

APP RUN AORTIC CLINIC

Rita Weise MSN, ACNPC-AG

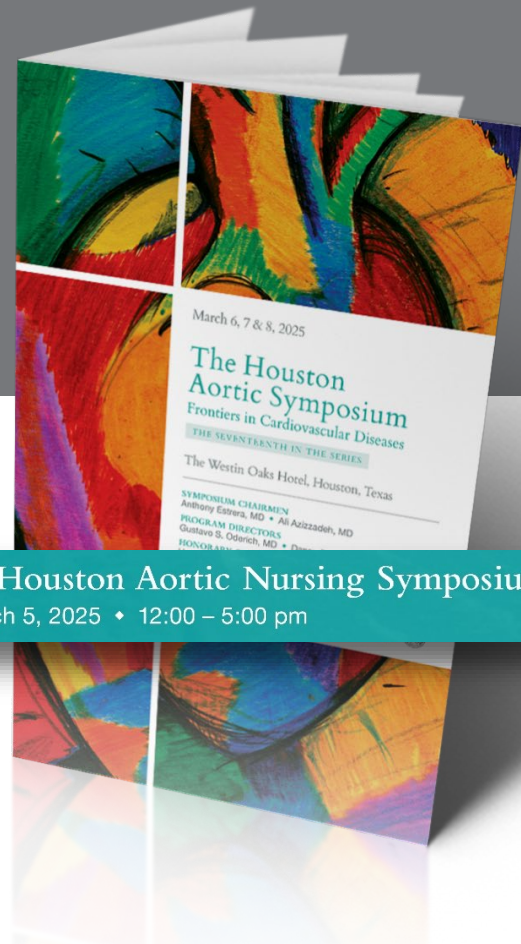
Nurse Practitioner Supervisor
Matranga Aortic Center
Marfan and Associated Conditions Clinic

Hoag Hospital
Jeffrey M. Carlton Heart & Vascular Institute
Newport Beach, CA

Department of
**Cardiothoracic &
Vascular Surgery**


 **UTHealth Houston**
McGovern Medical School

hoag



7th Annual Houston Aortic Nursing Symposium

Wednesday, March 5, 2025 • 12:00 – 5:00 pm

hoag Jeffrey M. Carlton
Heart & Vascular Institute

Comprehensive **Aortic** Center

- Why
- Multidisciplinary team
- Why have APP run clinic
- Imaging protocols
- Aortic Hotline & Code Aorta
- Referral, new patient and follow up
- Genetic testing
- Research and support

Why?

- Diagnose and treat all types of aortic pathologies
- One stop shop in aortic care
- Increase referring physician satisfaction
- Increase patient and family satisfaction
- Optimize patient outcomes
 - Survival
 - Reduced complications
 - Active Surveillance

Multidisciplinary Team Approach

- Cardiothoracic Surgeons
- Vascular Surgeons
- APP/Nurse Practitioner/PA
- Radiologists
- Emergency Room Physicians
- Anesthesia
- CVOR/CVICU
- Cardiologist
- Cardiac Rehab
- Genetic MD
- Genetics Counselor

4. Multidisciplinary Aortic Teams

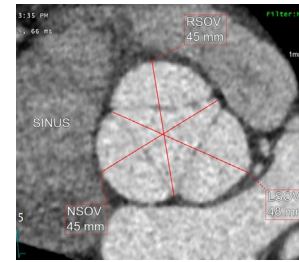
Recommendations for Multidisciplinary Aortic Teams		
COR	LOE	Recommendations
1	C-EO	1. For patients with acute aortic disease that requires urgent repair, a multidisciplinary team should determine the most suitable intervention.
2a	C-LD	2. For patients who are asymptomatic with extensive aortic disease, or who may benefit from complex open and endovascular aortic repairs, or with multiple comorbidities for whom intervention is considered, referral to a high-volume center (performing at least 30-40 aortic procedures annually) with experienced surgeons in a Multidisciplinary Aortic Team is reasonable to optimize treatment outcomes. ¹⁻⁶

Why have an APP run clinic?

