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GADJAH MADA

# Cardiology Research Office

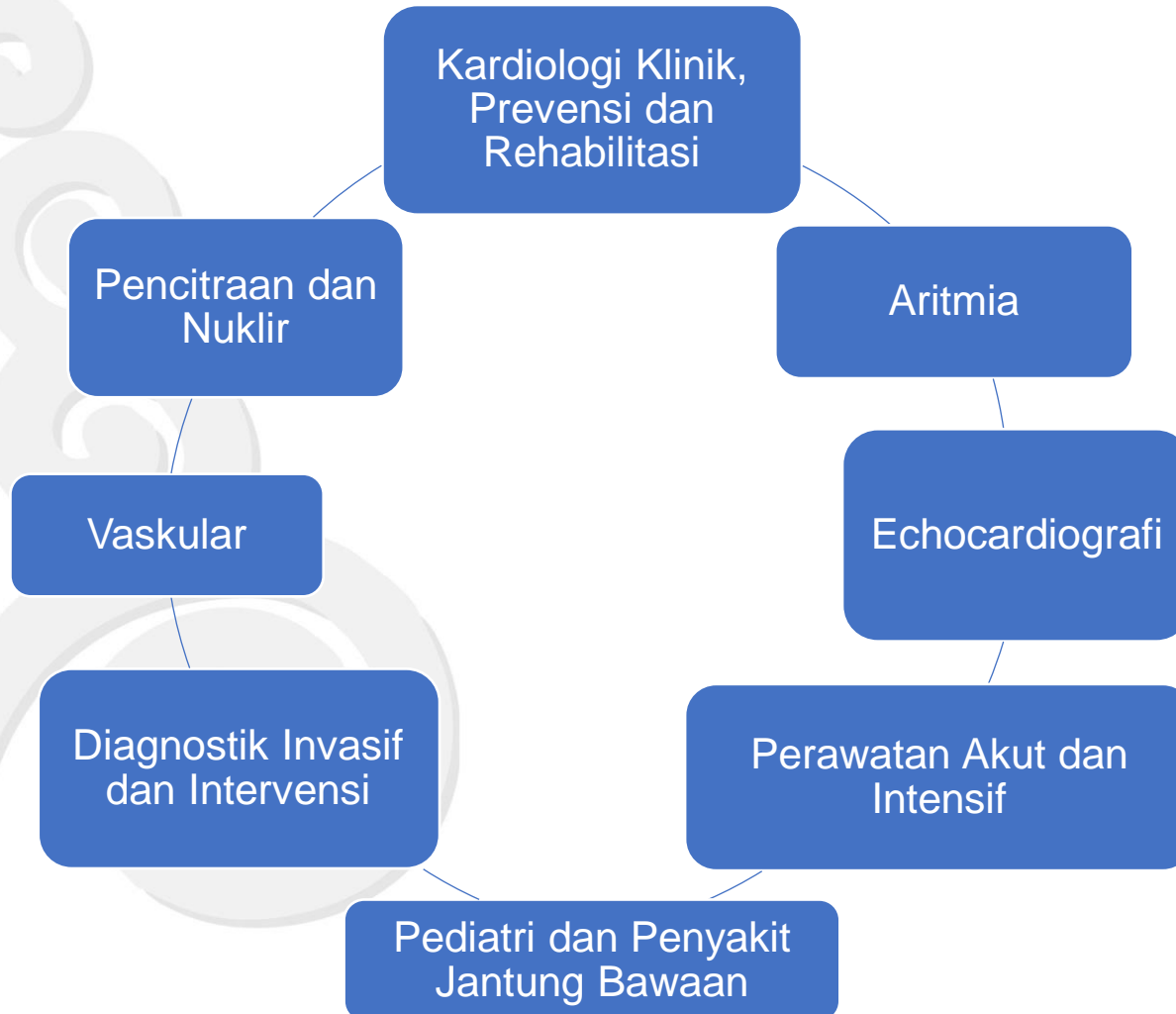
Unit Penelitian

Departmen Kardiologi dan Kedokteran Vaskular

CP: dr Dyah Wulan A ([wulan.anggrahini@ugm.ac.id](mailto:wulan.anggrahini@ugm.ac.id); 0811293349)



