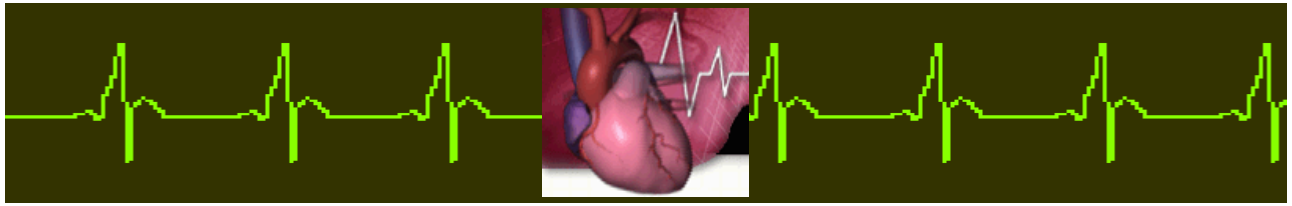
DEVELOPING CARDIOVASCULAR RISK ASSESSMENT MEASURES FOR PREGNANT & POSTPARTUM PATIENTS

Clinician Training

Principal Investigator: Afshan Hameed, MD, FACOG



PROBLEM

- Cardiovascular disease (CVD) among pregnant and postpartum patients is the leading cause of maternal mortality in the US
- There are large racial/ethnic disparities in CVD-associated maternal morbidity and mortality
- Normal pregnancy may mimic CVD symptoms and diagnosis may be missed
- Need to standardize evaluation and triage of pregnant patients with potential CVD signs and symptoms, use of a standardized clinical decision-making tool for patients receiving prenatal and postpartum care

CA-PAMR Findings
Preventability
2002-2006

24% of ALL CVD pregnancy-related deaths (and 31% of cardiomyopathy deaths) were determined to be **potentially preventable**

A CMQCC pregnancy-related mortality task force applied this algorithm to the 64 CVD deaths from 2002-2006 and determined that **56 out of 64 (88%)** cases would have identified as **screen-positive** or high risk for CVD

Hameed AB, Foster E, Main EK, Khandelwal A, Lawton ES. Cardiovascular Disease Assessment in Pregnant and Postpartum Women | California Maternal Quality Care Collaborative. Cardiovascular Disease in Pregnancy Toolkit. https://www.cmqcc.org/resource/cardiovascular-disease-assessment-pregnant-and-postpartum-women. Published November 2017. Accessed June 14, 2019.

Hameed A, Lawton E, McCain CL, et al. Pregnancy-Related Cardiovascular Deaths in California: Beyond Peripartum Cardiomyopathy. *American Journal of Obstetrics and Gynecology* 2015; DOI: 10.1016/j.ajog.2015.05.008

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CVD Toolkit Goals

Given that CVD is the leading cause of maternal mortality & morbidity in California, the Toolkit aims to:

- Encourage obstetric and other healthcare providers to retain a high index of suspicion for CVD, particularly among patients with risk factors who present with symptoms in late pregnancy or early postpartum period

- To serve as a resource for generalists who provide maternity care to patients, with special emphasis on
  - Prenatal visits
  - Postpartum encounters
  - Emergency room visits

Hameed, AB, Morton, CH and A Moore. Improving Health Care Response to Cardiovascular Disease in Pregnancy and Postpartum Developed under contract #11-10006 with the California Department of Public Health, Maternal, Child and Adolescent Health Division. Published by the California Department of Public Health, 2017.

