Patient Encounters in the Primary Care Setting

Carmine D'Amico, D.O.

Clinical Cases

Overview

- Learning objectives
- Clinical case presentations
- Questions for audience participation

Clinical Cases

Learning Objectives

1. Realize that patients with undiagnosed cardiovascular disease will sometimes present to their primary care physician's office.
2. Appreciate that web-based resources are available that can be very useful to health care providers in managing patients with cardiovascular disease.
3. Apply current practice guidelines to clinical scenarios.

Cardiovascular Cases

Case 1

A 60-year-old female presents to your office as a new patient. She recently moved here from out of town and she would like to establish care with you. What has prompted her to seek medical attention at this time is a 1-2 week history of palpitations (feeling like her heart was stopping) associated with lightheadedness and chest tightness. These symptoms seem to be getting worse, although she denies syncope. Her medical history is significant for osteoarthritis, hypertension, venous insufficiency, and schizophrenia. She has no known allergies. Her medications include meloxicam 15 mg PO daily, amlodipine 10 mg PO daily, furosemide 80 mg PO daily, metolazone 2.5 mg PO daily, and thioridazine 200 mg PO BID. She smokes cigarettes, and she has a 40-pack-year history of smoking (one pack of cigarettes per day for 40 years). She denies use of alcohol or illicit drugs. She has had no previous surgeries. Her family history is unknown, as she is adopted.

Cardiovascular Cases

Case 1 (cont.)

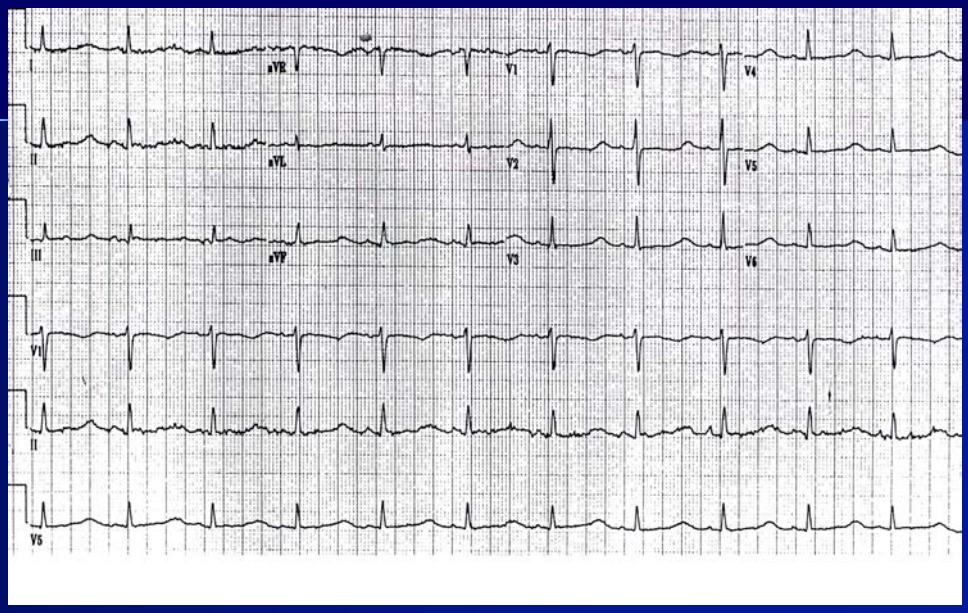
Physical examination reveals: blood pressure 126/82 mmHg, pulse 64 bpm, and respirations 12 per min. There is no jugular venous distension. There are no carotid bruits. Lungs are clear to auscultation bilaterally. Cardiac rhythm is regular. S1 and S2 are normal. There is no third or fourth heart sound. There is no cardiac murmur. There is no pericardial friction rub. The abdomen is soft and nontender, with no palpable masses or organomegaly. Bowel sounds are active. There is mild pitting edema of the distal aspects of both lower extremities. Stasis dermatitis changes are present on the distal aspects of both lower extremities. Distal pulses are intact and bilaterally equal in both the upper and the lower extremities. There is no evidence of gross motor or sensory neurological deficits.

Cardiovascular Cases

Case 1 (cont.)

Prior to sending this patient elsewhere for further evaluation, is there anything else that can done in the office that could be of value in determining the cause of her symptoms?

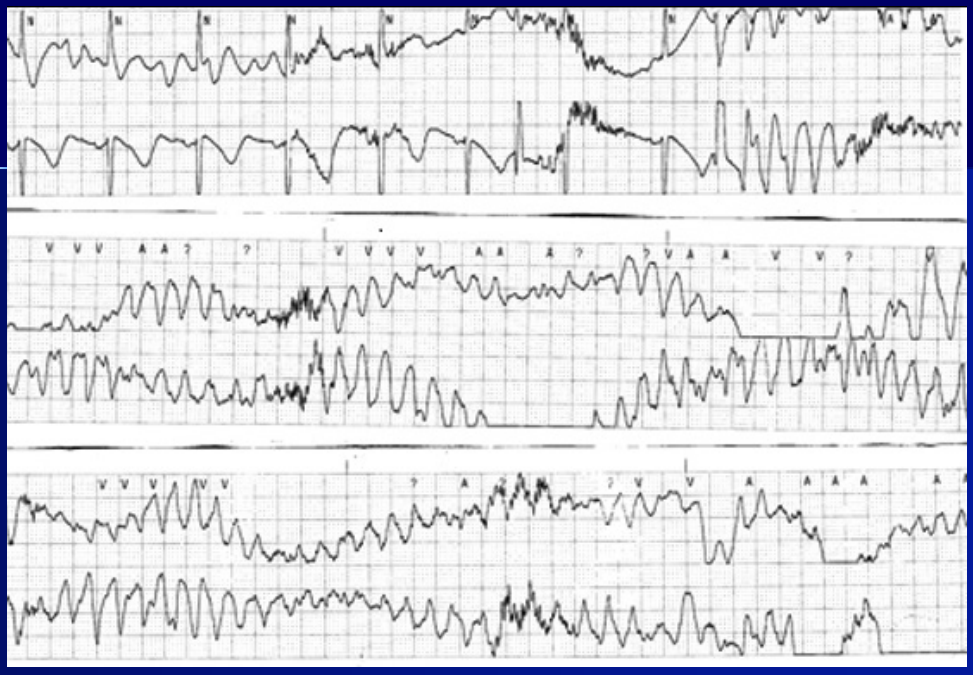
Cardiovascular Case 1



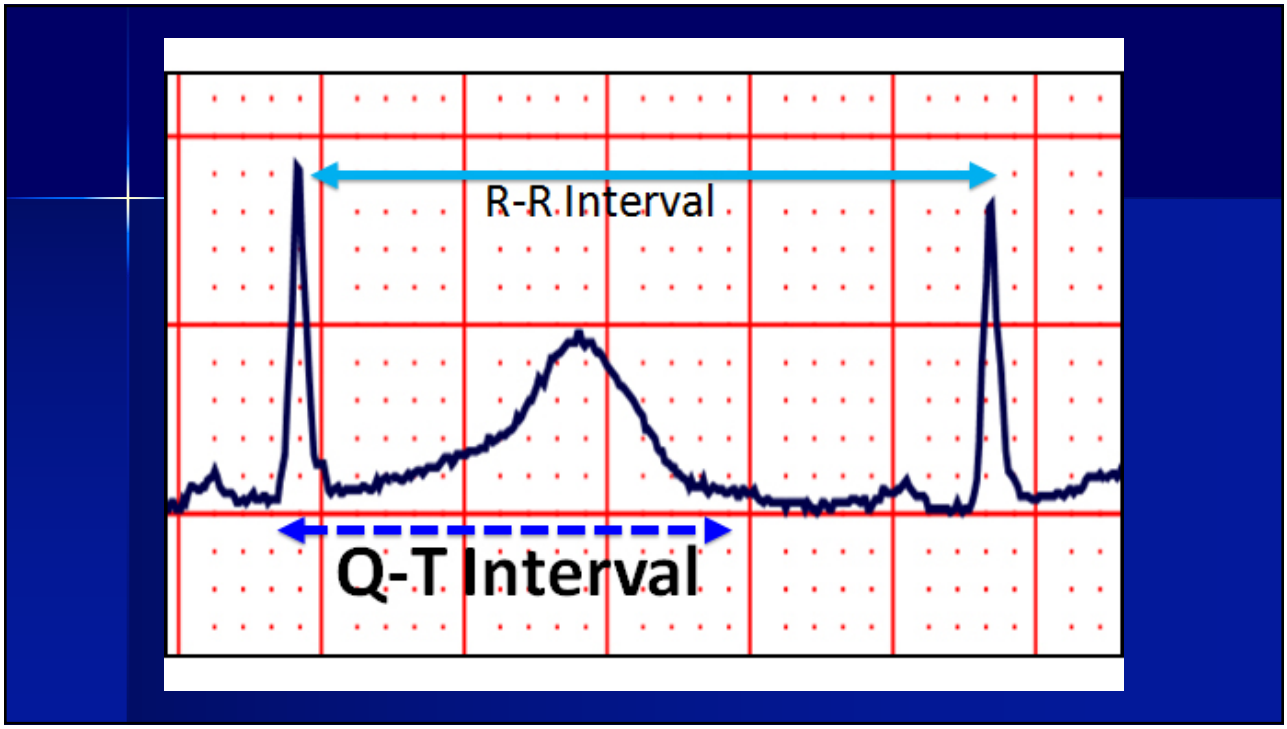
Cardiovascular Cases

Case 1 (cont.)

The following rhythm change occurred 29 minutes after the preceding EKG was recorded…



Cardiovascular Case 1



Cardiovascular Cases

Case 1 (cont.)

Is any additional testing indicated at this time?

Cardiovascular Case 1

Glucose	(65 - 99 mg/dL)	108
BUN	(7 - 18 mg/dL)	32
Creatinine	(0.7 - 1.3 mg/dL)	1.2
Na+	(135 - 145 mmol/L)	131
K+	(3.5 - 5.0 mmol/L)	2.1
Cl-	(101 - 111 mmol/L)	96
CO2	(21 - 31 mmol/L)	35
Calcium	(8.5 - 10.5 mg/dL)	9.9
Phosphorous	(2.5 - 4.5 mg/dL)	3.7
Uric acid	(2.5 - 8.0 mg/dL)	5
Total protein	(6.4 - 8.2 g/dL)	6.4
Albumin	(3.4 - 5.0 g/dL)	3.5
Globulin	(2.3 - 3.5 g/dL)	2.9
A / G ratio	(0.9 - 1.6)	1.2
Total bilirubin	(0.2 - 1.0 mg/dL)	0.8
Alk. Phosphatase	(50 - 136 U/L)	47
AST	(15 - 37 U/L)	60
ALT	(30 - 65 U/L)	45
LDH	(94 - 172 U/L)	146
Cholesterol	(0 - 200 mg/dL)	167
Triglycerides	(30 - 150 mg/dL)	169
HDL	(40 - 60 mg/dL)	46
LDL	(0 - 100 mg/dL)	87
Chol. / HDL ratio	(< 4.5)	3.6

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Cardiovascular Cases

Case 1 (cont.)

How could this problem have been prevented?

Cardiovascular Cases

Case 2

A 46-year-old female presents for preoperative evaluation prior to elective total abdominal hysterectomy. Her medical history is significant for uterine fibroids, hypertension, and paroxysmal atrial fibrillation. An echocardiogram performed last month revealed normal left ventricular systolic function, mild tricuspid regurgitation, trace mitral regurgitation, and no significant structural abnormalities. Her medications include warfarin 2 mg PO daily and atenolol 25 mg PO BID. Her INR is 2.8. The remainder of her lab work (CBC and CMP) is within normal limits. Physical examination reveals: blood pressure 126/82 mmHg, pulse 80 bpm, and respirations 12 per min. There is no jugular venous distension, lungs are clear to auscultation bilaterally (no crackles or wheezes), cardiac rhythm is regular and there is no S3, S4, murmur, or rub. There is no peripheral edema.

Cardiovascular Cases

Case 2 (cont.)

Which of the following is the most appropriate recommendation regarding anticoagulation prior to surgery?

A. Discontinue warfarin now, as anticoagulation is not indicated in this patient.

B. Discontinue warfarin four days prior to scheduled surgery. Check the INR daily. When the INR is < 2, begin enoxaparin 1 mg/kg SQ BID and continue it until the morning of surgery.

C. Discontinue warfarin four days prior to scheduled surgery. Check the INR the morning of scheduled surgery. Proceed with surgery if the INR is < 2.

D. Continue warfarin through the day before scheduled surgery. Withhold warfarin on the morning of surgery and initiate a continuous intravenous infusion of unfractionated heparin, which may then be discontinued on call to the operating room.

Cardiovascular Cases

Case 2 (cont.)

What is this patient's $CHADS_2$ score?

A. 0

B. 1

C. 2

D. 3

E. 4

F. 5

G. 6

Atrial Fibrillation Anticoagulation

$CHADS_2$ Risk Stratification Scheme

Risk Factors		Score
C	Congestive heart failure	1
H	Hypertension	1
A	Age ≥75 years	1
D	Diabetes mellitus	1
S_2	History of stroke or transient ischemic attack	2

Rockson et al. *J Am Coll Cardiol.* 2004;43:929-935.

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Cardiovascular Cases

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Cardiovascular Cases

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Atrial Fibrillation Anticoagulation

$CHADS_2$ Risk Stratification Scheme (cont.)

Score	Recommended therapy
0	Aspirin (81 to 325 mg daily)
1	Aspirin (81 to 325 mg daily) or Warfarin (INR 2.0 – 3.0)
2 - 6	Warfarin (INR 2.0 – 3.0)

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Cardiovascular Cases

Case 2 (cont.)

What is this patient's CHA_2DS_2-VASc score?

A. 0
B. 1
C. 2
D. 3
E. 4
F. 5
G. 6
H. 7
I. 8
J. 9

Atrial Fibrillation Anticoagulation

CHA_2DS_2–VASc Risk Stratification Scheme

Risk Factors		Score
C	Congestive heart failure	1
H	Hypertension	1
A_2	Age ≥75 years	2
D	Diabetes mellitus	1
S_2	History of stroke or transient ischemic attack	2
V	Vascular disease	1
A	Age 65 - 74 years	1
Sc	Sex category (female gender)	1

Lip et al. *Chest.* 2010;137:263-272.

Atrial Fibrillation Anticoagulation

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Cardiovascular Cases

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Cardiovascular Cases

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Atrial Fibrillation Anticoagulation

CHA_2DS_2–VASc Risk Stratification Scheme (cont.)

Score	Recommended therapy
0	"It is reasonable to omit antithrombotic therapy."
1	**** "No antithrombotic therapy, treatment with oral anticoagulant, or aspirin may be considered."
> 2	"Oral anticoagulants recommended."

January et al. *J Am Coll Cardiol.* 2014;64(21):2246-2280.

Atrial Fibrillation Anticoagulation

CHA_2DS_2–VASc Risk Stratification Scheme (cont.)