# Division in Department





# Registry-based Research Groups

Congenital Heart Disease and Pulmonary Hypertension

Vascular Disease

Valvular Heart Disease

Critical Care

Acute Coronary Syndrome

Percutaneous Coronary Intervention

Cardiac Imaging

Arrhythmia

Cardio-oncology

Heart Failure

Maternal and CV Disease

CAD - HDSS



2012 – sekarang	2014 - 2018	2017 - 2019	2017 - 2021	2021 - 2023	2021 - 2022
<b>Registri Penyakit Jantung Bawaan(PJB) Dewasa dan Hipertensi Pulmonal</b>	<b>Riset Pemetaan Karakter Klinis dan Biomarka : Patofisiologi Hipertensi Pulmonal ( Kolaboratif)</b>	<b>Riset Dasar/ Translasional : Mutasi Genetik pada Hipertensi Pulmonal terkait PJB</b>	<b>Pengembangan Sistem deteksi dini PJB untuk mencegah kejadian HP saat dewasa</b>	<b>Penelitian Pemetaan Variasi Genetik Baru pada Hipertensi Pulmonal (BIOMASS – COHARD PH)</b>	<b>Pengembangan Prediktor Mortalitas dan Kualitas Hidup Pasien Hipertensi Pulmonal</b>
<ol style="list-style-type: none"> <li>1. Angka prevalensi PJB dewasa</li> <li>2. Prevalensi komplikasi HP</li> <li>3. Prevalensi kehamilan dengan PJB dan hipertensi pulmonal (SUDAH TERLAKSANA)</li> </ol>	<ol style="list-style-type: none"> <li>1.Determinan klinis, hemodinamik, dan molecular terhadap terjadinya hipertensi pulmonal pada pasien Defek Septum Atrium</li> <li>2.Pemeriksaan biomarka NtproBNP, ET-1, ST2, NO, Prostacyclin (SUDAH TERLAKSANA)</li> </ol>	<ol style="list-style-type: none"> <li>1.Pemeriksaan BMPR2 pada Hipertensi Pulmonal</li> <li>2.Determinan Mortalitas pada pasien PJB dengan Kehamilan</li> <li>3.Pemeriksaan Varian Genetik pada PJB familial (SUDAH TERLAKSANA)</li> </ol>	<ol style="list-style-type: none"> <li>1.Pengembangan sistem deteksi dini berbasis EKG 12 lead pada anak SD kelas 1 di DIY (SUDAH TERLAKSANA)</li> <li>2.Penyusunan Kebijakan terkait Deteksi Dini PJB pada anak sekolah di DIY (SEDANG DILAKSANAKAN)</li> </ol>	<p>Tujuan penelitian:</p> <ol style="list-style-type: none"> <li>1.melakukan pemetaan variasi genetic baru Hipertensi Arteri Pulmonal</li> <li>2.Konsorsium internasional Jepang dan Vietnam dan UI ( BELUM TERLAKSANA)</li> </ol>	<p>Tujuan:</p> <p>Menciptakan sistem skoring prognostik mortalitas dan perburukan pasien HP</p> <p>Meningkatkan kualitas hidup pasien HP</p>
	<p>Dana Penelitian:</p> <ol style="list-style-type: none"> <li>1.Hibah Kolaborasi JSPS – DIKTI 2014 – 2016</li> <li>2.Hibah Damas FKKMK UGM</li> </ol>	<p>Dana Penelitian:</p> <ol style="list-style-type: none"> <li>1.PDUPT 2018-2019 ( tim peneliti)</li> <li>2.Hibah Damas FKKMK UGM</li> </ol>	<p>Dana Penelitian:</p> <ol style="list-style-type: none"> <li>1. PDUPT 2018-2019 ( tim peneliti)</li> <li>2. Hibah Damas FKKMK UGM</li> <li>3. Hibah LPDP ( tim peneliti)</li> </ol>	<p>Dana Penelitian:</p> <ol style="list-style-type: none"> <li>1. Kolaboratif JSPS ( tim peneliti )</li> </ol>	
<p>Outcome:</p> <ol style="list-style-type: none"> <li>1.Publikasi Internasional : min 2</li> <li>2.Publikasi Nasional: min 2</li> </ol>	<p>Outcome:</p> <ol style="list-style-type: none"> <li>1.Publikasi Internasional : 1</li> <li>2.Publikasi Nasional : 2</li> </ol>	<p>Outcome:</p> <ol style="list-style-type: none"> <li>1.Publikasi Internasional : 2</li> <li>2.Publikasi Nasional : 2</li> </ol>	<p>Outcome:</p> <ol style="list-style-type: none"> <li>1.Publikasi Internasional : 2</li> <li>2.Publikasi Nasional : 2</li> </ol>	<p>Outcome:</p> <ol style="list-style-type: none"> <li>1.Publikasi Internasional : 1</li> <li>2.Publikasi Nasional : 2</li> </ol>	<p>Outcome:</p> <ol style="list-style-type: none"> <li>1.Publikasi Internasional : 1</li> <li>2.Publikasi Nasional : 1</li> </ol>

2016

**-Registri penyakit vaskular**

1359 pasien

2017-2018

**-Efek nitrat pada pasien PAD**

Publikasi: EUROPEAN HEART JOURNAL SUPPLEMENTS 19 (E), E27-E27

VASCULAR DISEASE MANAGEMENT 2020;17(11):E212-E214

2019-2020

**-Fibrin Degradation Product on patients with heparinisation**

(penelitian kadar FDP pada pasien DVT pada pre dan post heparinisasi)