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Solution

- Improve detection of CVD and CVD risk in pregnant and postpartum patients with the CVD Risk Assessment Toolkit Algorithm
- This CVD Risk Assessment Algorithm was developed by the California Maternal Quality Care Collaborative (CMQCC) and is supported by ACOG and inclusion in the CVD bundle by the Alliance for Innovation for Maternal Health
- We propose a system-wide implementation of this algorithm to monitor the quality of CVD Risk Assessment (universal Risk Assessment, follow-up risk assessment positive)

APPROACH

Integrate the CVD algorithm into the EMR

- Complete CVD Risk Assessment in EMR
- CVD Risk Assessment added to the problem list

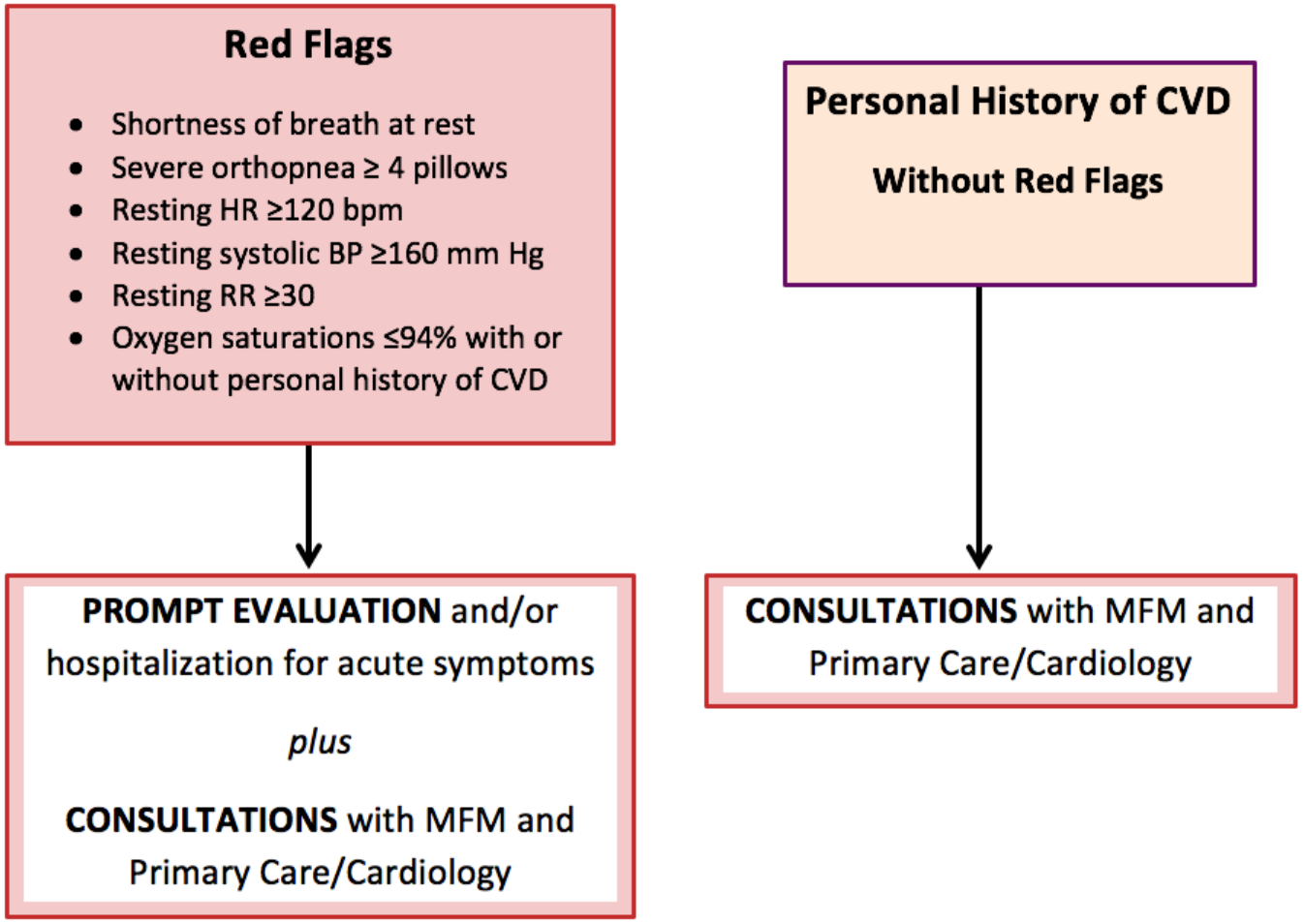
Clinicians receive immediate score **RISK ASSESSMENT POSITIVE**