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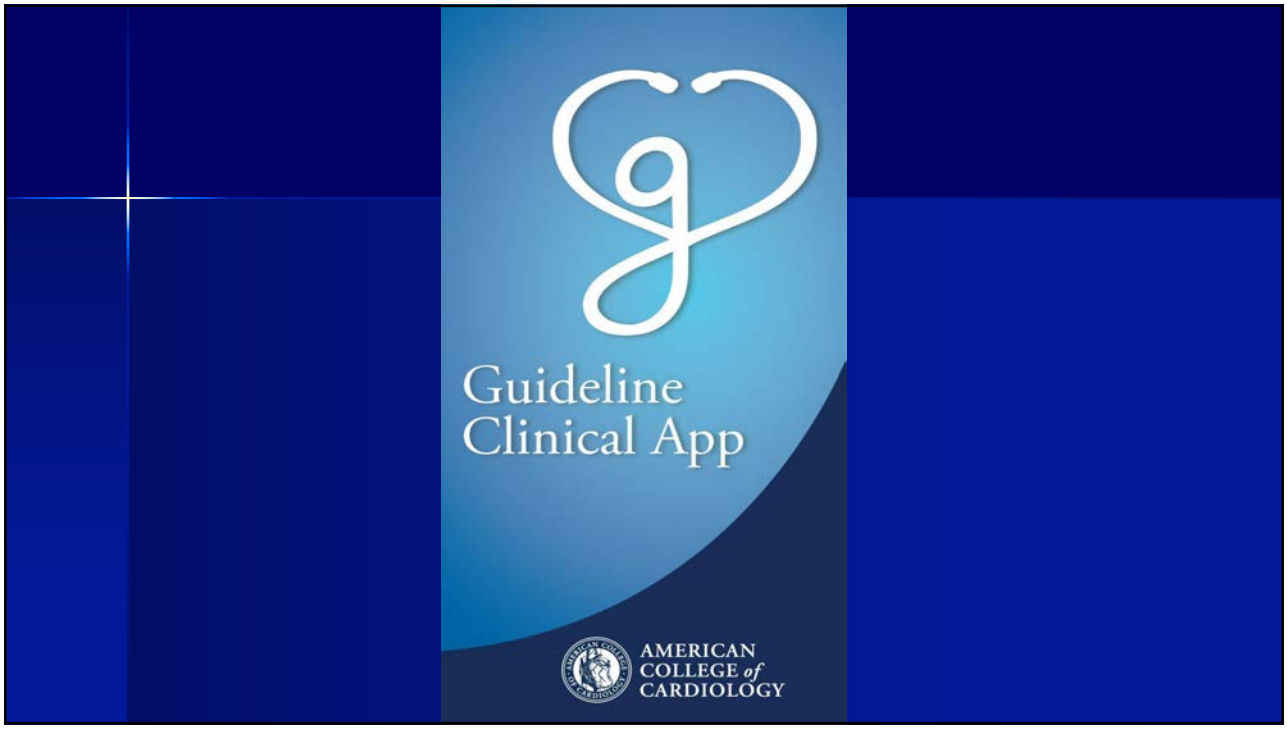
Cardiovascular Cases

2017 ACC/AHA Guidelines

Current ACC Guidelines (AF and many others):