**-Vascular screening program pada DM di DIY**

(Skrining kolaborasi dengan Jogjakarta Eye Diabetic Study in the Community atau JOGED di Puskesmas DIY)

**-Detection of AV Fistule disfunction by using cinical monitoring vs doppler sonography surveillance**

2020-2021

**-Pengembangan Alat Pengukuran ABI dan TBI dalam Diagnosis Penyakit Arteri Perifer 'Vascura Gama'**

(Penelitian kolaborasi dengan Fakultas Teknik Universitas Gadjah Mada dan RSA UGM) (Penelitian multidisiplin pengembangan dan validasi Vascura Gama)

**-VEGF on patients with ALI**  
**-Effectiveness between catheter direct trombolysis vs percutaneous manual trombolysis by using Angiojet**  
**-ALI on CHF patiens**

2021-2022

**-Translational research dan hilirisasi penelitian pada aspek diagnosis dan intervensi terapeutik pada pasien PAD**

(Profiling miRNA pada CLTI)  
(Terapi *exosome* pada CLTI)

(Program *Zero* amputasi di Kecamatan Mlati, Sleman pada tahun 2022)





## VALVULAR HEART DISEASE REGISTRY

RHEUMATIC HEART  
DISEASE (2014-Ongoing)NON-RHEUMATIC HEART  
DISEASE (2017)

## EPIDEMIOLOGY

- Rheumatic Fever in Children\*\*
- Right Heart Disease in Children\*\*
- Right Heart Disease in Adult\*\*

## ELECTROCARDIOGRAPHY

- Right Heart Ventricle Criteria Atrial Fibrillation (2015)
- Diagnostic Accuracy of P wave Area in Assessment of Left Atrial Size\*
- Diagnostic Accuracy of Macruz Index in Assessment of Left Atrial Size\*
- Diagnostic Accuracy of Mean Electrical Axis in Assessment of Left Atrial Size\*
- Correlation between The P-wave Dispersion and The Size of The Left Atrium\*

## ECHOCARDIOGRAPHY

- Right Ventricle Function (2016)
- Right Ventricle Area\*
- Pulmonary Hypertension Related Mitral Stenosis\*
- Pulmonary Hypertension in Pre and Post Surgery in Mitral Stenosis\*\*
- Correlation between Inflammatory Factor and Spontaneous Echo Contrast in Mitral Stenosis\*\*
- Evaluation of Left Atrial Size: Comparison of Patient with Pure Mitral Stenosis and Mitral Stenosis Accompanied with Mitral Regurgitation\*

## CLINICAL STUDY

- Prognostic Factors of Anticoagulant (2015)
- Factors Affecting Effectivity of Anticoagulant Warfarin in Patients with Valvular Atrial Fibrillation\*
- Risk Stratification and Mortality (2018)
- Correlation between Mitral Stenosis Severity with Autonomic Dysfunction\*

## HEMATOLOGY

- Thrombocytes Function\*\*
- Aggregation Factor\*\*
- Comparison of Mean Platelet Volume in Mitral Stenosis Patient with Atrial Fibrillation and Sinus Rhythm\*
- Other Haematological Function\*\*

