



Mahidol University

Faculty of Medicine Ramathibodi Hospital

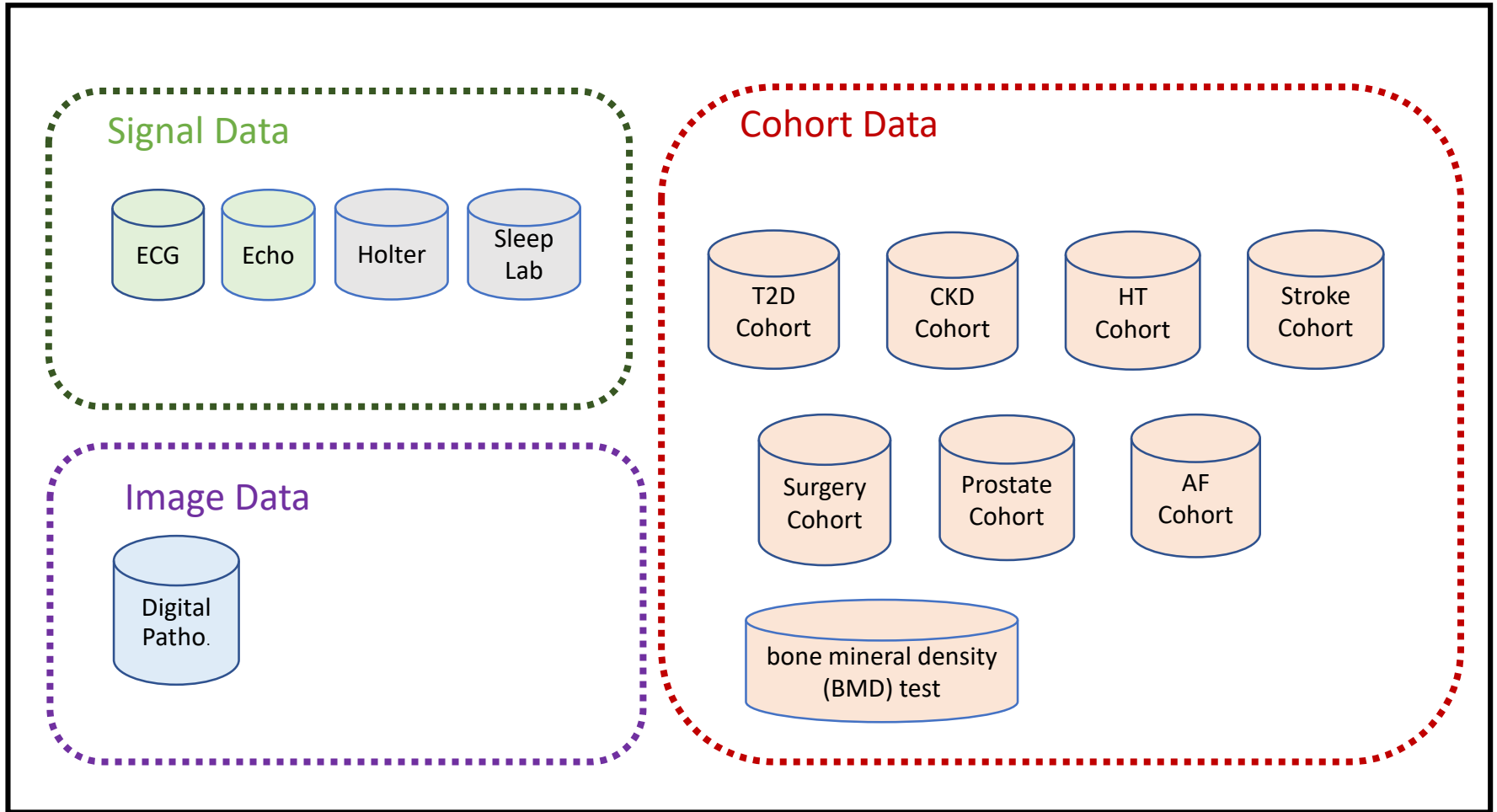
Department of Clinical Epidemiology and Biostatistics

Big cohort data for NCD

Department of Clinical Epidemiology and Biostatistics (CEB)



