

Valvular Heart Disease in the COVID Era

The Path Forward

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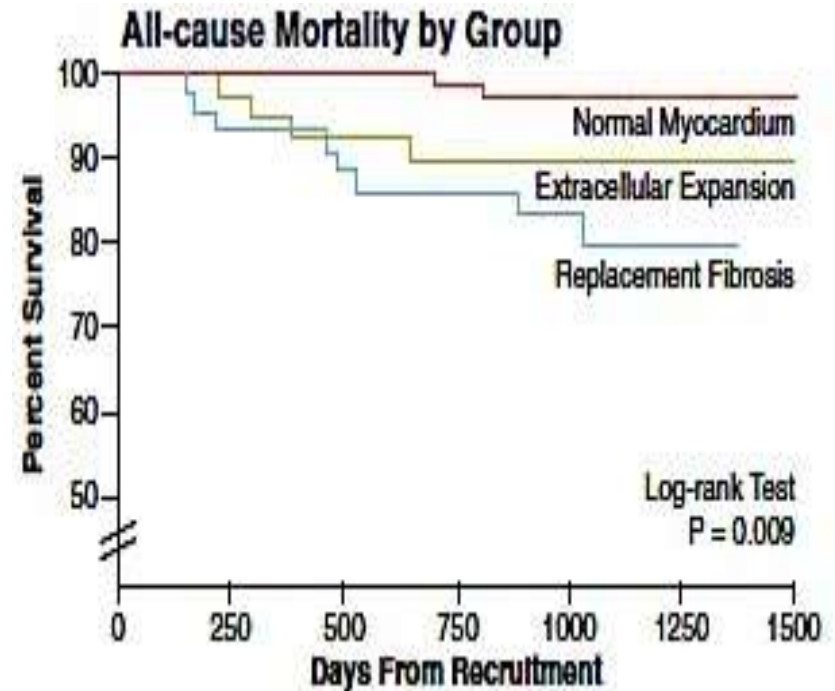
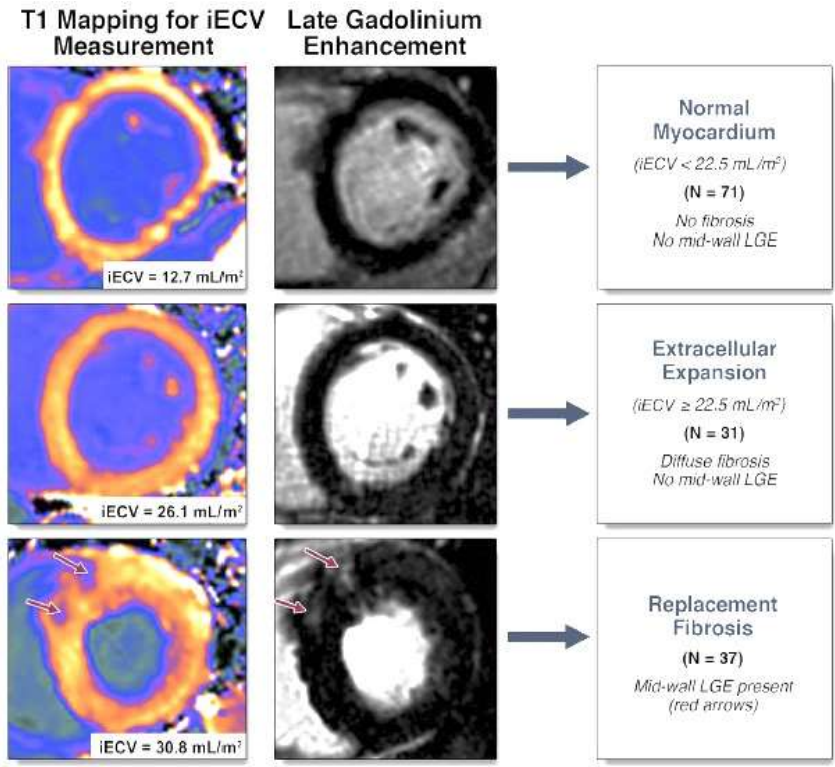
Disclosures

- **Medtronic, Apollo TMV**
- **Edwards LifeSciences, Early TAVR**

Advances in VHD

- **Natural history studies**
- **Multi-modality imaging**
- **Transcatheter technologies**
- **Surgical repair**
- **Clinical trials**
- **Registries**