## BIOMARKER

## Clinical Pathology :

- NT ProBNP (2015)
- sST2 (2016)
- IL-10\*
- IL-4\*
- TNF- $\alpha$ \*
- CD 68\*

## Anatomical Pathology :

- Cytokine Biomarker

## Cell Culture Study :

- Primary Culture of Endothelial and Fibroblast Cell of Human Valve\*\*

## In Vivo Study :

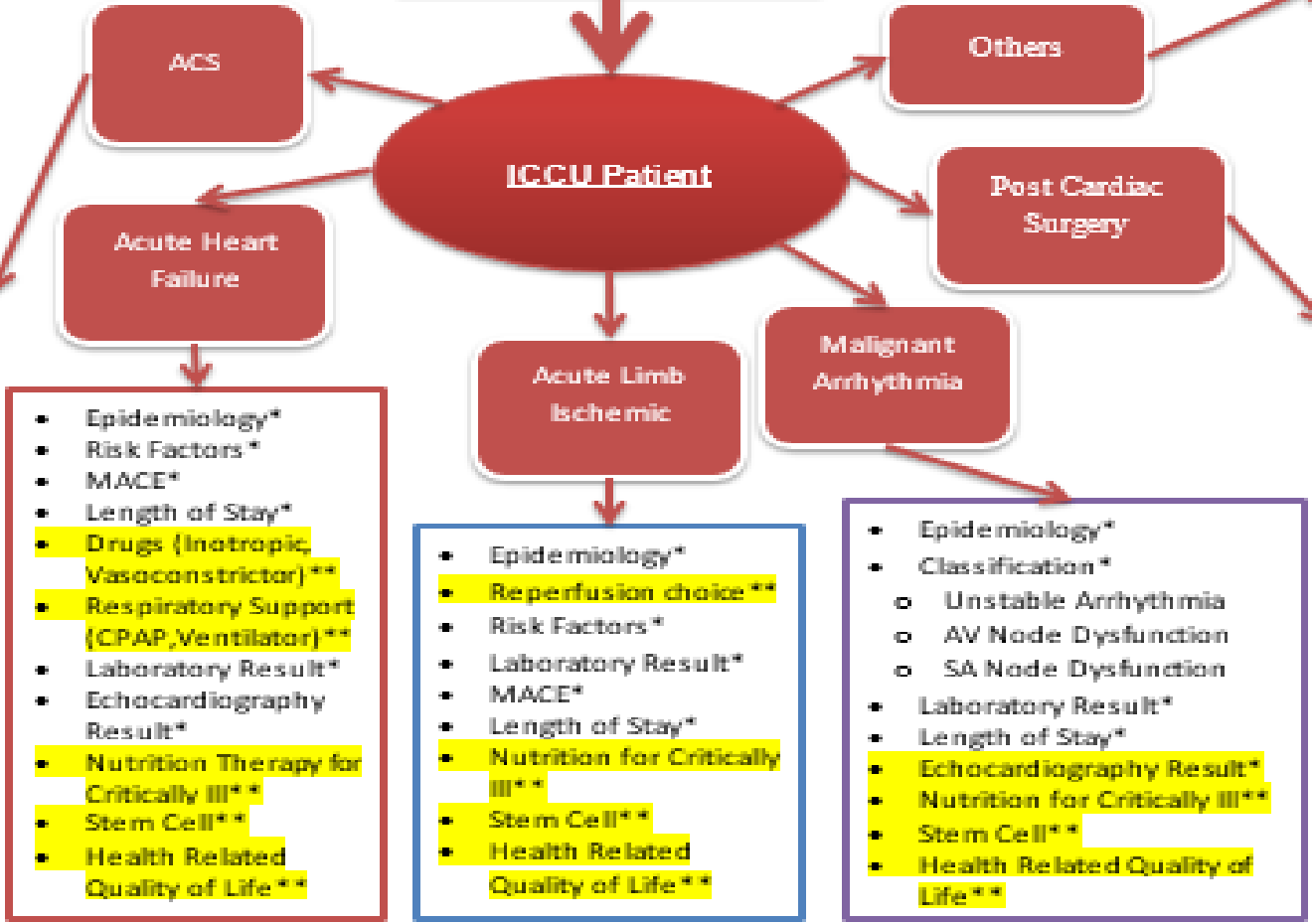
- Trial of anti IL-10 and anti IL-4 to ASTO (+) mice\*\*

**Legend :**  
\* Ongoing Study  
\*\* Planned Study



# SARDJITO CARDIOVASCULAR INTENSIVE CARE (SCIENCE)REGISTRY

- Epidemiology\*
- STE-ACS
  - Reperfusion Choice\*
  - Time to Lytic Bolus\*
  - Time to Wire Crossing\*
- NSTEMI-ACS
  - Risk Stratification\*
  - Revascularization Time\*\*
- Risk Factors\*
- Laboratory Result\*
- Echocardiography Result\*
- Percutaneous Coronary Intervention\*
- Coronary Angiography Result\*
- MACE\*
- Length of Stay\*
- Drugs (Inotropic, Vasoconstrictor)\*\*
- IABP\*\*
- Central Vessel Access\*\*
- Mortality predictor (Scoring system, ECG parameter)\*\*
- Nutrition Therapy for Critically Ill\*\*
- Stem Cell\*\*
- Health Related Quality of Life\*\*



- Acute Pulmonary Embolism, Aortic Dissection, Emergency Hypertension, etc.

- Epidemiology\*
- MACE\*
- Length of Stay\*
- Drugs (Inotropic, Vasoconstrictor)\*\*
- Cardiac Device\*\*
- Procedural Complication\*\*
- Laboratory Result\*
- Echocardiography Result\*
- Scoring System\*\*
- Stem Cell\*\*
- Health Related Quality of Life\*\*

\* = Ongoing Research  
\*\* = Planned Research



# ACUTE CORONARY SYNDROME

## Epidemiology Study

- 1. Prevalence \*\*
- 2. Sex \*\*
- 3. Age \*\*
- 4. Risk Factor (Diabetes Melitus, Hypertension, Obesity) \*\*
- 5. Morbidity \*\*
- 6. Mortality \*\*
- 7. MACE \*\*
- Dead
- Reinfarc
- Cardiogenic Shock
- Acute Heart Failure
- Tachycardy Ventricular/ Fibrillation Ventricular
- Stent Thrombosis
- Discharge

- ### Echocardiography
- LV Study \*\*
  - Diastolic Function \*\*
  - Right Heart Study \*

- ### Electrocardiography
- New LBBB \*\*
  - New RBBB \*\*
  - Arrhythmia Ventricular \*\*
  - Arrhythmia Supraventricular \*\*

- ### Hematology
- Leukocytes \*\*
  - Platelet Indices (MPV, PDW, P-LCR, PCT) \*
  - HsCRP (2016)

- ### Biomarker
- CKMB (2016)
  - CK Total (2016)
  - Troponin I (2016)
  - Platelet Microparticle (PMP) \*
  - Endotel Microparticle (EMP) \*

## Management

I STEMI (The Indonesian Society of Interventional Cardiology) \*

Network Hospital & Plan indentification of STEMI, acute treatment & timely transfer to hospital for reperfusion by using national registry.

