Paroxysmal Atrial Fibrillation/Atrial Flutter with RVR ED Pathway

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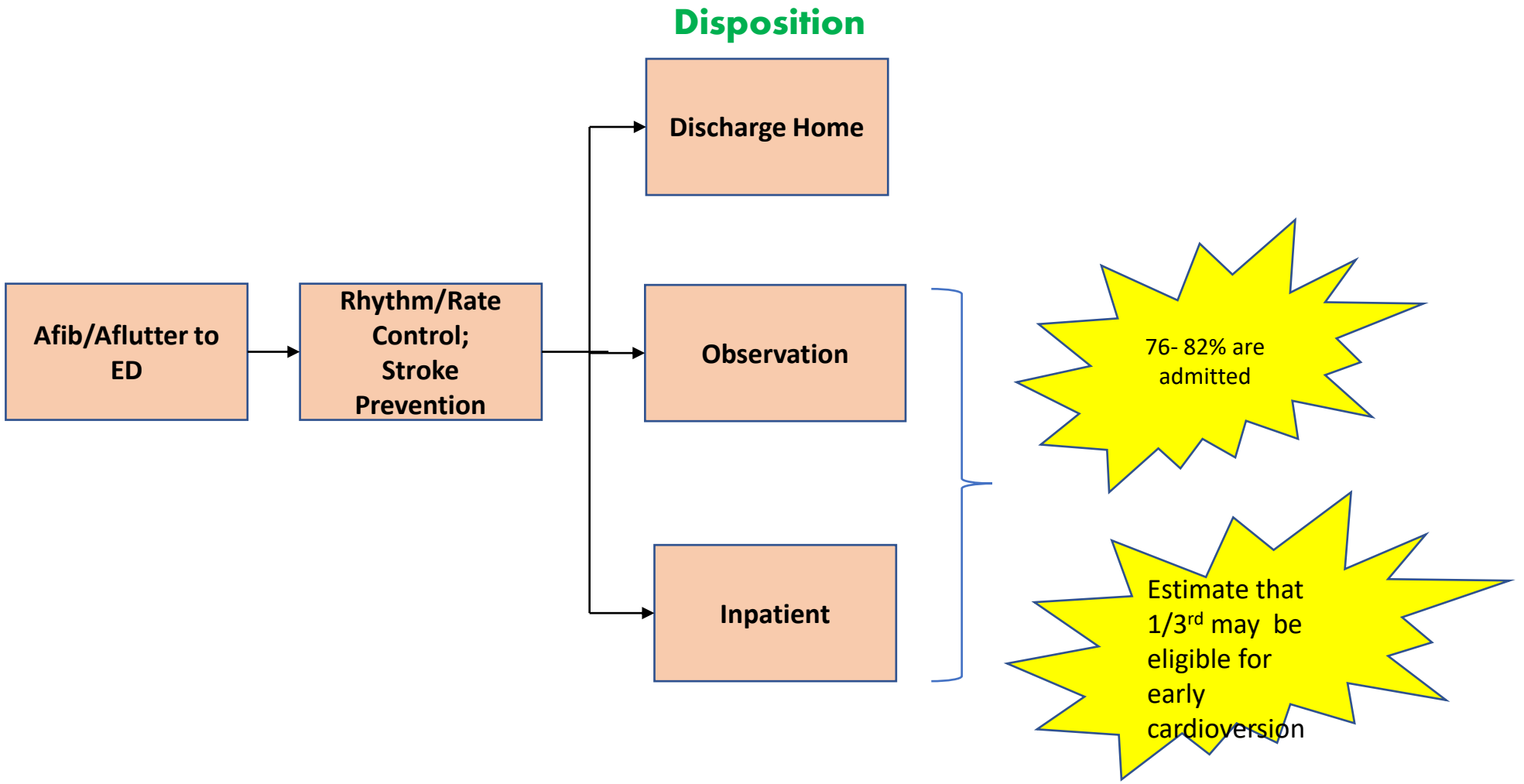
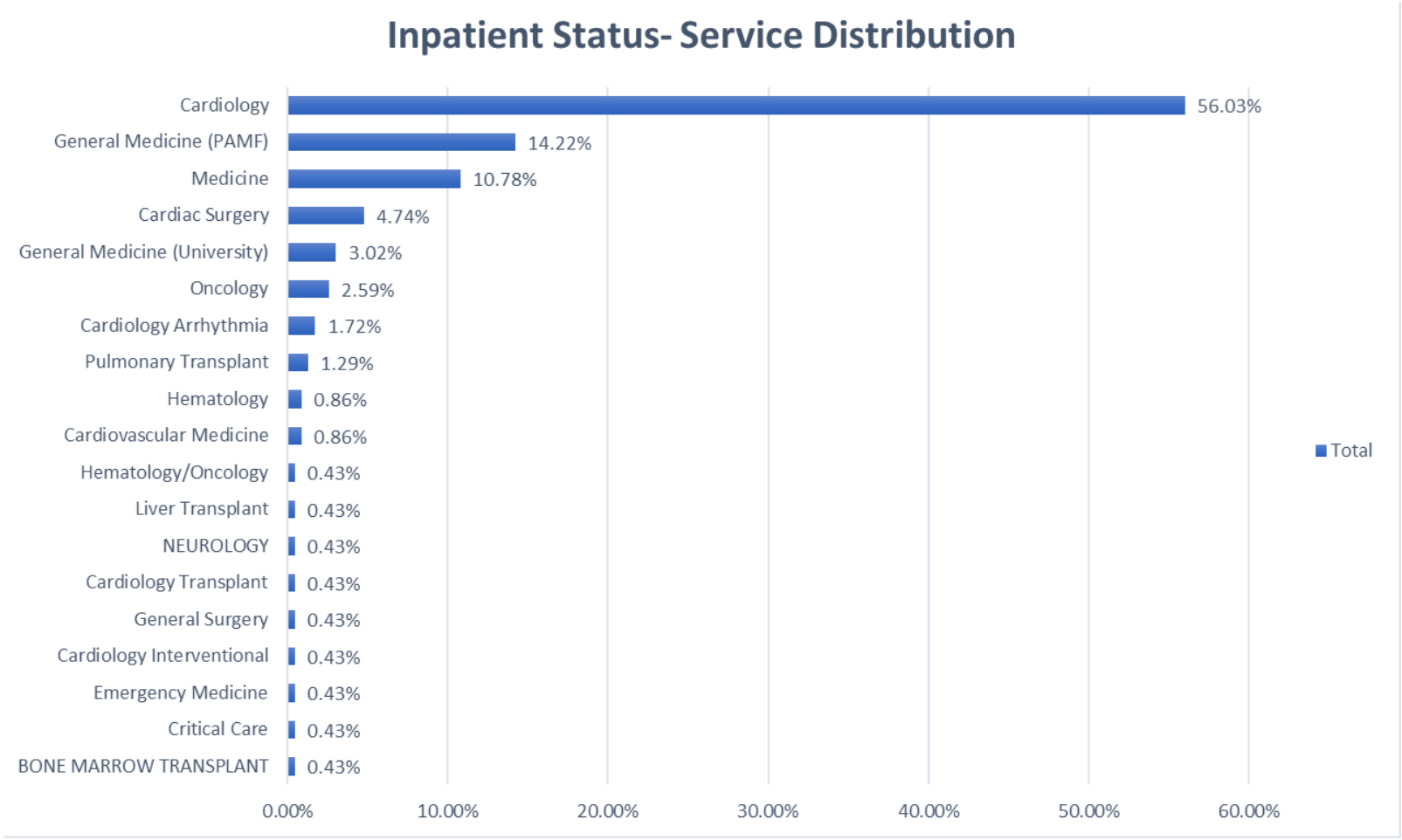
Paroxysmal Atrial Fibrillation/Atrial Flutter Current State