CEB - Data Warehouse



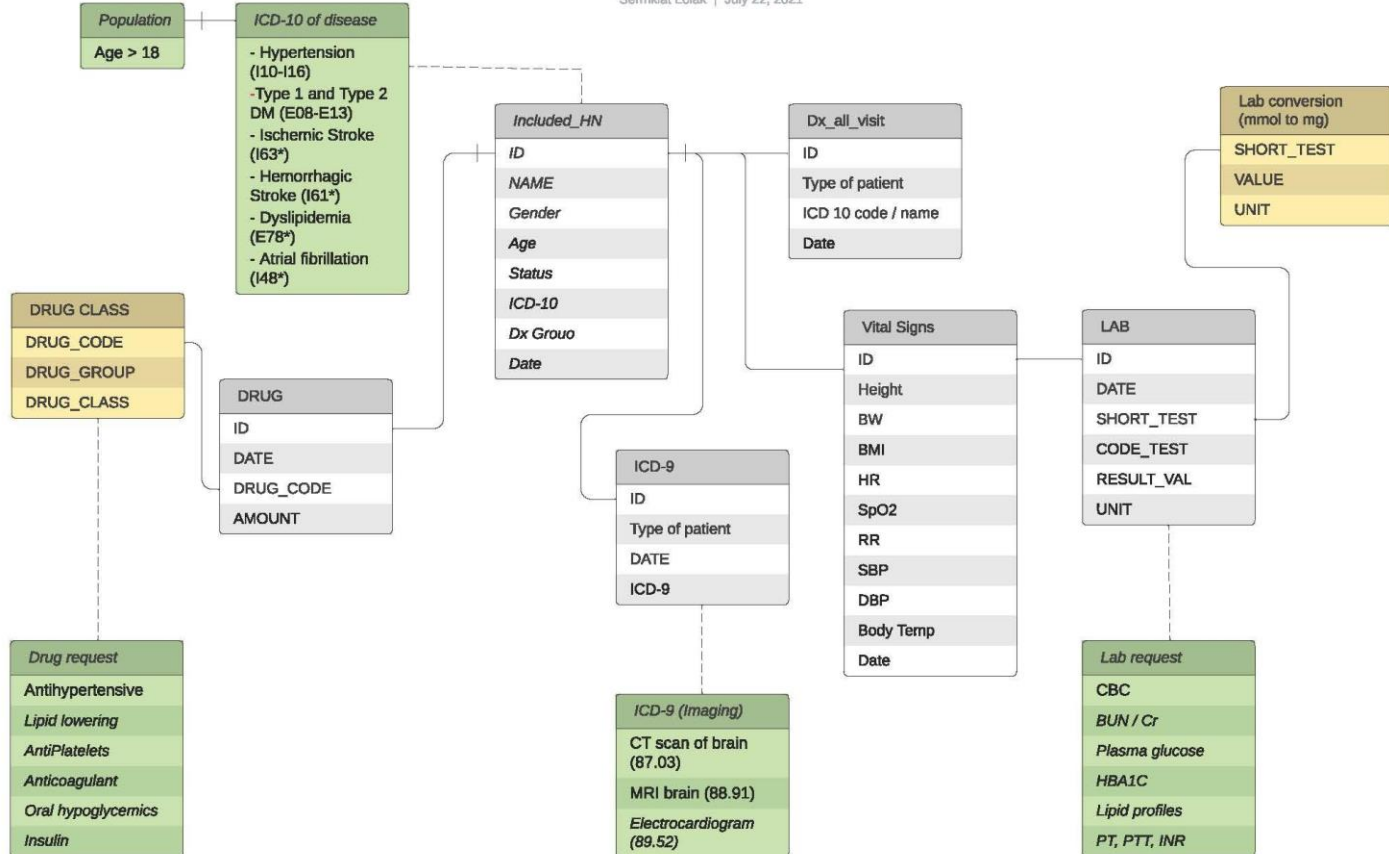


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Stroke and AF data tables

Sermkiet Lolek | July 22, 2021



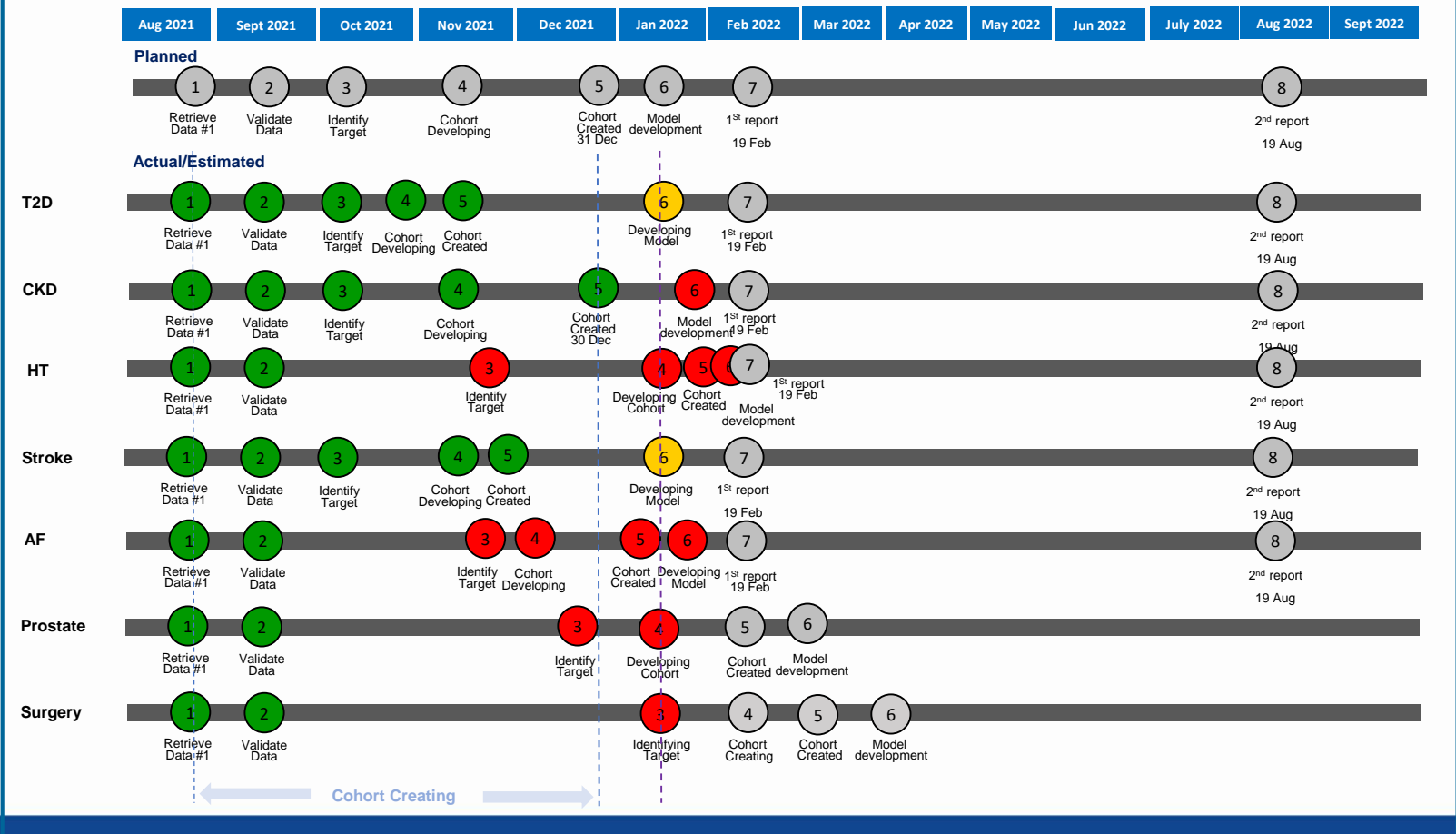
White box : Table from Rama database
 Yellow box : External table
 Green box : Requested data



CEB – Data Warehouse

Remarks: Prostate and Surgery are not included in the grant reporting

Key Milestones



Key Milestone Legend: Gray Originally planned Green Completed activity Yellow On track, will complete as planned Red Planned delivery at risk or Delay