### Legend

(\*) : On going Research  
(\*\*) : Planned Research





# PCI Registry

STEMI

NSTEMI

Unstable  
Angina  
Pectoris

Stable  
Angina  
Pectoris

Other

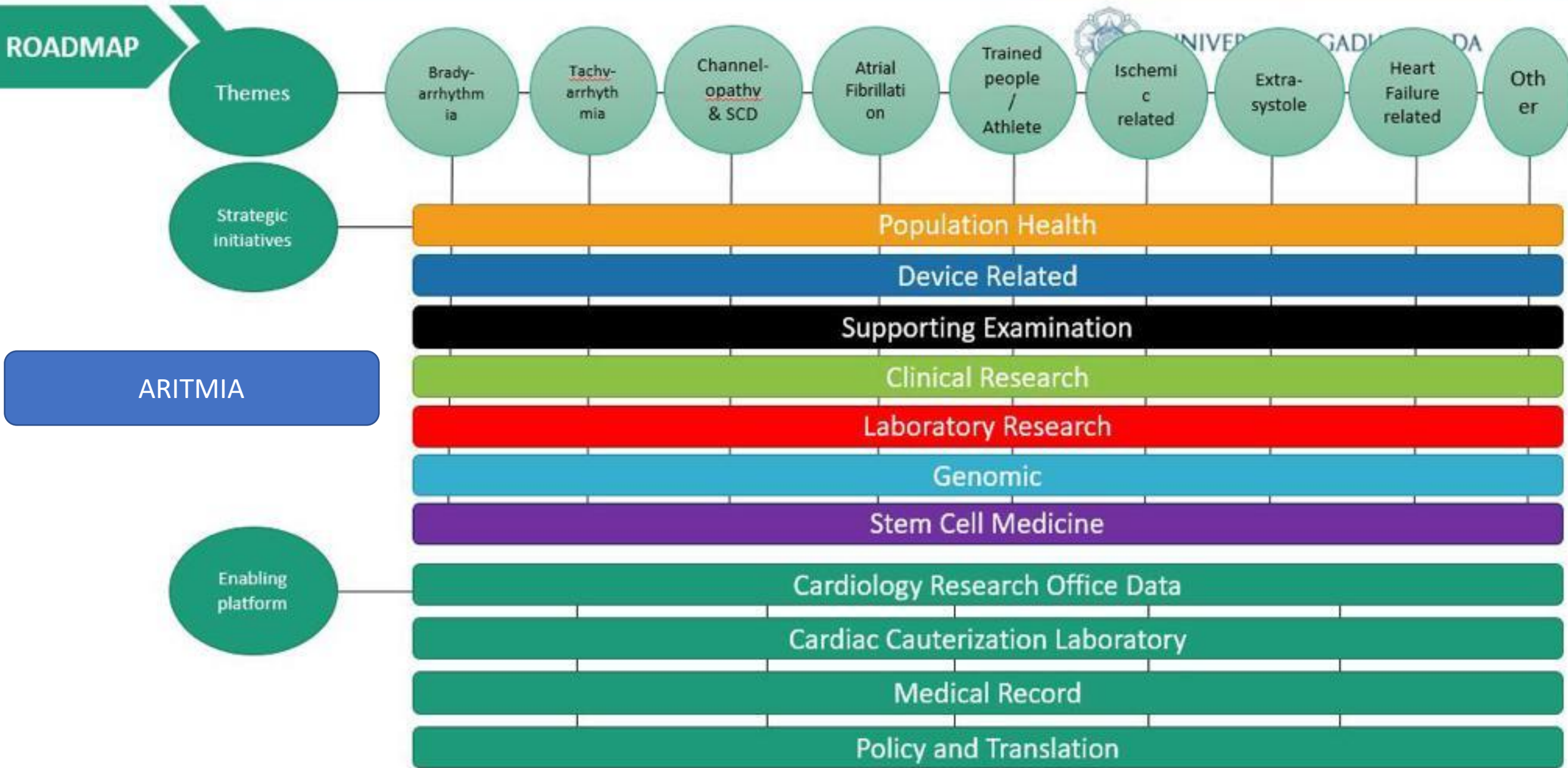
- Primary
- Rescue
- Pharmacoinvasive
- Delayed Routine PCI
- Delayed Selective PCI