- Emergency Department workflow



Hospital Service Line Distribution 1

- Between September 2018 to August 2020
- Admission Type: Emergency
- Patient Type: Inpatient



Data Analysis & Future State Modeling

- Any diagnosis of I48.0, I48.3, I48.4, I48.91, I48.92
- Between September 2018 to August 2020
- Admission Type: Emergency
- Median Inpatient LOS= 2 days

ADTPatientClassificationDSC	FY2019	FY2020	Discharge to Home	
			Current State	Future State
Emergency Services	138	95	21%	50% ↑
Observation	117	103	21%	25% ↑
Inpatient	307	325	59%	25% ↓

Post Implementation of Pathway:

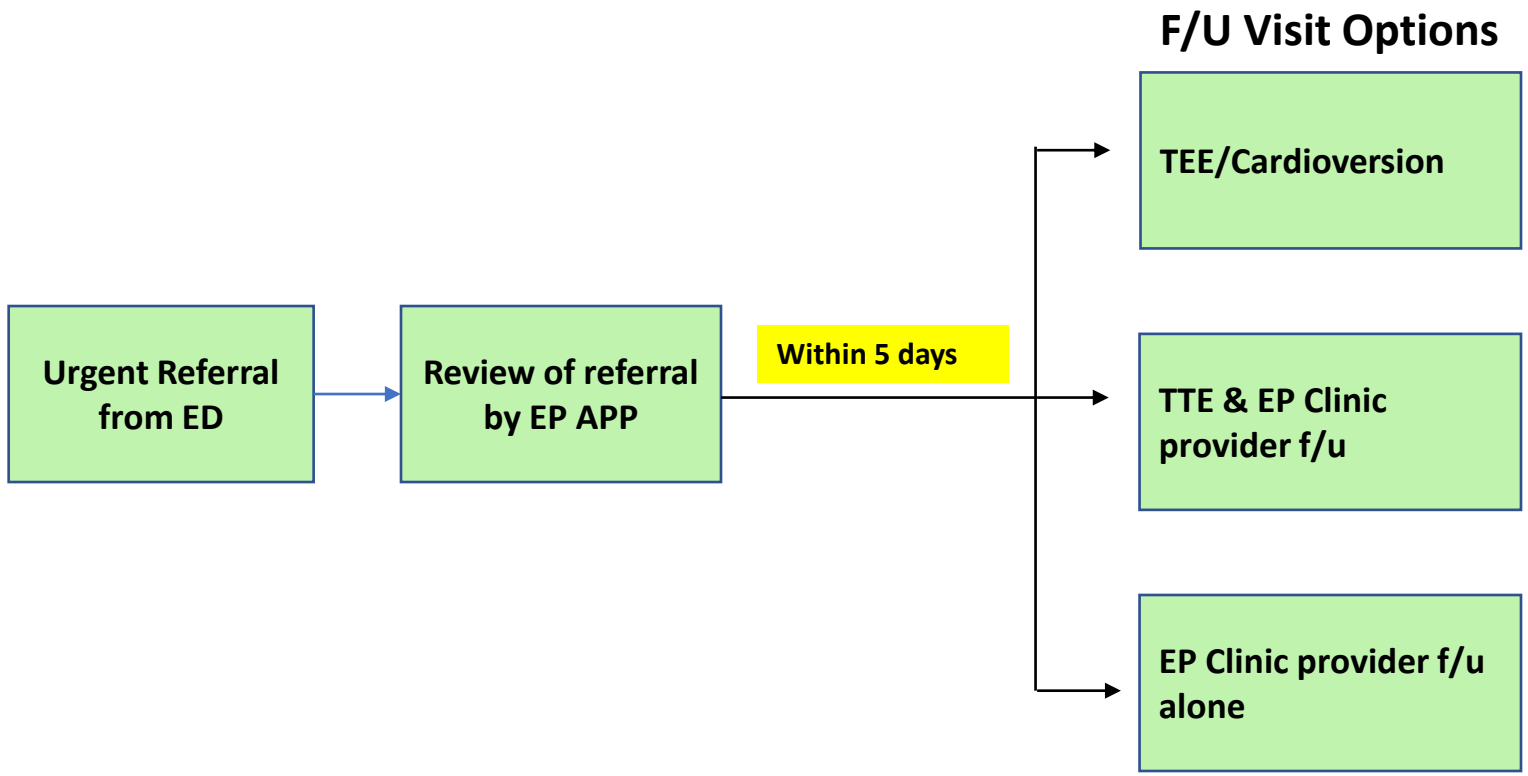
Potential Bed Days Saving (annual)= 364 bed days

