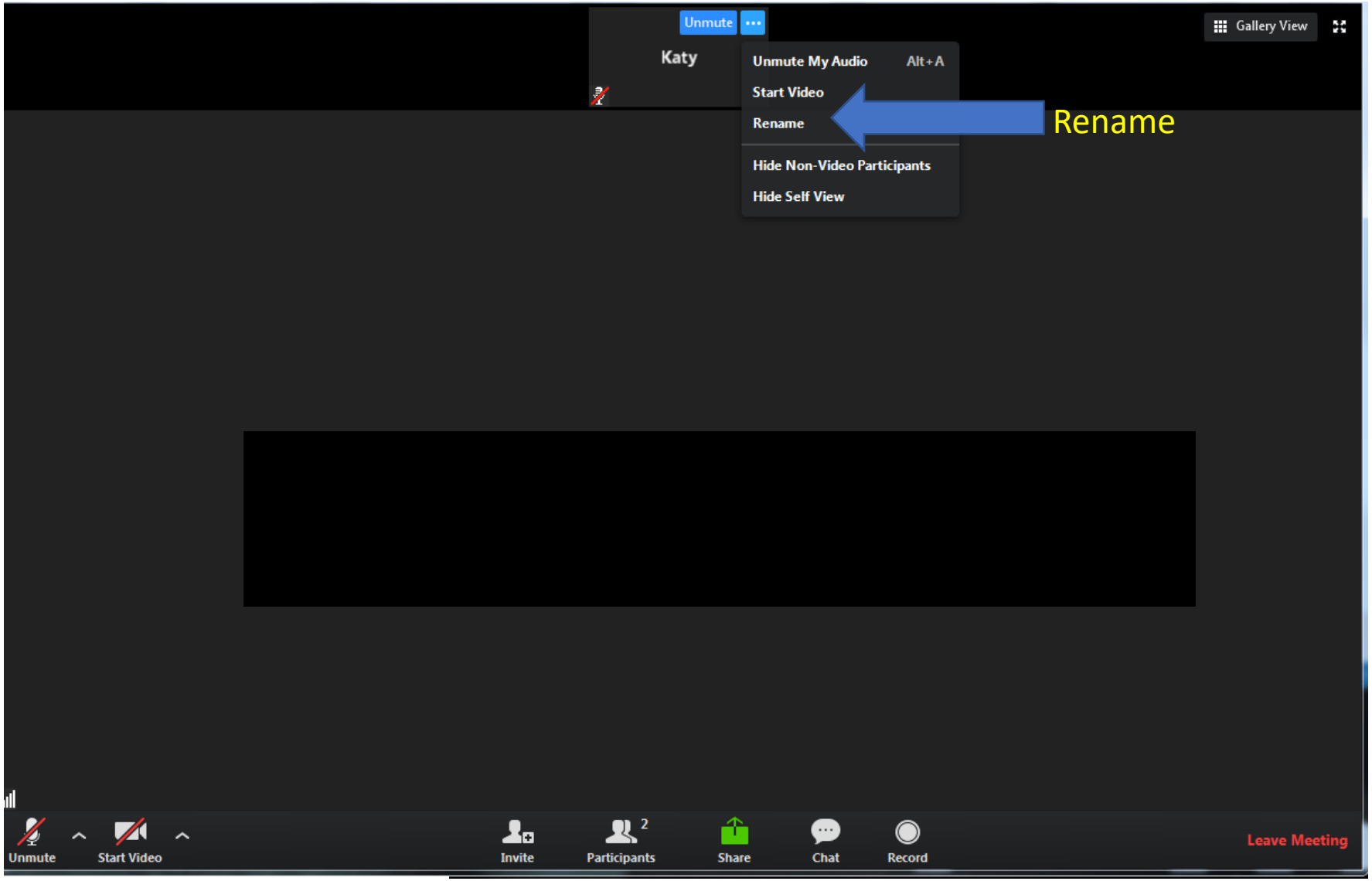
Diabetes and Hypertension ECHO* Clinic

November 20, 2020

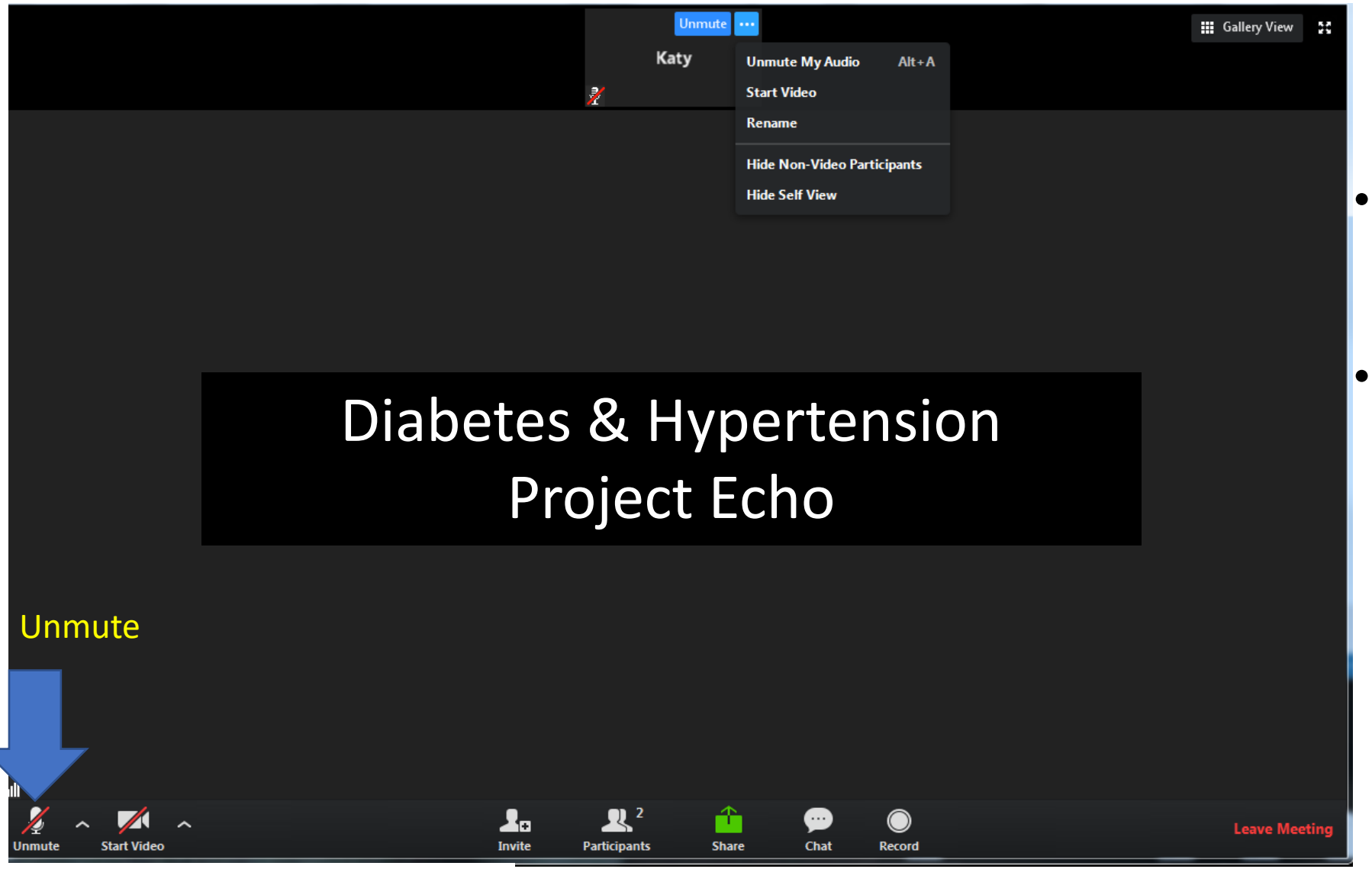
*ECHO: Extension of Community Healthcare Outcomes