- Urgent
- In-Hospital
- PCI within 30 days post event

- Ad hoc
- Staged PCI

Coroangiography

# ROADMAP





## Cardio-Oncology

### 2020-2021

- Penelitian Identifikasi peran biomarker pada deteksi dini kejadian kardiovaskular yang diakibatkan oleh kemoterapi

### 2021-2022

- Pembuatan sistem skor prediksi dan stratifikasi kejadian komplikasi kardiovaskular untuk menjangkau pasien yang beresiko terkena komplikasi

### 2022

- Uji intervensi terapi profilaksis untuk mencegah kejadian komplikasi kardiovaskular

### 2023- future

- Registri multi-institusional untuk identifikasi kardi toksisitas dan uji terapi untuk mencegah kejadian komplikasi kardiovaskular





# Chronic Heart Failure Registry

dr. Hasanah Mumpuni, Sp.PD, Sp.JP(K), dr. Hendry Purnasidha Bagaswoto, Sp.JP(K), dr. Dyah Adhi Kusumastuti, Sp.JP



Department of Cardiology and Vascular Medicine

Faculty of Medicine Universitas Gadjah Mada - Dr. Sardjito General Hospital



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## CHF Registry Data

### Demographical Data

1. Sex
2. Age
3. Body Mass Index
4. Comorbid
5. CHF classification
6. Social Class

### Physical Examination

1. Vital signs
2. Lung and heart sound
3. Heart abnormalities
4. Abdominal abnormalities
5. Extremity edema

### Electrocardiography

1. ECG characteristic
2. Interventricular conduction delay
3. QRS duration

### Echocardiography

1. Systolic function
2. Diastolic function
3. LV study
4. Right Heart Study
5. LV geometry
6. Valve function

### Laboratorium Examination

1. Complete Blood Count
2. Kidney function
3. Diabetes test
4. Hepar function
5. Blood clotting function
6. Cholesterol

### Therapy

1. ACEi/ARB
2. B-blocker
3. Diuretics
4. Aldosteron antagonist
5. Statin
6. Aspirin
7. Digitalis
8. CCB
9. Clopidogrel
10. Anti-coagulant



### Outcome

1. Mortality
2. Rehospitalization



# ROAD MAP HEART FAILURE

## 2016

**Knowing the characteristic difference of CHF patients in Indonesia**

Profil Penderita Gagal Jantung Kronik di RSUP Dr. Sardjito

Correlation between Tricuspid Regurgitation Duration with Pulmonary Pressure in Heart Failure Patients

Predicting the Type of Heart Failure in Patients with Chronic Heart Failure Based on ECG Features: Role of the Scoring System

## 2017

**Improving efficiency and productivity of examination, medication and evaluation**

Perbedaan Profil Pasien Gagal Jantung Kronik Berdasarkan Fungsi Ventrikel Kiri di RSUP Dr. Sardjito Yogyakarta

Nilai Diagnostik Interval Tpte pada Gangguan Fungsi Diastolik Pasien Hipertensi

Nilai Diagnostik Dispersi Gelombang P terhadap Fungsi Diastolik pada Pasien Hipertensi

Characteristic of Chronic Heart Failure Patients in Sardjito General Hospital Yogyakarta

## 2018

**Improving therapy efficiency and developing targeted therapy**

Hubungan Kadar sST2 dengan Fungsi Sistolik Ventrikel Kiri pada Populasi Pasien Gagal Jantung Kronis di RSUP Dr. Sardjito

## 2019

**Improving Diagnostic and Prognostic Evaluation of Heart Failure Patients**

Prediktor Keberhasilan Tindakan Percutaneous Balloon Mitral Valvulotomy pada Pasien Stenosis Mitral

Right Ventrikel, not Left Ventricle Proven as Predictor Mortality: Study from Sardjito General Hospital Heart Failure Registry

Association of Estimated Glomerular Filtration Rate with Right Ventricular Function in Patients with Heart Failure Preserved Ejection Fraction

Association between Estimated Glomerular Filtration Rate with Left Ventricular Remodelling in Patients with Heart Failure Preserved Ejection Fraction

Functional Capacity in Heart Failure and Ischemic Heart Disease: A Comparison of Percutaneous Coronary Intervention versus Pharmacotherapy Alone

## 2020-2021

**COVID-19 Impact on Heart Failure and How to Improve Patients Outcome**

Predictor of One-year Mortality in Chronic Heart Failure Patients: Study from Sardjito General Hospital Heart Failure Registry