- There's an app for that!
  - Enter: "ACC Guideline Clinical Apps"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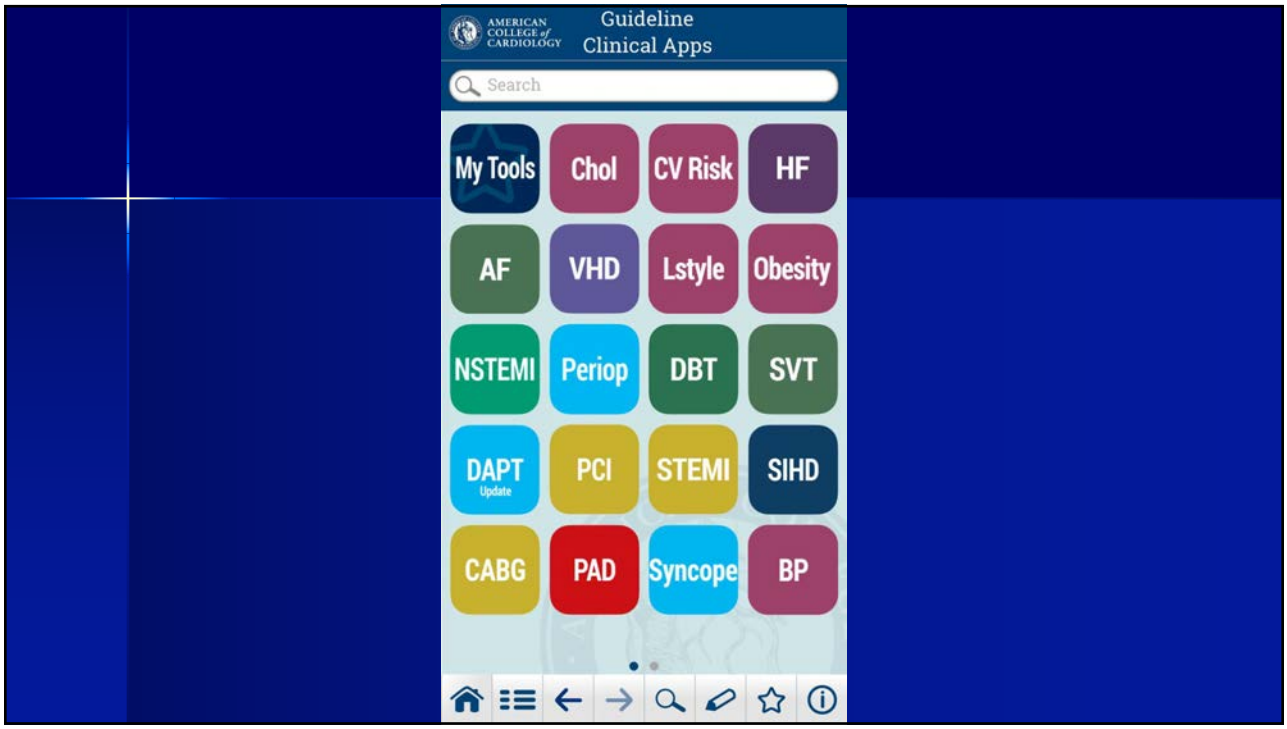
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DAPT
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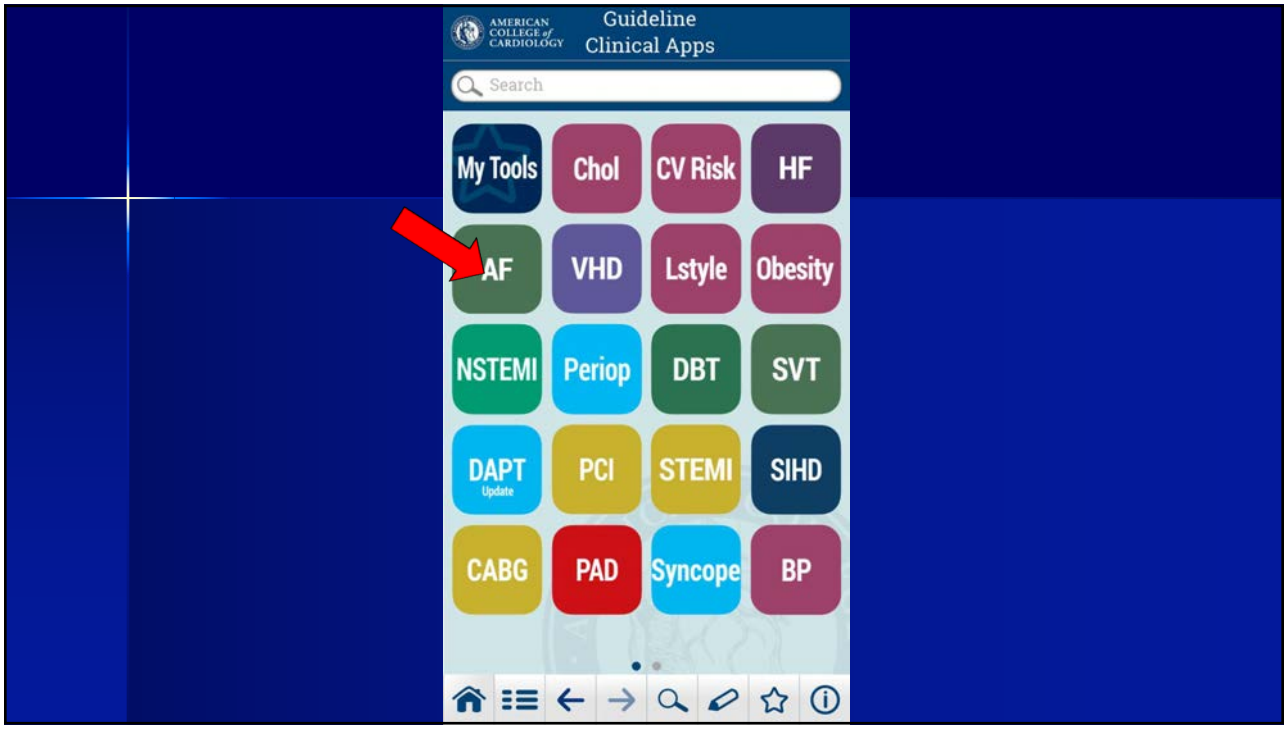
STEMI
SIHD
CABG
PAD
Syncope
BP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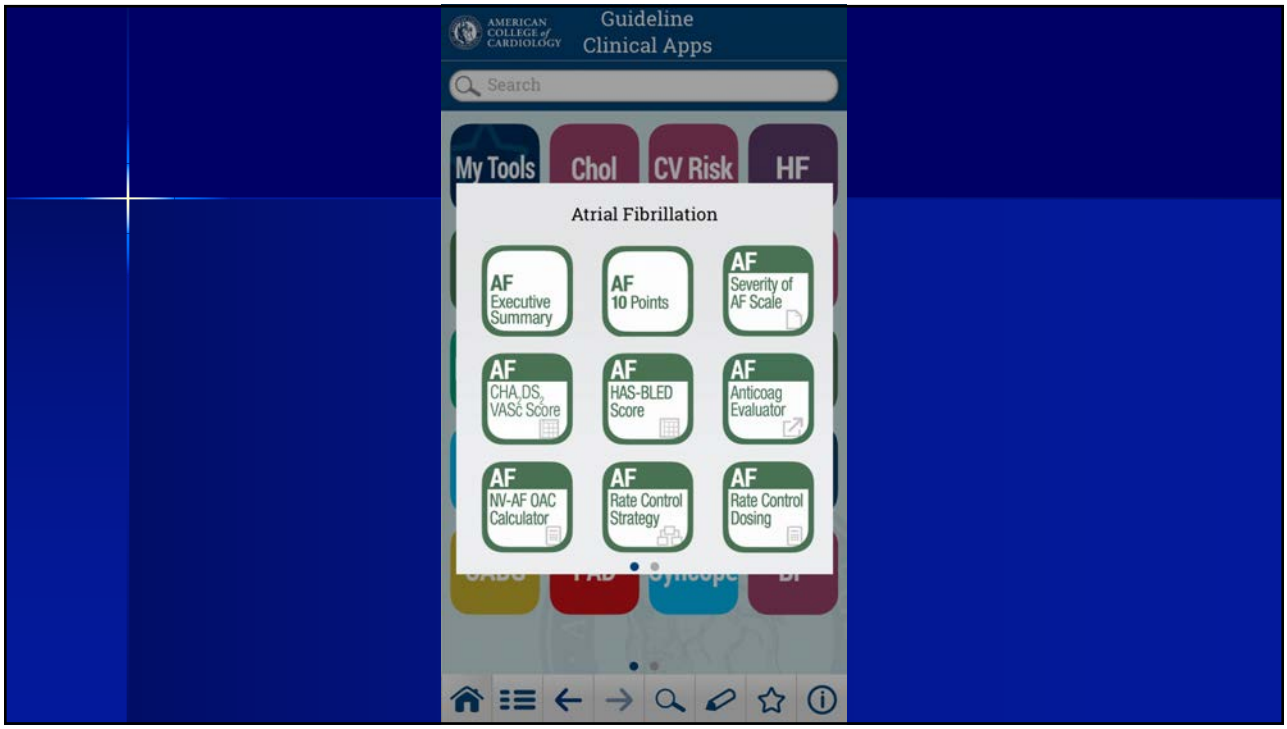
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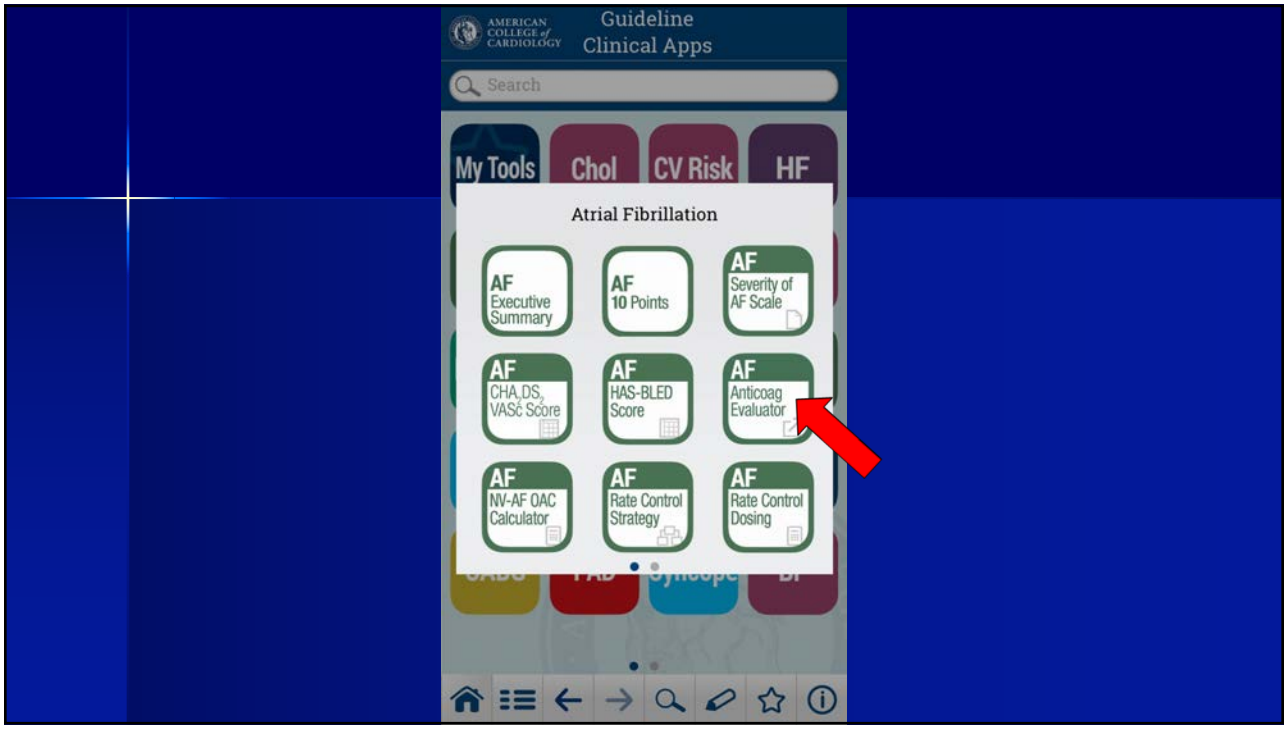
Atrial Fibrillation
AF Executive Summary
AF 10 Points
AF Severity of AF Scale
AF CHA2DS2-VASc Score
AF HAS-BLED Score
AF Anticoag Evaluator
AF NV-AF OAC Calculator
AF Rate Control Strategy
AF Rate Control Dosing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AF Executive Summary
AF 10 Points
AF Severity of AF Scale
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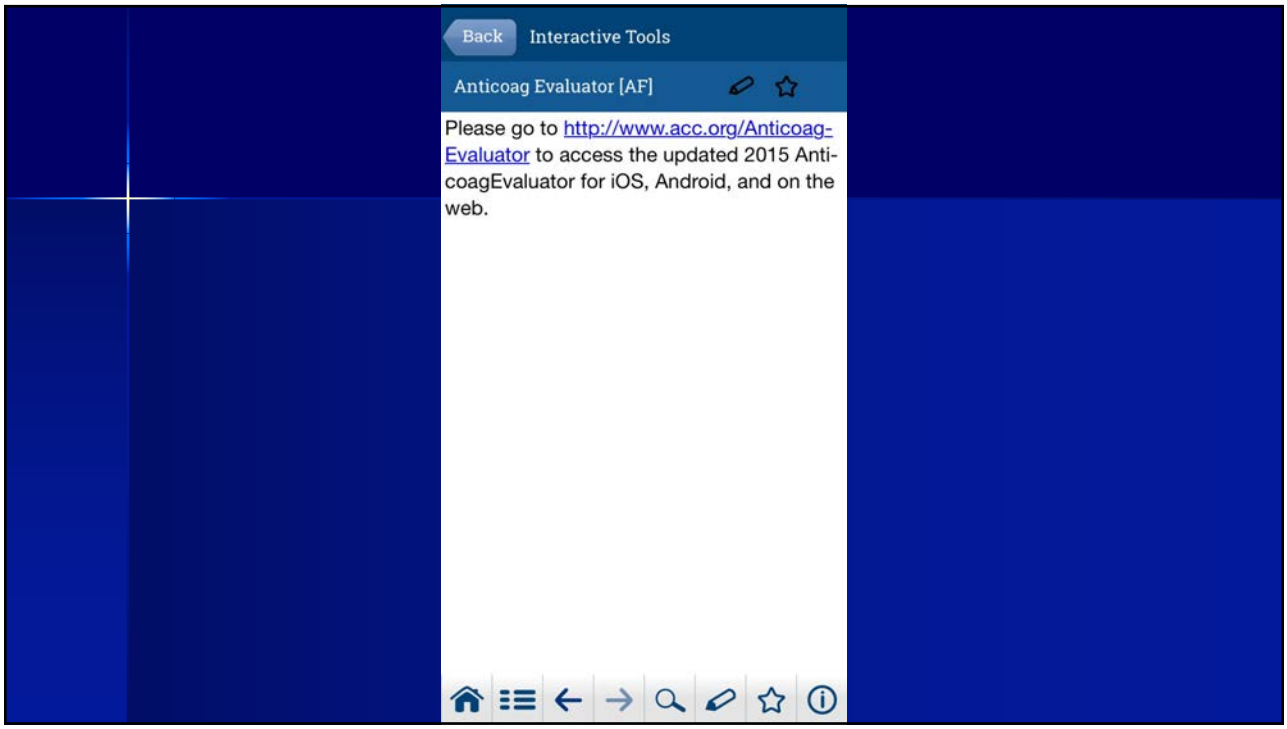
AF HAS-BLED Score
AF Anticoag Evaluator
AF NV-AF OAC Calculator
AF Rate Control Strategy
AF Rate Control Dosing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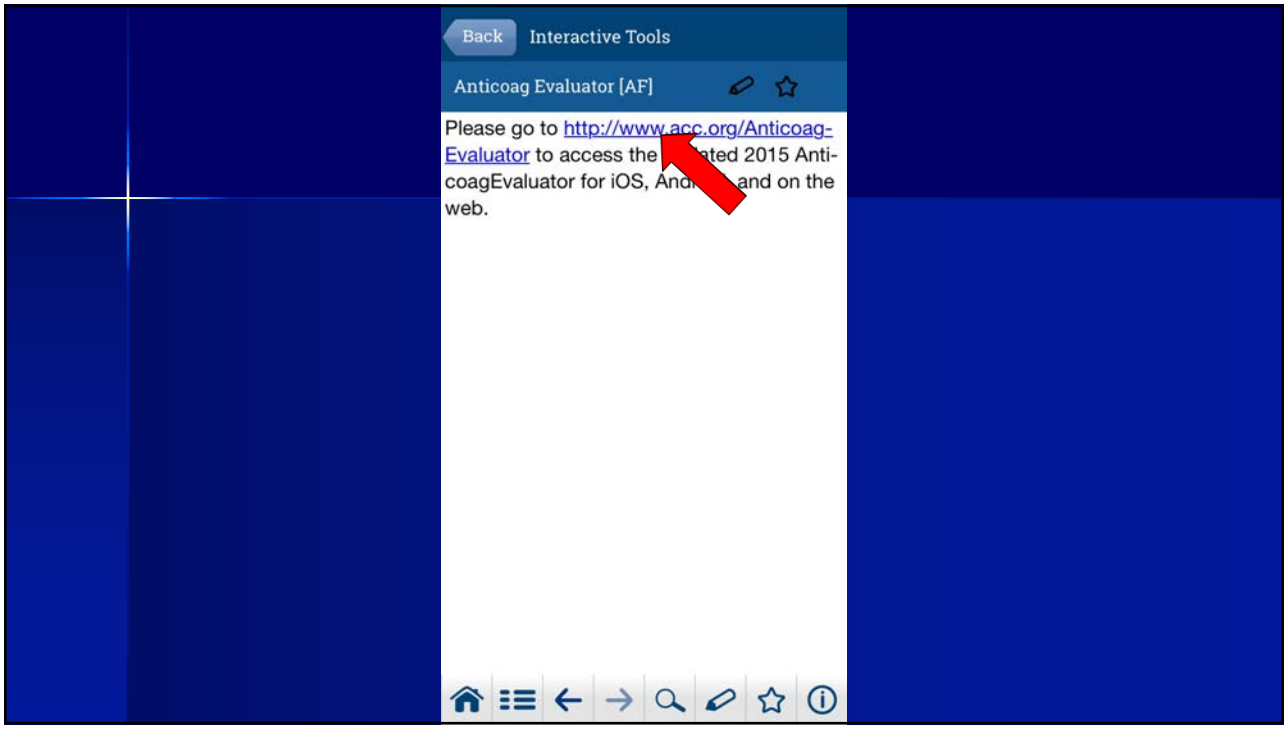
Please go to http://www.acc.org/Anticoag-Evaluator to access the updated 2015 Anti-coagEvaluator for iOS, Android, and on the web.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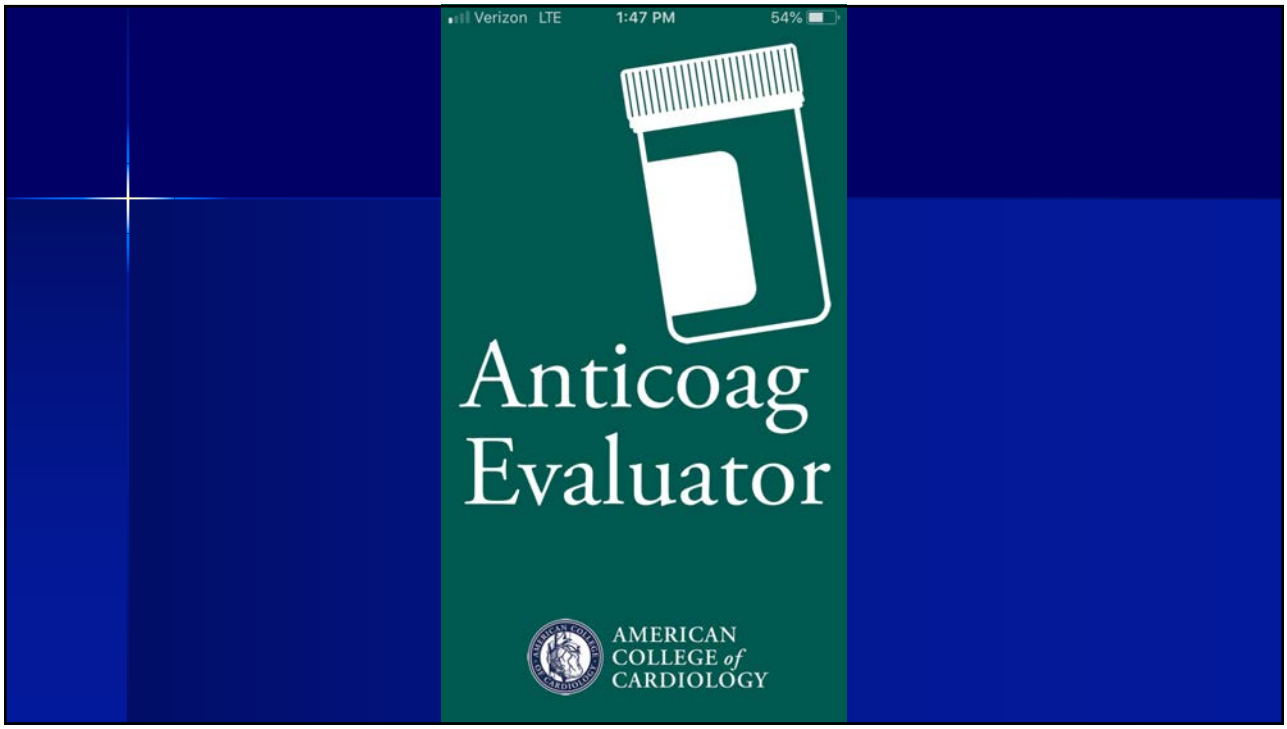
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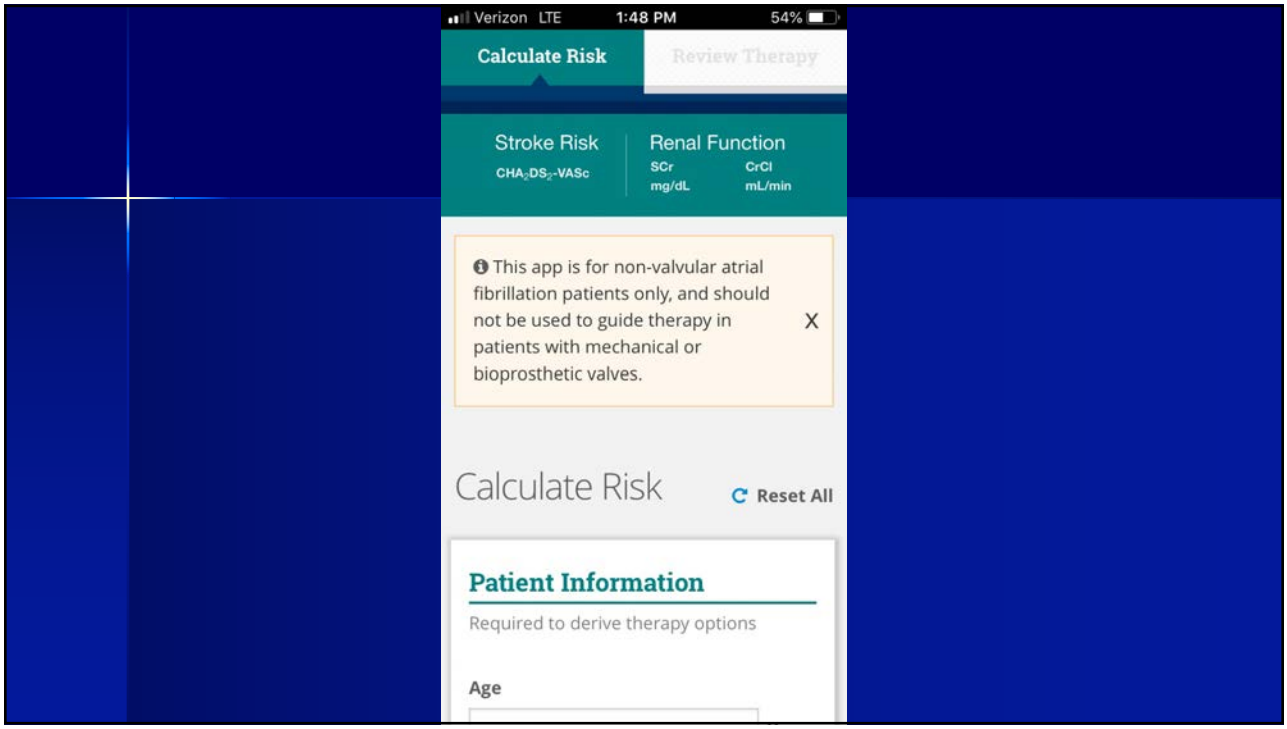
Anticoag Evaluator
AMERICAN COLLEGE of CARDIOLOGY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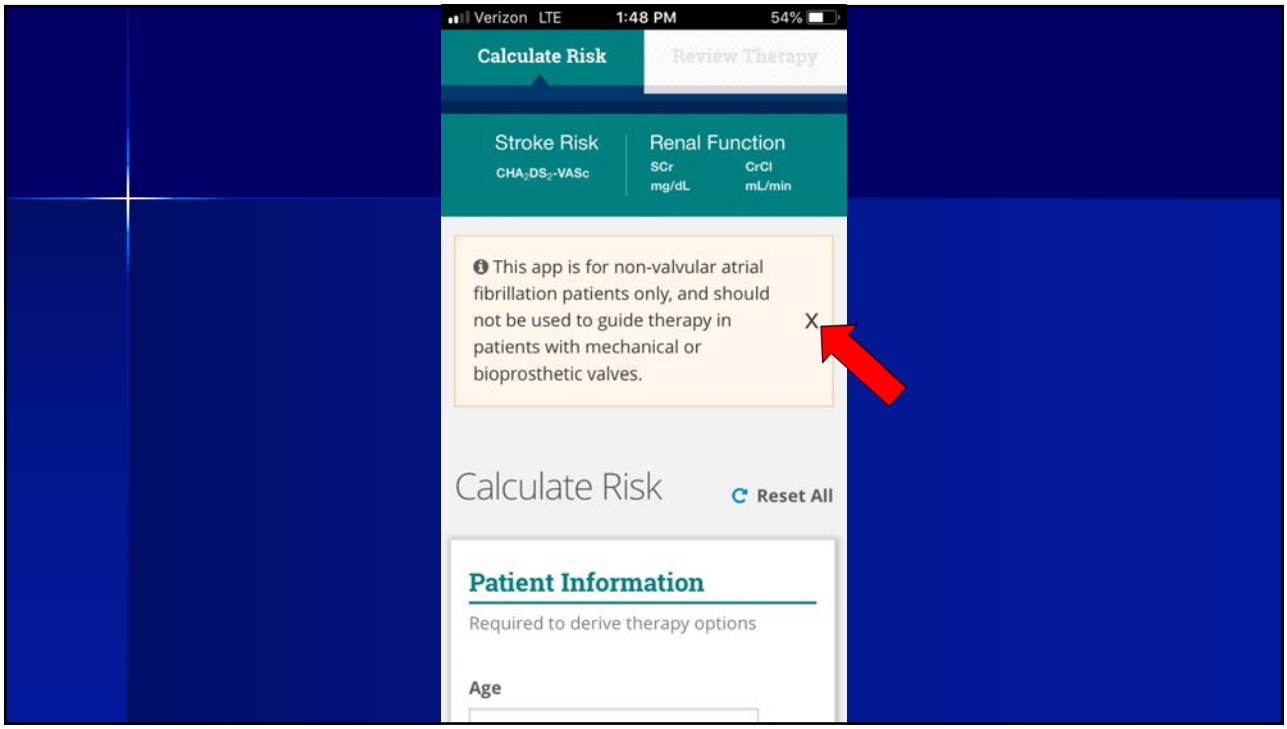
Calculate Risk
Review Therapy
Stroke Risk
CHA2DS2-VASc
Renal Function
SCr mg/dL
CrCl mL/min
This app is for non-valvular atrial fibrillation patients only, and should not be used to guide therapy in patients with mechanical or bioprosthetic valves.
X
Calculate Risk
Reset All
Patient Information
Required to derive therapy options
Age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Calculate Risk
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Patient Information
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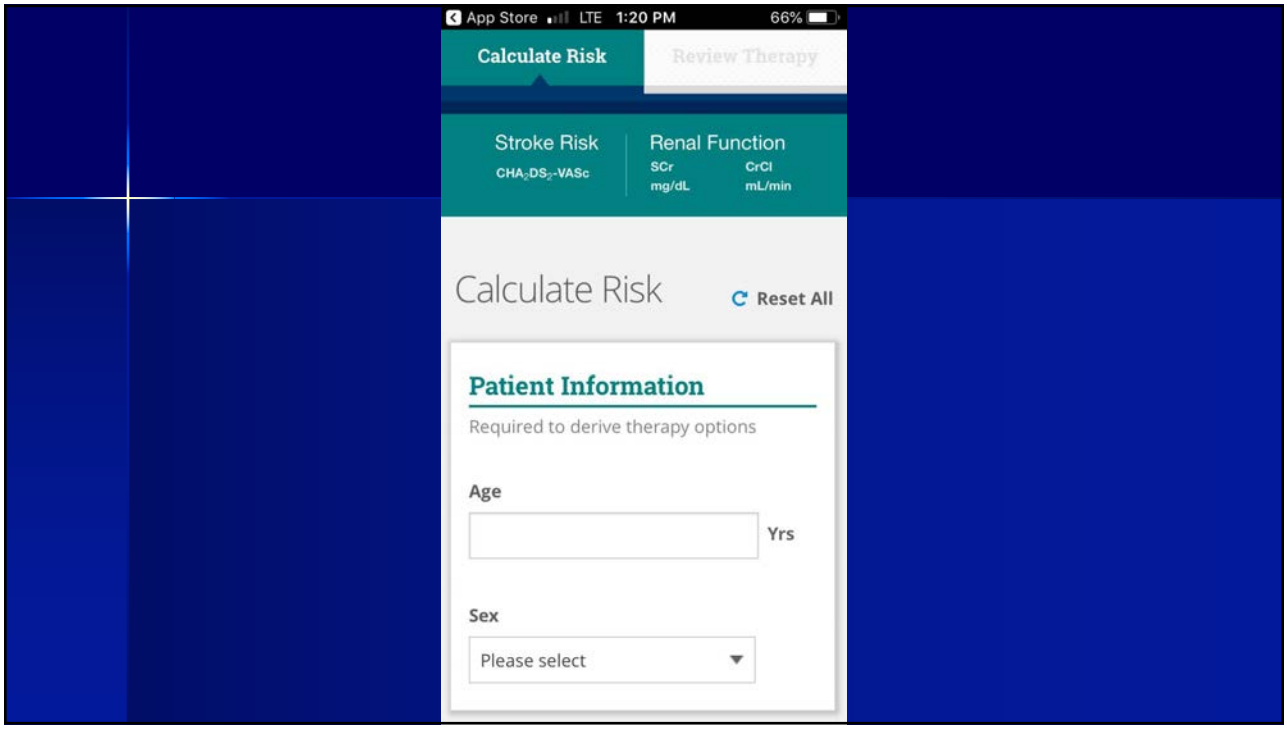
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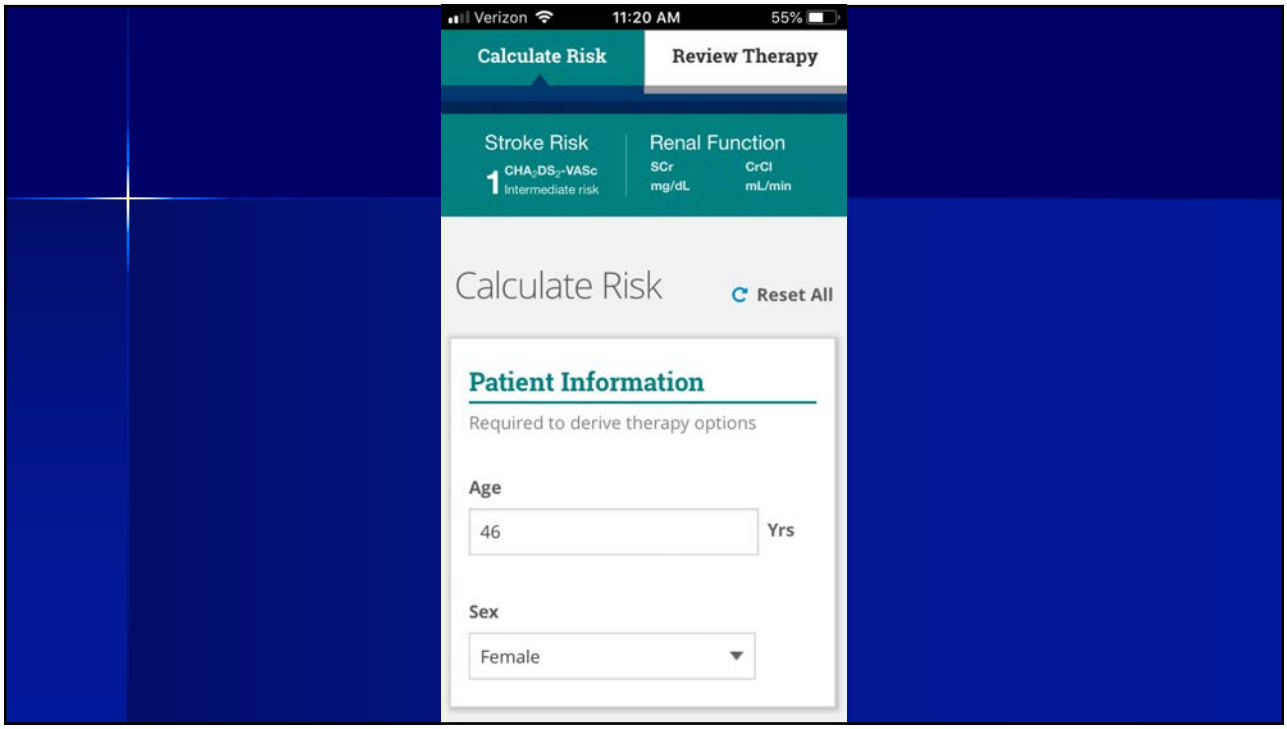
Calculate Risk
Review Therapy
Stroke Risk
CHA2DS2-VASc
Renal Function
SCr
mg/dL
CrCl
mL/min
Calculate Risk
Reset All
Patient Information
Required to derive therapy options
Age
Yrs
Sex
Please select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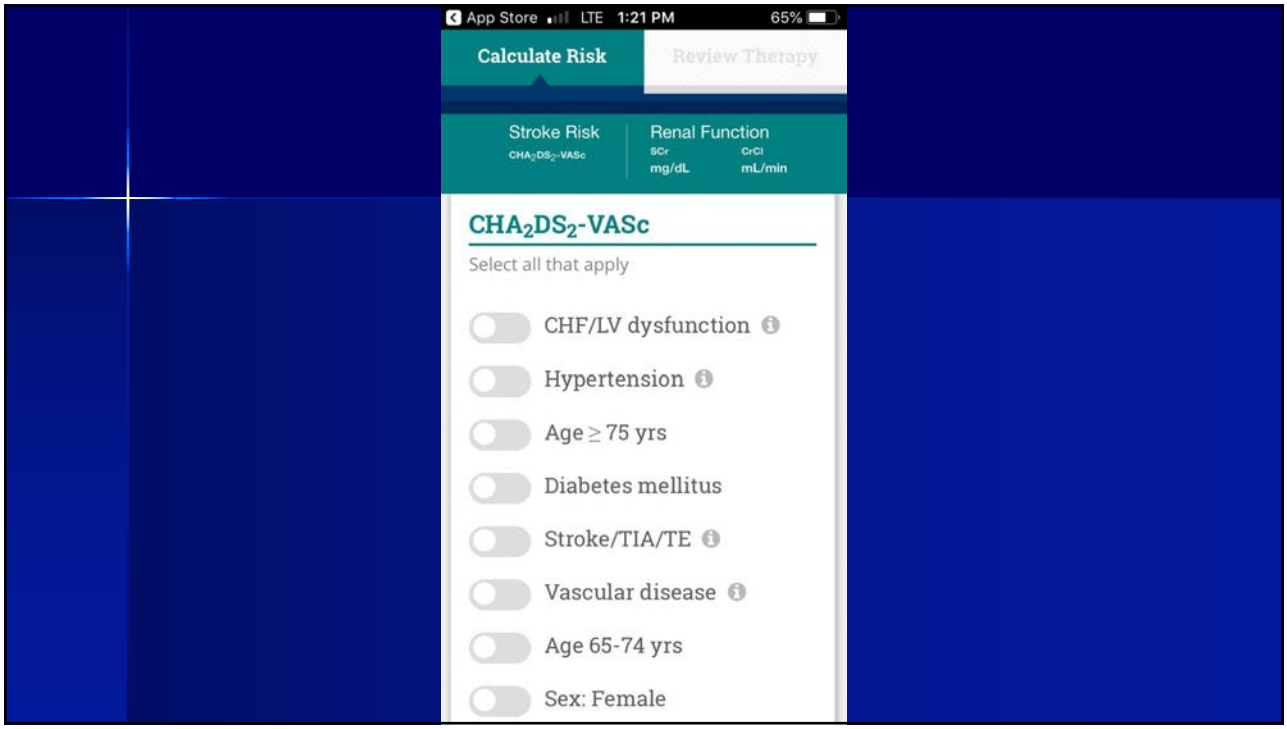