Helpful Reminders



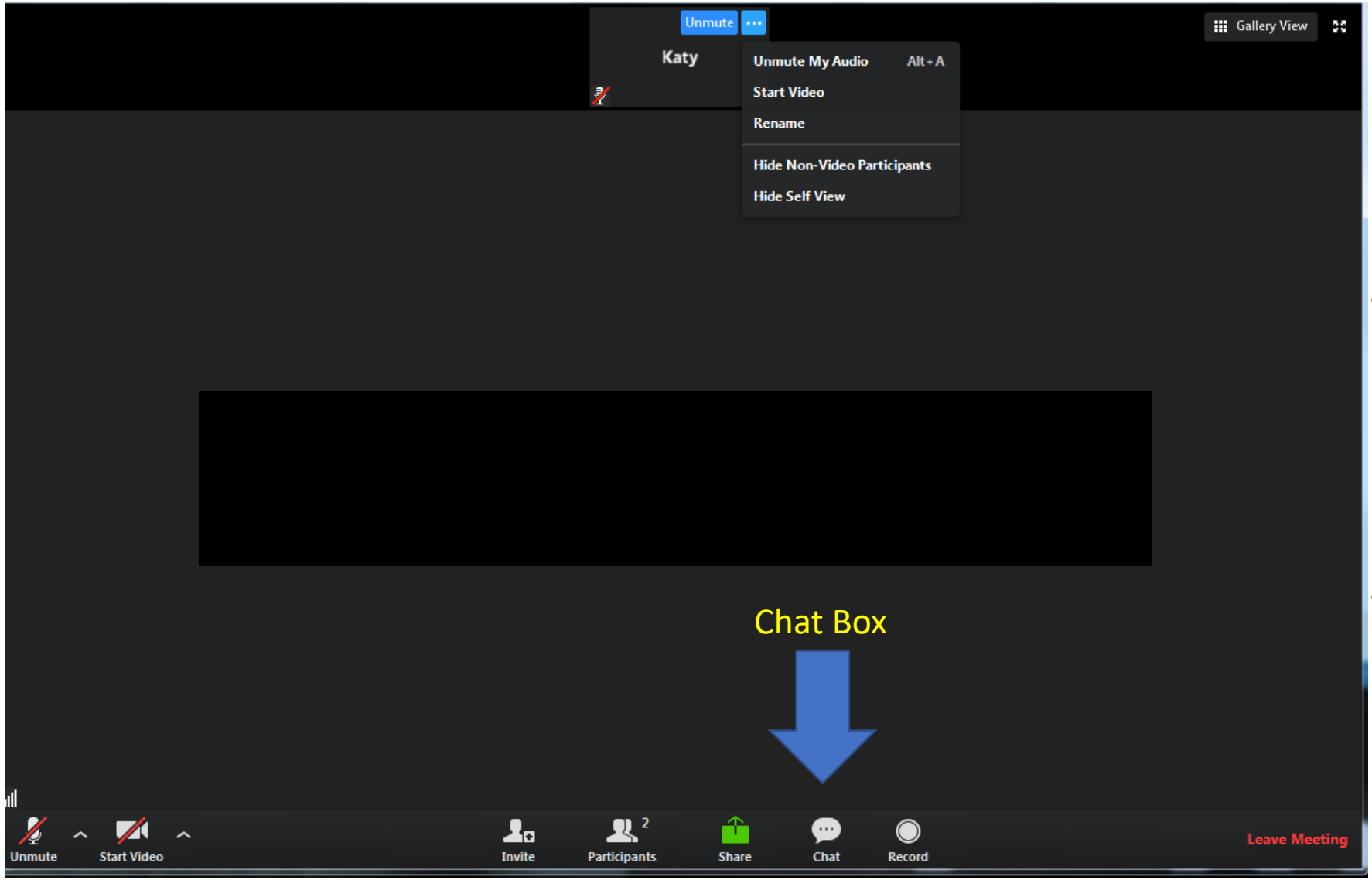
*Rename your Zoom screen with your name and organization

Helpful Reminders



- You are all on mute. Please unmute to talk
- If joining by telephone audio only, press *6 to mute and unmute

Helpful Reminders



- Please type your full name and organization in the chat box
- Use the chat function to speak with our team or ask questions

