial fibrillation (i.e. in the presence of above conditions)
- Data collected included: patient demographics, past medical history (including CHADS₂ and HAS-BLED risk factors), AT therapy prior to admission and at discharge, PCI procedure details, thrombotic and bleeding events up to time of discharge, follow-up plans, etc.

- Electronic survey**
- Distributed to 32 cardiologists and cardiology fellows at SHSC using LimeSurvey
 - 10 general and case-based questions to explore the rationale behind prescribing practices
- Statistics/Analysis**
- Analyses were exploratory and descriptive
 - Descriptive statistics including frequencies and percentages, with continuous variables presented as means ± standard deviations

RESULTS

Table 1. Baseline Characteristics (n=107)

Mean age (years) ± SD	77.4 ± 10.2
Female sex - no. (%)	32 (29.9)
Low body weight (<60 kg)	14 (13.1)
CrCl <60 ml/min* - no. (%)	52 (48.6)
Atrial Fibrillation - no. (%)	81 (75.7)
CHF or LV dysfunction - no. (%)	25 (23.4)
Prior stroke or TIA - no. (%)	20 (18.7)
Bleeding history - no. (%)	16 (15.0)
Anemia - no. (%)	36 (33.6)
Mean CHADS ₂ score ± SD	2.5 ± 1.3
Mean HAS-BLED score ± SD	2.1 ± 1.0
OAC PTA - no. (%)	64 (59.8)
ASA PTA - no. (%)	38 (35.5)
P2Y12 inhibitor PTA - no. (%)	18 (16.8)
Inpatient PCI - no. (%)	86 (80.4)
ACS	71 (66.4)
Urgent CAD (non-ACS)	15 (14.0)
Elective PCI - no. (%)	21 (19.6)
Radial access - no. (%)	77 (72.0)
Drug-eluting stent - no. (%)	104 (97.2)
3 or more stents - no. (%)	25 (23.4)
LAD stenting - no. (%)	49 (45.8)
Left main stenting - no. (%)	10 (9.4)
Average LOS (days) ± SD	3.50 ± 4.2

CrCl = creatinine clearance; CHF = congestive heart failure; LV = left ventricular; TIA = transient ischemic attack; CHADS₂ = score based on history of CHF, hypertension, age ≥75, diabetes mellitus, stroke or TIA; HAS-BLED = score based on history of hypertension, abnormal renal or liver function, stroke, bleeding, labile INRs, age >65, drugs that predispose to bleeding or alcohol excess; PTA = prior to admission; ACS = acute coronary syndrome; CAD = coronary artery disease; LAD = left anterior descending; LOS = length of stay; *Unable to calculate CrCl for 2 patients (no weight documented)