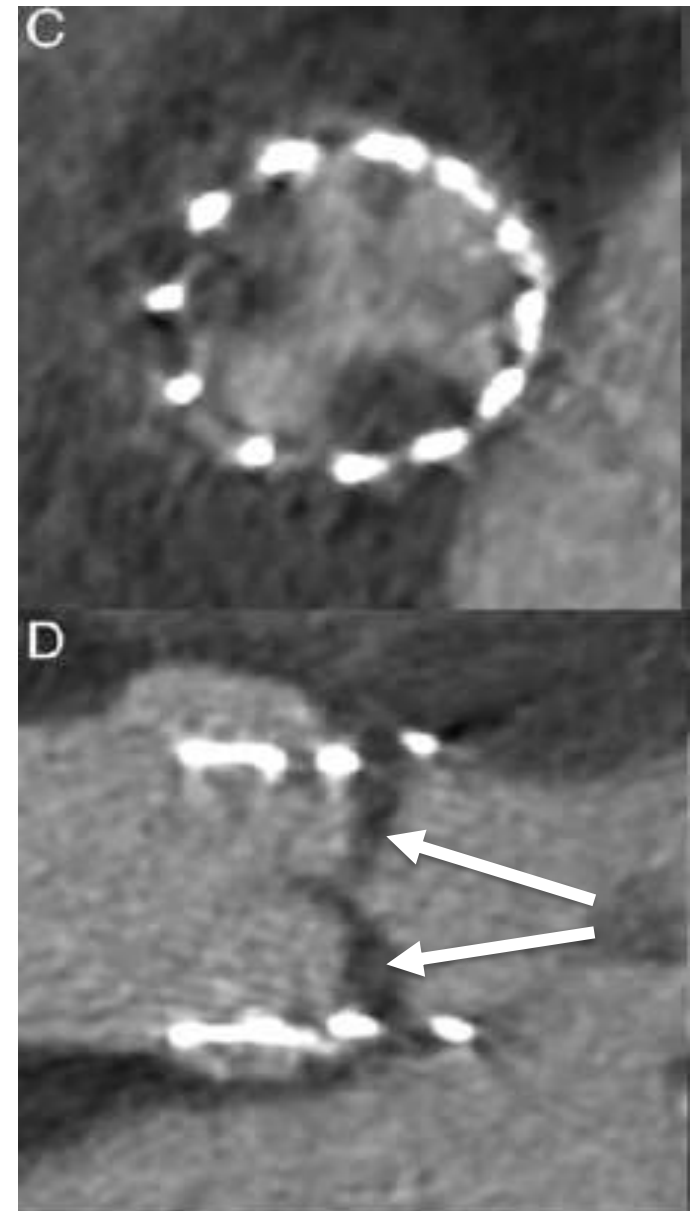
Myocardial Fibrosis in AS



Bioprosthetic Valve Thrombosis: TAVI



Mack MJ, Holmes DR. *JTCVS* 2016;152:952-3



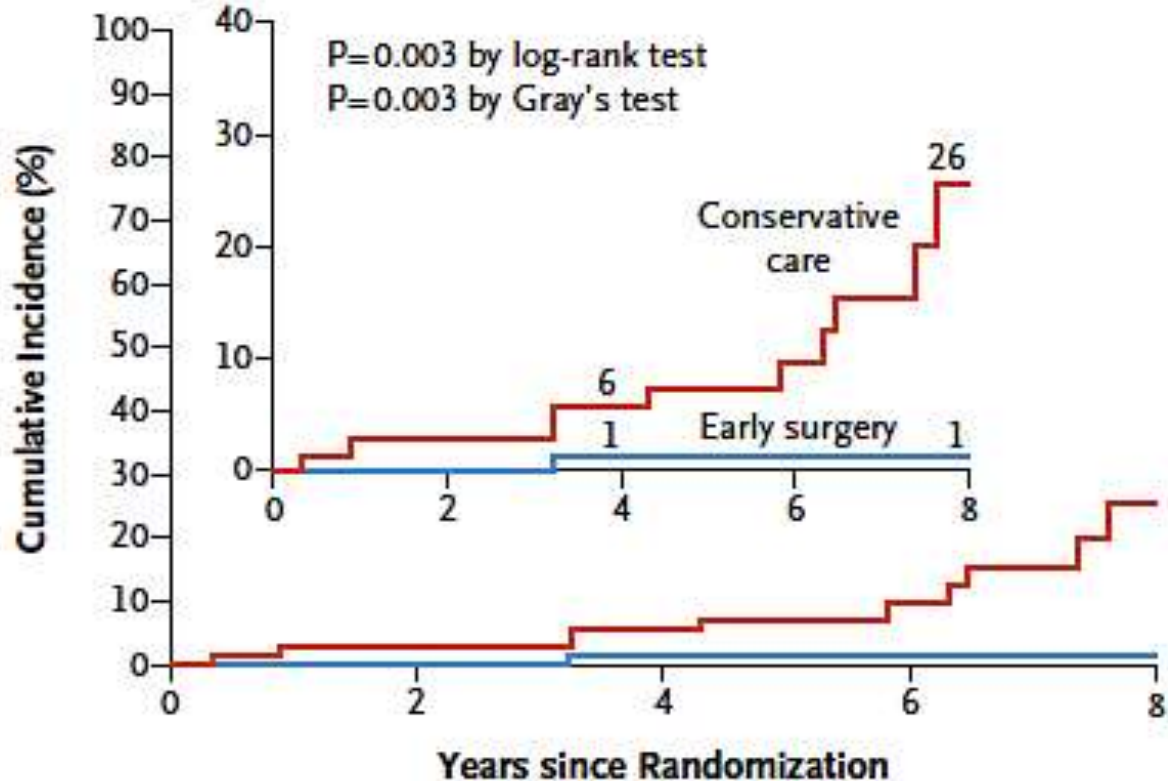
Pache G et al. *EHJ* 2016; 37:2263-71

Gaps in VHD

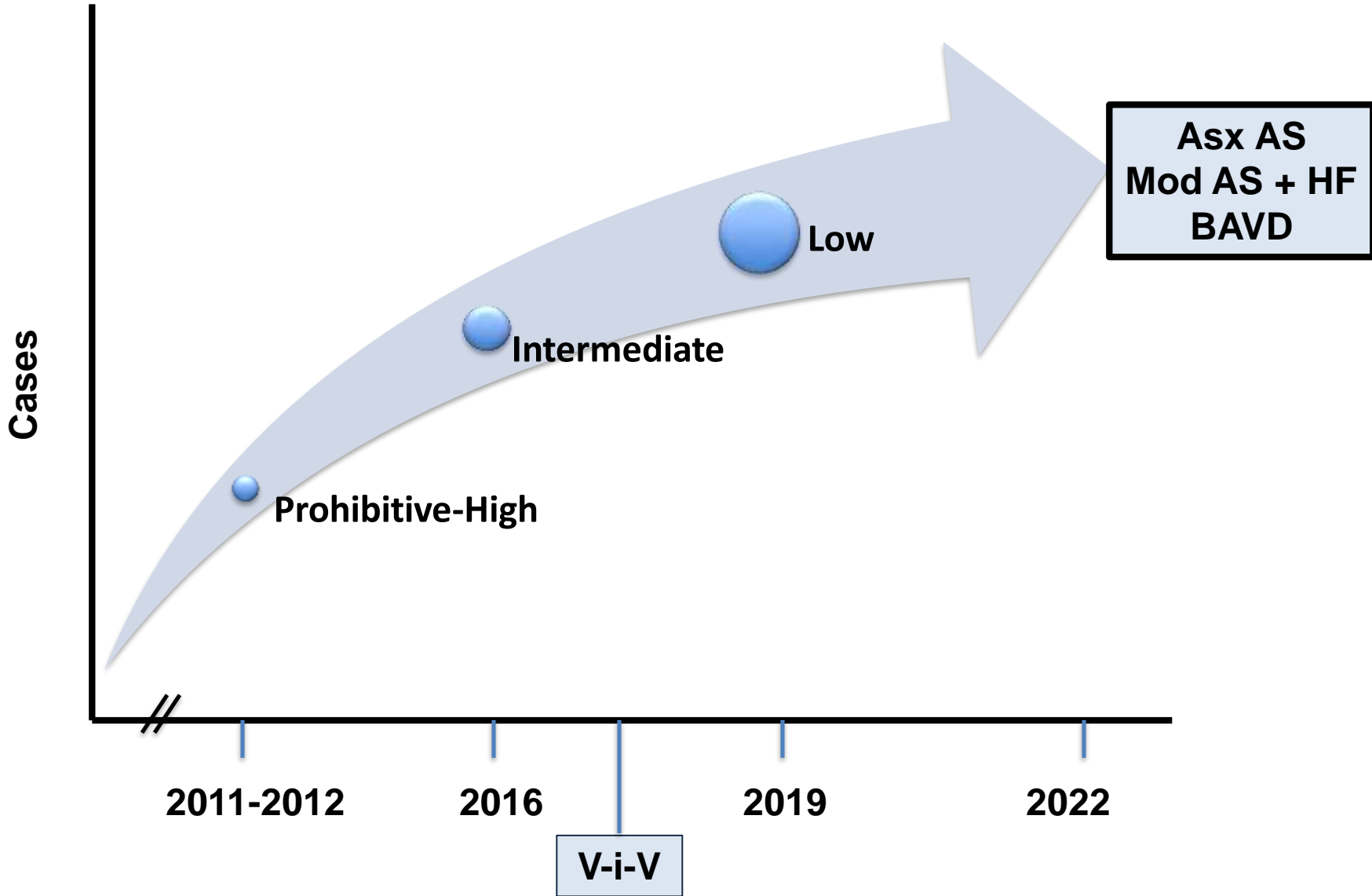
- **Screening/Detection**
- **Access**
- **Equity**
- **Genetics**
- **Prevention**
- **Randomized trial data**