VCU Diabetes & Hypertension ECHO Clinics

- Biweekly, 1.5-hour tele-ECHO clinics
- Every tele-ECHO clinic includes a 30-minute didactic presentation followed by case discussions
- Didactic presentations are developed and delivered by interprofessional experts
- Website: www.vcuhealth.org/echodmhtn
- Please note: CME is not available for this session. (We are hoping to start offering CE at our next session on Dec. 4)

Hub and Participant Introductions

VCU Team	
Principal Investigator	Dave Dixon, PharmD
Administrative Medical Director ECHO Hub	Vimal Mishra, MD, MMCi
Clinical Experts	Niraj Kothari, MD Trang Le, MD
Project Coordinator/IT Support	Madeleine Wagner, BA
Program Manager	Bhakti Dave, MPH

- Use chat function for introduction
  - Name
  - Organization

Reminder: Mute and unmute screen to talk or press *6 for phone audio

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Housekeeping items

- Please feel free to eat your lunch or step away briefly if needed
- We are recording and will post each session to the website
- We encourage you to keep your camera on, but if you are uncomfortable being recorded, feel free to turn it off
- Please **do not share any protected health information** in your discussion
- Project ECHO operates on the “All Teach, All Learn” model
  - Feel free to ask questions in the chat or unmute to ask questions at designated times
  - We’re all here to learn from each other and value each person’s input and expertise!

What to Expect

I. Didactic Presentations
    I. Diabetes Diagnosis and Classification
    II. Essential HTN
II. Case presentations
    I. Case 1
        I. Case summary
        II. Clarifying questions
        III. Recommendations
    II. Case 2
        I. Case summary
        II. Clarifying questions
        III. Recommendations
III. Closing and questions

Let's get started!

Didactic Presentation

Disclosures

Trang Le, MD has no financial conflicts of interest to disclose.

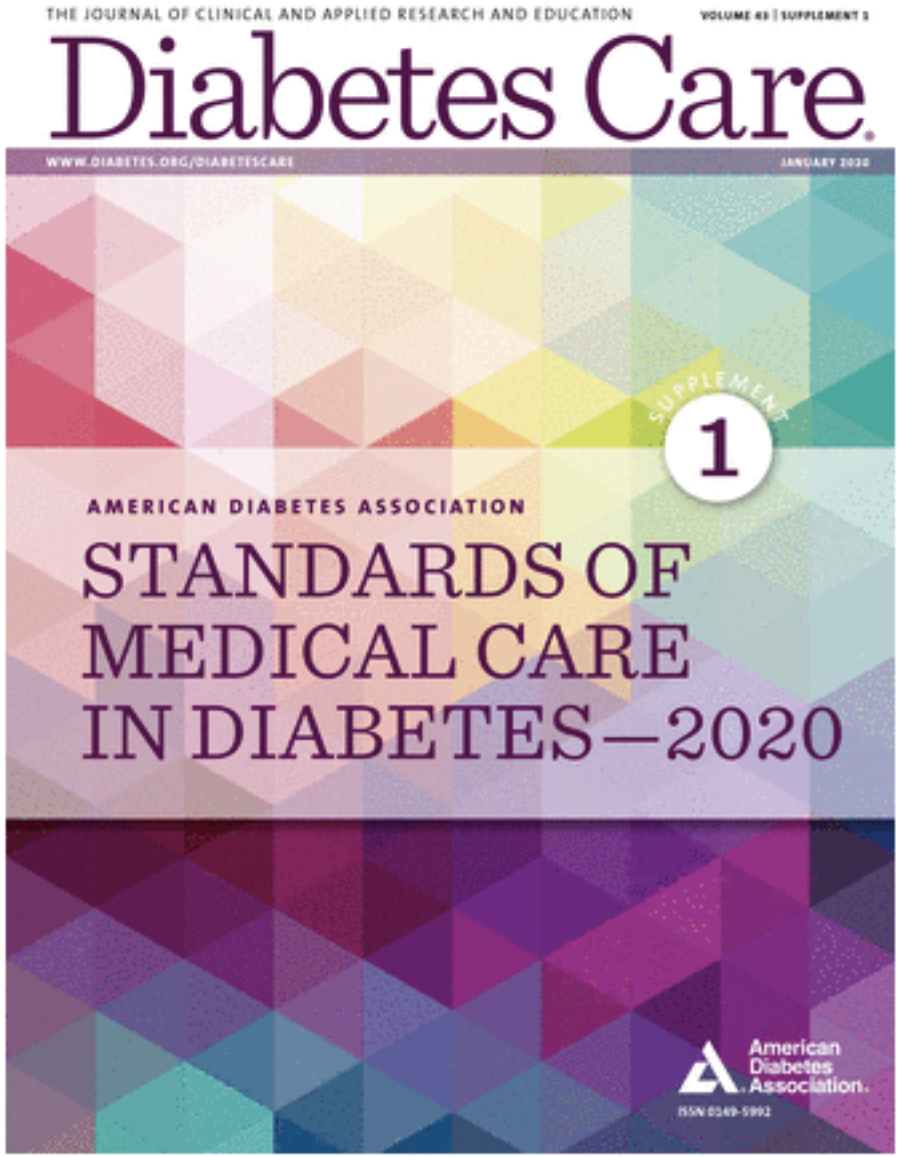
Niraj Kothari, MD has no financial conflicts of interest to disclose.

There is no commercial or in-kind support for this activity.

Learning Objectives

- Apply current best practices for comprehensive diabetes and hypertension care to patient case scenarios.
- Recognize best practices for implementing team-based diabetes and hypertension care.
- Demonstrate awareness of opportunities to improve care provided to patients with diabetes and hypertension.