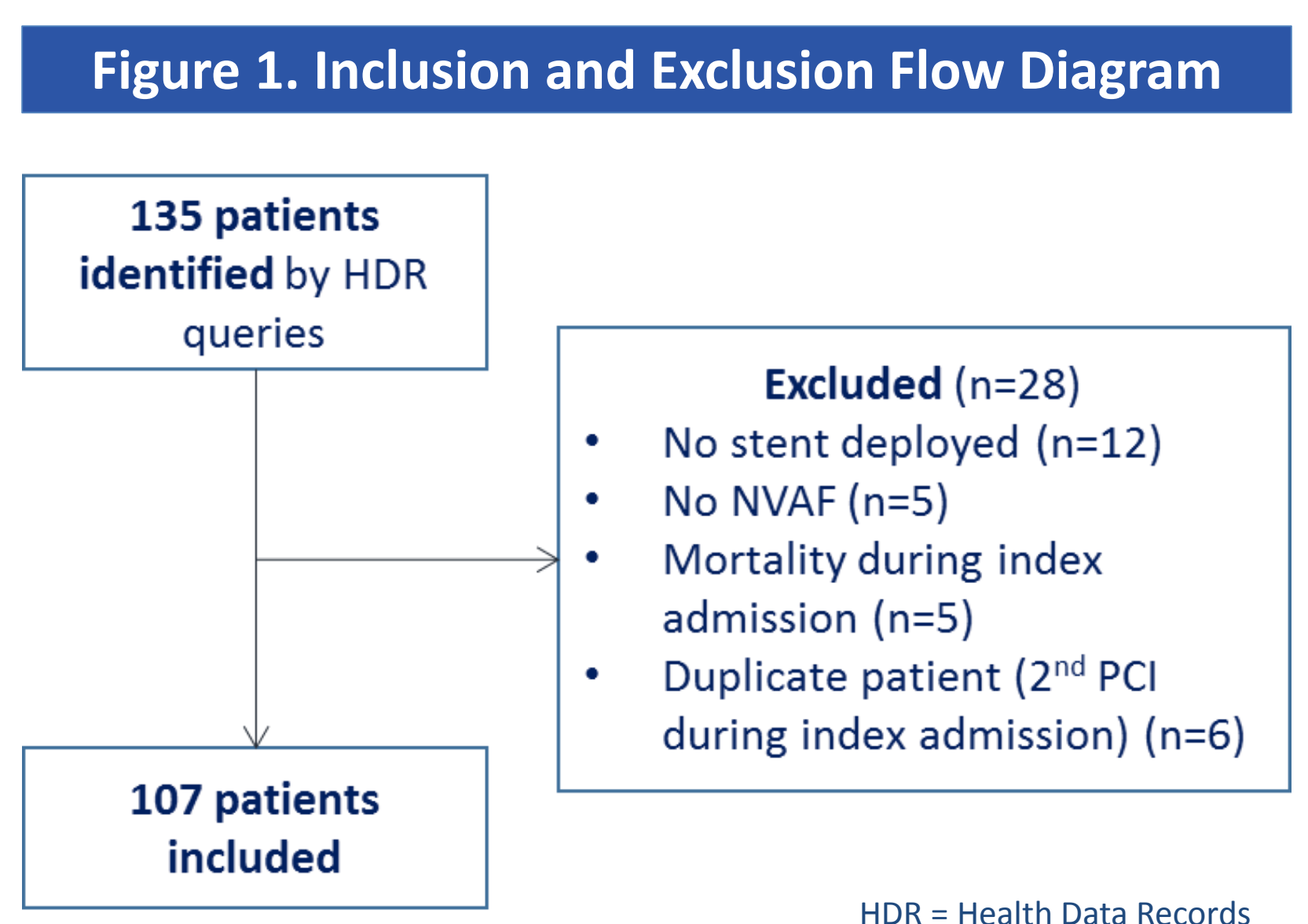


Table 2. Regimens on Discharge

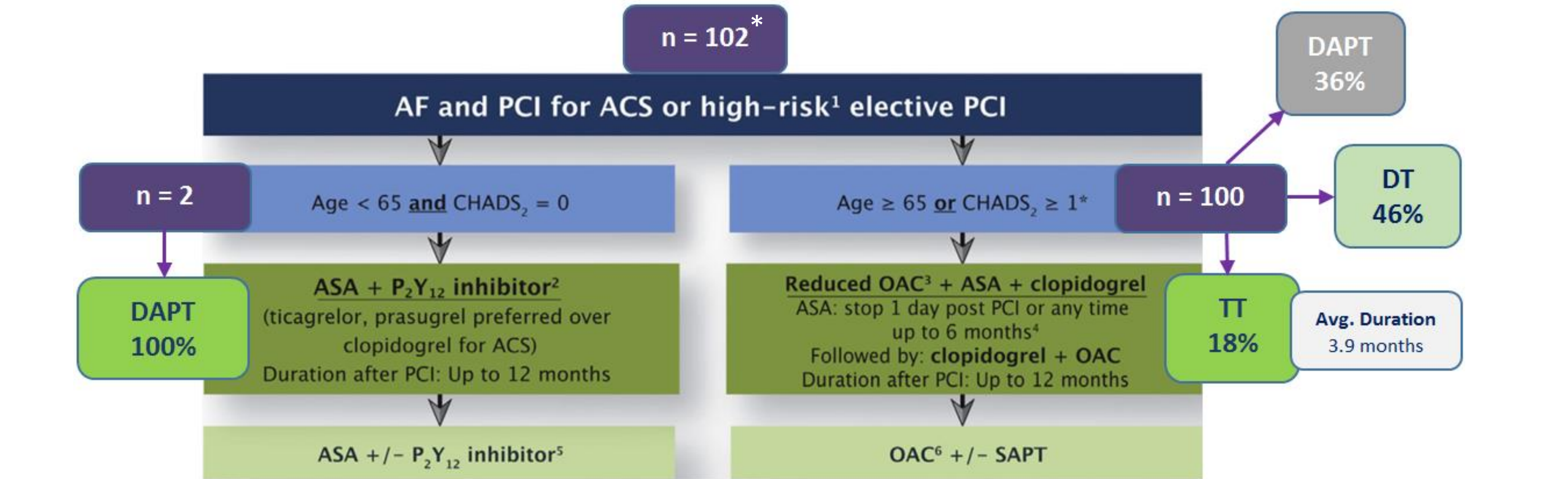
Regimen	n = 107	%
Triple Therapy (TT)	19	17.8%
W + C + ASA	7	6.5%
R15 + C + ASA	3	2.8%
A2.5 + C + ASA	6	5.6%
D110 + C + ASA	3	2.8%
Dual Therapy* (DT)	48	44.9%
R20 + C	2	1.9%
R15 + C	30	28.0%
R10 + C	1	0.9%
R15 + T	2	1.9%
A5 + C	5	4.7%
A2.5 + C	5	4.7%
W + C	3	2.0%
Dual Antiplatelet Therapy (DAPT)	40	37.4%
C + ASA	24	22.4%
T + ASA	16	15.0%

