

# **SUPPLEMENTAL MATERIAL**

## Data S1.

### SURVEY

#### Inclusion criteria:

A) Are you licensed MD, DO, PA, RN or APRN in the United States?

0. No 1. Yes

B) If so, do you provide direct patient care in the United States?

0. No 1. Yes

#### PART I: Current practices

1. How often did you discuss genetic testing for inherited cardiac conditions with patients in 2019?
  - Never
  - Once in the year
  - Once a month
  - Once a week
  - More than once a week
2. How often did you refer said patients to genetics?
  - Never
  - Once in the year
  - Once a month
  - Once a week
  - More than once a week
3. How often are genetic tests performed for your patients?
  - Never
  - Once in the year
  - Once a month
  - Once a week
  - More than once a week
4. Do you consider yourself to be a genetics professional (medical geneticist, or a physician with genetic expertise) in the field of Cardiology?
  - Yes
  - No
5. I have access to a genetics professional (genetic counselor, medical geneticist, or a physician with genetic expertise) to whom I can **refer** patients specifically for issues relating to inherited cardiac conditions

- Strongly disagree
- Disagree
- Neither agree nor agree
- Agree
- Strongly agree

6. I have access to a genetics professional (genetic counselor, medical geneticist, or a physician with genetics expertise) with whom I can **consult** about clinical care specifically for issues relating to inherited cardiac conditions

- Strongly disagree
- Disagree
- Neither agree nor agree
- Agree
- Strongly agree
- I consider myself a genetics professional

7. Please indicate what your desired course of action would be for the following situations

	I would like to refer them to a genetics professional	I would like to address it myself	I would do something else
Discussing genetic testing options with a patient			
Discussing the implications of positive results with a patient			
Discussing the implications of uncertain results with a patient			
Discussing implications to family members (referring family members).			

8. Are you experiencing any barriers/frustrations in implementing genetic testing into your practice?

- Yes
- No

if NO, skip logic to #11

9. Below are some of the common barriers to implementing genetic testing into practice. Please indicate whether you think each of the following is a barrier to YOU integrating genetic testing into your practice.

	Yes, this is a barrier	No, this is not a barrier
Genetic testing takes additional time		
Genetic testing is too costly or not reimbursable.		
I require more education		
Genetic testing could increase patient anxiety about their risks for inherited cardiac conditions		
Genetic testing could increase insurance discrimination		

10. Is there a barrier we haven't listed here? if so, please write in: \_\_\_\_\_

11. Please indicate whether you think each of the following would motivate you to incorporate more genetic testing into your practice.

	Yes, this would motivate me	No, this does not motivate me
Evidence-based professional society guidelines		
Cost/benefit data		
Patients requesting testing		
Evidence from the medical literature that your patient population is at increased risk for carrying pathogenic variants in genes that increase their risk for heart disease/ Sudden cardiac death (SCD)		
If the electronic health record provided an inherited cardiac condition risk assessment to flag appropriate patients		
Being involved in the care of a patient with a pathogenic variant in a gene that increases their risk for heart disease/Sudden cardiac death (SCD)		
Being personally affected by an inherited cardiac condition or having a close family member or friend with an inherited cardiac condition		
Is there anything else that would motivate you that has not been listed above? If so, please let us know here.: _____		

## **PART II: Confidence in genetics knowledge**

12. How much do you agree with the following statements?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I feel confident in my ability to understand information about genetics or confident in my understanding of genetics					
I feel confident I can find the literature sources to inform me about inherited cardiac conditions.					
I feel confident that I can identify clinical situations in which genetic testing for inherited cardiac conditions is indicated.					
I feel confident that I can identify the best person to initiate genetic testing.					
I feel confident that I can inform patients of the risk and benefits of genetic testing.					
I feel confident I can provide counseling to patients making decisions about whether or not to have genetic testing.					
I feel confident in my knowledge of the types of genetic testing available.					
I feel confident that I can identify the appropriate genetic test to order.					
I feel confident that I can interpret the genetic test results returned from a clinical lab.					
I feel confident I can find the literature sources to inform me about and understand a variant of uncertain significance (VUS).					

I feel confident that I can make treatment recommendations based on genetic test results.					
I feel confident I can provide psychosocial support to patients coping with a genetic test result.					
I feel confident in my knowledge about when to refer to a genetic counselor.					

