Understanding The Barriers To Antiplatelet And Statin Adherence Following Vascular Interventions: What Should Be Done About It

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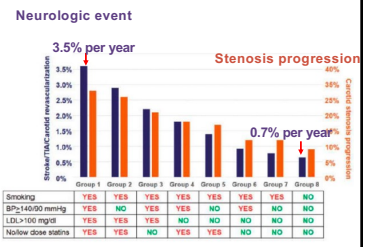
Benefit of Medical Management

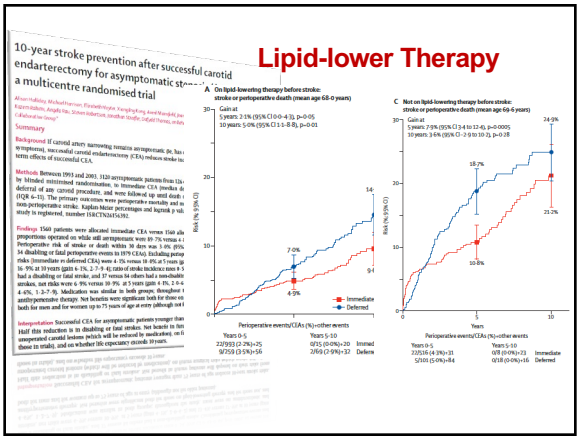
Annual incidence of neurological ischemic events and stenosis progression

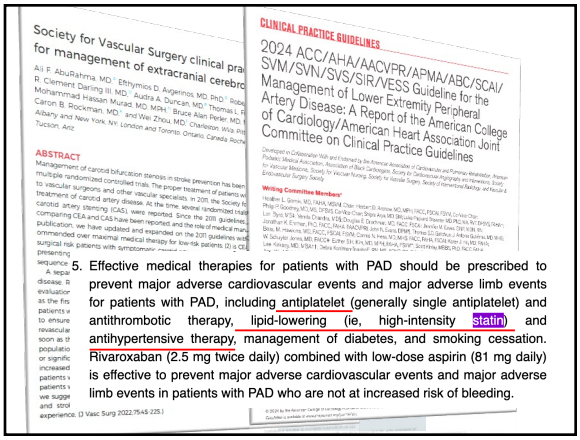


Smoking	YES	YES	YES	YES	YES	YES	YES	NO
BP>140/90 mmHg	YES	NO	YES	YES	NO	YES	NO	NO
LDL>100 mg/dl	YES	YES	YES	NO	NO	NO	NO	NO
No/low dose statins	YES	YES	NO	YES	YES	NO	NO	NO

European Heart Journal Supplements 2020

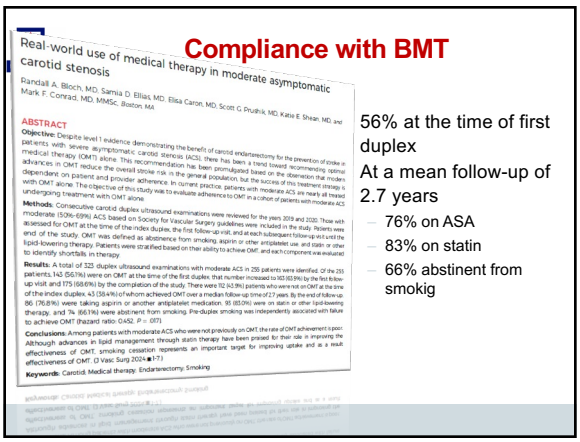
Lipid-lower Therapy



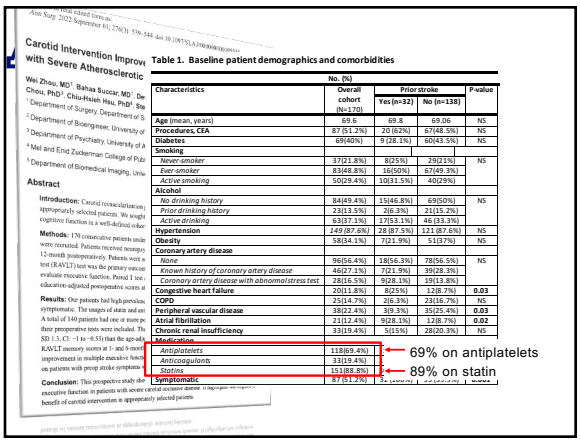


5. Effective medical therapies for patients with PAD should be prescribed to prevent major adverse cardiovascular events and major adverse limb events for patients with PAD, including antiplatelet (generally single antiplatelet) and antithrombotic therapy, lipid-lowering (ie, high-intensity statin) and antihypertensive therapy, management of diabetes, and smoking cessation. Rivaroxaban (2.5 mg twice daily) combined with low-dose aspirin (81 mg daily) is effective to prevent major adverse cardiovascular events and major adverse limb events in patients with PAD who are not at increased risk of bleeding.