Potential Average Direct Cost Saving (annual)= $3,657,113

New ED Atrial Fibrillation Discharge Plan

Project Goals:

- Improve access for care for atrial fibrillation patients
- Reduce inpatient admissions
- Reduce cost, increase bed availability for transfers
- Stroke prevention
- Improve patient satisfaction



Questions to Cardiology

1. Tips on how to clearly identify patients with symptoms less than 48 hours who may be eligible for cardioversion.
2. For rate control, should oral metoprolol be the preferred oral agent at discharge unless contraindicated?
3. For rate control, how best to transition from IV Diltiazem to PO metoprolol? Start Metoprolol 25 mg PO concomitantly with IV Diltiazem?
4. Review Admission Criteria to General Cardiology- failed cardioversion? Unsuccessful rate control?
5. Some rhythm control patients could be admitted to our CDU pending AM consultation/evaluation by EP Consult Fellow with subsequent transfer to PACU for Cardioversion. Is this a reasonable workflow?

Paroxysmal AFib/A Flutter with RVR Pathway

Unstable with myocardial ischemia, hypotension <90, respiratory distress, OR acute CHF

YES → Manage accordingly
ADMIT

No

Candidate for Cardioversion?
Clear onset time < 48 hours OR
Adequately anticoagulated x 3 weeks

NO → Rate Control

YES → Rhythm Control
-Refer to Cardioversion Pathway

Rate Control

Diltiazem
0.25 mg/kg IV over 10 min
May repeat 0.35 mg/kg IV

Start PO Diltiazem 60 mg; increase by 30 mg every 2 hours if necessary to achieve adequate rate control.

Metoprolol
2.5-5.0 mg IV q5min
to a max of 15 mg IV

PO Metoprolol 25 mg, increase to 50mg if necessary (unless contraindicated)

Amiodarone
150mg - 300mg mg IV followed by infusion
0.5-1.0 mg/min
Recommended in CHF, or for low or soft BP

Calculate and document CHA2DS2-VAS score for anticoagulation and HAS-BLED score for bleeding risk
Use calculator and Clinical Decision Support Tool in ED Provider chart.
Check CBC, CMP, INR
If no contraindications, start Apixaban in ED
Dose: 5 mg PO bid
2.5 mg PO bid for age > 80, Weight < 60kg, or
1.5 ≤ Creatinine ≤ 2.0
Apixaban contraindicated for Creatinine > 2.0.

Adequate Rate Control in ED?
Goal: HR <100 at rest or <110 walking

If ED LOS < 4 hrs, and HR goal achieved, **AND no other indication for hospital admission**

YES → **ED Discharge Plan**
- Follow up with PCP or Cardiologist if established
- If patient insurance is eligible for Stanford (check with case management if necessary), select "**Cardiovascular Medicine-Atrial Fibrillation**" disposition button under ED Discharge Referral Orders unless patient is PAMF or has community non-Stanford Cardiologist.
- For PAMF, follow-up PAMF Cardiology
- ED return precautions for rapid heart rate, syncope/near syncope, chest pain and shortness of breath
- Case Management has access to discount Rx cards for apixaban if necessary

NO → **Admit CDU for medication adjustment to achieve rate control OR TEE/Cardioversion option**

Cardioversion for Paroxysmal AFib/A Flutter with RVR Pathway

Unstable with myocardial ischemia, hypotension <90, respiratory distress, OR acute CHF