RECOVERY Trial

Operative Mortality or Death from Cardiovascular Causes



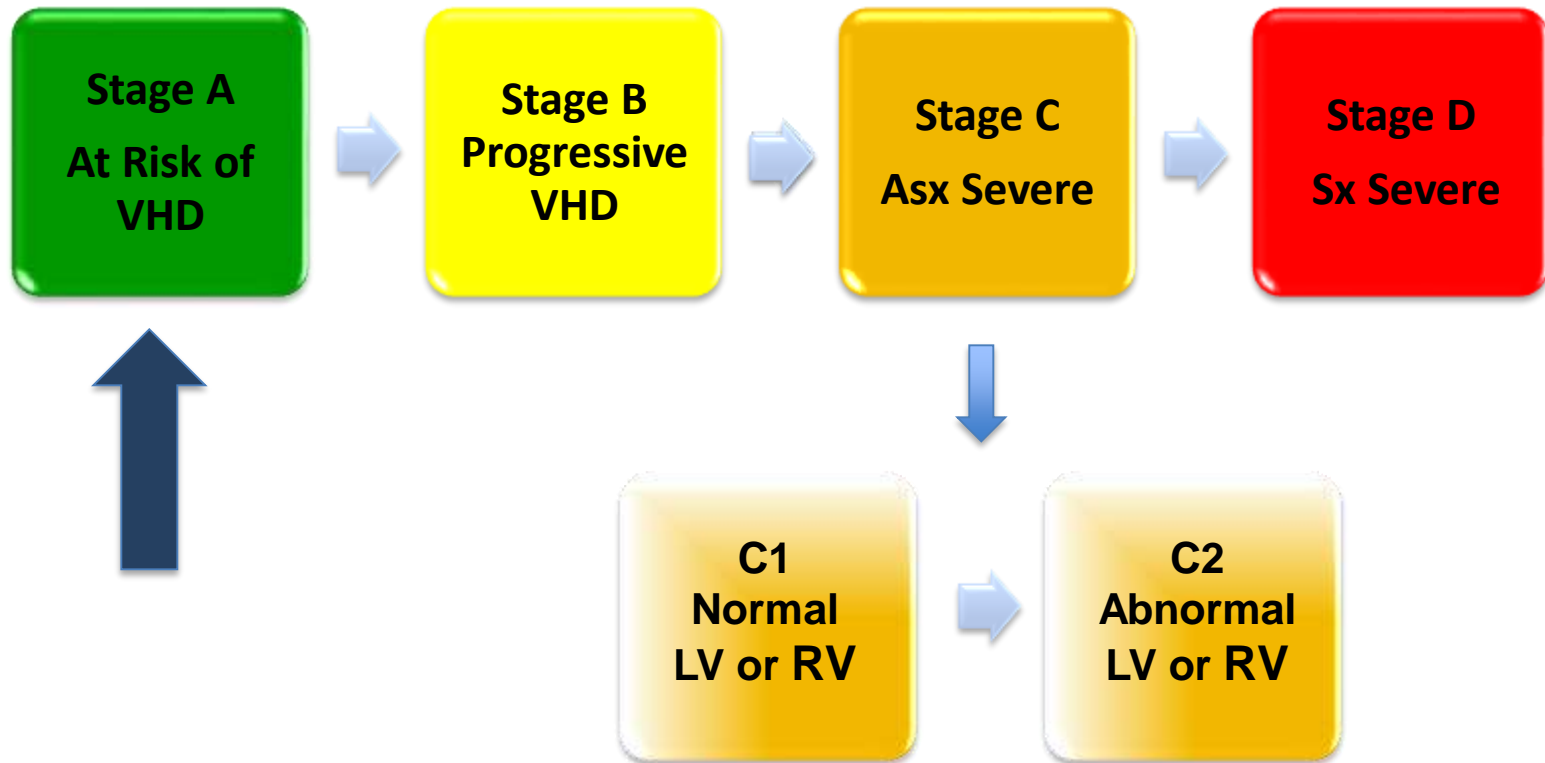
TAVI



Questions for TAVI

- **Valve durability**
- **Anti-thrombotic therapy**
- **Conduction system trauma**
- **BAV disease**
- **Strategy for sequential procedures in young patients (V-i-V)**