1. Classification and Diagnosis of Diabetes



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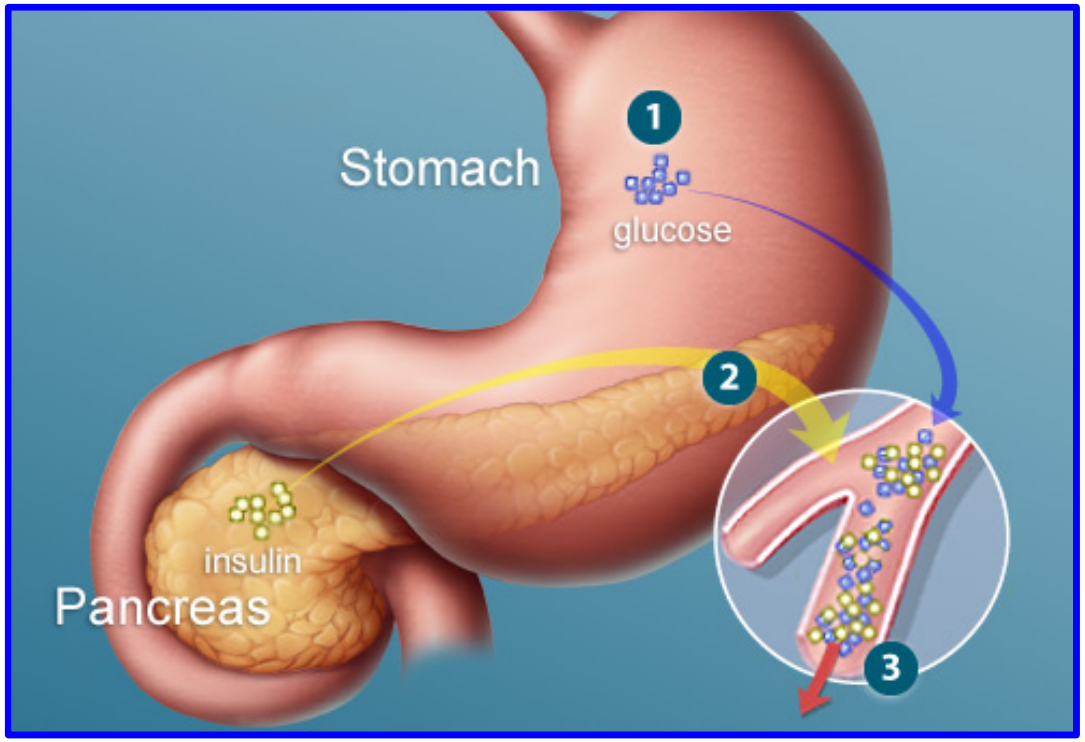
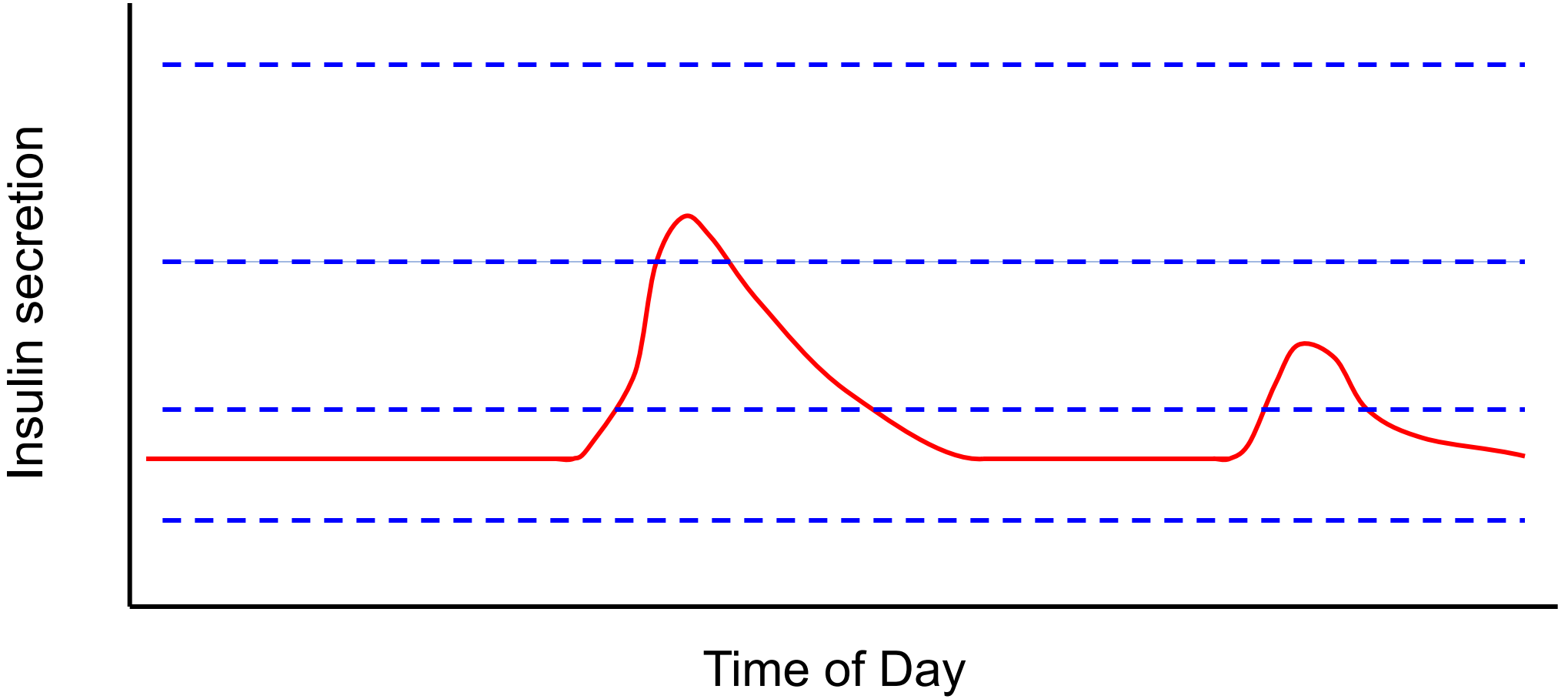
Classification of Diabetes