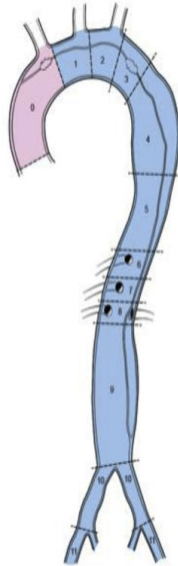
- Patient Management Expertise
 - Review imaging, monitor growth, follow up = free up surgeon for complex cases
- Patient Education and Support
 - Detailed explanations of conditions and treatments
- Efficient
 - Manage routine visits, H &P, imaging
- Cost Effective Care
 - Handling routine management, optimize healthcare costs
- Collaboration with Surgeons
 - Close working relationship ensures seamless care, provide crucial info in coordinating

Imaging

- Dedicated **Aortic** Radiologist
 - 3D lab post process outside study
- Aortic imaging protocols
 - Report maximum vessel diameter
 - Reproducible anatomic landmarks perpendicular to blood flow
 - TEVAR protocol (stent graft delay)
 - TAVR protocol
 - AI detection for outpatient referral
 - Code Aorta (CTA c/a/p)
- Block time in outpatient CT



- Aortic Root:
 - Aortic Annulus = Area, Distance, Perimeter
 - Sinuses of Valsalva (measure cusp to commissure)
- Sinotubular Junction
- Mid Ascending Aorta
- Distal Ascending aorta
- Zone 1
 - Aortic Arch between innominate and left carotid
- Zone 2
 - Aortic arch between left carotid and left subclavian
- Zone 3
 - Descending 2 cm distal to left subclavian
- Zone 4
 - Descending maximum mid
- Zone 5
 - Descending 2 cm proximal to celiac

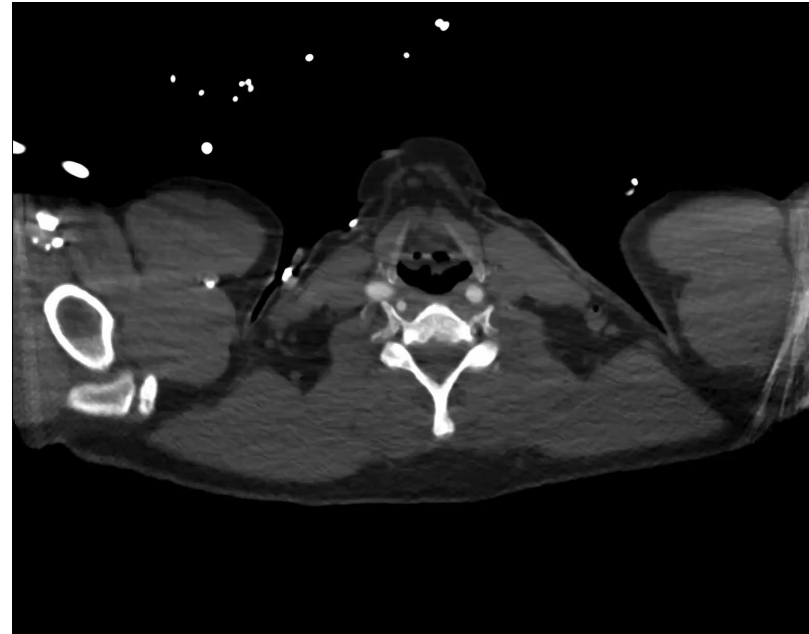


Aortic Hotline and Code Aorta

- **Outside Transfer (surrounding hospital/ER)**
 - Develop Aortic Hotline **1-800-90-Aorta**
 - Cutdown on delays to OR
- **Inhouse/ER patient**
 - Called by ER physician when suspected aortic dissection heading to CT
 - Inpatient CT scan cleared due to urgency
 - Cardiothoracic/Vascular surgeon on call notified via imaging app
 - Surgeon able to view CTA in real time
 - Gated CTA chest, abdomen, pelvis

Code Aorta Activated

- Notify CVOR call team, anesthesia, bed board and CVICU
- ER physician activate Code Aorta order set which includes:
- OR Case request
- Consent surgery
- Vitals
- Site prep
- Studies: Xray, Echo, PFT
- Indwelling catheter
- Preop labs and type and cross
- Prophylactic antibiotics
- Medications
- **APP**- meets with family, educate, resources



Post Dissection/IMH

- Type A,B,IMH

- Discharge, 1, 3, & 6 month imaging

- TEVAR

- Surveillance 5 years

- Discharge

- Medications
- Blood pressure
- Journal



- Aortic Dissection Support group

- Provide support for patients, caregivers on patients who suffered aortic dissection
- Meet Quarterly
- Establish patient connection
- Topics: Dietician, therapist, art/music therapy