Calculate Risk
Review Therapy
Stroke Risk
1
CHA2DS2-VASc
Intermediate risk
Renal Function
SCr
mg/dL
CrCl
mL/min
Calculate Risk
Reset All
Patient Information
Required to derive therapy options
Age
46
Yrs
Sex
Female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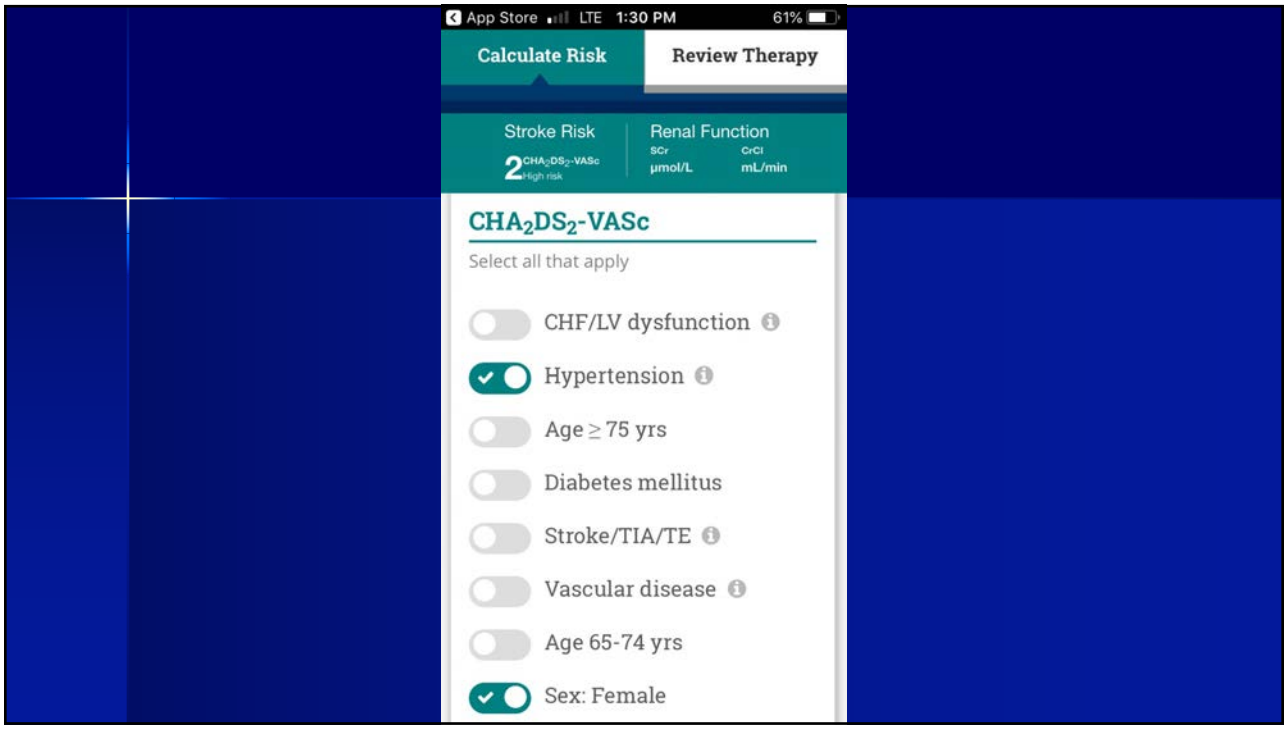
Calculate Risk
Review Therapy
Stroke Risk
CHA2DS2-VASc
Renal Function
SCr
mg/dL
CrCl
mL/min
CHA2DS2-VASc
Select all that apply
CHF/LV dysfunction
Hypertension
Age ≥ 75 yrs
Diabetes mellitus
Stroke/TIA/TE
Vascular disease
Age 65-74 yrs
Sex: Female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Calculate Risk
Review Therapy
Stroke Risk
2
CHA2DS2-VASc
High risk
Renal Function
SCr
µmol/L
CrCl
mL/min
CHA2DS2-VASc
Select all that apply
CHF/LV dysfunction
Hypertension
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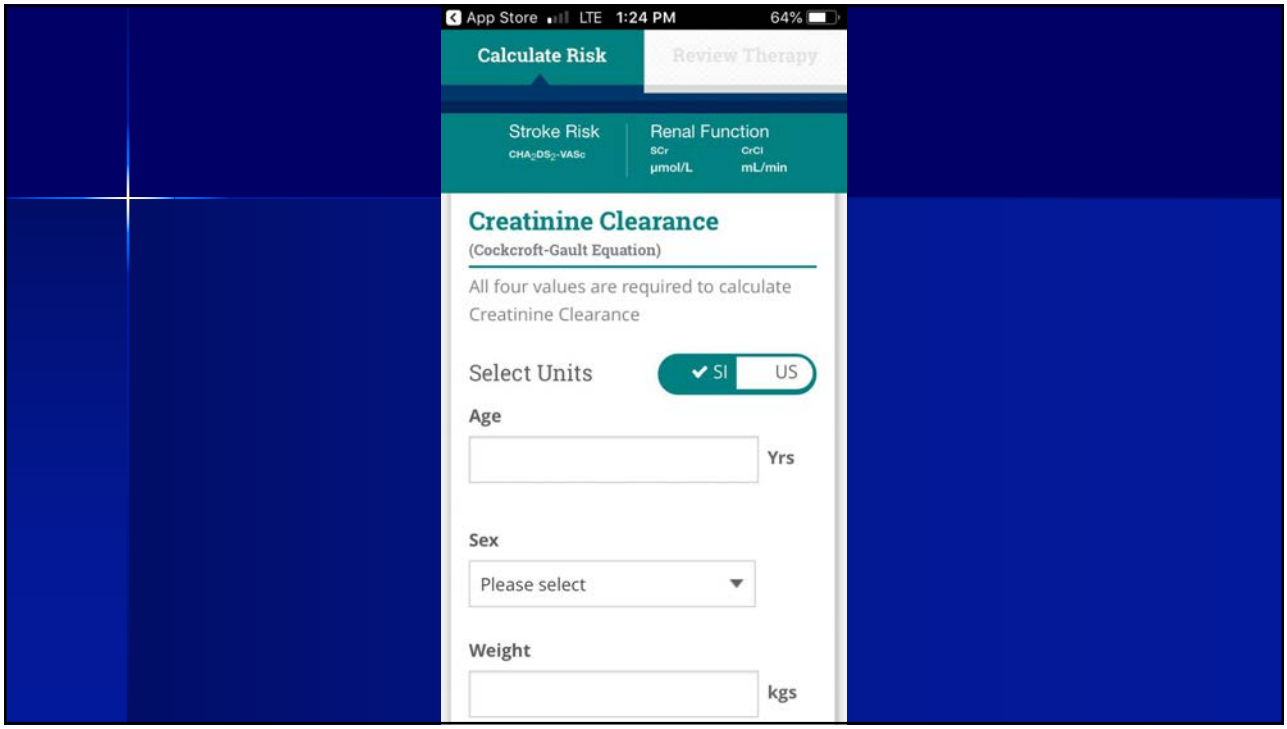
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Calculate Risk
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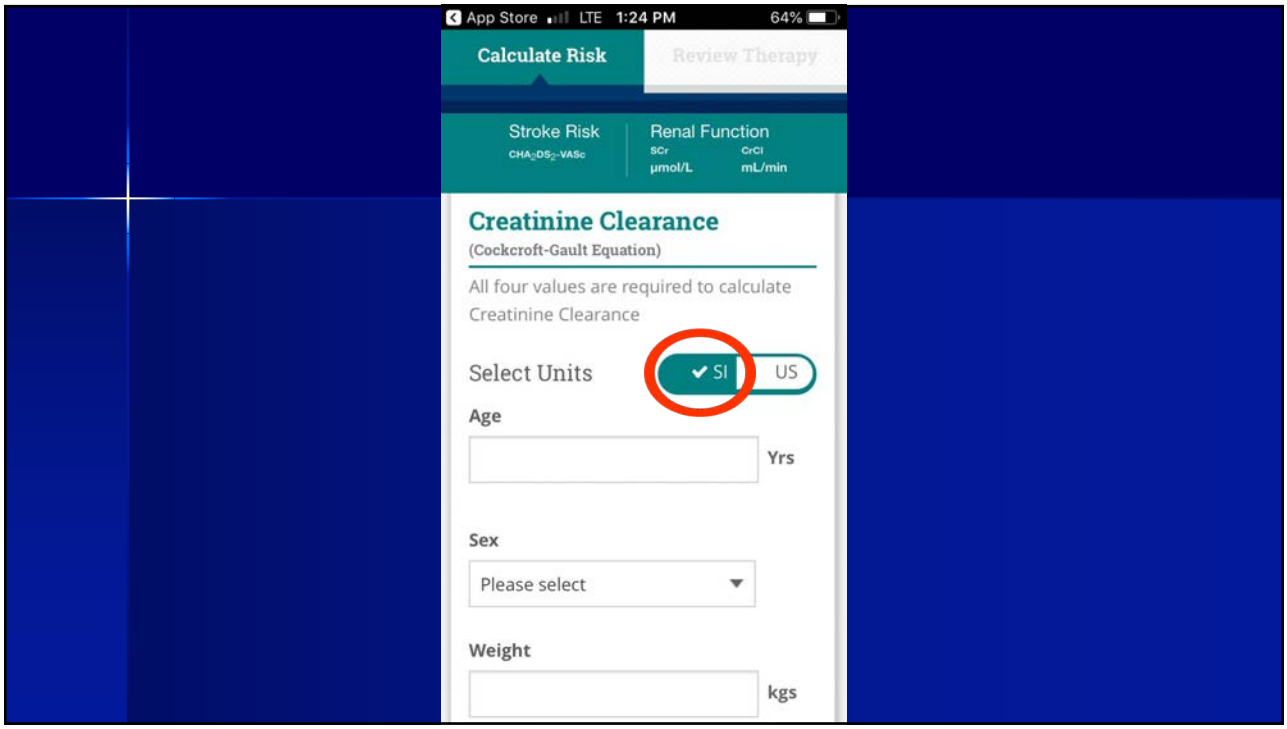
Stroke Risk
CHA2DS2-VASc
Renal Function
SCr
µmol/L
CrCl
mL/min
Creatinine Clearance
(Cockcroft-Gault Equation)
All four values are required to calculate Creatinine Clearance
Select Units
SI
US
Age
Yrs
Sex
Please select
Weight
kgs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Calculate Risk
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Renal Function
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Creatinine Clearance
(Cockcroft-Gault Equation)
All four values are required to calculate Creatinine Clearance
Select Units
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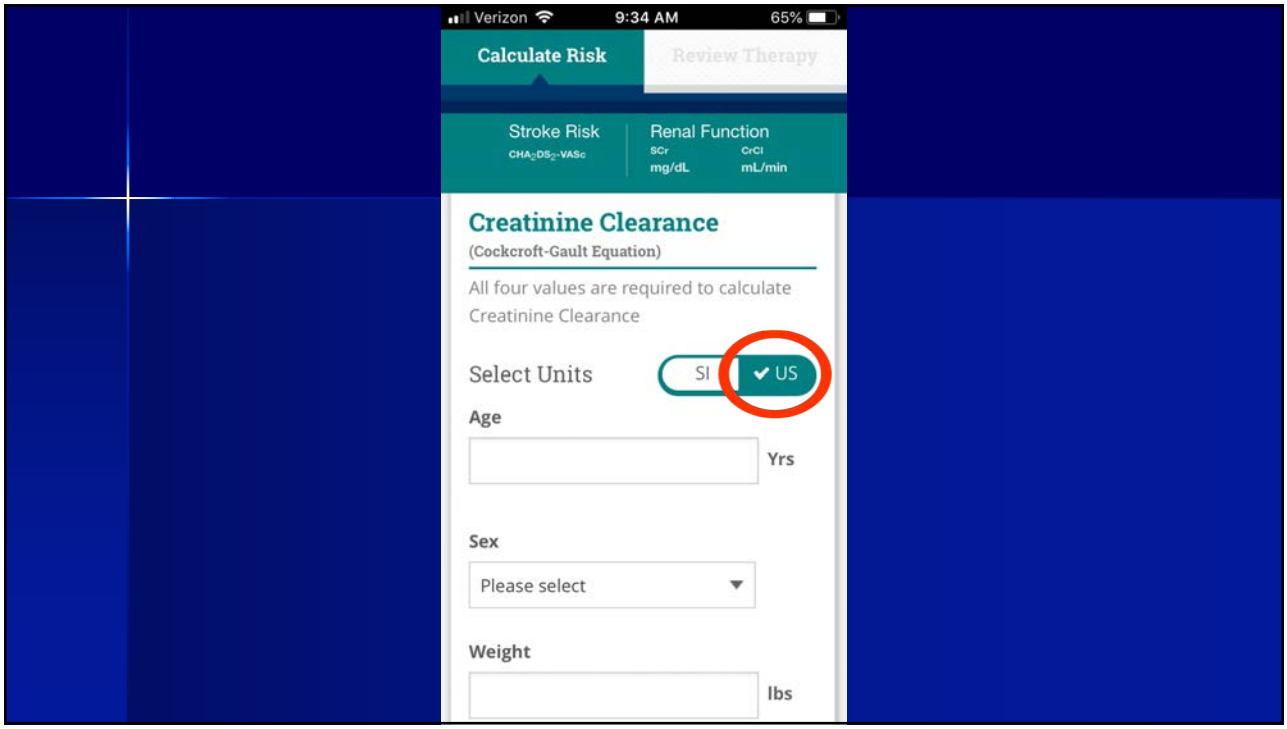
Sex
Please select
Weight
kgs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Calculate Risk
Review Therapy
Stroke Risk
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Renal Function
SCr
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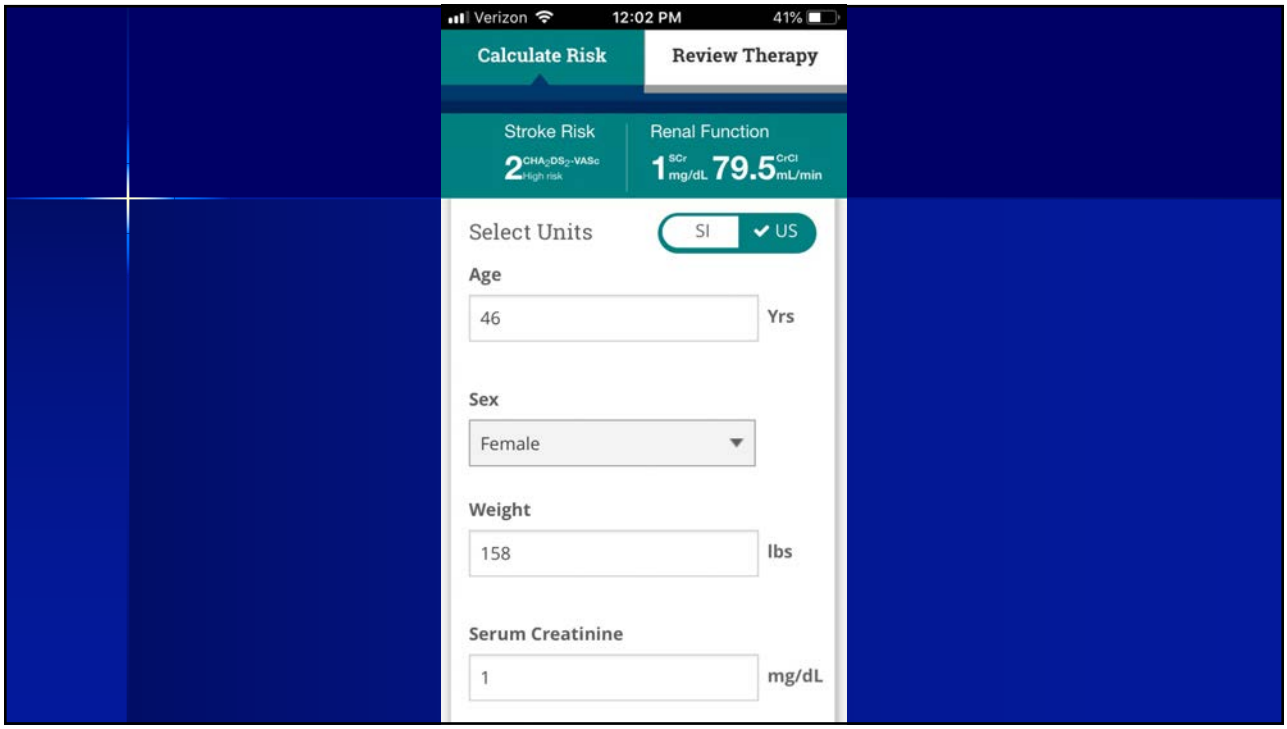
(Cockcroft-Gault Equation)
All four values are required to calculate Creatinine Clearance
Select Units
SI
US
Age
Yrs
Sex
Please select
Weight
lbs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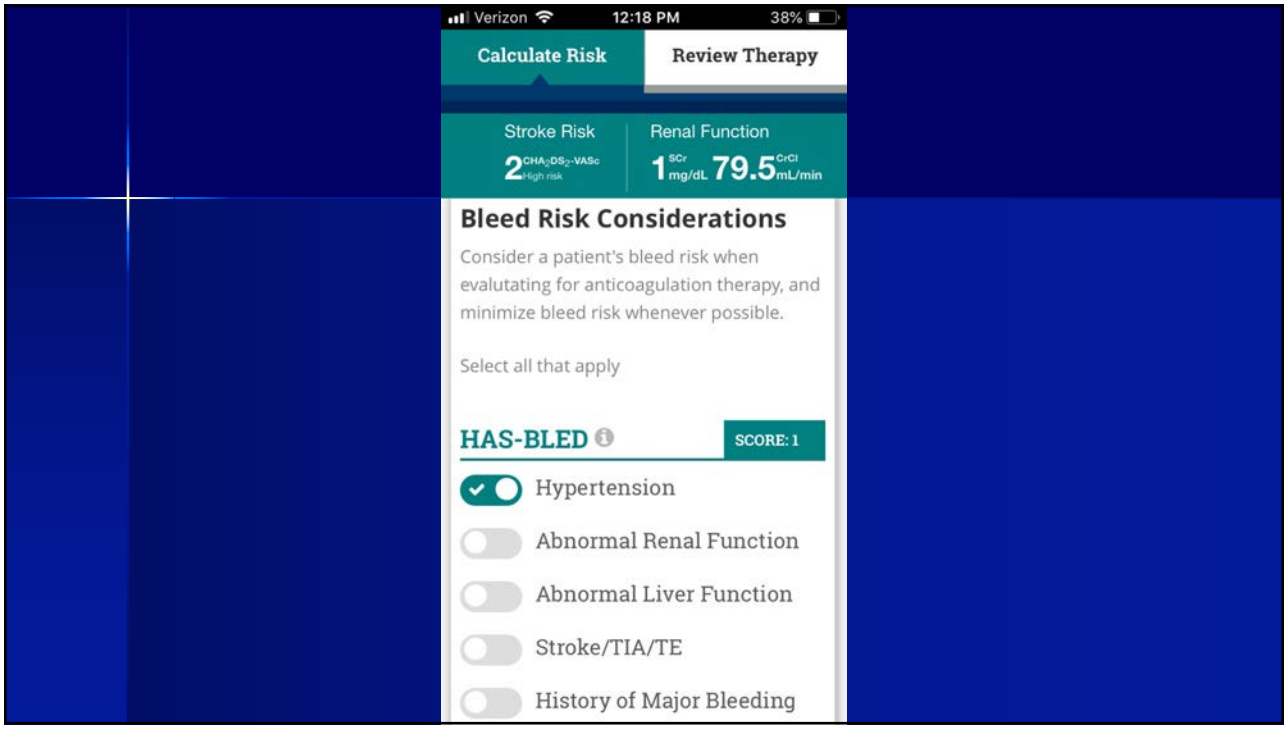
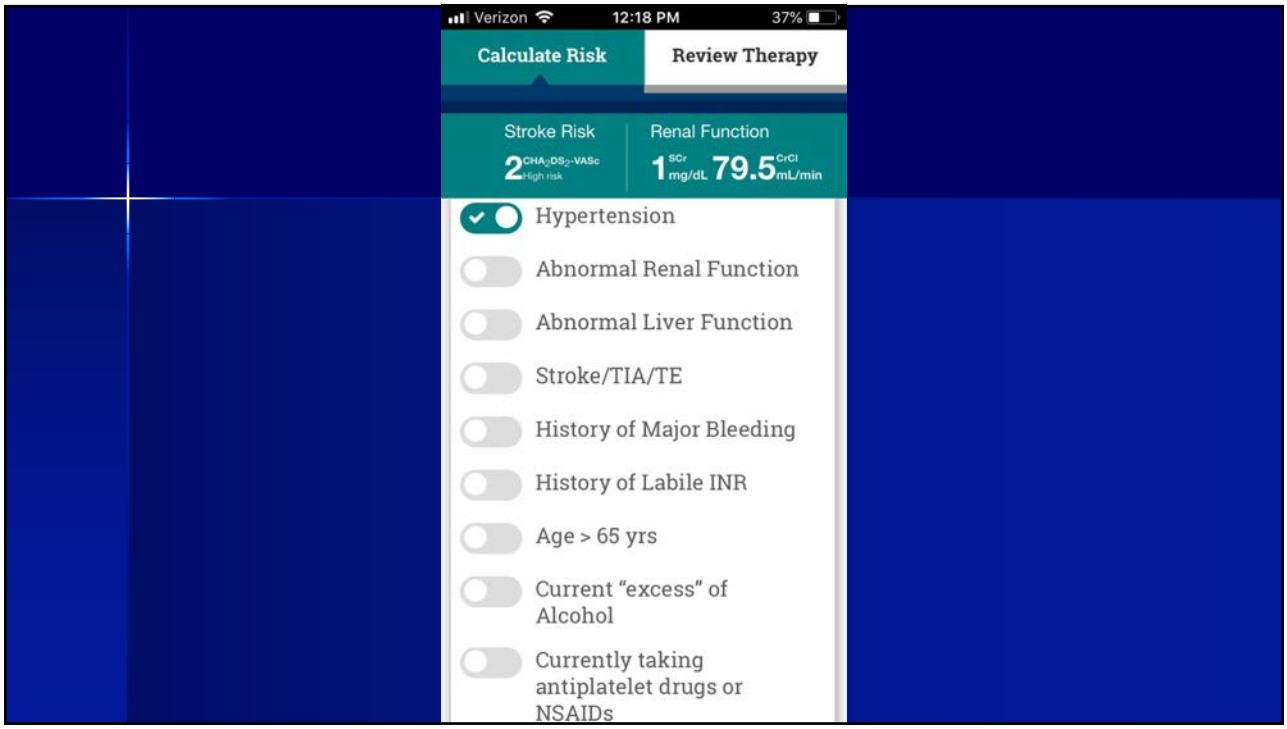
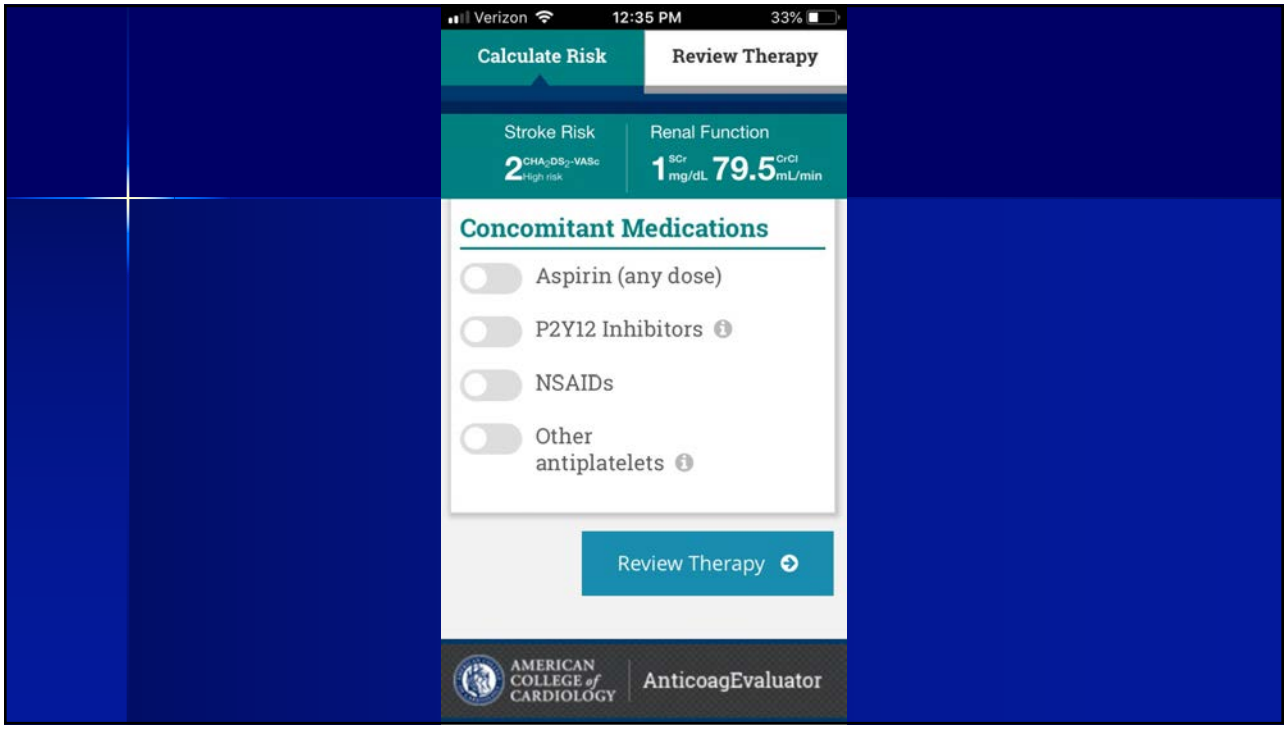
41%
Calculate Risk
Review Therapy
Stroke Risk
2
CHA2DS2-VASc
High risk
Renal Function
1
SCr
mg/dL
79.5
CrCl
mL/min
Select Units
SI
US
Age
46
Yrs
Sex
Female
Weight
158
lbs
Serum Creatinine
1
mg/dL