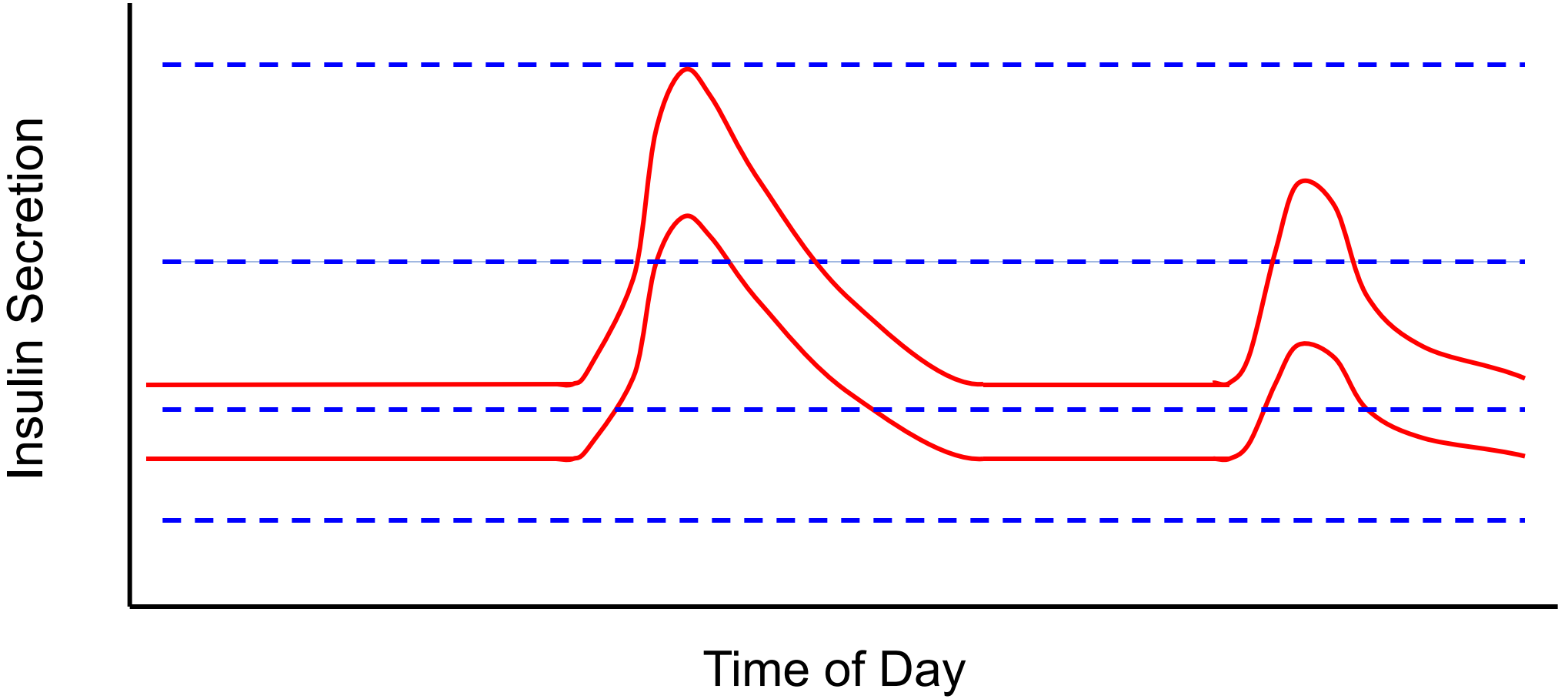
- Type 1 diabetes : autoimmune β cell destruction --> absolute insulin deficiency
- Type 2 diabetes: due to a progressive loss of adequate β cell insulin secretion, frequently on the background of insulin resistance



Impaired Insulin Secretion



Role of Insulin Resistance



Classification of DM

Specific types of diabetes due to other causes:

- Monogenic diabetes syndromes (neonatal diabetes and maturity-onset diabetes of the young)
- Diseases of the exocrine pancreas (cystic fibrosis and pancreatitis)
- Drug- or chemical-induced diabetes (such as with glucocorticoid use, in the treatment of HIV/AIDS, or after organ transplantation)
- Gestational diabetes mellitus: diagnosed 2nd or 3rd trimester of pregnancy *that was not clearly overt diabetes prior to gestation*

Comparison of T1DM and T2DM

	T1DM	T2DM
Overweight	Low	High
Ketosis prone	Common	Uncommon
Microvascular complications	Common	Common
Islets	Autoimmune destruction	β-cell defect
Genetic predisposition	HLA-DR3/DR4	*TCF7L2*

Presentation

- Children with type 1 diabetes: hallmark symptoms of polyuria/polydipsia, and approximately one-third present with diabetic ketoacidosis (DKA)
- The onset of type 1 diabetes may be more variable in adults
  - may not present with the classic symptoms
  - May have temporary remission from the need for insulin
- Patients with T2DM may present in DKA
- Although difficulties in distinguishing diabetes type may occur in all age- groups at onset, the diagnosis becomes more obvious over time

Classification of DM

- Classification is important for determining therapy
- Some individuals cannot be clearly classified as having type 1 or type 2 diabetes at the time of diagnosis
- The traditional paradigms of type 2 diabetes occurring only in adults and type 1 diabetes only in children are no longer accurate, as both diseases occur in both age-groups

Diagnostic Thresholds for Diabetes

FPG ≥126 mg/dL (7.0 mmol/L). Fasting is defined as no caloric intake for at least 8 h.*
OR
2-h PG ≥200 mg/dL (11.1 mmol/L) during OGTT. The test should be performed as described by the WHO, using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water.*
OR
A1C ≥6.5% (48 mmol/mol). The test should be performed in a laboratory using a method that is NGSP certified and standardized to the DCCT assay.*
OR
In a patient with classic symptoms of hyperglycemia or hyperglycemic crisis, a random plasma glucose ≥200 mg/dL (11.1 mmol/L).

DCCT, Diabetes Control and Complications Trial; FPG, fasting plasma glucose; OGTT, oral glucose tolerance test; WHO, World Health Organization; 2-h PG, 2-h plasma glucose. *In the absence of unequivocal hyperglycemia, diagnosis requires two abnormal test results from the same sample or in two separate test samples.