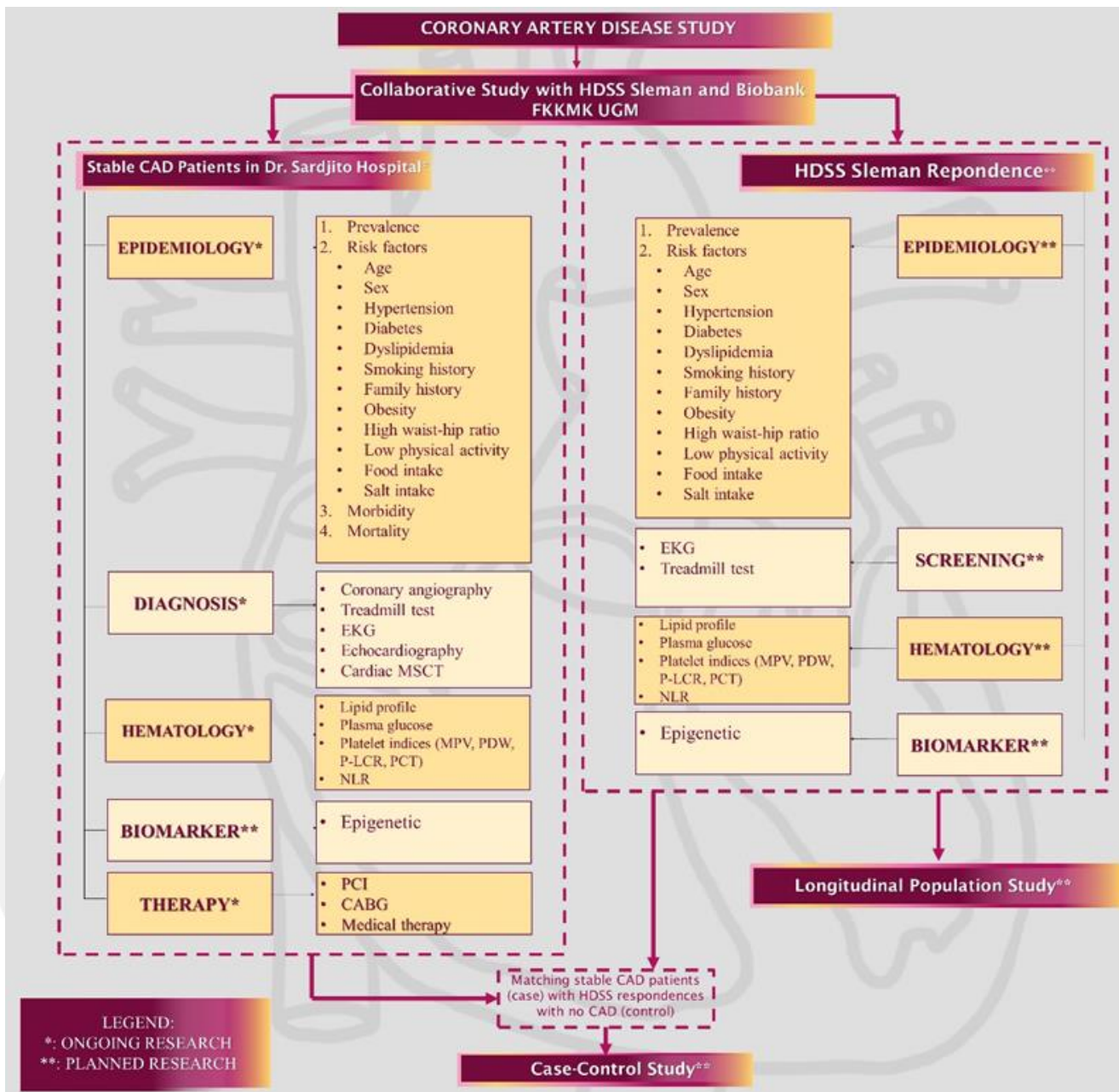
Dampak Pandemi COVID-19 pada Pasien Gagal Jantung Kronis di RSUP Dr. Sardjito

Dampak Psikososial dan Penggunaan Akses Jaminan Kesehatan pada Pasien Angina di Kabupaten Sleman Yogyakarta

NT-proBNP sebagai Prediktor Morbiditas dan Mortalitas pada Pasien Gagal Jantung Kronis di RSUP Dr. Sardjito

Pengembangan Registri Gagal Jantung Berbasis Aplikasi Android di RS Jejaring AHS UGM





Registry CAD-HDSS

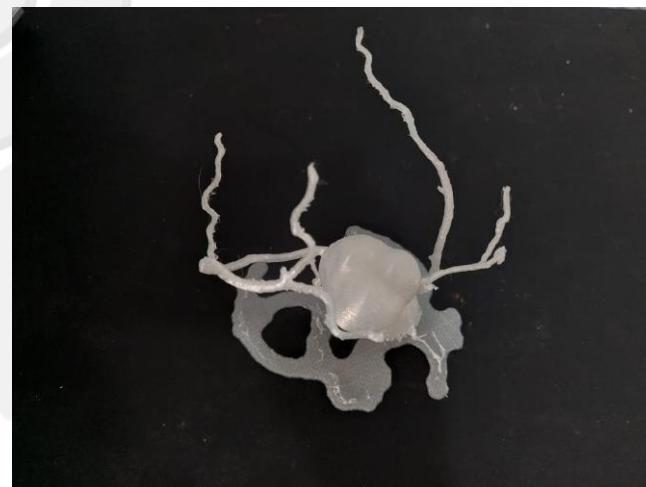


# Development of Cardiac Imaging

3D printed model  
for CHD and VHD



3D printed based  
simulator for  
coronary angiogram



AR/VR





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Great Network, Italy

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ADESTE Trial

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ISTEMI Network Indonesia

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Cancer-Registry ( cardiooncology)