Educate the Community

www.thinkaorta.us **Call 911 for medical emergencies

For more information or to speak with someone:

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Jeffrey M. Carlton
Heart & Vascular Institute

Aortic Hotline
1-800-90-AORTA

When There is an Aortic Dissection:

Symptoms:

- Chest or abdominal pain
- Numbness or weakness in any limb
- Syncope or dizziness

Pain Can Be:

- Sharp, tearing, ripping, sudden onset
- Migratory and transient

Physical Exam:

- Difference in BP between arms or legs
- Stroke-like symptoms
- New heart murmur

Risk Factors for Aortic Disease

Family Medical History:

- Aortic aneurysm
- Aortic dissection
- Unexplained sudden death

#ThinkAortaThinkFamily

Patient History:

- Bicuspid aortic valve
- Hypertension
- Connective tissue disorders



Outpatient Referral & Follow up

- Point Person- **APP**
 - Prioritize urgency and ease anxiety
- Interview patient
 - Medical history, size of patient, size of aneurysm, prior heart surgery, bicuspid aortic valve, kidney function, contrast allergy, family history, autopsy, CVOR records (establish size of dissection)
- Imaging
 - Type of study (MRA/CTA/ECHO), quality, other studies,
- MD notes
 - Cardiologist, PCP, rheumatologist, pulmonologist
- Orders
 - Labs, new imaging
 - LVN/MA prepare chart after **APP** review and given check list



New patient appointment

- LVN/MA
 - Vitals, Medication, Medical/surgical history
- Aneurysm Education Video
- APP Assessment
 - Physical, medical/surgical, family, education
- Surgeon-
 - Cardiothoracic, Vascular, Endovascular
- Genetic Testing
- Surgery Scheduler
- Active surveillance clinic
 - Track patients, book follow up appointments

		Aortic Size (cm)									
		3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0
Height (inches)	(m)										
		55	1.40	2.50	2.86	3.21	3.57	3.93	4.29	4.64	5.00
57	1.45	2.41	2.76	3.10	3.45	3.79	4.14	4.48	4.83	5.17	5.52
59	1.50	2.33	2.67	3.00	3.33	3.67	4.00	4.33	4.67	5.00	5.33
61	1.55	2.26	2.58	2.90	3.23	3.55	3.87	4.19	4.52	4.84	5.16
63	1.60	2.19	2.50	2.81	3.13	3.44	3.75	4.06	4.38	4.69	5.00
65	1.65	2.12	2.42	2.73	3.03	3.33	3.64	3.94	4.24	4.55	4.85
67	1.70	2.06	2.35	2.65	2.94	3.24	3.53	3.82	4.12	4.41	4.71
69	1.75	2.00	2.29	2.57	2.86	3.14	3.43	3.71	4.00	4.29	4.57
71	1.80	1.94	2.22	2.50	2.78	3.06	3.33	3.61	3.89	4.17	4.44
73	1.85	1.89	2.16	2.43	2.70	2.97	3.24	3.51	3.78	4.05	4.32
75	1.90	1.84	2.11	2.37	2.63	2.89	3.16	3.42	3.68	3.95	4.21
77	1.95	1.79	2.05	2.31	2.56	2.82	3.08	3.33	3.59	3.85	4.10
79	2.00	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00
81	2.05	1.71	1.95	2.20	2.44	2.68	2.93	3.17	3.41	3.66	3.90

 = low risk (~ 4% per year)
 = moderate risk (~ 7% per year)
 = high risk (~ 12% per year)
 = severe risk (~ 18% per year)

Light green area indicates low risk, yellow area indicates moderate risk, orange area indicates high risk, and red area indicates severe risk.