**PART III: Cardiogenetic Knowledge**

13. In patients with arrhythmogenic right ventricular cardiomyopathy and a history of sudden cardiac arrest (SCA), an implantable cardioverter-defibrillator (ICD) is recommended if meaningful survival greater than 1 year is expected.
- True
  - False
14. A cardiomyopathy panel is the genetic test recommended for first degree relatives of patients with hypertrophic cardiomyopathy (HCM) due to a known causative mutation.
- True
  - False
15. Evaluation for genetic arrhythmia syndromes is recommended in young patients (<40 years of age) with unexplained SCA who do not have ischemic or other structural heart disease.
- True
  - False
16. Genetic testing for inherited cardiac conditions is recommended to be initiated in the most clearly affected family member.
- True
  - False
17. A patient with non-ischemic cardiomyopathy and a heterozygous Lamin A/C mutation is being evaluated for a primary prevention implantable cardioverter-defibrillator (ICD). According to the 2017 AHA/ACC/HRS Guidelines for management of patients with ventricular arrhythmias and prevention of sudden cardiac death, which of the following

should not be considered during evaluation for a primary prevention ICD in patients with a Lamin A/C variant?

- Male sex
- Whether the Lamin A/C variant is a missense or truncation mutation.
- Whether the patient is over 40 years of age**
- Whether the patient has a left ventricular ejection fraction less than 45%

#### Part IV: CME

\*\* We recognize that how clinicians engage in education has been impacted by the COVID-19 pandemic. For the following questions, please consider your education preferences assuming all of these options are safely available to you.

18. What would be your preferred delivery method for online learning? Please rank your top 4 choices in increasing order (meaning 4 is your most preferred delivery method).

- Article
- A comprehensive website with clinical resources and to support clinical care.
- Educational modules
- Discussion Board (online group discussions)
- PowerPoint slides
- Podcast
- Webinar
- recorded lecture

Is there a CME delivery method that was not listed above that you like? if so, please let us know here.: \_\_\_\_\_

19. What is your preferred format for content for an online CME?

- I prefer active learning content such as case-based learning, patient simulations and online group discussions.
- I prefer passive learning content such as recorded lectures and written materials.

20. When participating in online CME, what device do you mostly use?

- Mobile device (phone or tablet)
- Computer/laptop
- Both

21. Please indicate whether you would like to see the following topics covered in a CME program about genetic testing relevant to cardiology

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Risk assessment for inherited cardiac conditions					
Genetic test ordering					
Genetic test report interpretation					
Management of inherited cardiac conditions based on guidelines					
Communication skills for approaching/counseling patients about inherited cardiac conditions					
Psychosocial issues related to genetic testing and genetic conditions					
Ethical and legal issues related to genetic testing					
Insurance coverage and payment issues related to genetic testing					
Communicating about direct-to-consumer genetic testing					

22. Would you be interested in participating in online group discussions (e.g. listserv, webinars, etc) about genetics and genomics relevant to cardiology?

- Yes
- No
- Unsure

IF YES or Unsure:

Would you like to provide your email where we can contact you about the online group?

\* Note: This response is not linked to you other answers.

- Yes: \_\_\_\_\_
- No

### **PART V: Demographics**

23. What best describes your training or educational background (**please select all that apply**):



- Resident
  - Please write the specialty of your residency: \_\_\_\_\_
- Fellow
  - Please write the specialty of your fellowship: \_\_\_\_\_
- Internist
- General Pediatrician
- Pediatric Cardiologist
- Cardiologist: Electrophysiology
- Cardiologist: Cardiomyopathy and/or heart transplant
- Cardiologist: Invasive
- Cardiologist: Non-invasive
- PA
- APN
- Registered Nurse
- Other practitioner, not listed above: \_\_\_\_\_

24. How long have you been practicing medicine?

- Still in residency
- < 5 years
- 5-10 years
- 10-15 years
- >15 years

25. Which of the following best describes your primary work setting?

- Private Group Practice
- Private Solo Practice
- University Medical Center
- Private Hospital/Medical Facility
- Public Hospital/ Medical Facility
- Diagnostic Laboratory/Testing Laboratory
- Other: \_\_\_\_\_

26. In which geographic region is your primary work setting?

- Urban
- Suburbs
- Rural

27. What is your current gender identity?

- Male
- Female
- Trans male/Trans man
- Trans female/Trans woman
- Genderqueer/Gender non-conforming
- Agender
- Prefer not to disclose gender identity
- Prefer to self-describe gender identity: \_\_\_\_\_

28. Are you Hispanic/Latino/a?

- Yes
- No
- Prefer not to disclose

29. With which racial and ethnic group(s) do you identify? (please select all that apply)?

- American Indian/Alaskan Native
- Asian (e.g., East/South/Southeast)
- Middle Eastern/North African
- Black/African American
- Native Hawaiian/Pacific Islander
- White
- Mixed race
  - Which ones: \_\_\_\_\_
- Other: \_\_\_\_\_