YES → Manage accordingly. ADMIT

NO

Candidate for Cardioversion?
Clear onset time < 48 hours OR
Adequately anticoagulated x 3 weeks

Exclusion Criteria for ED Cardioversion (Rate control, admission recommended):

Acute Coronary Syndrome
Hypertensive emergency
Pericarditis, pericardial effusion
Congenital heart disease
Rheumatic Heart Disease
Mechanical Heart Valve
Recent < 30 days CVA or TIA
Pregnancy
< 30 d s/p ablation, PCI, pacemaker/AICD insertion, CABG, other cardiac surgery
Other acute medical conditions that necessitate hospital admission – eg Sepsis, Pneumonia, COPD exacerbation, Pulmonary Embolism, Thyrotoxicosis, Drug Overdose

Electrical Cardioversion

Synchronized Cardioversion

- Keep patient NPO
- Signed Consent
- Moderate Sedation per ED practice
- Place pads in AP position
- 150-200 J biphasic **synchronized** cardioversion
- Limit to 3 shocks

Normal Sinus rhythm?

NO → **ADMIT Cards**

YES

Chemical Cardioversion

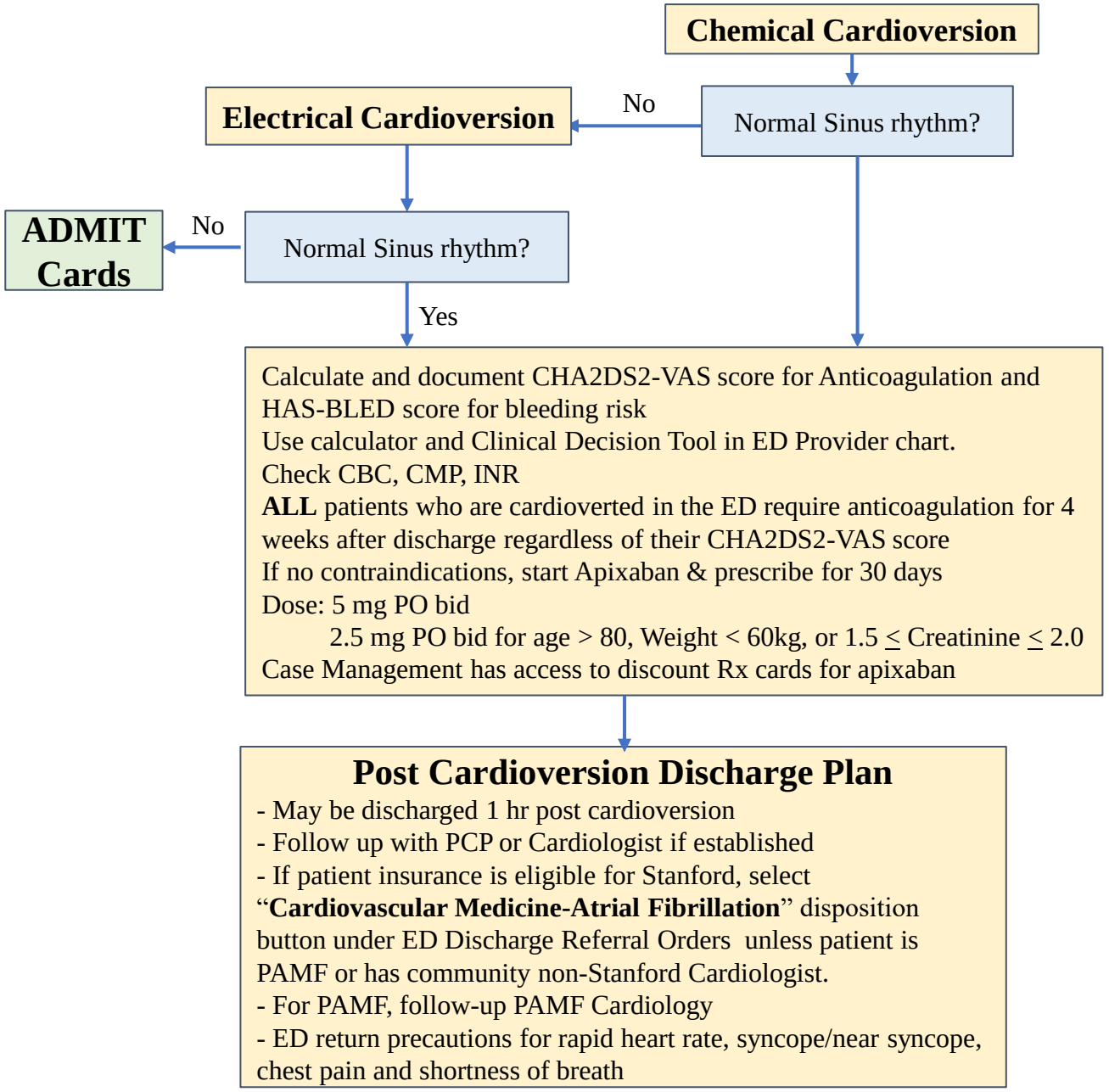
Ibutilide
1 mg IV , may repeat x 1 after 10 minutes,
1.7% risk of Torsades