Compliance with BMT



- 56% at the time of first duplex
- At a mean follow-up of 2.7 years
  - 76% on ASA
  - 83% on statin
  - 66% abstinent from smokig



Characteristics	Overall cohort (N=170)	Prior stroke Yes (n=32)	Prior stroke No (n=138)	P-value
Age (mean, years)	69.6	69.8	69.06	NS
Procedures, CEA	87 (51.2%)	20 (62%)	67(48.5%)	NS
Diabetes	69(40%)	9 (28.1%)	60(43.5%)	NS
Smoking				
Never-smoker	37(21.8%)	8(25%)	29(21%)	NS
Ever-smoker	83(48.8%)	16(50%)	67(49.3%)	
Active smoking	50(29.4%)	10(31.5%)	40(29%)	
Alcohol				
No drinking history	84(49.4%)	15(46.8%)	69(50%)	NS
Prior drinking history	23(13.5%)	2(6.3%)	21(15.2%)	
Active drinking	63(37.1%)	17(53.1%)	46 (33.3%)	
Hypertension	*149 (87.6%)*	28 (87.5%)	121 (87.6%)	NS
Obesity	58(34.1%)	7(21.9%)	51(37%)	NS
Coronary artery disease				
None	96(56.4%)	18(56.3%)	78(56.5%)	NS
Known history of coronary artery disease	46(27.1%)	7(21.9%)	39(28.3%)	
Coronary artery disease with abnormal stress test	28(16.5%)	9(28.1%)	19(13.8%)	
Congestive heart failure	20(11.8%)	8(25%)	12(8.7%)	0.03
COPD	25(14.7%)	2(6.3%)	23(16.7%)	NS
Peripheral vascular disease	38(22.4%)	3(9.3%)	35(25.4%)	0.03
Atrial fibrillation	21(12.4%)	9(28.1%)	12(8.7%)	0.02
Chronic renal insufficiency	33(19.4%)	5(15%)	28(20.3%)	NS
Medication				
Antiplatelets	118(69.4%)			
Anticoagulants	33(19.4%)			
Statins	151(88.8%)			
Symptomatic	87 (51.2%)			

- 69% on antiplatelets
- 89% on statin

Purpose of the Study

Barriers to Antiplatelet and Statin Adherence Following Major Vascular Intervention

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Background: Antiplatelets and statins therapies are associated with improved cardiovascular outcomes following major vascular intervention. Many vascular surgery institutions are reporting improved prescribing rates for aspirin (ASA), P2Y12 antagonists, and statins. Nevertheless, there remains limited publication describing rates and patient-perceived barriers for postoperative adherence. The purpose of this study is to investigate patient nonadherence to antiplatelet and statin therapies following major vascular intervention.
Methods: A retrospective review of patients who underwent major vascular intervention at a single academic center was performed. The prescribing rates of ASA, P2Y12 antagonists, and statins were reviewed. Postoperative adherence, defined as consistent intake as prescribed, was evaluated at 1, 3, 6, 9, and 12 months using electronic documentation of both follow-up clinic appointments and phone call assessments, then corroborated with pharmacy fulfilment records. Patient-reported barriers to medication adherence were also examined.
Results: A total of 101 subjects underwent major vascular intervention between January 2020 and July 2020, 98% of whom were discharged on at least 1 antiplatelet or statin agent. Approximately 90% of patients were discharged with ASA, 32% with a P2Y12 antagonist, and 96% with a statin. All patients who maintained adherence up to 6 months continued to report adherence at 9 and 12 months. Consistent adherence at 12 months was documented in 76% of patients on ASA, 81% on P2Y12 antagonism therapy, and 73% on statins. New adverse drug reactions represented the most common barrier to achieving adherence (37% [$n = 20$]). Preoperative therapy with ASA, P2Y12 antagonists, and statins were all independently predictive of postoperative adherence to the same regimen ($P \leq 0.001$). The female gender was also associated with higher rates of adherence to postoperative P2Y12 antagonism therapy ($P \leq 0.05$).
Conclusions: The current prescribing rates for antiplatelet and statin agents are promising, but postoperative nonadherence remains a multifaceted issue.