Stages of Chronic VHD



AS Progression



Normal



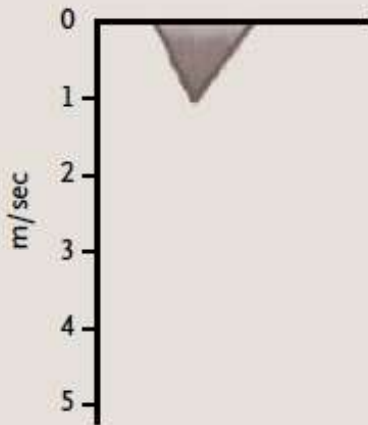
Aortic sclerosis



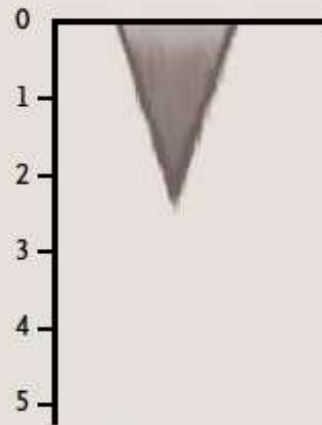
Mild-to-moderate aortic stenosis



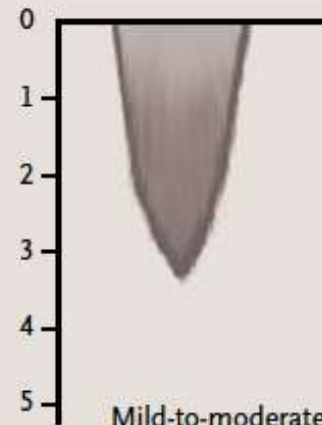
Severe aortic stenosis



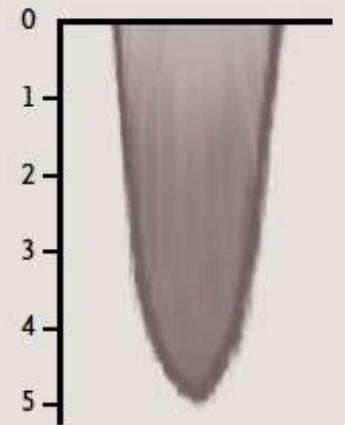
Normal



Aortic sclerosis
<2.5 m/sec



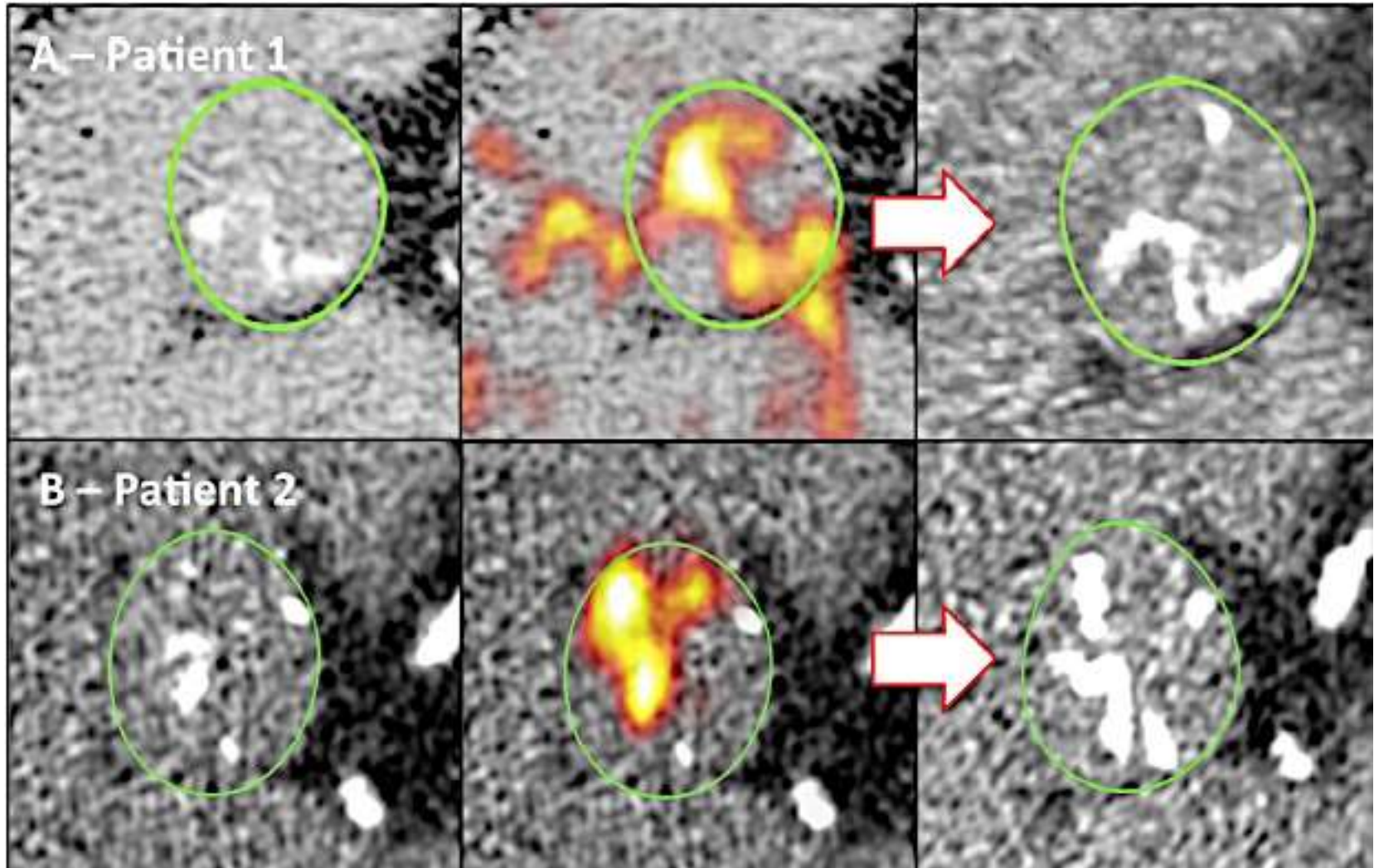
Mild-to-moderate
aortic stenosis
2.5–4.0 m/sec



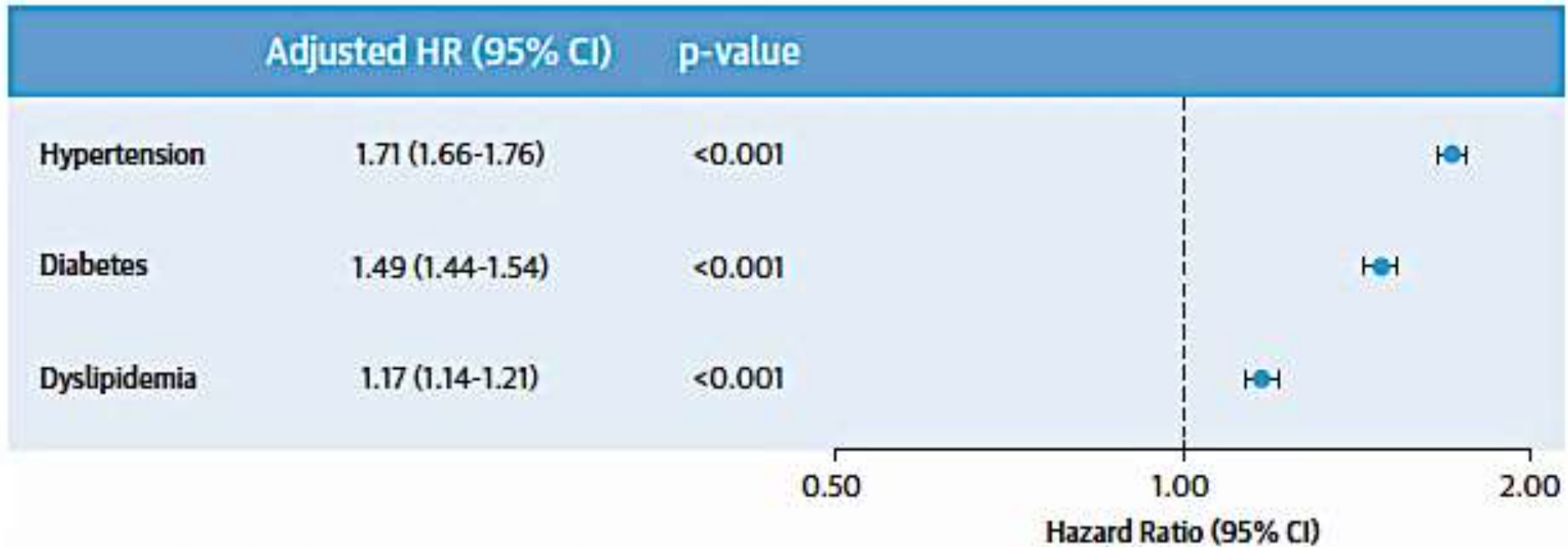
Severe aortic stenosis
>4 m/sec

Otto CM. NEJM 2008; 359:1395-8

AS Progression (18F-NaF)