Testing for Diabetes

- Discordance between A1c and plasma glucose can be caused by hemoglobin variants (i.e. hemoglobinopathies)
  - Consider using an assay without interference, or plasma blood glucose criteria
- Consider plasma glucose criteria if concern for altered relationship between A1c and glycemia:
  - Sickle cell disease
  - Pregnancy
  - G6PD deficiency, HIV
  - Hemodialysis, erythropoetin treatment
  - Recent blood loss or transfusion

Other tests

- Autoantibodies?
  - MAYBE – if trying to distinguish between Type 1 and Type 2
  - GAD-65, ZNT8, insulin AA
- Insulin levels?
  - Not necessary – difficult to interpret (it's only half the picture)
- C-peptide?
  - Possibly – if trying to distinguish between Type 1 and Type 2
  - Medicare requirements

Summary

- A1c is easiest to diagnose diabetes but there may be situations in which other testing strategies may be preferred
- There is overlap between T1 and T2DM
- Correct diagnosis and classification of diabetes can inform treatment decisions

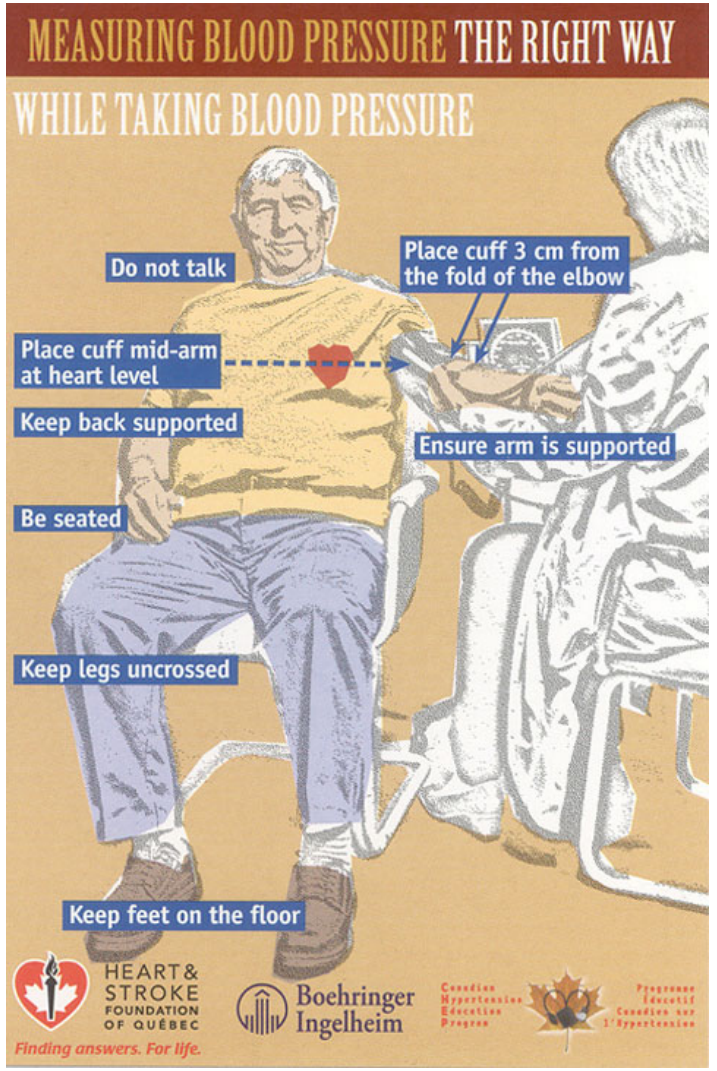
Didactic #2 - "Essential" HTN

- What is HTN?
  - BP 130/80 or higher
  - Approximately half of adults in the US are affected
  - 90% have essential HTN
- Can see loss of nocturnal BP "dipping"
  - Normal: ~15%
  - Loss of dipping associated with increased incidence of LVH
  - Elevated nighttime BP -> increased risk of death from cardiovascular causes

Didactic #2 - "Essential" HTN

How do we assess BP?

- Patient seated quietly with back support and feet on floor, 5 minutes of rest
- Cuff at heart level
- Proper cuff size
- Take two measurements at least 30 seconds apart, repeat until two values within 5mmHg of each other



Didactic #2 - "Essential" HTN

BP categories:

Category	Office reading (mmHg)	24-hour ambulatory(mmHg)	Self-recorded (mmHg)
Normal	SBP < 120 and DBP < 80		
Elevated BP	SBP 120-129 and DBP < 80		
HTN Stage 1	SBP 130-139 or DBP 80-89		
HTN Stage 2	SBP ≥ 140 or DBP ≥ 90	>130/80	135/85

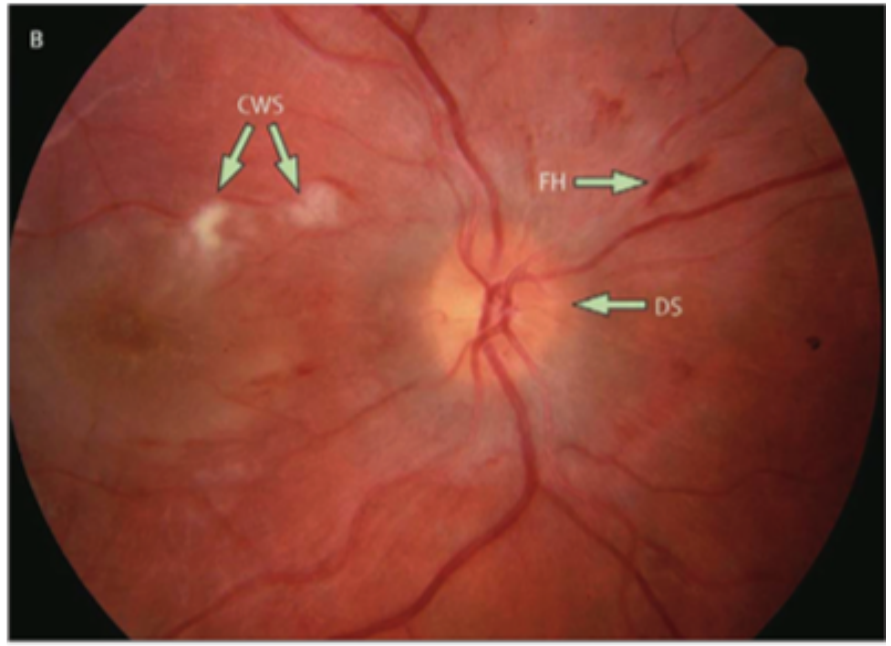
Didactic #2 - "Essential" HTN

Medications causing HTN:	
Black licorice (European)	Antiretrovirals
EtOH	VEGF antagonists i.e. bevacizumab
NSAIDs	Glucocorticoids
Sympathomimetics, decongestants, amphetamines	OCPs
SSRIs/SNRIs	Caffeine
ESAs i.e. erythropoietin	Cocaine