Connective Tissue Disorder Screening

Systemic Score

- 3 - Wrist AND Thumb
 - 1 - Wrist OR Thumb
 - 2 - Pectus Carinatum Deformity
 - 1 - Pectus Excavatum or Chest Asymmetry
 - 2 - Hindfoot Deformity
 - 1 - Plain Flat Feet
 - 2 - Spontaneous Pneumothorax
 - 2 - Dural Ectasia
 - 2 - Protucio Acetabulae
 - 1 - Scoliosis or Thoracolumbar Kyphosis
 - 1 - Reduced Elbow Extension
 - 1 - 3 or 5 Facial Features
 - 1 - Skin Striae
 - 1 - Severe Myopia
 - 1 - Mitral Valve Prolapse
 - 1 - Reduced Upper Segment/Lower Segment & Increased Arm Span/Height
- Height:*** Arm Span:*** Lower Segment:***
 - Upper/Lower Segment Ratio:***
 - Arm Span/Height Ratio:***

Total Systemic Risk Score: ***

Aneurysm follow up appointment

- MA/LVN request cardiology note and last echocardiogram
- **APP** review imaging results prior to upcoming appt
- Discuss/Review with appropriate surgeon
 - Establish time to review follow up CTA's
- **APP** see patient only if stable
- **APP** & Surgeon see patient if crosses over to surgery

Patient Information

First Name: Last Name:
Gender: Age:
Height: Weight:
BMI: BSA:

Provider Information

Cardiologist:
Surgeon:
IM/FM:

Visit Details

Visit Date:
Initial Clinic Presentation Date:

Existing Diagnoses:

Aneurysm Predisposition:
Incidental Findings:
Risk Factors:
Genetic Test:
Genetic Finding:

Patient Education:

Imaging Data

Risk Level: **MODERATE**

Date	Zone DA		Zone DB				Zone DC			Zone D1	Zone D2	Zone D3	Zone D4	Zone D5
	Aortic Annulus	Sinotubular Junction	RSOV	LSCV	NSOV	Ascending (M4/Largest)	Ascending (Distal)	Aortic Arch						

Aortic Risk Reference

Risk	Aortic size (cm)									
	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0
1.20	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
1.40	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
1.60	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
1.80	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
2.20	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
2.40	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
2.60	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
2.80	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
3.20	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
3.40	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
3.60	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
3.80	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
4.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
4.20	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
4.40	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
4.60	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
4.80	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
5.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
5.20	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
5.40	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
5.60	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
5.80	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
6.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
6.20	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
6.40	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
6.60	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
6.80	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
7.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
7.20	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
7.40	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
7.60	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
7.80	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
8.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

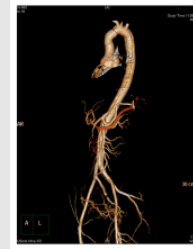
■ < 1% risk (10% per year)
■ 1-10% risk (10% per year)
■ > 10% risk (> 20% per year)

Height (cm/ft)	Aortic Size (cm)									
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55	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
56	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
57	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
58	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
59	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
60	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
61	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
62	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
63	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
64	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
65	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
66	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
67	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
68	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
69	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
70	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
71	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
72	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
73	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
74	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
75	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
76	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
77	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
78	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
79	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80

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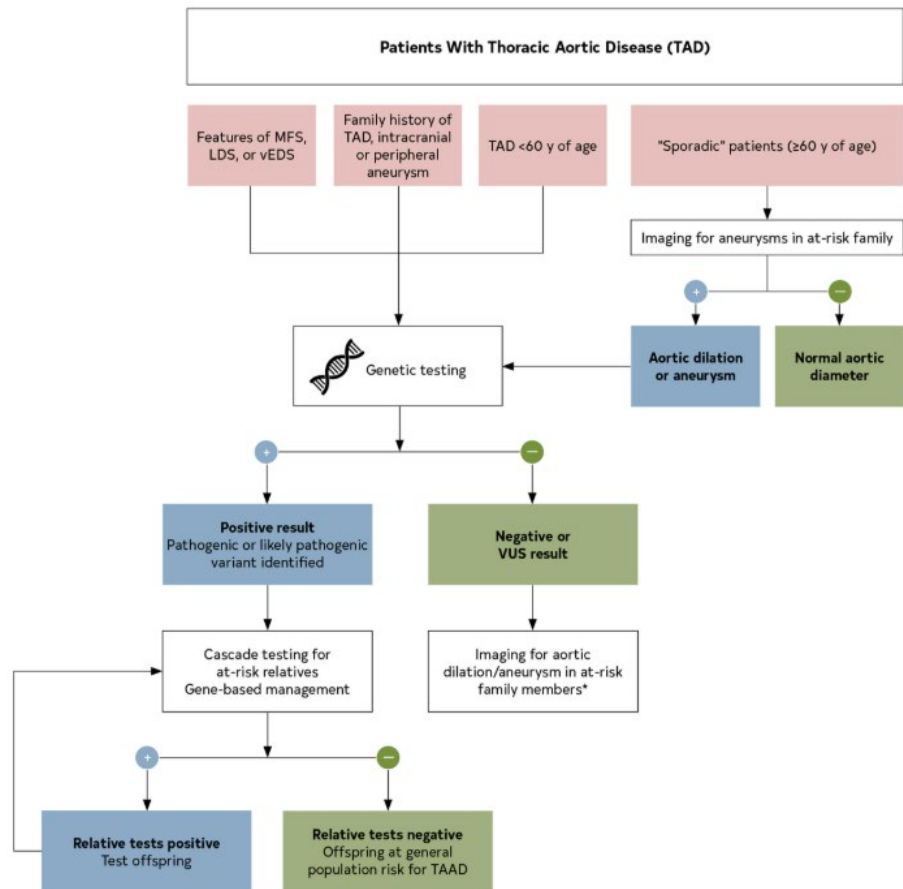
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3D CI Angiogram