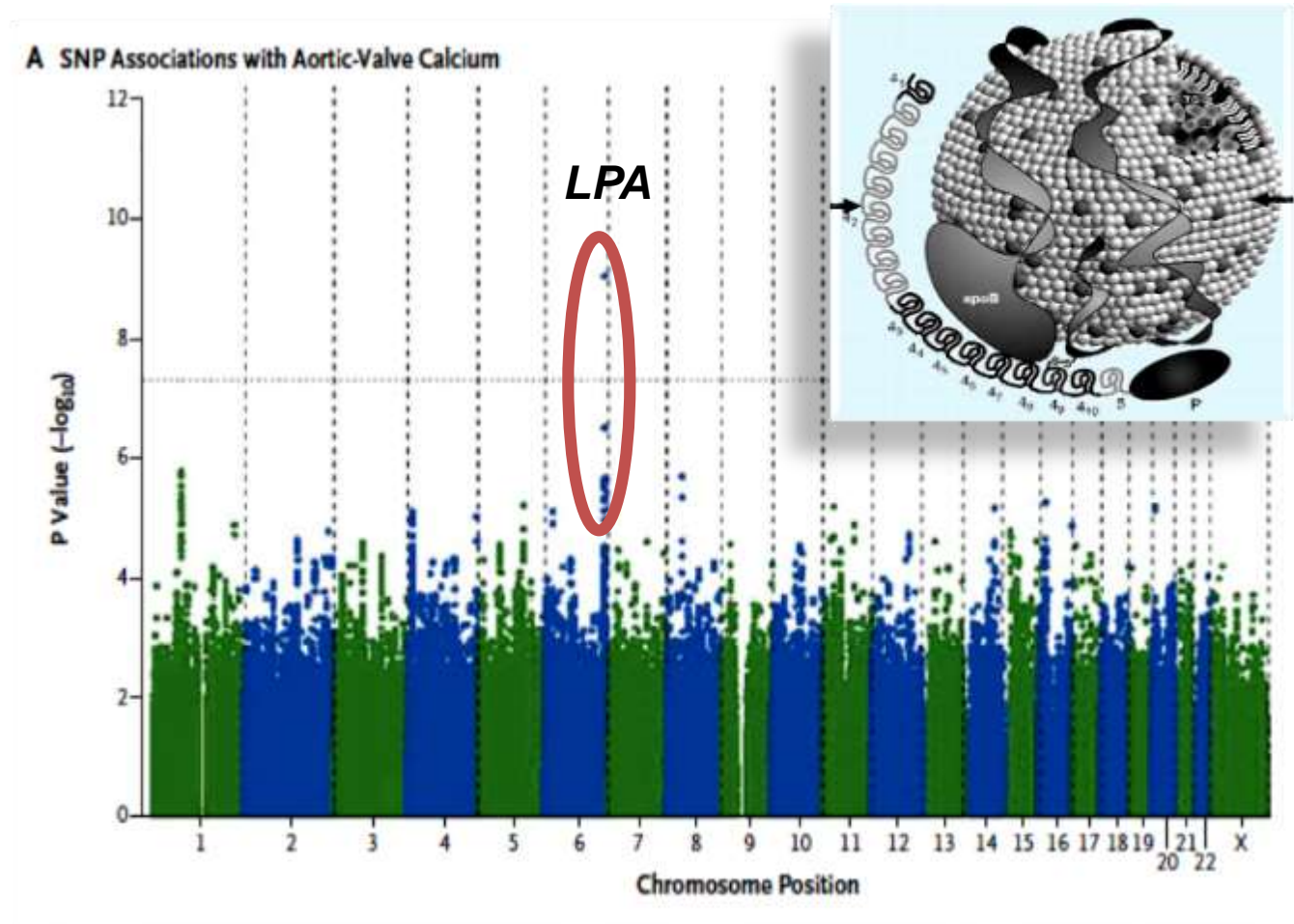
ASCVD Risk Factors and AS



Yan, A.T. et al. J Am Coll Cardiol. 2017;69(12):1523-32.

- Incidence 144/100,000 p-yr
- PAR=34.4%

Single-Nucleotide Polymorphism Associations with Aortic-Valve Calcium

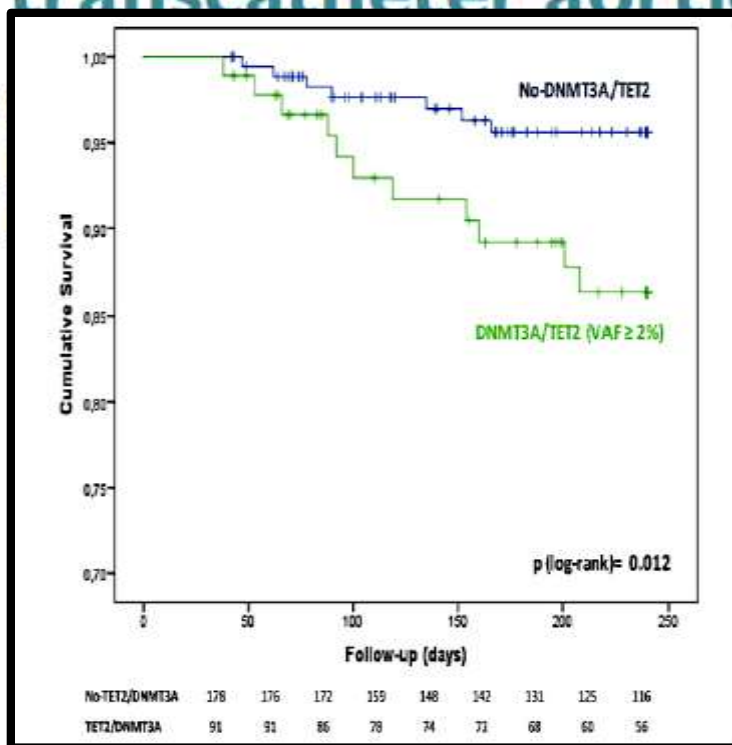


Thanassoulis G et al. *NEJM* 2013;368:503-512

Clonal haematopoiesis in patients with degenerative aortic valve stenosis undergoing transcatheter aortic valve implantation

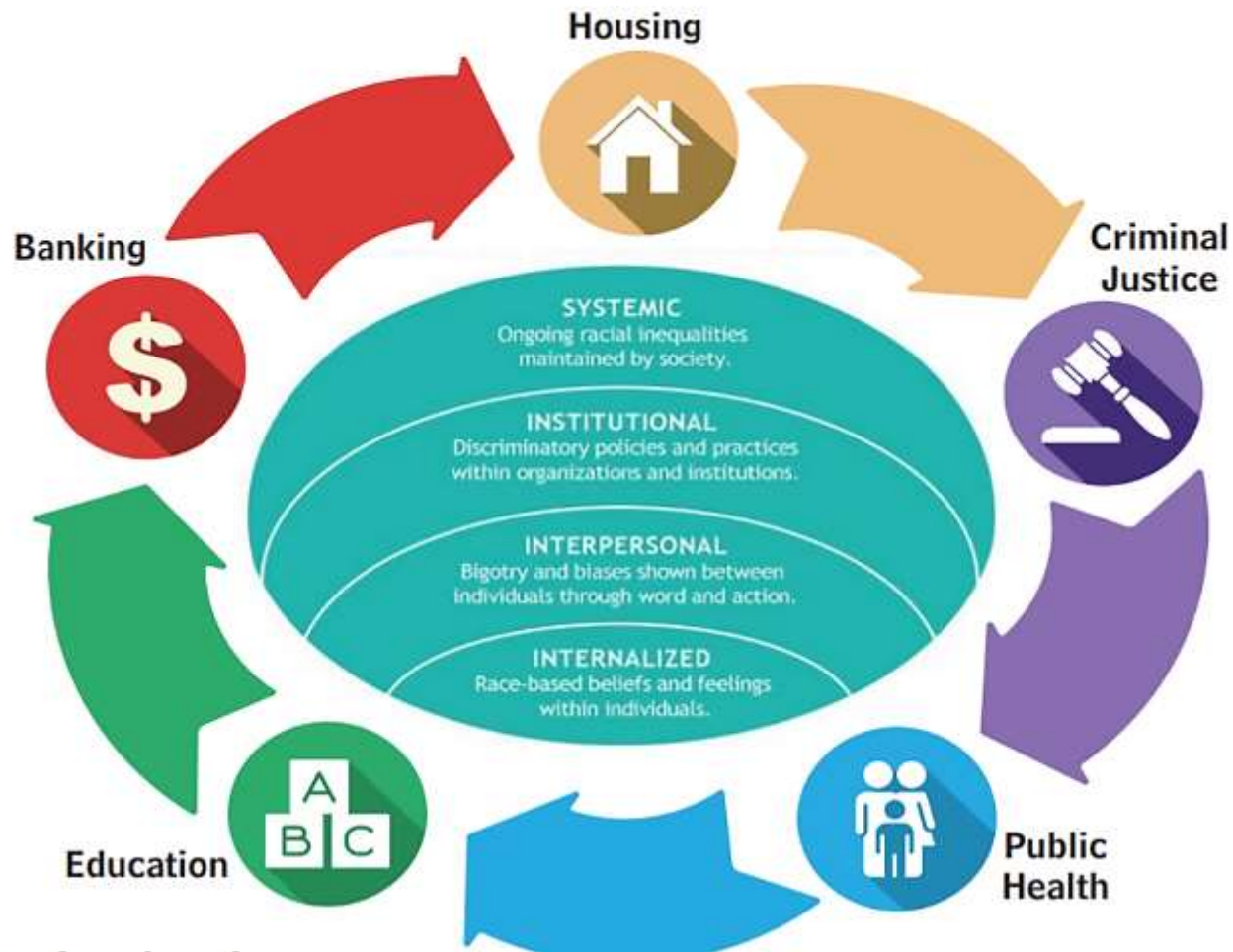
...mann^{1,2†}, Stephan Fichtlscherer^{1,2},
 ...ger^{3,4,5}, Stefanie Dimmeler^{2,6},
 ...reas