Verizon
12:18 PM
38%
Calculate Risk
Review Therapy
Stroke Risk
2 CHA2DS2-VASc High risk
Renal Function
1 SCr mg/dL 79.5 CrCl mL/min
Bleed Risk Considerations
Consider a patient's bleed risk when evalutating for anticoagulation therapy, and minimize bleed risk whenever possible.
Select all that apply
HAS-BLED
SCORE: 1
Hypertension
Abnormal Renal Function
Abnormal Liver Function
Stroke/TIA/TE
History of Major Bleeding


Verizon
12:18 PM
37%
Calculate Risk
Review Therapy
Stroke Risk
2 CHA2DS2-VASc High risk
Renal Function
1 SCr mg/dL 79.5 CrCl mL/min
Hypertension
Abnormal Renal Function
Abnormal Liver Function
Stroke/TIA/TE
History of Major Bleeding
History of Labile INR
Age > 65 yrs
Current "excess" of Alcohol
Currently taking antiplatelet drugs or NSAIDs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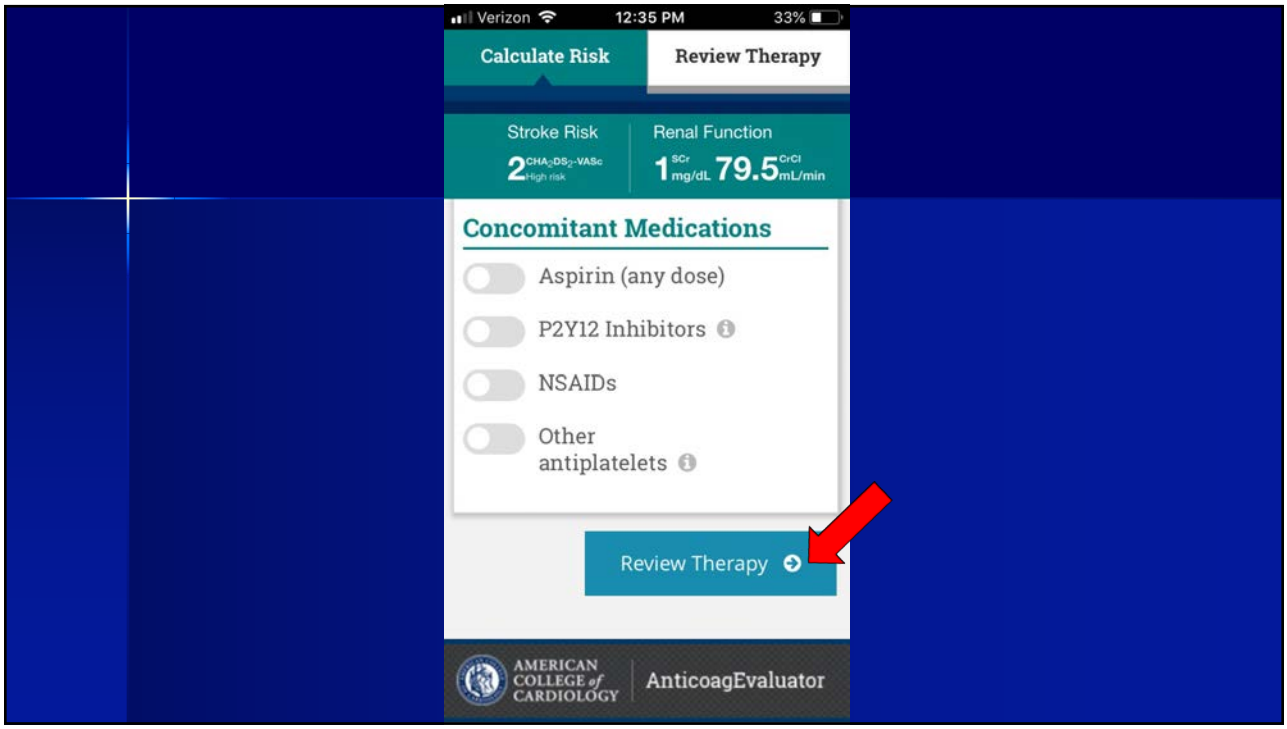
33%
Calculate Risk
Review Therapy
Stroke Risk
2 CHA2DS2-VASc High risk
Renal Function
1 SCr mg/dL 79.5 CrCl mL/min
Concomitant Medications
Aspirin (any dose)
P2Y12 Inhibitors
NSAIDs
Other antiplatelets
Review Therapy
AMERICAN COLLEGE of CARDIOLOGY
AnticoagEvaluator