Flecainide
300 mg PO x1
Time to convert: 2-3 hrs
Not to be used in HFrEF, CAD, mod-severe CKD or significant liver disease
Pro-arrhythmic: Low risk of A flutter with RVR

Normal Sinus rhythm?

YES

Cardioversion for Paroxysmal AFib/Flutter with RVR Pathway



CDU Pathway for Paroxysmal AFib/Flutter with RVR

CDU Admission Criteria
- Hemodynamically STABLE without myocardial ischemia, hypotension <90, respiratory distress, acute CHF or TnI elevation
- No other medical indication for hospital admission

Treatment Option #1
Adjust PO meds to achieve Afib target heart rate goal:
< 100 at rest, OR <115 walking

Adequate Rate Control in CDU?
Goal: HR <100 at rest or <110 walking

NO → **ADMIT Cards**

YES

Calculate and document CHA2DS2-VAS score for anticoagulation and HAS-BLED score for bleeding risk
Use calculator and Clinical Decision Support Tool in ED Provider chart.
Check CBC, CMP, INR
If no contraindications, start Apixaban in CDU if not already started
Dose: 5 mg PO bid
2.5 mg PO bid for age > 80, Weight < 60kg, or
1.5 ≤ Creatinine ≤ 2.0
Apixaban contraindicated for Creatinine > 2.0.