**CHIP-driver gene mutations
 associate with increased
 inflammatory activity and
 worse outcome after TAVI**



SARS Co-V-2

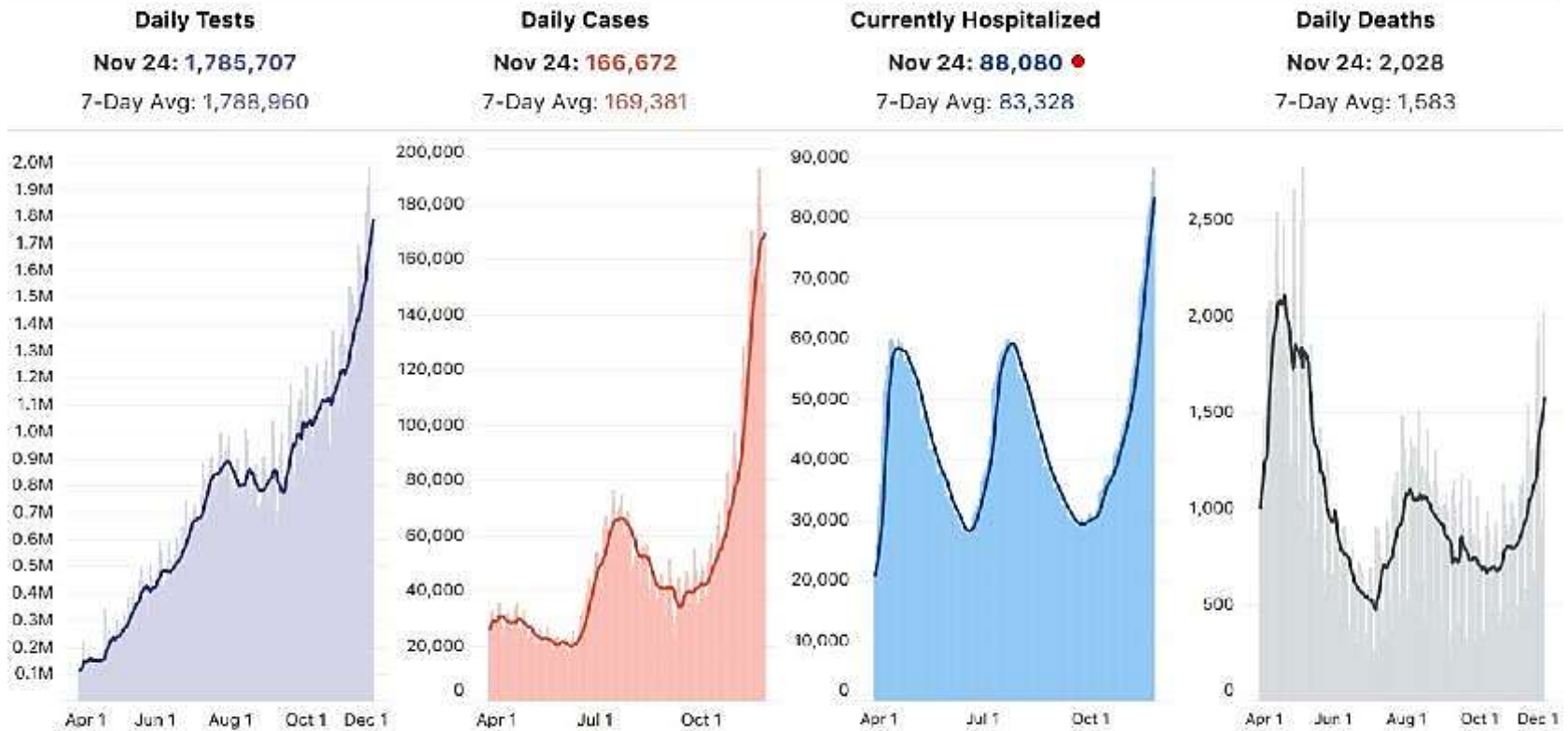
Structural Racism



COVID Tracking Project

NATIONWIDE COVID-19 METRICS. 7-DAY AVERAGE LINES

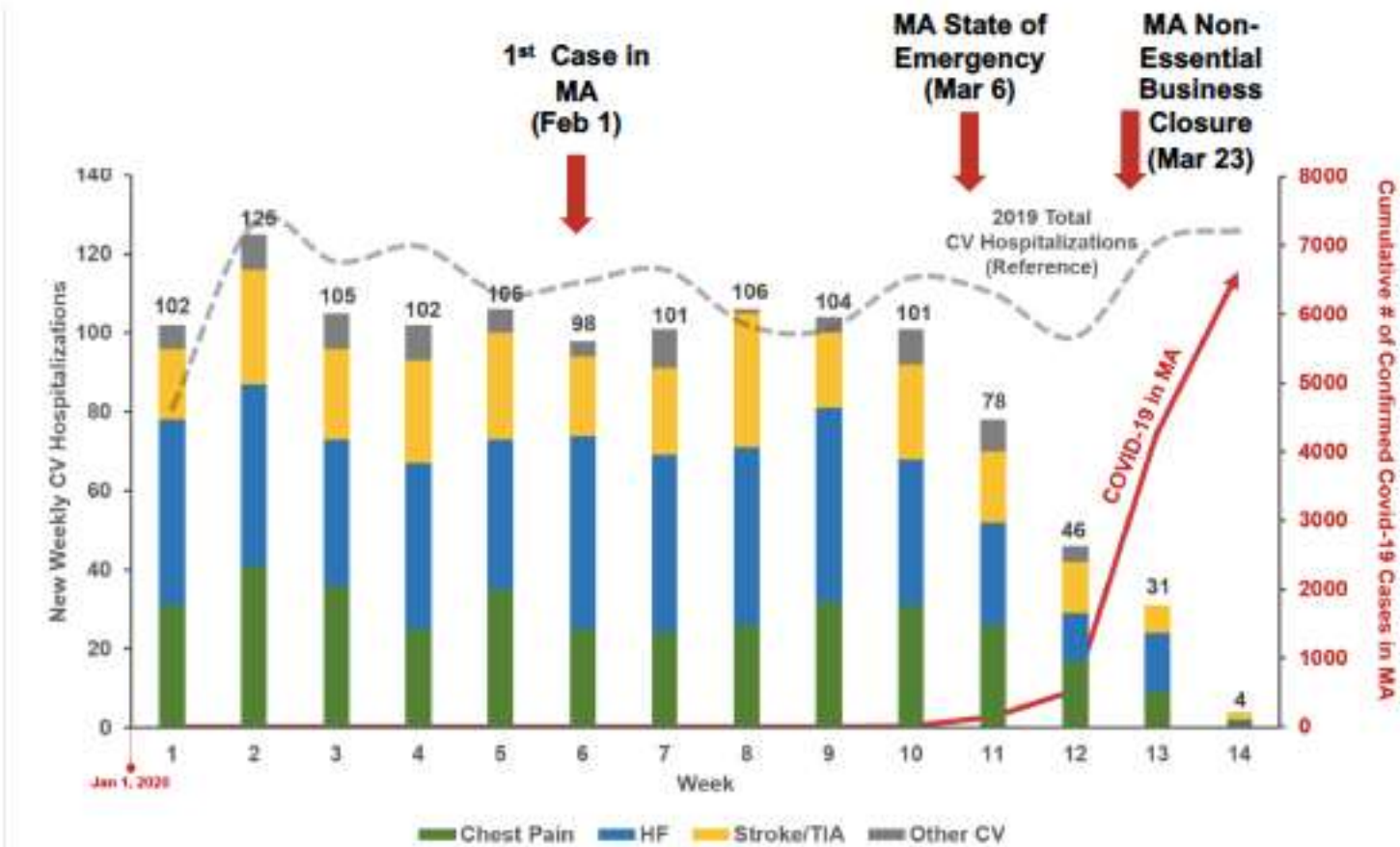
Apr 1 - Nov 24



Source: The COVID Tracking Project

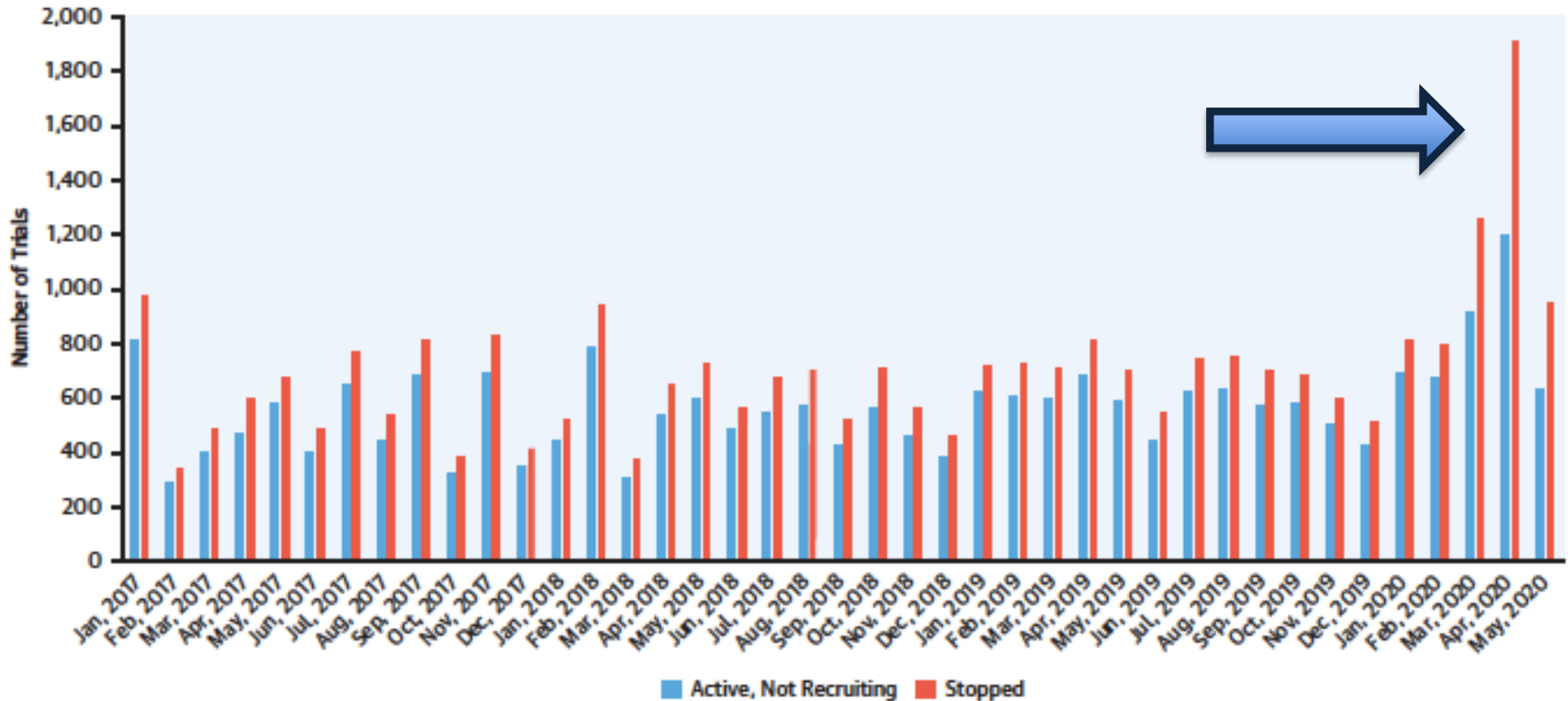
● Single-day record

“Missing” Patients During the Pandemic