Verizon
12:35 PM
33%
Calculate Risk
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AMERICAN COLLEGE of CARDIOLOGY
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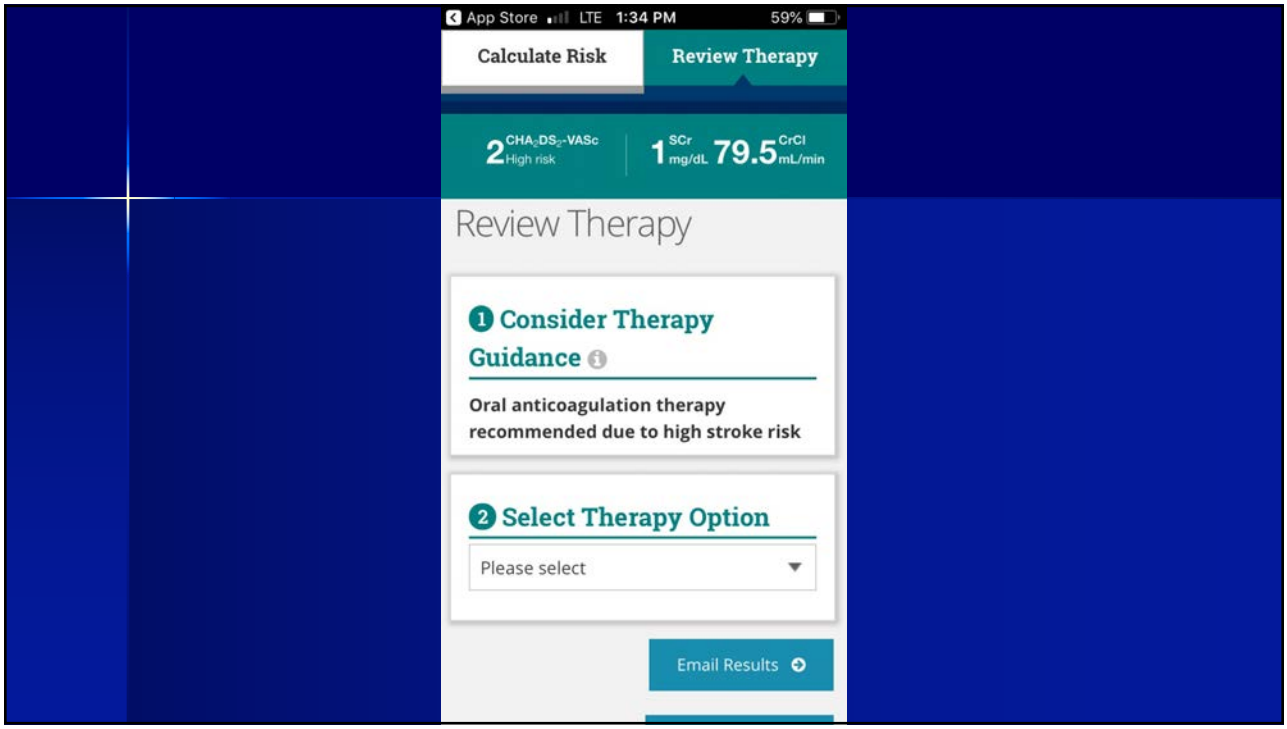
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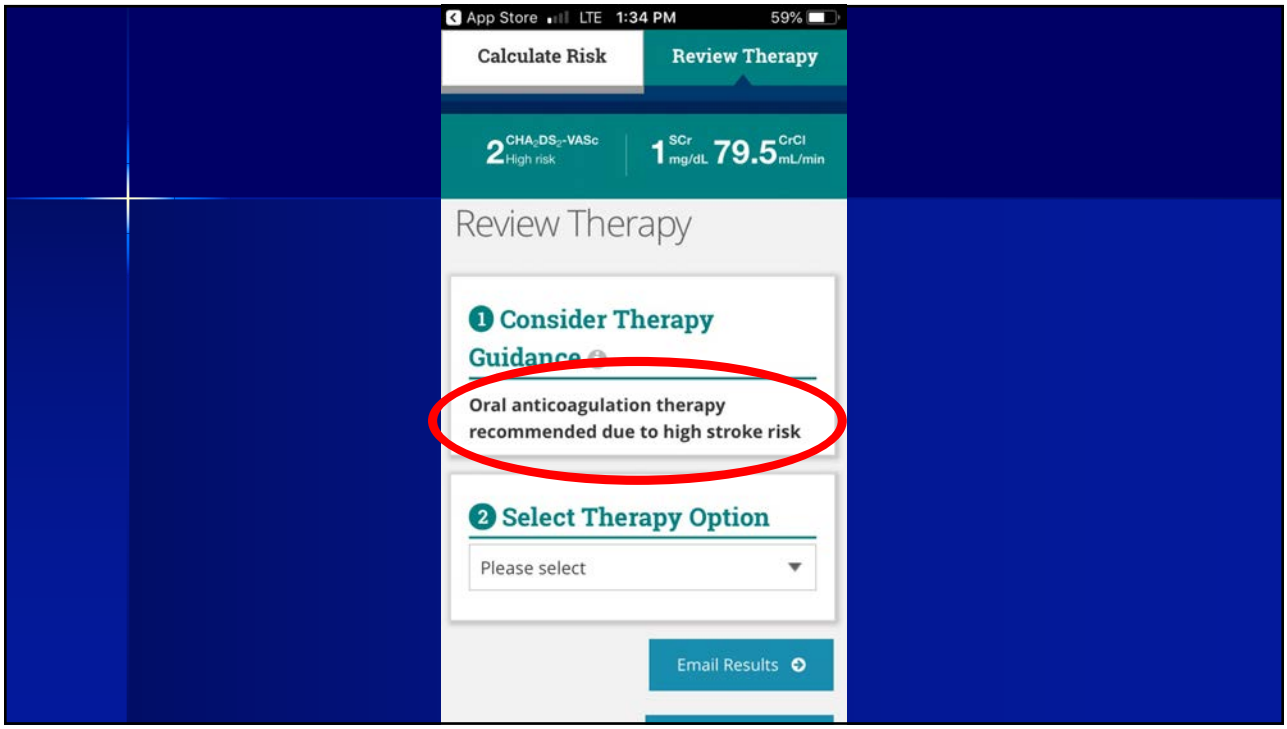
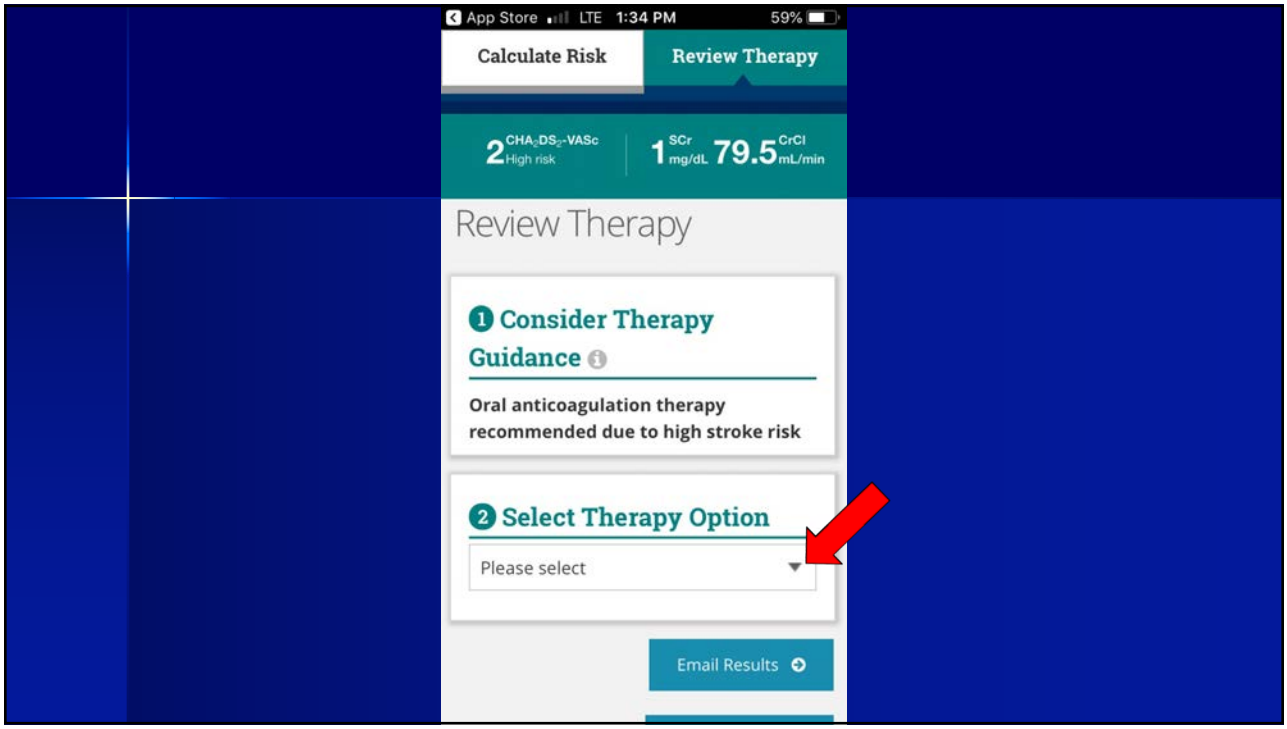
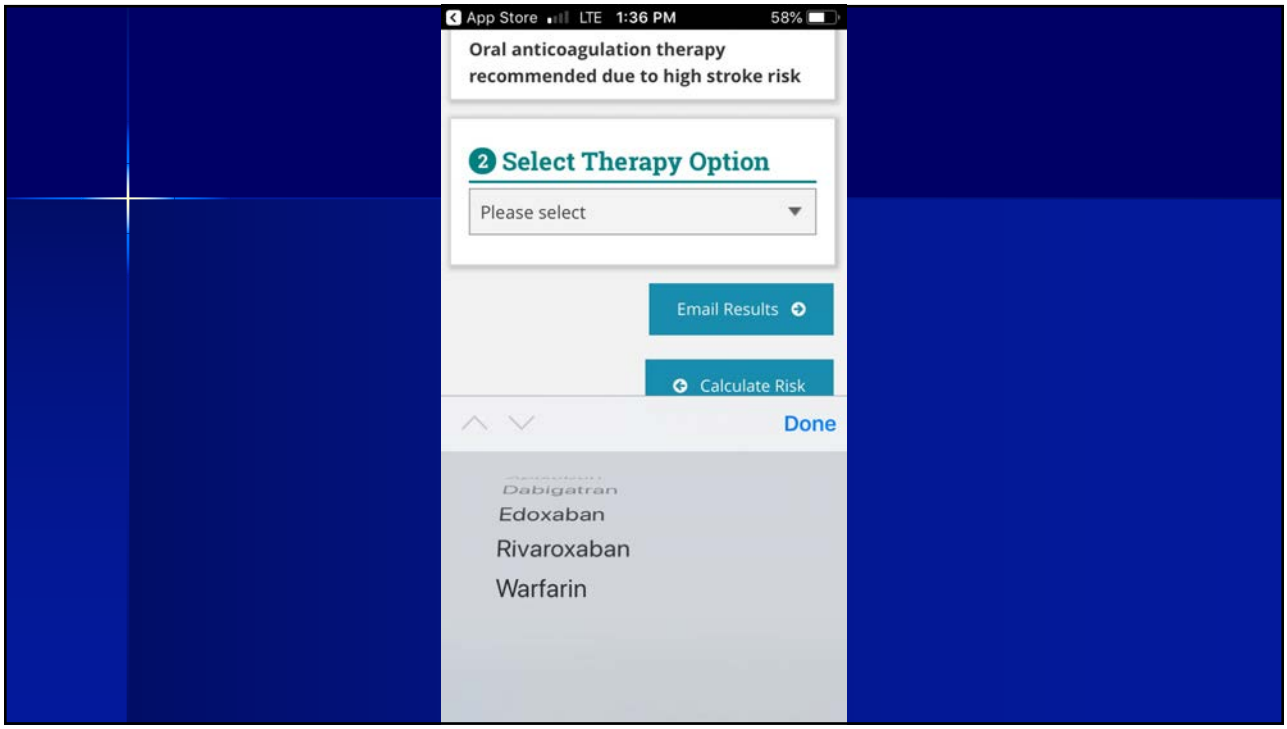
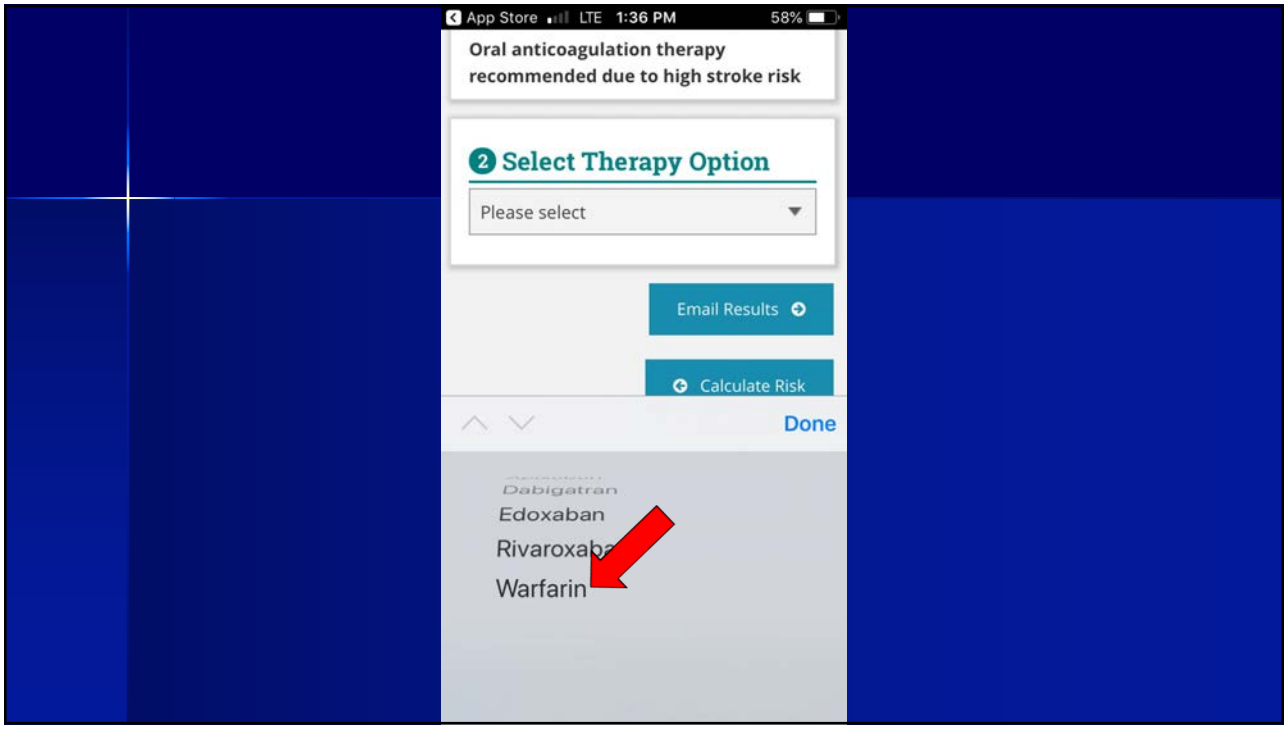
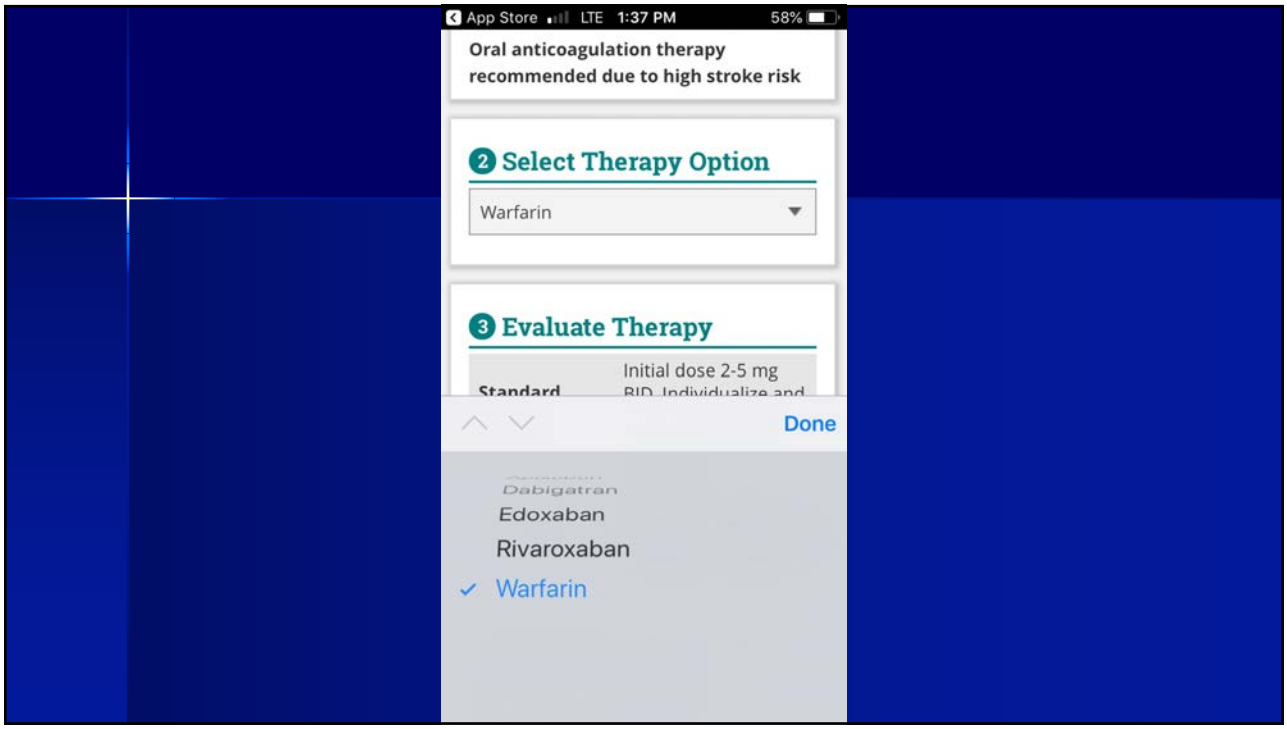
Calculate Risk
Review Therapy
2 CHA2DS2-VASc High risk
1 SCr mg/dL
79.5 CrCl mL/min
Review Therapy
1 Consider Therapy Guidance
Oral anticoagulation therapy recommended due to high stroke risk
2 Select Therapy Option
Please select
Email Results