Genetic Testing

- 20% of TAA are related to genetic or HTAD
- HTAD most commonly involves the root, ascending aorta or both
- 20% of TAA or aortic dissection have a family history of TAD
- Autosomal dominant gene
- Medical Insurance- no discrimination
- Life Insurance- can discriminate due to results
- Genetic Counselor
 - Determine company (Ambry/Invitae/Gene DX) based on Insurance
 - Cash price 250
 - Determine local reps for genetic testing for support



Research at Hoag

- APP screen patients for research studies
- BAV com
- MAC
- John Ritter Association
- Local trials: Arise



Aortic patient is a patient for **life**

- Aortic Awareness Day
 - Annual Day that provides awareness to patients, staff, and family members
 - Celebrate our Aortic Dissection Survivors
 - Aortic patients can thank their team
- Aortic Conference
 - Houston Aortic Symposium team
- Aortic Team Walk
 - Marfan walk create team of aortic dissection survivors

 The Marfan Foundation

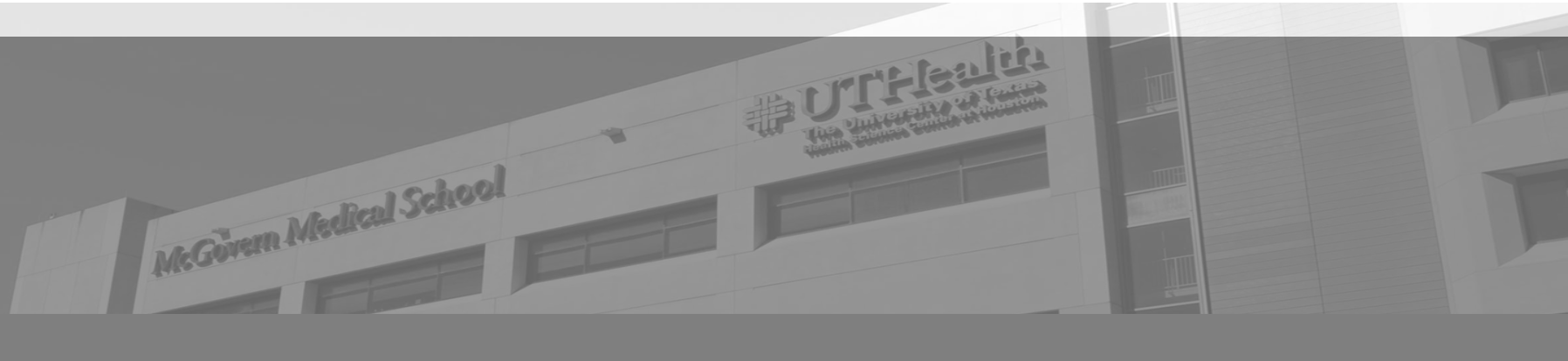
July 12 at 1:19 PM · 🌐

Congratulations to the team at the Elaine & Robert Matranga Aortic Center, Hoag Health, for receiving the Cheryl Gasner Spirit of Service Award at the Foundation's E3 Conference! We applaud your ongoing dedication to those living with Marfan, Loays-Dietz, VEDS, and other genetic aortic and vascular conditions.

#E3Conf22



Thank You!



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