Bhatt AS, et al. JACC 2020. doi: <https://doi.org/10.1016/j.jacc.2020.05.038>.

Trends in Clinical Trial Activity



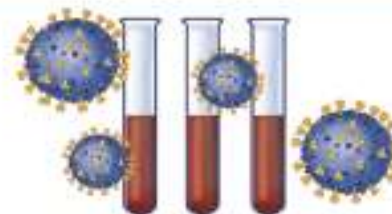
clinicaltrials.gov.
From Guadino M et al JACC 09/2020

Guiding Principles: Patient and Staff Safety and Clinical Trial Integrity

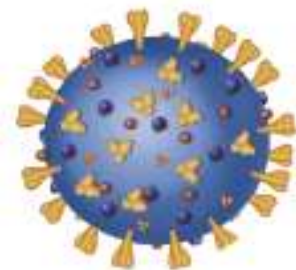
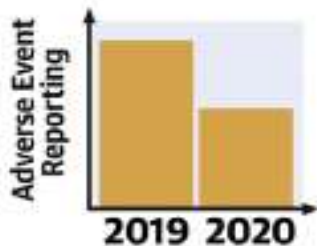
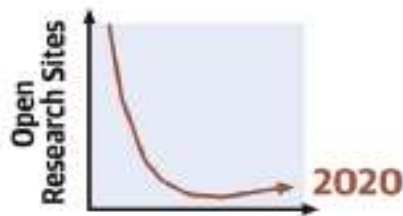
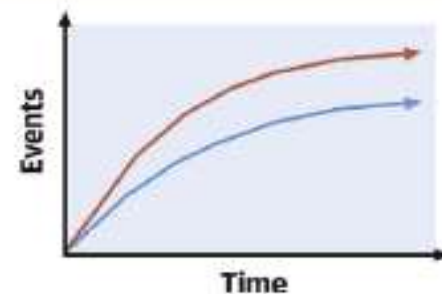
Evaluate Options for Remote Endpoint Assessment