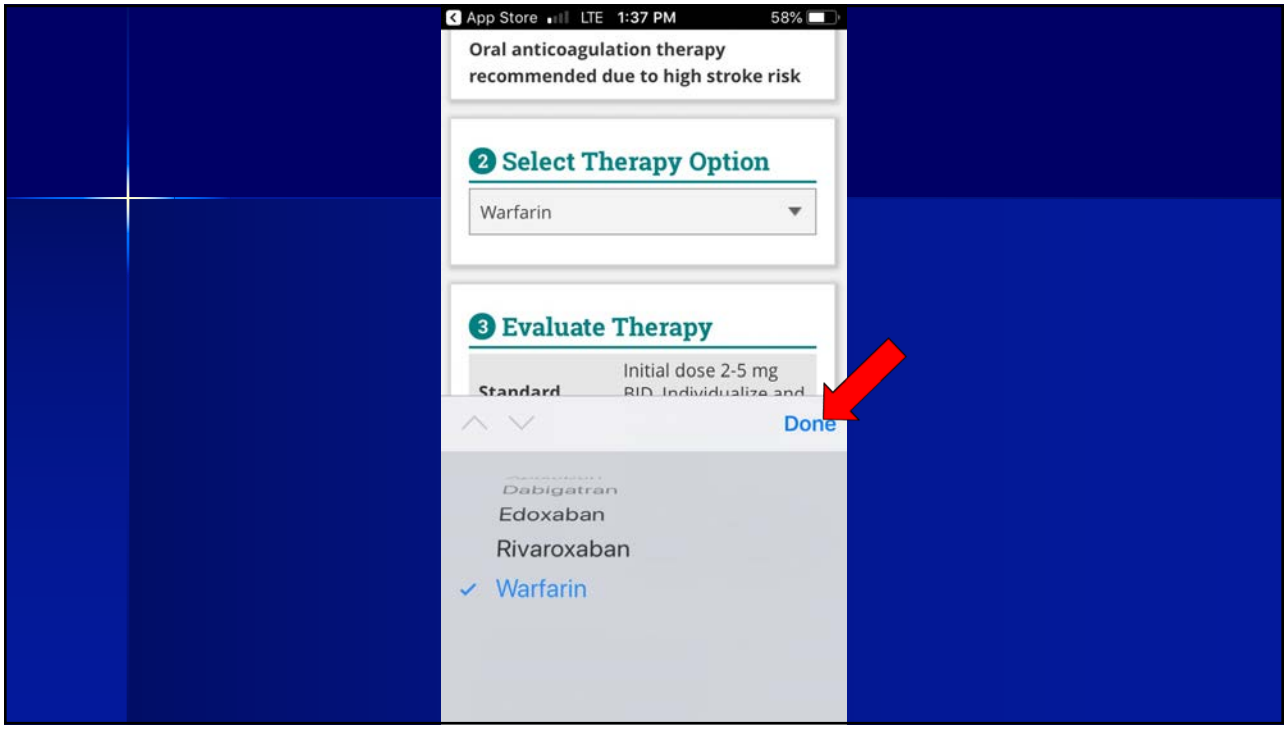

App Store LTE 1:34 PM 59%
Calculate Risk
Review Therapy
2 CHA2DS2-VASc High risk
1 SCr mg/dL
79.5 CrCl mL/min
Review Therapy
1 Consider Therapy Guidance
Oral anticoagulation therapy recommended due to high stroke risk
2 Select Therapy Option
Please select
Email Results

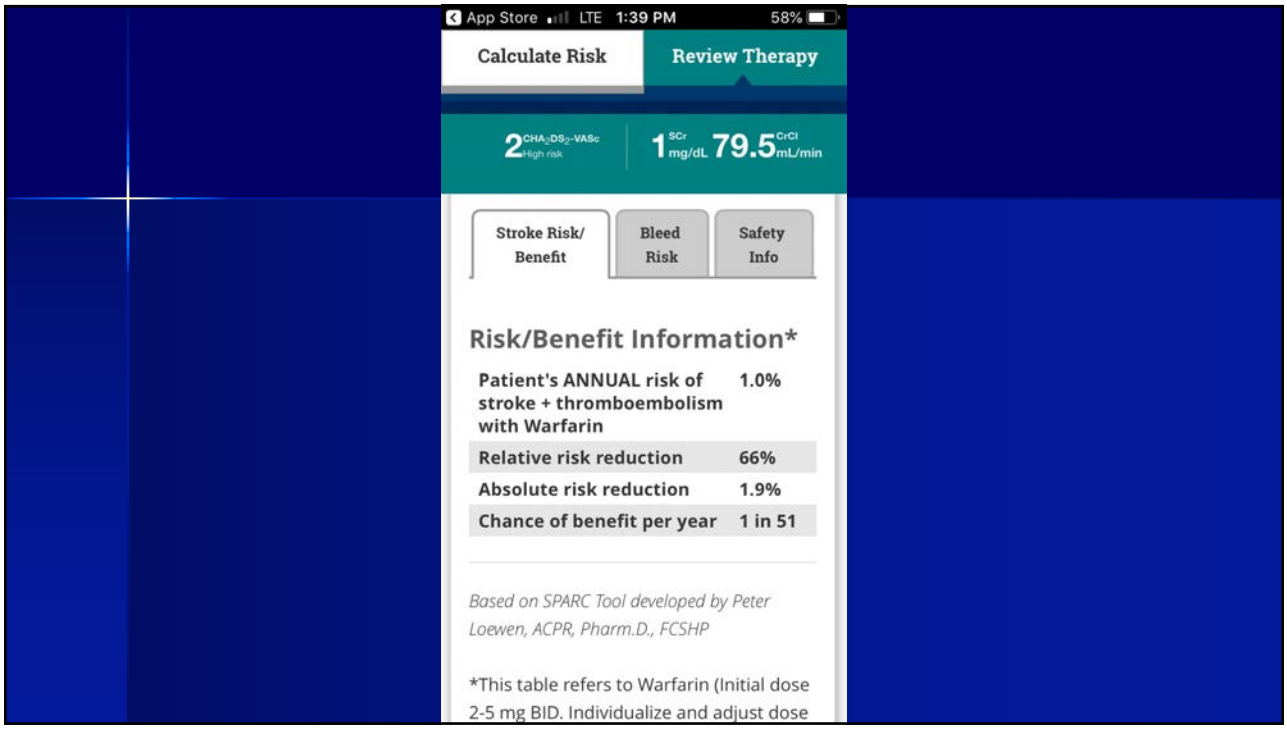

App Store LTE 1:34 PM 59%
Calculate Risk
Review Therapy
2 CHA2DS2-VASc High risk
1 SCr mg/dL 79.5 CrCl mL/min
Review Therapy
1 Consider Therapy Guidance
Oral anticoagulation therapy recommended due to high stroke risk
2 Select Therapy Option
Please select
Email Results


App Store LTE 1:36 PM 58%
Oral anticoagulation therapy recommended due to high stroke risk
2 Select Therapy Option
Please select
Email Results
Calculate Risk
Done
Dabigatran
Edoxaban
Rivaroxaban
Warfarin


App Store LTE 1:36 PM 58%
Oral anticoagulation therapy recommended due to high stroke risk
2 Select Therapy Option
Please select
Email Results
Calculate Risk
Done
Dabigatran
Edoxaban
Rivaroxaban
Warfarin


App Store LTE 1:37 PM 58%
Oral anticoagulation therapy recommended due to high stroke risk
2 Select Therapy Option
Warfarin
3 Evaluate Therapy
Standard
Initial dose 2-5 mg
Done
Dabigatran
Edoxaban
Rivaroxaban
Warfarin


App Store LTE 1:37 PM 58%
Oral anticoagulation therapy recommended due to high stroke risk
2 Select Therapy Option
Warfarin
3 Evaluate Therapy
Initial dose 2-5 mg
Done
Dabigatran
Edoxaban
Rivaroxaban
Warfarin


App Store LTE 1:39 PM 58%
Calculate Risk
Review Therapy
2 CHA2DS2-VASc High risk
1 SCr mg/dL
79.5 CrCl mL/min
Stroke Risk/ Benefit
Bleed Risk
Safety Info
Risk/Benefit Information*
Patient's ANNUAL risk of stroke + thromboembolism with Warfarin 1.0%
Relative risk reduction 66%
Absolute risk reduction 1.9%
Chance of benefit per year 1 in 51
Based on SPARC Tool developed by Peter Loewen, ACPR, Pharm.D., FCSHP
*This table refers to Warfarin (Initial dose 2-5 mg BID. Individualize and adjust dose

Cardiovascular Cases

Case 2 (cont.)

Which of the following is the most appropriate recommendation regarding anticoagulation prior to surgery?

A. Discontinue warfarin now, as anticoagulation is not indicated in this patient.

B. Discontinue warfarin four days prior to scheduled surgery. Check the INR daily. When the INR is < 2, begin enoxaparin 1 mg/kg SQ BID and continue it until the morning of surgery.

C. Discontinue warfarin four days prior to scheduled surgery. Check the INR the morning of scheduled surgery. Proceed with surgery if the INR is < 2.

D. Continue warfarin through the day before scheduled surgery. Withhold warfarin on the morning of surgery and initiate a continuous intravenous infusion of unfractionated heparin, which may then be discontinued on call to the operating room.

Cardiovascular Cases

Case 2 (cont.)

Which of the following is the most appropriate recommendation regarding anticoagulation prior to surgery?

A. Discontinue warfarin now, as anticoagulation is not indicated in this patient.

B. Discontinue warfarin four days prior to scheduled surgery. Check the INR daily. When the INR is < 2, begin enoxaparin 1 mg/kg SQ BID and continue it until the morning of surgery.

C. Discontinue warfarin four days prior to scheduled surgery. Check the INR the morning of scheduled surgery. Proceed with surgery if the INR is < 2.

D. Continue warfarin through the day before scheduled surgery. Withhold warfarin on the morning of surgery and initiate a continuous intravenous infusion of unfractionated heparin, which may then be discontinued on call to the operating room.

Cardiovascular Cases

Case 2 (cont.)

Provided that the surgery was uneventful, which of the following is the most appropriate recommendation regarding anticoagulation postoperatively?

A. Do not resume anticoagulation postoperatively, as it is not indicated in this patient.

B. Resume warfarin as soon as the surgeon feels that the patient is at a low risk for bleeding. Discharge the patient when the INR is $\geq$ 2.

C. Begin enoxaparin 1 mg/kg SQ BID and resume warfarin 2 mg PO daily as soon as the surgeon feels that the patient is at a low risk for bleeding. Check the INR daily. Discontinue enoxaparin and discharge the patient when the INR is $\geq$ 2.

D. Begin enoxaparin 1 mg/kg SQ BID and resume warfarin 2 mg PO daily as soon as the surgeon feels that the patient is at a low risk for bleeding. Check the INR daily until the INR is $\geq$ 2. Discontinue enoxaparin after 10 doses regardless of INR.

Cardiovascular Cases

Case 2 (cont.)

Provided that the surgery was uneventful, which of the following is the most appropriate recommendation regarding anticoagulation postoperatively?

A. Do not resume anticoagulation postoperatively, as it is not indicated in this patient.

B. Resume warfarin as soon as the surgeon feels that the patient is at a low risk for bleeding. Discharge the patient when the INR is $\geq$ 2.