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JSPS - Jepang

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Dept Obstetri – Fetomaternal

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Dinkes Prop DIY - Pediatric - Health Policy

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## Collaborative Research Network

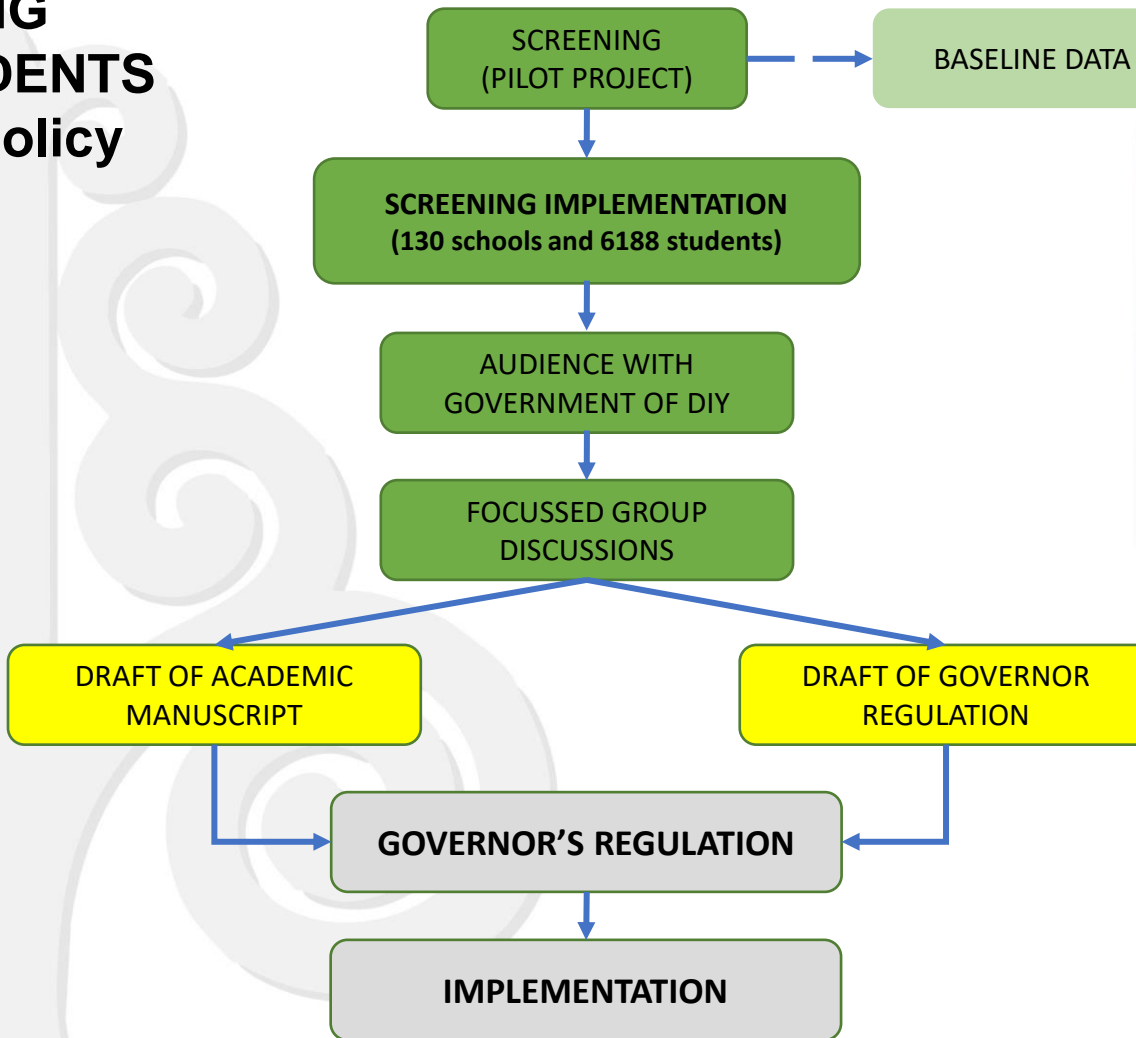


# SCREENING OF CONGENITAL HEART DISEASE AMONG ELEMENTARY STUDENTS

## From Registry to Policy



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THANK YOU