W = warfarin, R20 = rivaroxaban 20 mg daily, R15 = rivaroxaban 15 mg daily, R10 = rivaroxaban 10 mg daily, A2.5 = apixaban 2.5 mg BID, A5 = apixaban 5 mg BID, D110 = dabigatran 110 mg BID, D150 = dabigatran 150 mg BID, C = clopidogrel 75 mg daily, T = ticagrelor 90 mg BID. *All DT patients also received ASA on the day of PCI, with ASA discontinued as early as the day after PCI.

Reasons for no anticoagulation (DAPT):

- "Transient" a-fib: 45%
- Decision deferred to other hospital: 15%
- High bleed risk/recent bleed: 15%
- CHADS-65 score of zero: 7.5%
- Plan for OAC-containing regimen in future: 7.5%
- Reason not documented: 7.5%
- Patient refused anticoagulation: 2.5%

Figure 5. Discharge Regimens Alongside the 2018 CCS Antiplatelet Guideline Recommendations³



*n = 102 because 5 of 107 patients were elective patients without high-risk features; CCS = Canadian Cardiovascular Society

Figure 6. Documentation of Follow-Up Plan

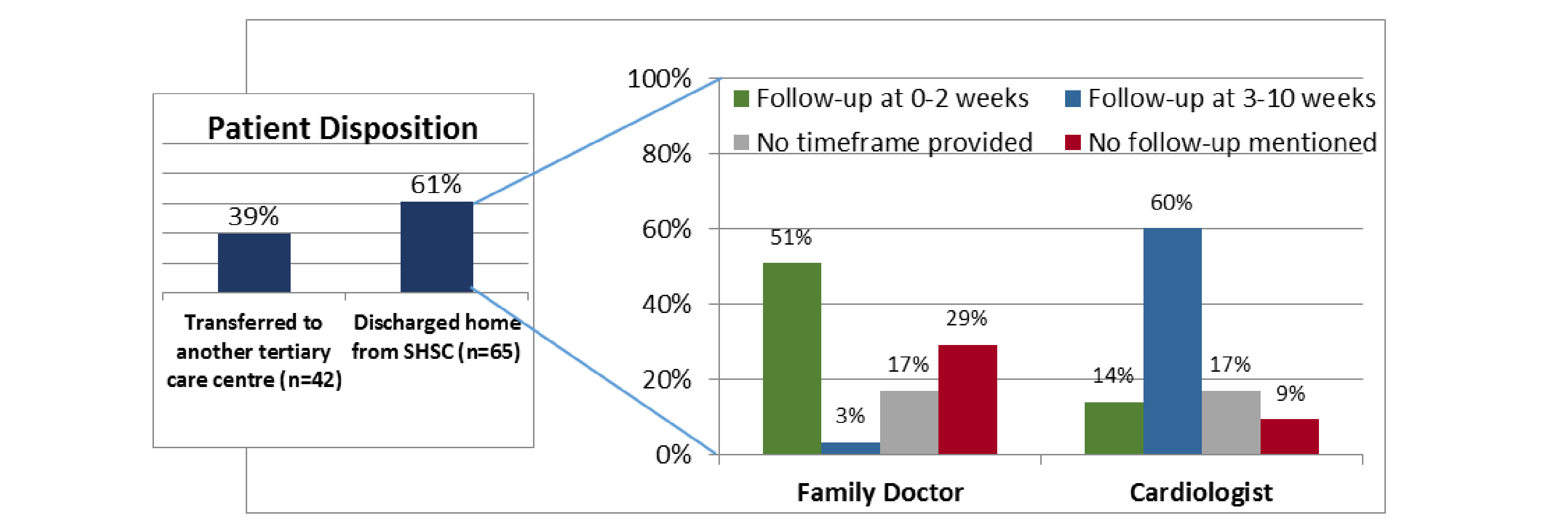


Figure 2. Discharge Regimens Based on Urgency of PCI

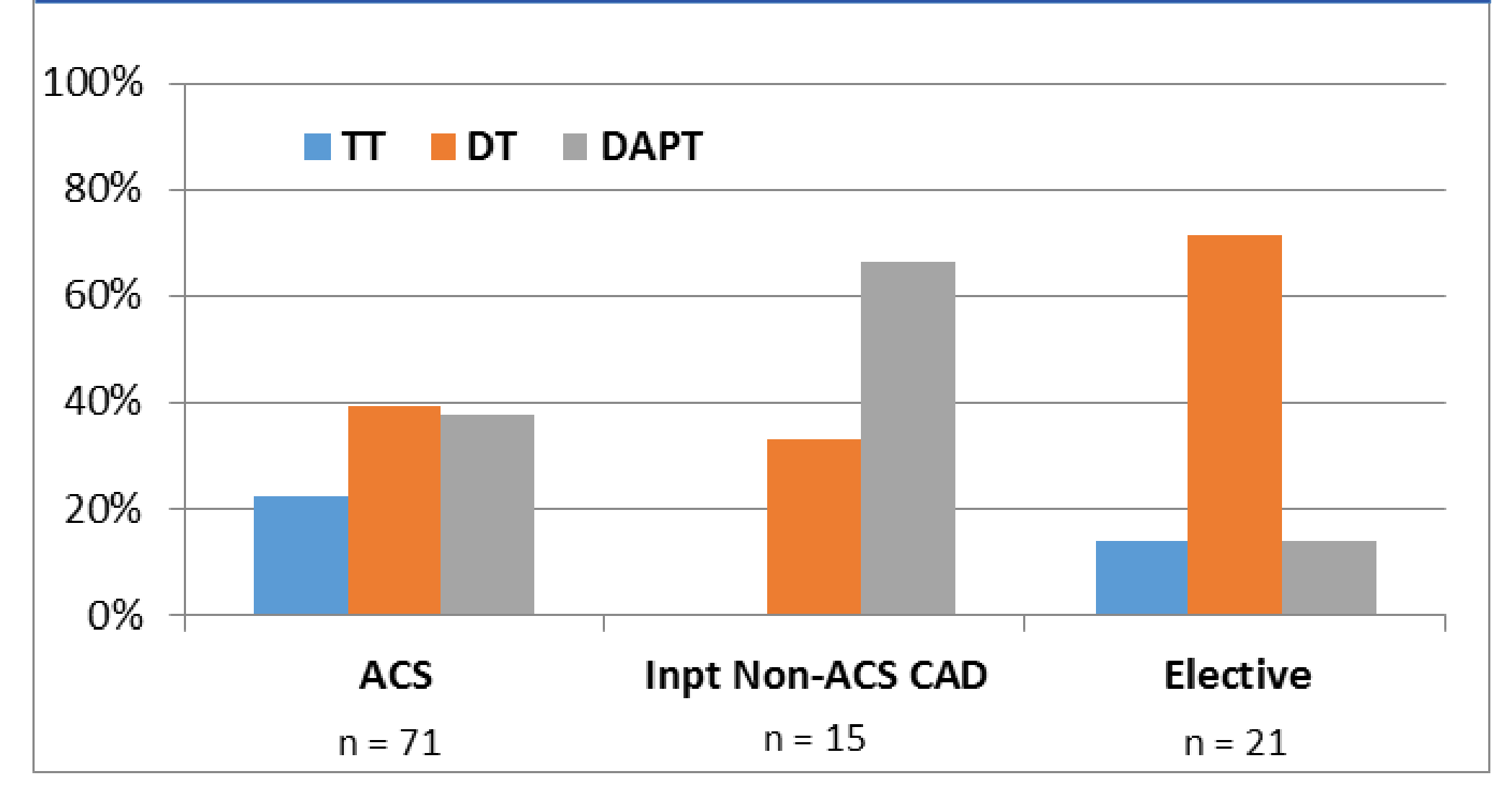
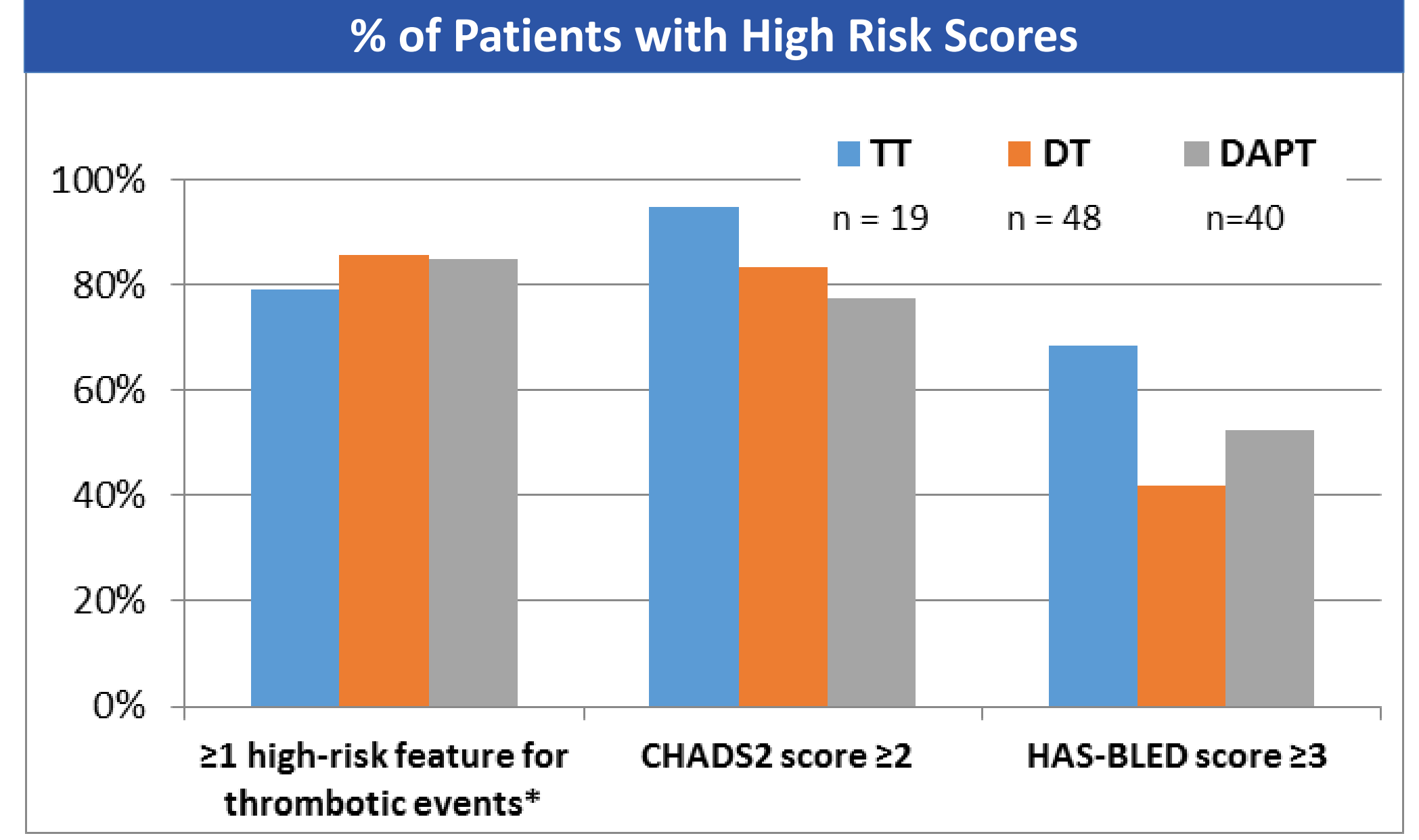