- Follow up imaging
- Follow-up laboratory test
- Follow up consultations

UCI Outcome

Improved CVD Risk Assessment in pregnant and postpartum patients

CVD Assessment Algorithm
For Pregnant and Postpartum Patients



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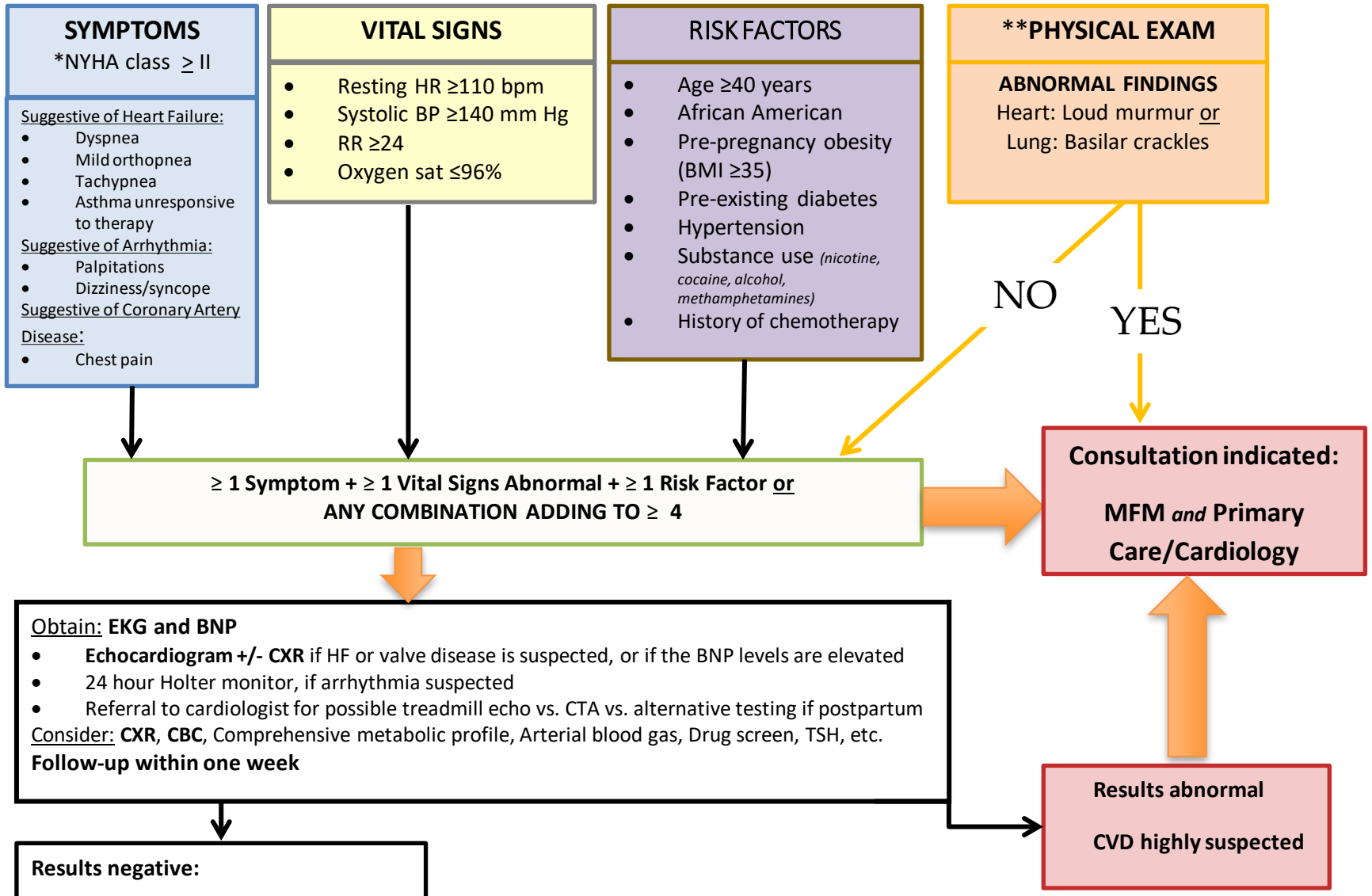
(No Red Flags and/or no personal history of CVD, and hemodynamically stable)