To evaluate antiplatelet and statin adherence following major vascular intervention

To identify barriers for non-adherence

Barriers to Antiplatelet and Statin Adherence Following Major Vascular Intervention

- 133 consecutive patients underwent major vascular intervention captured in VQI between 1/2020—7/2020
- 32 excluded
  - 9 for missing medication data
  - 23 with incomplete follow-up medication records

Barriers to Antiplatelet and Statin Adherence Following Major Vascular Intervention

Table I. Summary of basic characteristics, procedural details, and follow-up outcomes

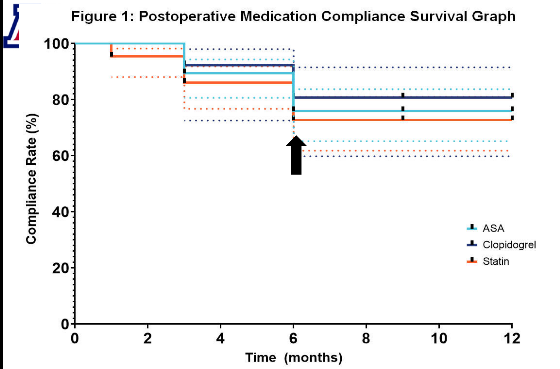
Characteristics	No. (%)
Demographics	
Total number of subjects	101
Age, mean (SEM), years	69.8 ± 10.9
Male	63 (62.4%)
"In-Town"	73 (72.3%)
Caucasian	77 (76.2%)
Comorbidities	
Hypertension	84 (83.2%)
Peripheral artery disease	55 (54.5%)
Coronary artery disease	27 (26.7%)
Diabetes mellitus	17 (16.8%)
Atrial fibrillation	15 (14.9%)
TIA or stroke	9 (8.9%)
Hypercoagulable disorder	2 (1.9%)
Vascular intervention Breakdown	
Carotid endarterectomy	41 (40.6%)
Carotid artery stenting	4 (3.9%)
Suprainguinal bypass	6 (5.9%)
Infra-inguinal bypass	13 (12.9%)
PVI	16 (15.8%)
oAAA repair	3 (2.9%)
EVAR	14 (13.9%)
TEVAR	4 (3.9%)
Procedural and F/U outcomes	
Technical success	101 (101%)
Procedural complications	0 (0.0%)
Reinterventions for treatment failure	0 (0.0%)
Length of clinic F/U, mean (SEM), months	10.4 ± 0.3
Range of F/U, months	3–12

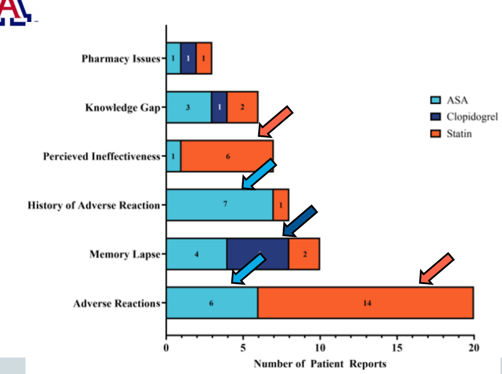
Table II. Summary of preoperative medication usage, postoperative prescribing rates, and adherence rates at mean follow-up

	No. (%)		
Drug class	Preoperative usage ($n = 101$)	Postoperative prescription ($n = 101$)	Adherence at mean F/U ($n = 99$)
Any medication	74 (73.3%)	99 (98.0%)	73 (73.7%)
Antiplatelet			
Any	74 (73.3%)	95 (94.1%)	73 (76.8%)
Aspirin	74 (73.3%)	91 (90.1%)	69 (75.8%)
P2Y12a	28 (27.7%)	32 (31.7%)	26 (81.3%)
None	27 (26.7%)	6 (5.9%)	N/A
Statin			
Any	73 (72.3%)	97 (96.0%)	71 (73.2%)
Low-intensity	2 (1.9%)	0 (0.0%)	N/A
Moderate-intensity	56 (55.4%)	73 (72.3%)	61 (83.6%)
High-intensity	15 (14.9%)	24 (23.8%)	10 (41.7%)
None	28 (27.7%)	4 (3.9%)	N/A

F/U, follow-up; SEM, standard error of the mean; N/A, not applicable.

Figure 1: Postoperative Medication Compliance Survival Graph





Summary

- There are clear barriers to antiplatelet and statin adherence
- Patient adhered at 6 months continue to show adherence up to 1 year
- Barriers for each medication are different
  - Statin: adverse reaction and perceived ineffectiveness
  - ASA: adverse reaction
  - Plavix: memory lapse
- Targeted intervention to remove the barriers

Next project

- The impact of telephone counseling on **V**ascular surgery patients for postoperative **A**ntiplatelet and **ST**atin (**VAST**) adherence

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