Figure 3. Discharge Regimens Based on % of Patients with High Risk Scores



*High risk features for thrombotic events included clinical features (prior MI, treated diabetes, CKD, prior stent thrombosis) and angiographic features (multiple stents, long lesion length, complex lesions, left main or proximal LAD stenting, multivessel PCI)

Figure 4. Discharge Regimens Over Time

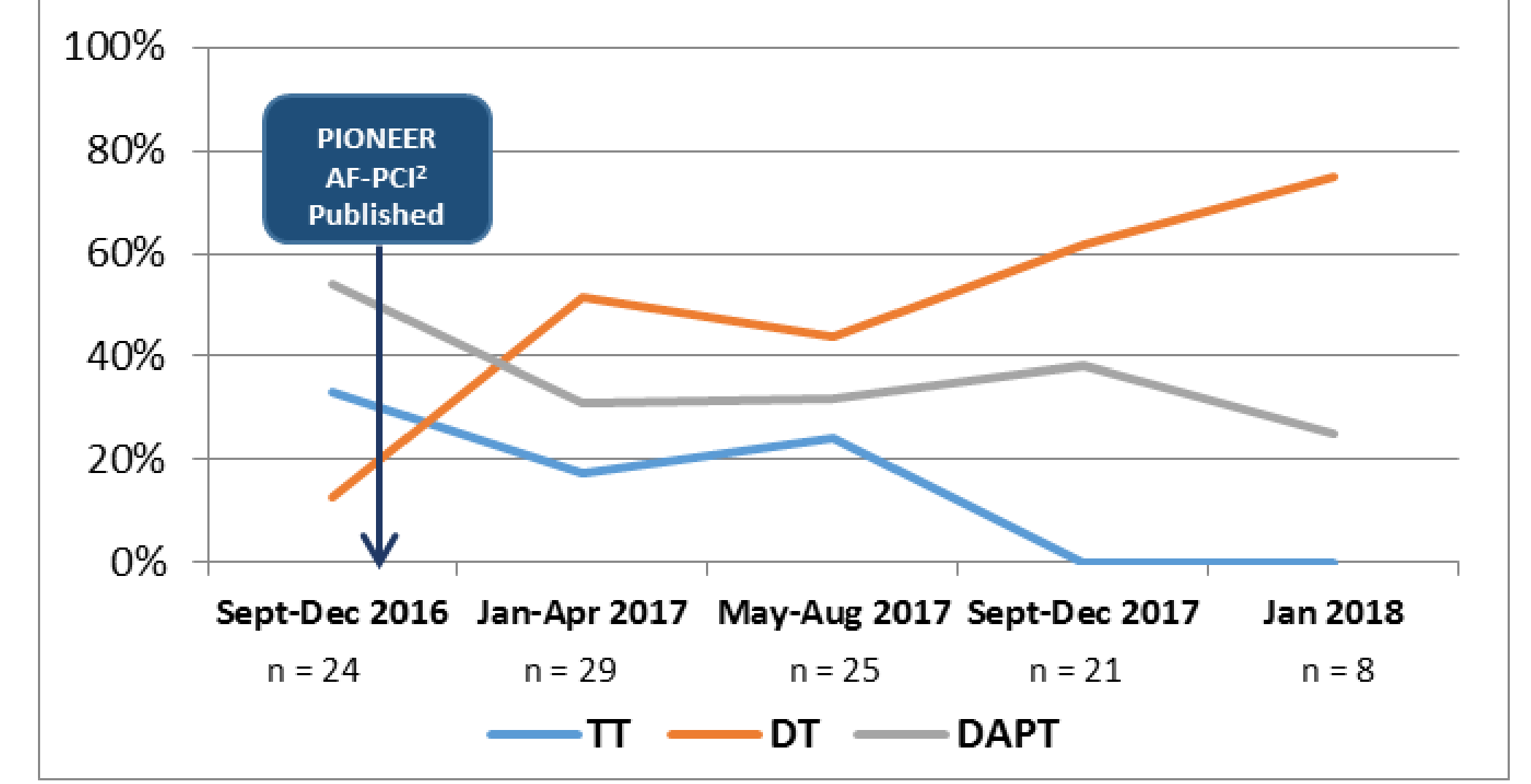


Table 3. Declared Events in Hospital

Event	No. (%)
Thrombotic events*	1 (0.9)
Bleeding events†	6 (5.6)

*Thrombotic event was a stroke; †3 of 6 bleeding events were related to femoral site being used for PCI access

Table 4. Survey Results (n=8, Response Rate = 25%)

Respondents agreed they...	No. (%)
Use CHADS-65 score routinely when deciding AT therapy	7 (87.5)
Use HAS-BLED score routinely when deciding AT therapy	3 (37.5)
Consider thromboembolic event risk to be a higher priority vs. bleeding risk	7 (87.5)
Are comfortable using prasugrel or ticagrelor in TT regimen	0 (0)
Are comfortable using DOACs* in TT regimen	7 (87.5)
Would say that recent literature has influenced their practice	8 (100)
Feel very comfortable or comfortable choosing AT therapy for NVAF patients undergoing PCI	7 (87.5)

*DOAC = direct oral anticoagulant

DISCUSSION

- Characterizing recent practice patterns:**
- TT:** TT was used in a minority (n=19, 18%) of cases, most often (n=16, 84%) in ACS patients for 3.9 months on average.
 - 63% (n=12) of TT regimens involved DOACs at doses not directly studied in trials; all TT regimens included clopidogrel.
 - All TT patients had a bleeding risk reduction strategy in place, with proton pump inhibitor being the most common strategy.
 - DT:** DT was the most common regimen prescribed on discharge overall (n=48, 45%). In particular, it was the most common regimen in elective (n=15, 71% of elective) and ACS (n=28, 39% of ACS) patients.
 - R15 + C (as per the PIONEER AF-PCI trial²) was used in 63% (n=30) of all DT regimens.
 - DAPT:** 37% of all patients were discharged on DAPT (n=40).