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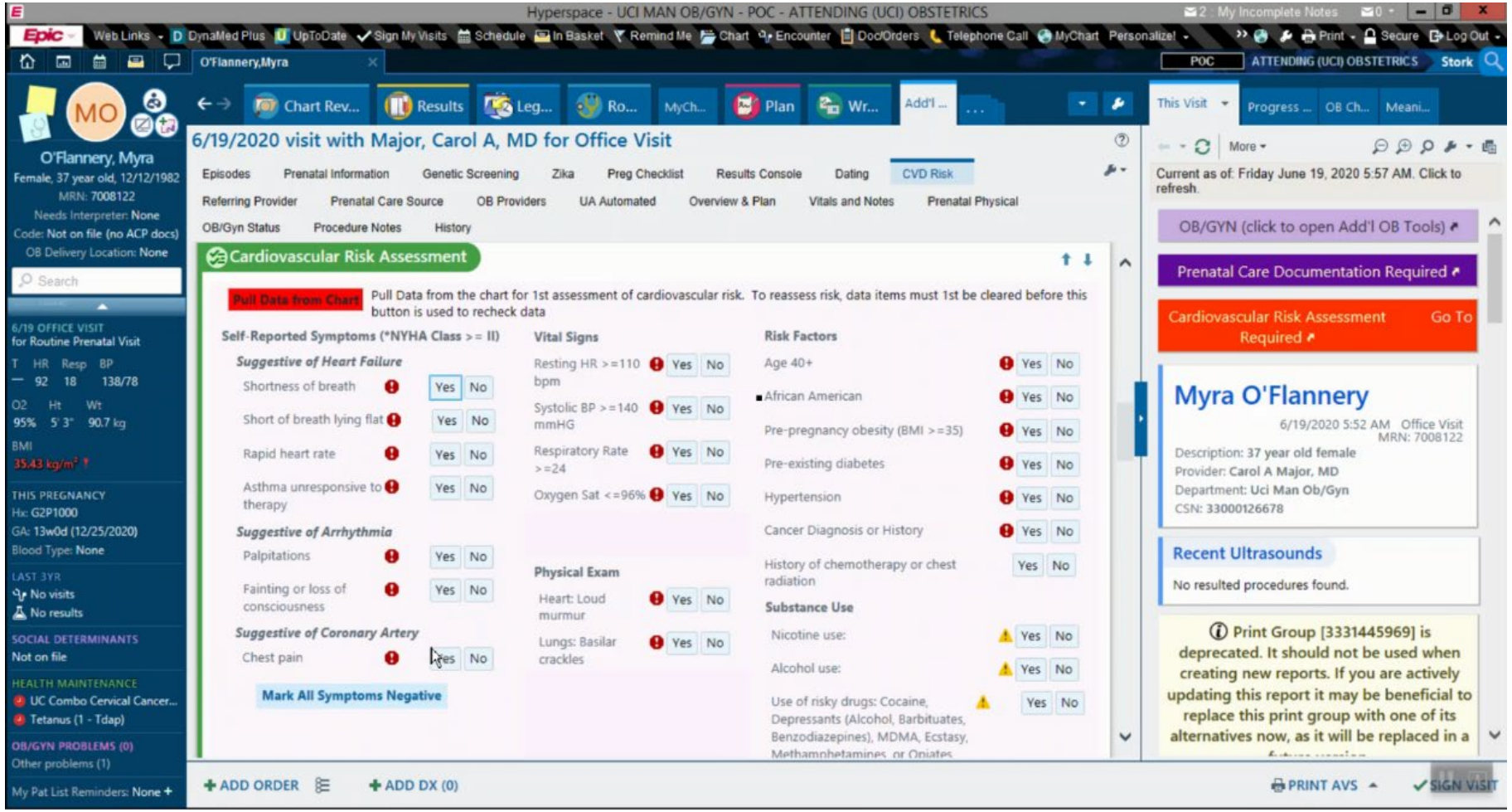
We ask that you complete a risk assessment for ALL PREGNANT/POSTPARTUM PATIENTS using the algorithm