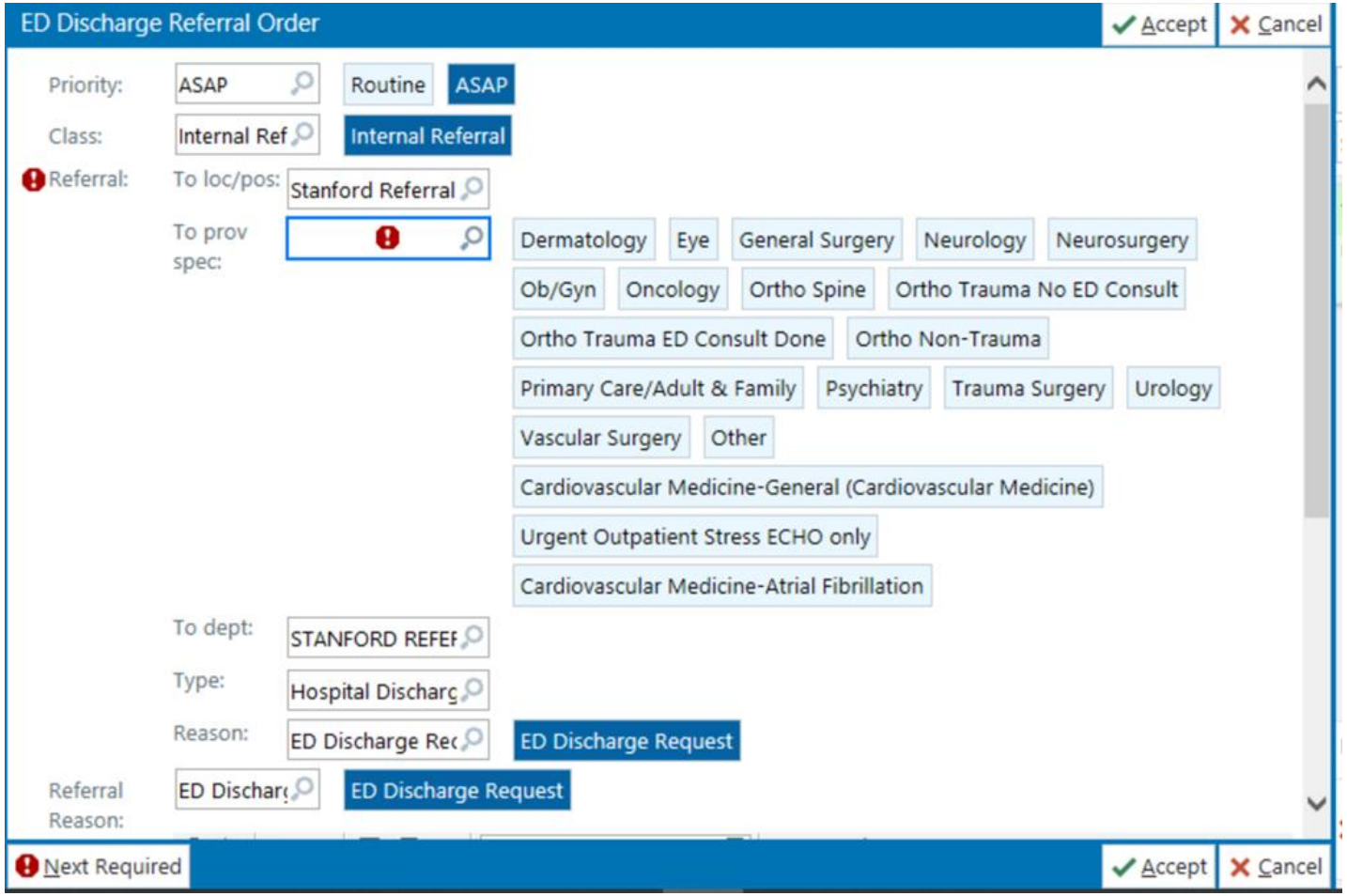
Treatment Option #2
Continue IV meds from ED
Heart rate goal <110
Consult EP APP at 0700 to arrange TEE/Cardioversion in ECHO
Return to CDU post-procedure for discharge instructions, f/u and discharge Rx

Calculate and document CHA2DS2-VAS score for Anticoagulation and HAS-BLED score for bleeding risk
Use calculator and Clinical Decision Tool in ED Provider chart.
Check CBC, CMP, INR
ALL patients who are cardioverted require anticoagulation for 4 weeks after discharge regardless of their CHA2DS2-VAS score
If no contraindications, start Apixaban & prescribe for 30 days
Dose: 5 mg PO bid
2.5 mg PO bid for age > 80, Weight < 60kg, or 1.5 ≤ Creatinine ≤ 2.0
Case Management has access to discount Rx cards for apixaban

CDU Discharge Plan

- May be discharged 1 hr post cardioversion
- Follow up with PCP or Cardiologist if established
- If patient insurance is eligible for Stanford, select "**Cardiovascular Medicine-Atrial Fibrillation**" disposition button under ED Discharge Referral Orders unless patient is PAMF or has community non-Stanford Cardiologist.
- For PAMF, follow-up PAMF Cardiology
- ED return precautions for rapid heart rate, syncope/near syncope, chest pain and shortness of breath

Cardiovascular Medicine – Atrial Fibrillation Discharge Button



CHA2DS2-VASc Score