Evaluate Methods to Assist COVID-19 and
Non-COVID-19 Event Adjudication



Evaluate Prospective Statistical Analysis Plan and
Protocol Alterations to Preserve Trial Integrity



COVID 19 Advancements

Telemedicine

- Increase outreach to patients
- Expand home monitoring capabilities
- Ensure appropriate reimbursement

Deregulation

- Remove barriers for medical innovation and research
- Facilitate innovation in care delivery models
- Eliminate unproven quality metrics

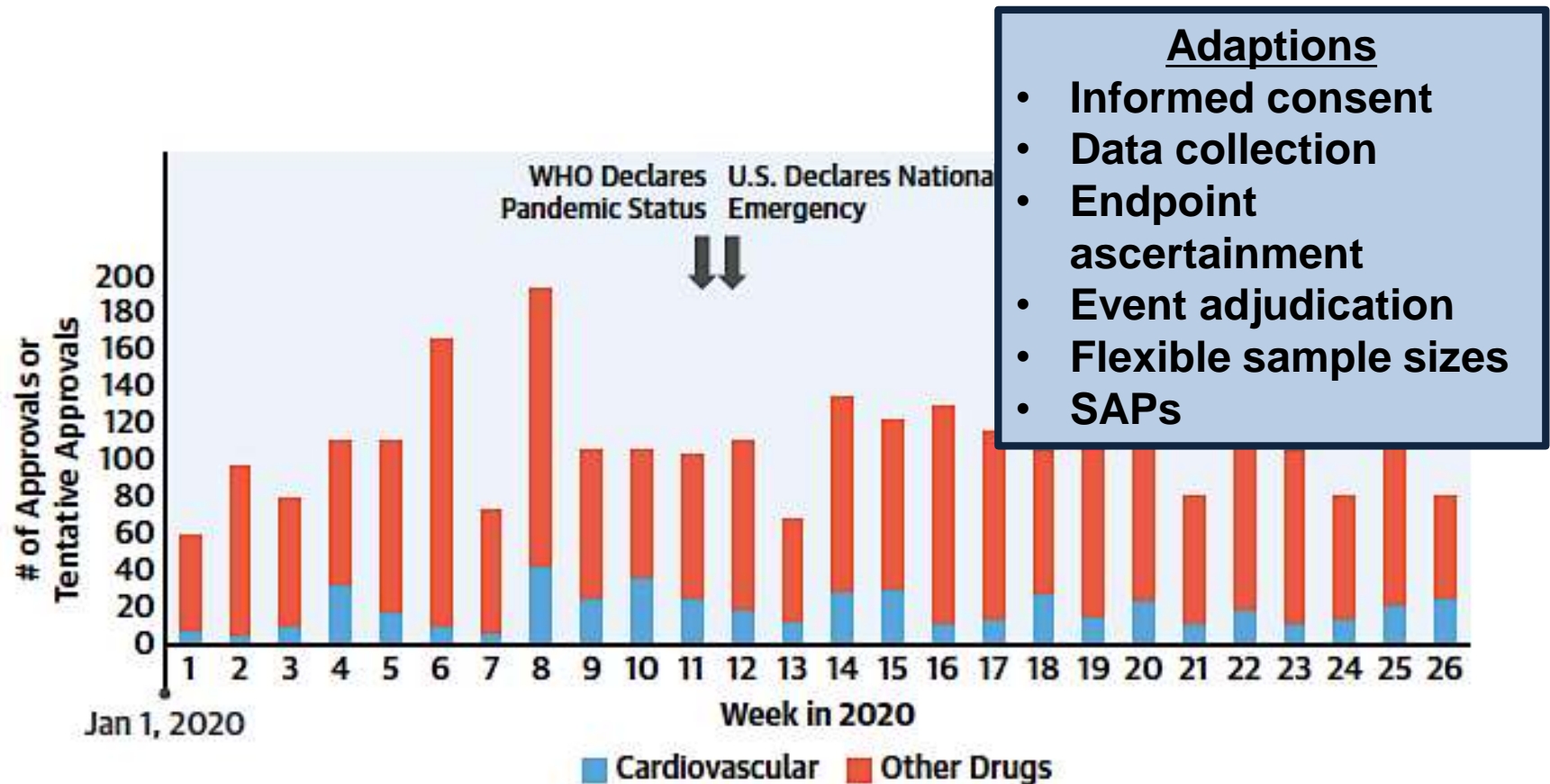
Judicious Use of Resources

- Allocate resources to maximize efficiency
- Reduce unnecessary testing that only provides marginal benefits or is done for medico-legal coverage

Global Collaboration

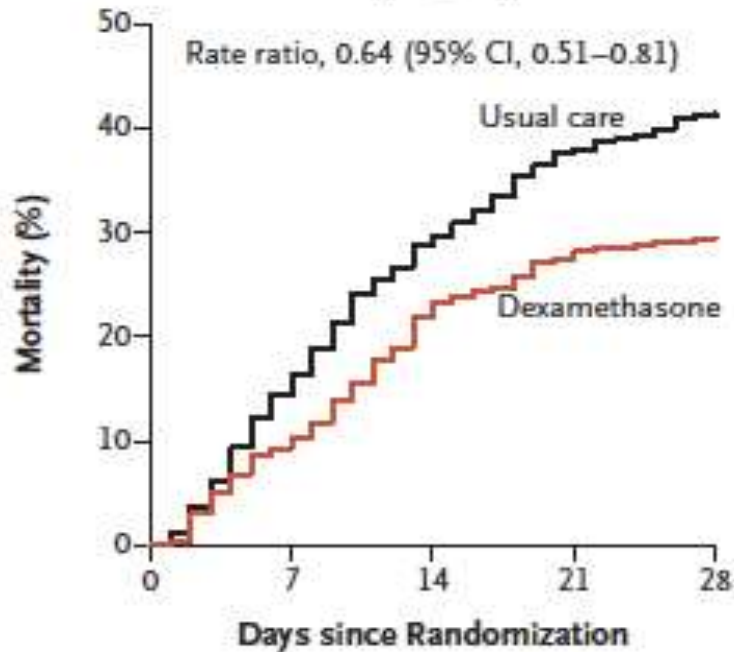
- Communicate new research rapidly through expedited online publications
- Share information from vetted medical sources through social media

Regulatory Activity



A Simple Trial

B Invasive Mechanical Ventilation (N=1007)



No. at Risk

Usual care	683	572	481	424	400
Dexamethasone	324	290	248	232	228

- Platform design
- Rapid enrollment
- Simplified CRF
- NHS



- **ACTIV 4 Trials (A-C)**

The RECOVERY Collaborative Group NEJM July 2020

Barriers to Pragmatic A vs B Trials

Case Study: SAVR vs TAVI for BAVD

Barrier	Comment
Lack of incentives	Label indication allows
Limited enthusiasm	Train has left the station. Lacks novelty.
Resistance to randomization	Patients want TAVI
Informed consent	Always a challenge
Interference with clinical work flow	Treatment assignment during office visit
Sample size	Large numbers; extended follow-up
COVID-19	Avoidance of care, hospitals

Adapted from Simon GE, Platt R, Hernandez AF. NEJM 2020; 382:1488

Equanimity