- All new pregnant and postpartum patients at a prenatal or postpartum visit
- Return patients who have not had a Risk Assessment before
- Any patient new/previously had risk assessment who has new cardiac symptoms
- The algorithm should only be applied once per patient unless they have new cardiac symptoms
- If the patient risk assessment is positive and further testing was planned, please keep a record of follow-up, and review barriers to follow-up if any
- Exclude:
  - Any patients with a known history of cardiac disease
  - patients who have another reason to visit the clinic (not prenatal or postpartum care) and have a positive pregnancy test but plan to terminate the pregnancy or seek prenatal services elsewhere

Steps to Complete Risk Assessment

All clinicians will use the CVD Toolkit Algorithm integrated in the EMR to complete risk assessment in ALL pregnant and postpartum patients at



Aim

Improve the quality and efficiency of healthcare at UCI via using a Cardiovascular (CVD) Risk Assessment algorithm to complete a risk assessment on pregnant and postpartum patients for cardiovascular risk.

Sampling

- All patients who have a prenatal or postpartum visit at the hospital system
  - Including pregnant and postpartum minors
  - Hospital system: Labor and Delivery; outpatient care at the hospital or in affiliated clinics; private providers contracting with the hospital for delivery
- Exclusion criteria: patients with a diagnosed heart problem
  - patients with prior history of known cardiac disease
  - patients who have another reason of visit to the clinic [not prenatal or postpartum care] and have a positive pregnancy test but plan to terminate the pregnancy or seek prenatal services elsewhere

Key Clinical Pearls

- The first presentation of cardiovascular disease may be during pregnancy or early postpartum.
- The highest risk period for CVD worsening is between 24-28 weeks or postpartum.
- CVD symptoms or vital sign abnormalities should not be ignored in pregnant/postpartum patients.
- New onset or persistent asthma may be a sign of heart failure.
- Bilateral infiltrates on chest x-ray may be due to heart failure rather than pneumonia.

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Key Clinical Pearls (continued)

- Pregnancy or postpartum patients with significant risk factors should be counseled regarding future CVD risk.
- patients with known CVD should receive pre- & inter-conception counseling by an experienced perinatologist and cardiologist.
- Contraception choices should be tailored to the individual.
- Provider and patient education are essential.
- High index of suspicion, early diagnosis, appropriate referrals, and follow-up are the key elements to a successful outcome.

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Study Sites and Investigators

University of California, Irvine, Medical Center Health Systems

UCI Health 1,500 births a year, 3% black

Afshan Hameed, MD/Heike Thiel de Bocanegra, PhD/Brian Crosland, MD

University of California, San Diego, Medical Center Health Systems

UCSD Jacobs & Hillcrest 3,000 births a year, 5-6% black

Maryam Tarsa, MD

University of Tennessee, St Thomas Health Systems

St Thomas Health Systems 12,000 deliveries in 2018, 25% black

Connie Graves, MD

University of Missouri-Kansas, St Luke's Health Systems

St Luke's Health Systems 5,000 deliveries a year

Karen Florio, MD

Albert Einstein College of Medicine, Montefiore Medical Center Health Systems

Montefiore Health Systems 5,600 deliveries in 2018

Diana Wolfe, MD