 - Regimens over time:** Trend for increasing DT and declining DAPT and TT over time (coinciding with publication of PIONEER AF-PCI).
- Cardiologist rationale (based on survey responses):**
- CHADS-65 score is routinely considered; thromboembolic risk is considered a higher priority vs. bleeding risk.
 - There is comfort with DOACs, but not prasugrel or ticagrelor, in TT.
 - Recent literature has influenced current practice.

Short-term safety and efficacy outcomes:

- Low numbers of thrombotic (n=1, 0.9%) and bleeding (n=6, 5.6%) events during hospitalization.
- The patient who developed a stroke was discharged on TT for 3 months followed by indefinite DT.
- All patients who had bleeding events were discharged on less intensive AT regimens (5 on DAPT, 1 on DT).

Opportunities to optimize practice at SHSC:

- Improved documentation of therapeutic plan, particularly regarding plan for OAC (if discharged home or to another facility)
- Improved documentation of a plan, including timeframe, for outpatient follow-up by family MD and cardiologist
- Consideration of more intensive antithrombotic therapy in patients with high ischemic risk who might otherwise be prescribed DT, or high stroke risk who might otherwise be prescribed DAPT

Limitations:

- Single-centre study, small number of patients
- Retrospective design; observational results dependent on quality of information documented
- Admitted patients only; may not be reflective of elective cases
- Short-term measurement of efficacy and safety outcomes

CONCLUSIONS

- This study provided a useful snapshot of recent antithrombotic practice patterns in NVAF patients undergoing PCI at SHSC.
- Results suggest that practice is generally consistent with the most recent Canadian guidelines, involving a tailored approach to antithrombotic therapy.
- Results suggest a changing landscape in this area, with rapid translation of recent literature into clinical practice at SHSC.
- Opportunities were identified to improve practices at discharge in select patient subgroups. Findings will be shared with prescribers.