Didactic #2 - "Essential" HTN

Evaluation of new HTN

- FamHx of HTN/heart dz/CKD/stroke?
- Meds
- HA/palp/visual changes
- Lifestyle: smoking/EtOH/diet/stress
- OSA symptoms
- Exam:
    - BP in both arms
    - Eyes: AV nicking/papilledema/cotton wool spots
    - Neck: palpate thyroid
    - CV: volume, pulses, LV heave, S4
    - Abdomen: listen for bruits



Didactic #2 - "Essential" HTN

Evaluation of new HTN

- Labs: metabolic panel (K/Ca/renal function), fasting BG, lipids, UA, urine albumin-Cr ratio
- EKG
- Echo?
    - More sensitive for LVH
    - Known heart disease
    - LBBB
    - Suspected white coat HTN

"You can't list your iPhone as your primary-care physician."

Didactic #2 - "Essential" HTN

Initial therapy:

- Lifestyle changes good for everyone: low sodium/DASH, wt loss, exercise
- 120-129/<80 or stage 1 with 10 year CV risk < 10%: nonpharmacologic
- Nonpharm ± drugs: BP > 130/80 and CV disease, 10 year CV risk > 10%, BP > 140/90: goal <130/80
- Stage 2 HTN or BP average 20/10mmHg above target: two first-line drugs in different classes
- Goal BP generally <130/80 (includes stable ischemic heart dz, HFrEF/pEF, PAD, DM, CKD)
  - Stroke/TIA: less certain benefit if BP < 140/90
  - ICH: <130/80 after acute setting

Didactic #2 - "Essential" HTN

Secondary HTN:

- BP above goal despite 3 different classes of antihypertensive agent, including a diuretic, or at goal on four cl
- Management options
  - Add low-dose aldosterone antagonist
  - Chronotherapy
- Screen for secondary causes
- Rule out pseudohypertension

Didactic #2 - "Essential" HTN

Screening for secondary HTN:

- Not everyone needs to be screened
- Whom to screen:
  - Age of onset <30 without obesity or family hx HTN
  - Severe (>180/110mmHg) or resistant HTN
  - Abruptly worsened BP in previously controlled pt
  - Worrisome clinical features

"Your blood pressure is up. Quit taking campaign promises with a grain of salt."

Didactic #2 - "Essential" HTN

Etiologies of secondary HTN:

- Renal dysfunction (acute and chronic)
- Renovascular HTN
    - >90% atherosclerosis
    - Fibromuscular dysplasia (especially young women)
    - Recurrent flash pulmonary edema, or marked Cr rise with RAAS blockade
    - Asymmetric kidney size (more than 1.5cm difference)
- Hyperaldosteronism (not all have hypokalemia)
- Pheochromocytoma
    - Headache/flushing/sweating; paroxysmal BP elevation
- Thyroid dysfunction
- Medications (as referenced previously)

Any questions?

Case Presentation #1: Claire Bradman, NP

- 12:35-12:55 (20 min)
  - 5 min: Presentation
  - 2 min: Clarifying questions- Spokes
  - 2 min: Clarifying questions – Hub
  - 2 min: Recommendations – Spokes
  - 2 min: Recommendations – Hub
  - 5 min: Summary - Hub

Reminder: Mute and unmute to talk
Press *6 for phone audio
Use chat function for questions

Case Presentation #1: Claire Bradman, NP

Case History

Attention: Please DO NOT provide any patient-specific information or include any protected health information!

Demographic Information (e.g. age, sex, race, education level, employment, social support, etc.)

36 year old male initially seen in clinic on 6/19/2020 referred by Neurosurgery for optimization of diabetes management in preparation for surgery. Surgery was canceled 2 weeks prior due to BG>400.
He is on disability due to seizures.
Diabetes was managed by his PCP.

Past medical history (e.g. medical diagnosis, lab results, current medications, barriers to patient care, etc.)

Diagnosed with hypothalamic hamartoma, which requires ablation. Dx with type 2 diabetes over 3 years ago.
A1c in March was 9.5%.
Medications include Levemir 20 units daily, which he had only been taking consistently since 2 weeks prior. Was taking Novolog based on a correction scale.

What interventions have you tried up to this point?
Additional case history (e.g. treatments, medications, referrals, etc.)

Stopped Levemir and began Lantus 30 units daily. Instructed him to take Novolog 5 units with meals and added on a correction scale.
Instructed him to check glucose qid.

What is your main concern or challenge (e.g. diagnosis, management, etc.) ?

Main challenge was having the patient understand that insulin has to be taken every day. Also, challenge is having PCP's understand that Levemir is only a 12 hour insulin, so 12 hours after it is taken, the patient no longer has insulin coverage.

Other relevant information:

FBS day of surgery was 194, and A1c was 8.6%

Reminder: Mute and unmute to talk
Press *6 for phone audio
Use chat function for questions

Case Presentation #2: Gabriella Negron, MD

- 12:55pm-1:25pm (20 min)
  - 5 min: Presentation
  - 2 min: Clarifying questions- Spokes (participants)
  - 2 min: Clarifying questions – Hub
  - 2 min: Recommendations – Spokes (participants)
  - 2 min: Recommendations – Hub
  - 5 min: Summary - Hub

Reminder: Mute and Unmute to talk
*6 for phone audio
Use chat function for questions

Case Presentation #2: Gabriella Negron, MD

Case History

Attention: Please DO NOT provide any patient-specific information or include any protected health information!

Demographic Information (e.g. age, sex, race, education level, employment, social support, etc.)

71-yo old, female, Caribbean

Past medical history (e.g. medical diagnosis, lab results, current medications, barriers to patient care, etc.)