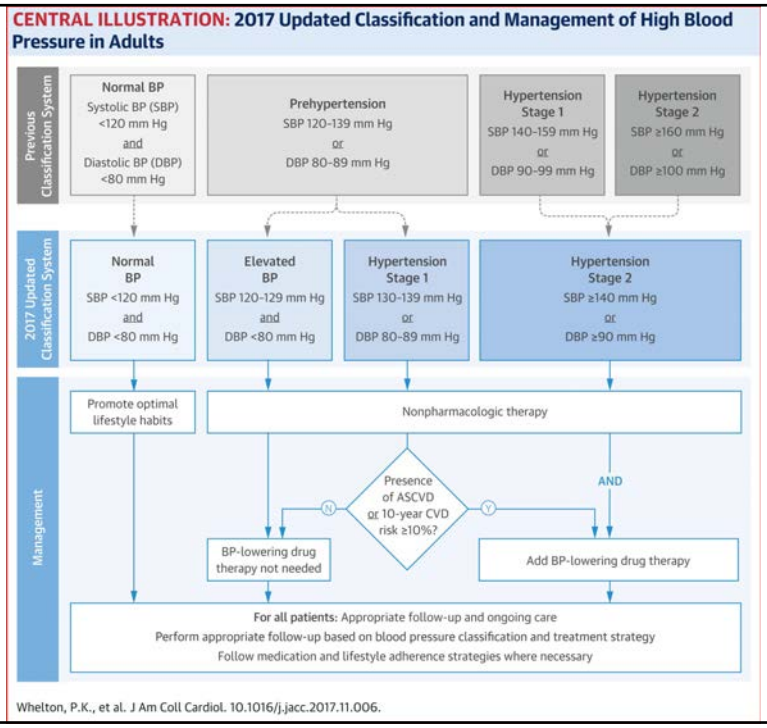
C. Begin enoxaparin 1 mg/kg SQ BID and resume warfarin 2 mg PO daily as soon as the surgeon feels that the patient is at a low risk for bleeding. Check the INR daily. Discontinue enoxaparin and discharge the patient when the INR is $\geq$ 2.

D. Begin enoxaparin 1 mg/kg SQ BID and resume warfarin 2 mg PO daily as soon as the surgeon feels that the patient is at a low risk for bleeding. Check the INR daily until the INR is $\geq$ 2. Discontinue enoxaparin after 10 doses regardless of INR.

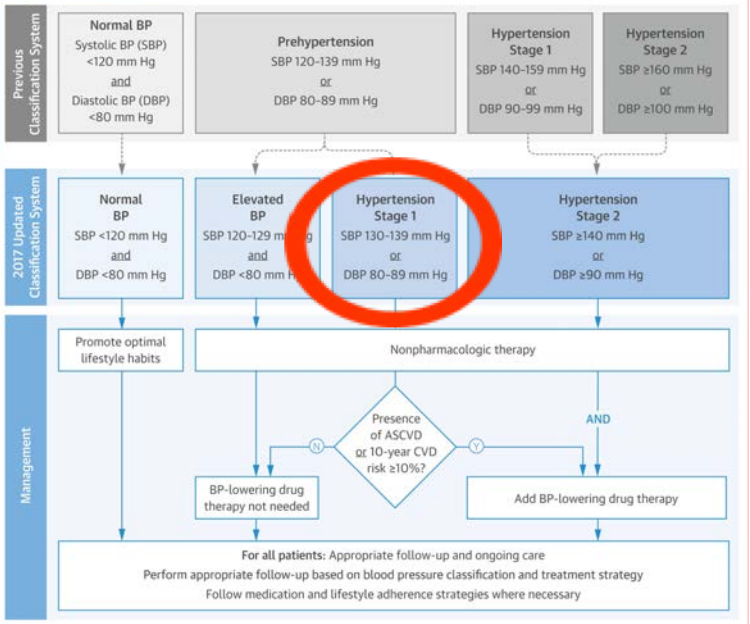
Cardiovascular Cases

Case 3

62-year-old African American male without clinical CVD presents for routine medical evaluation. He is a nonsmoker and he is not diabetic. He has a history of asthma, for which he takes montelukast 10 mg PO daily. His total cholesterol is 192 mg/dL, his HDL-cholesterol is 38 mg/dL, triglycerides are 180 mg/dL, and his LDL-cholesterol is 118 mg/dL. His blood pressure is 134/76 mmHg, averaged from two separate occasions. Does his blood pressure require pharmacologic treatment at this time?

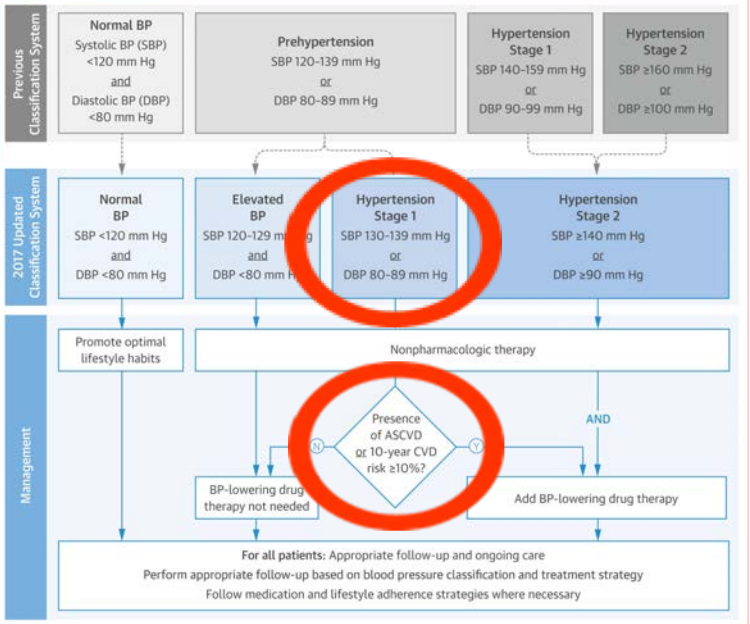


CENTRAL ILLUSTRATION: 2017 Updated Classification and Management of High Blood Pressure in Adults



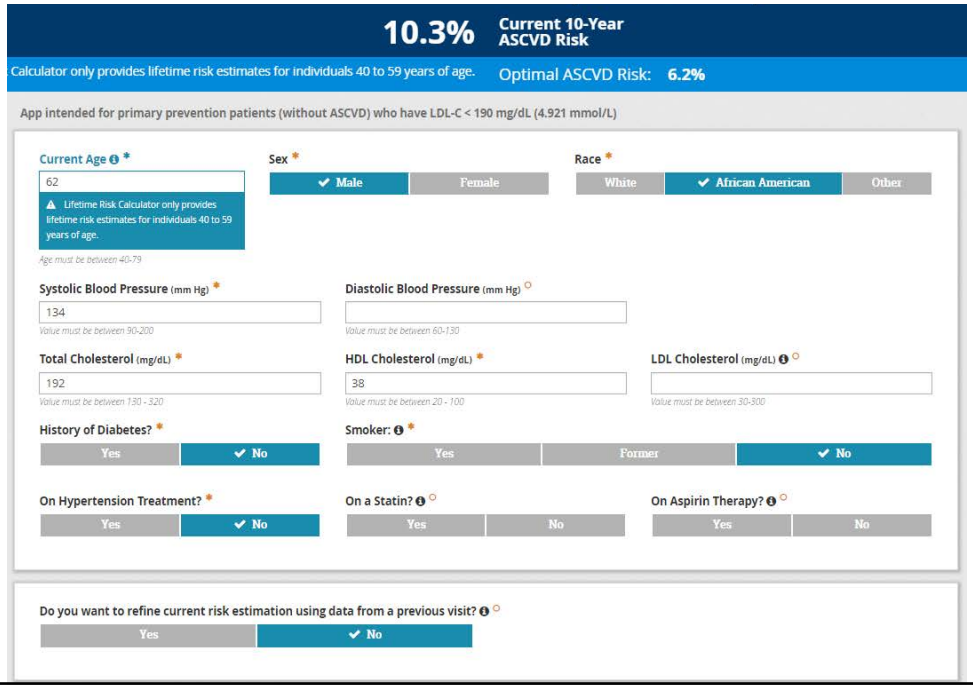
Whelton, P.K., et al. J Am Coll Cardiol. 10.1016/j.jacc.2017.11.006.

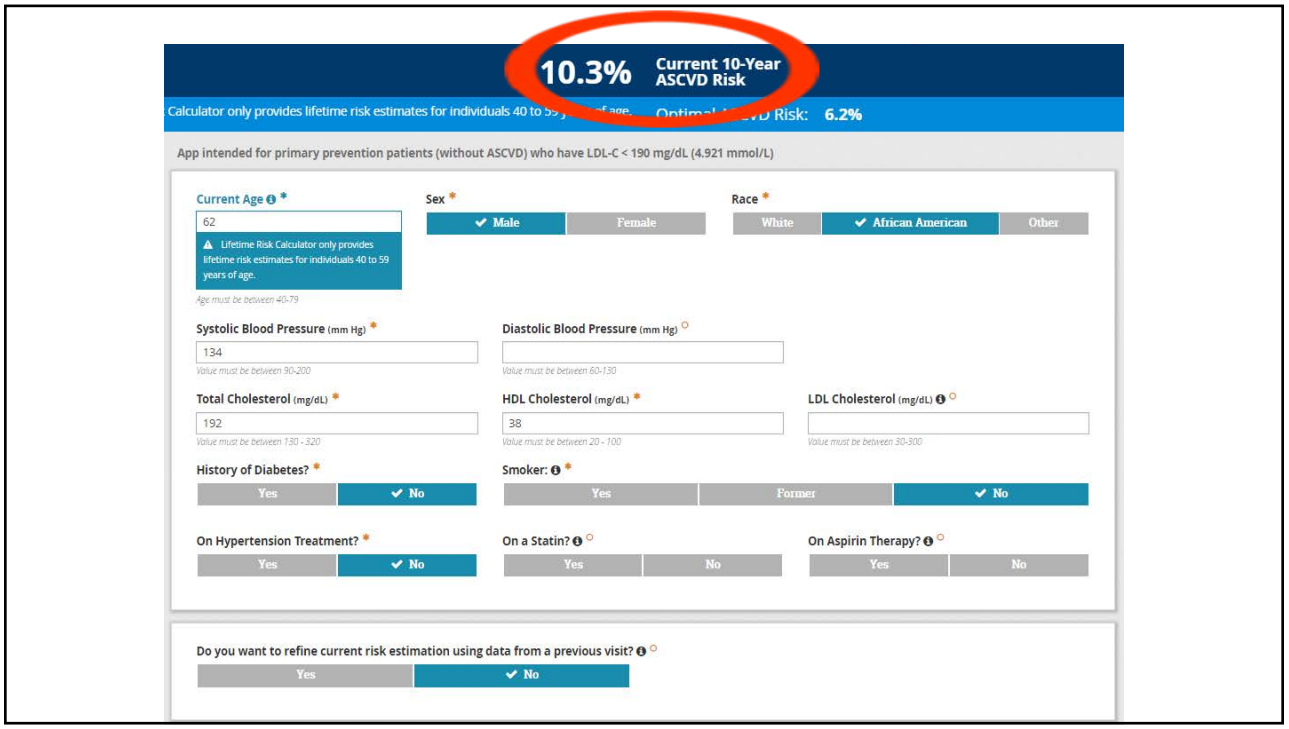
CENTRAL ILLUSTRATION: 2017 Updated Classification and Management of High Blood Pressure in Adults



Whelton, P.K., et al. J Am Coll Cardiol. 10.1016/j.jacc.2017.11.006.


App intended for primary prevention patients (without ASCVD) who have LDL-C < 190 mg/dL (4.921 mmol/L)
Current Age *
Age must be between 40-79
Sex *
Male
Female
Race *
White
African American
Other
Systolic Blood Pressure (mm Hg) *
Value must be between 90-200
Diastolic Blood Pressure (mm Hg)
Value must be between 60-130
Total Cholesterol (mg/dL) *
Value must be between 130 - 320
HDL Cholesterol (mg/dL) *
Value must be between 20 - 100
LDL Cholesterol (mg/dL)
Value must be between 30-300
History of Diabetes? *
Yes
No
Smoker: *
Yes
Former
No
On Hypertension Treatment? *
Yes
No
On a Statin?
Yes
No
On Aspirin Therapy?
Yes
No
Do you want to refine current risk estimation using data from a previous visit?
Yes
No


10.3%
Current 10-Year ASCVD Risk
Calculator only provides lifetime risk estimates for individuals 40 to 59 years of age.
Optimal ASCVD Risk: 6.2%
App intended for primary prevention patients (without ASCVD) who have LDL-C < 190 mg/dL (4.921 mmol/L)
Current Age *
62
Lifetime Risk Calculator only provides lifetime risk estimates for individuals 40 to 59 years of age.
Age must be between 40-79
Sex *
Male
Female
Race *
White
African American
Other
Systolic Blood Pressure (mm Hg) *
134
Value must be between 90-200
Diastolic Blood Pressure (mm Hg)
Value must be between 60-130
Total Cholesterol (mg/dL) *
192
Value must be between 130 - 320
HDL Cholesterol (mg/dL) *
38
Value must be between 20 - 100
LDL Cholesterol (mg/dL)
Value must be between 30-300
History of Diabetes? *
Yes
No
Smoker: *
Yes
Former
No
On Hypertension Treatment? *
Yes
No
On a Statin?
Yes
No
On Aspirin Therapy?
Yes
No
Do you want to refine current risk estimation using data from a previous visit?
Yes
No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Current Age
62
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Age must be between 40-79
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African American
Other
Systolic Blood Pressure (mm Hg)
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LDL Cholesterol (mg/dL)
Value must be between 30-300
History of Diabetes?
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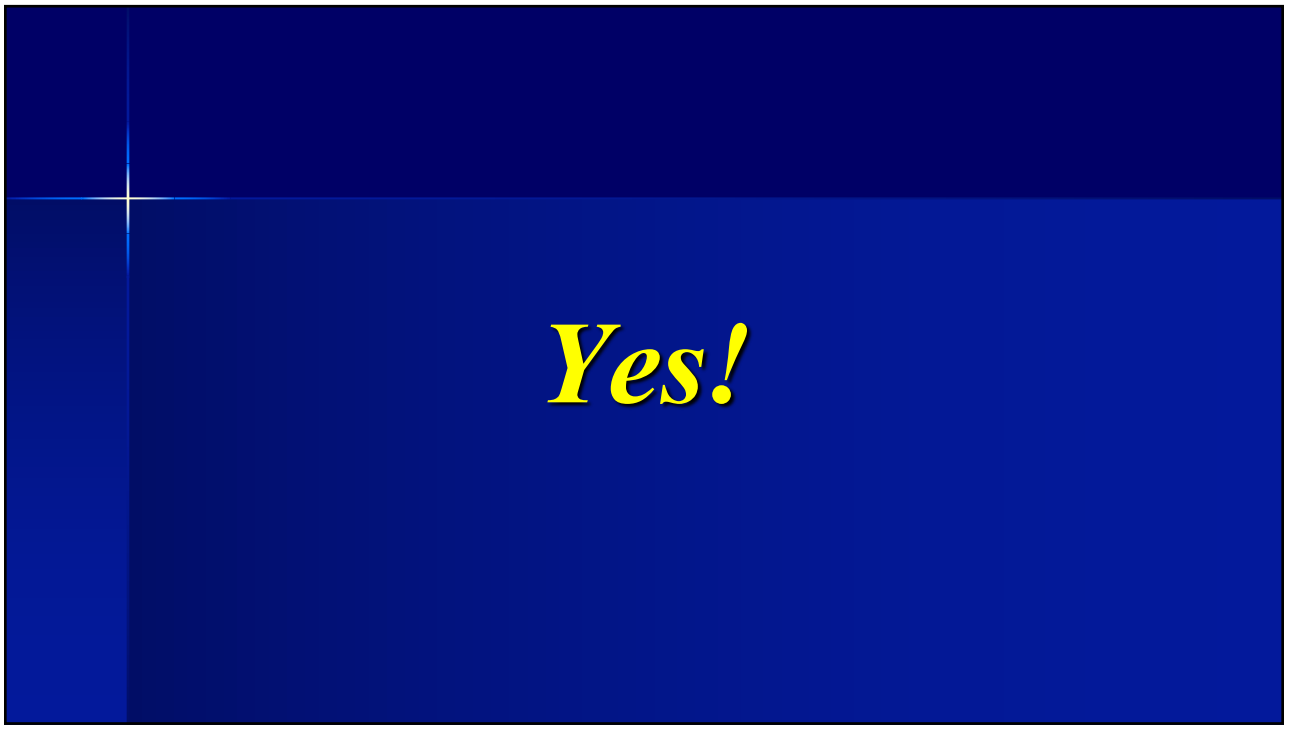
Smoker:
Yes
Former
No
On Hypertension Treatment?
Yes
No
On a Statin?
Yes
No
On Aspirin Therapy?
Yes
No
Do you want to refine current risk estimation using data from a previous visit?
Yes
No


Yes!

Summary

1. Patients with undiagnosed cardiovascular disease are commonly encountered in the primary care setting.
2. Web-based resources are available that can be very useful to health care providers in managing patients with cardiovascular disease.
3. Never be too proud to ask for help.

https://www.youtube.com/watch?v=NAlnRHicgWs

Praying mantis singles Bars.