Past medical history of hypertension, type 2 diabetes mellitus, CAD, and ESRD on peritoneal dialysis
T2DM complicated with nephropathy and retinopathy

Medications:
-amlodipine 10 mg daily
-aspirin 81 mg daily
-cholecalciferol (Vitamin D3 5000 intl units, daily)
-cilostazol 100 mg, PO, twice daily
-metoprolol tartrate 50 mg, PO, twice daily
-omeprazole 20 mg oral daily
-rosuvastatin 40 mg oral daily

Diabetes regimen:
- Lantus 25 units nightly
- Aspart 8-12 units with breakfast only
- Aspart correction scale:
  140-180 -- 4 units
  181-240 -- 6 units
  241-300 -- 8 units
  301- 350 -- 10 units
  >350 -- 12 units

HbgA1c: 9.1% (10/2020)

[illegible] 9.1% (10/2020)

projectredcap.org REDCap

What interventions have you tried up to this point?
Additional case history (e.g. treatments, medications, referrals, etc.)

Limitations: ESRD, patient wishes least number of injections possible, variable diet
Referral to CT surgery for CABG due to h/o CAD, in preparation for renal transplant

What is your main concern or challenge (e.g. diagnosis, management, etc.) ?

Appropriate insulin dosing
Intensive glycemic control in anticipation of CABG

Reminder: Mute and Unmute to talk
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Case Studies

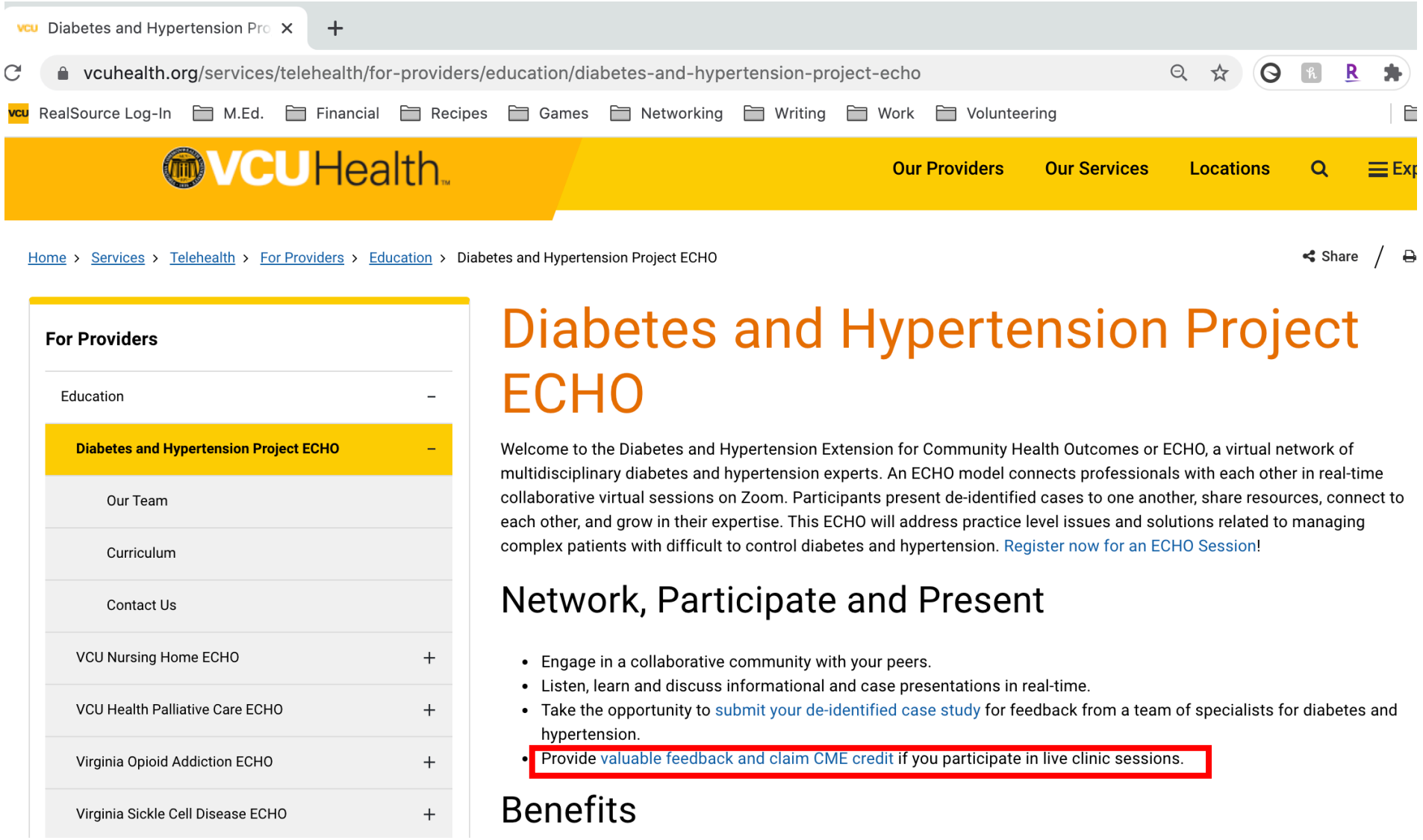
- Anyone can submit cases: www.vcuhealth.org/echodmhtn
- Receive feedback from participants and content experts
- Earn **$150** for submitting and presenting

Provide Feedback

www.vcuhealth.org/echodmhtn

- Feedback
  - Overall feedback related to session content and flow?
  - Ideas for guest speakers?
  - *CME for next session hopefully*

Access Your Evaluation



Access Your Evaluation

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Resize font:

Diabetes and Hypertension CME and Eval

Please complete the survey below.

Thank you!

Name
* must provide value

Email Address
* must provide value

I attest that I have successfully attended the Diabetes and Hypertension ECHO Clinic.
* must provide value
- Yes
- No

reset

Do you intend to make changes based on this presentation?
* must provide value
- Yes
- No

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VCU

VCU Diabetes & Hypertension ECHO Clinics

1st and 3rd Fridays — 12-1:30 p.m. (2020)
2nd and 4th Thursdays — 12-1:30 p.m. (2021)

Mark Your Calendar — Upcoming Sessions

Dec. 4: Initial treatment options for type 2 diabetes

Dec. 18: Hypertension treatment overview

****Then moving to 2nd and 4th THURSDAYS

Jan. 1: Happy New Year! No session

Jan. 15: Teaching patients diabetes self-management skills

Please refer and register at www.vcuhealth.org/echodmhtn

THANK YOU!

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