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All = 301,514 subjects

T2D = 71,663

HT = 260,676

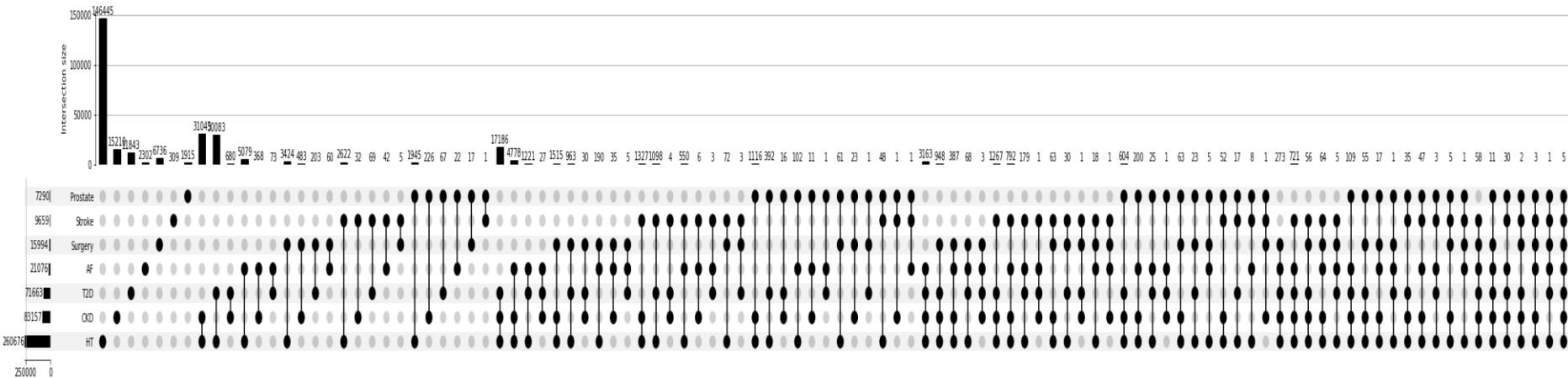
Prostate = 7,290

Acute Abdominal Surgery = 15,994

CKD = 83,157

AF = 21,076

Stroke = 9,659



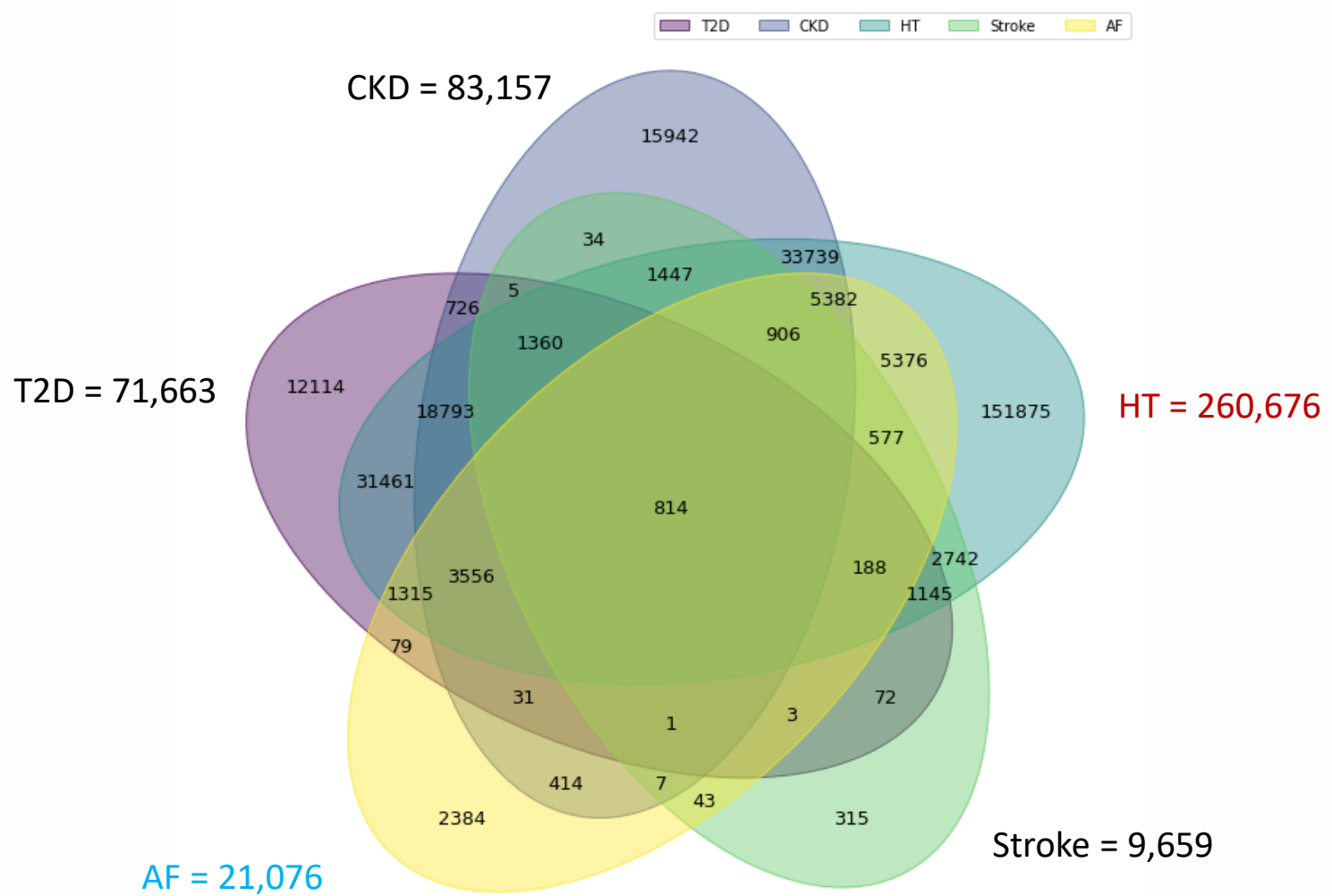


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All 5 projects = 292,846 subjects





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Real world data

- Treatment effectiveness
- Disease progression
- Economic evaluation
- Data analytics
 - Advance statistic models
 - Natural language processing
 - Machine learning
 - Deep learning



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Type 2 Diabetes Big data cohort

Panu Looareesuwan

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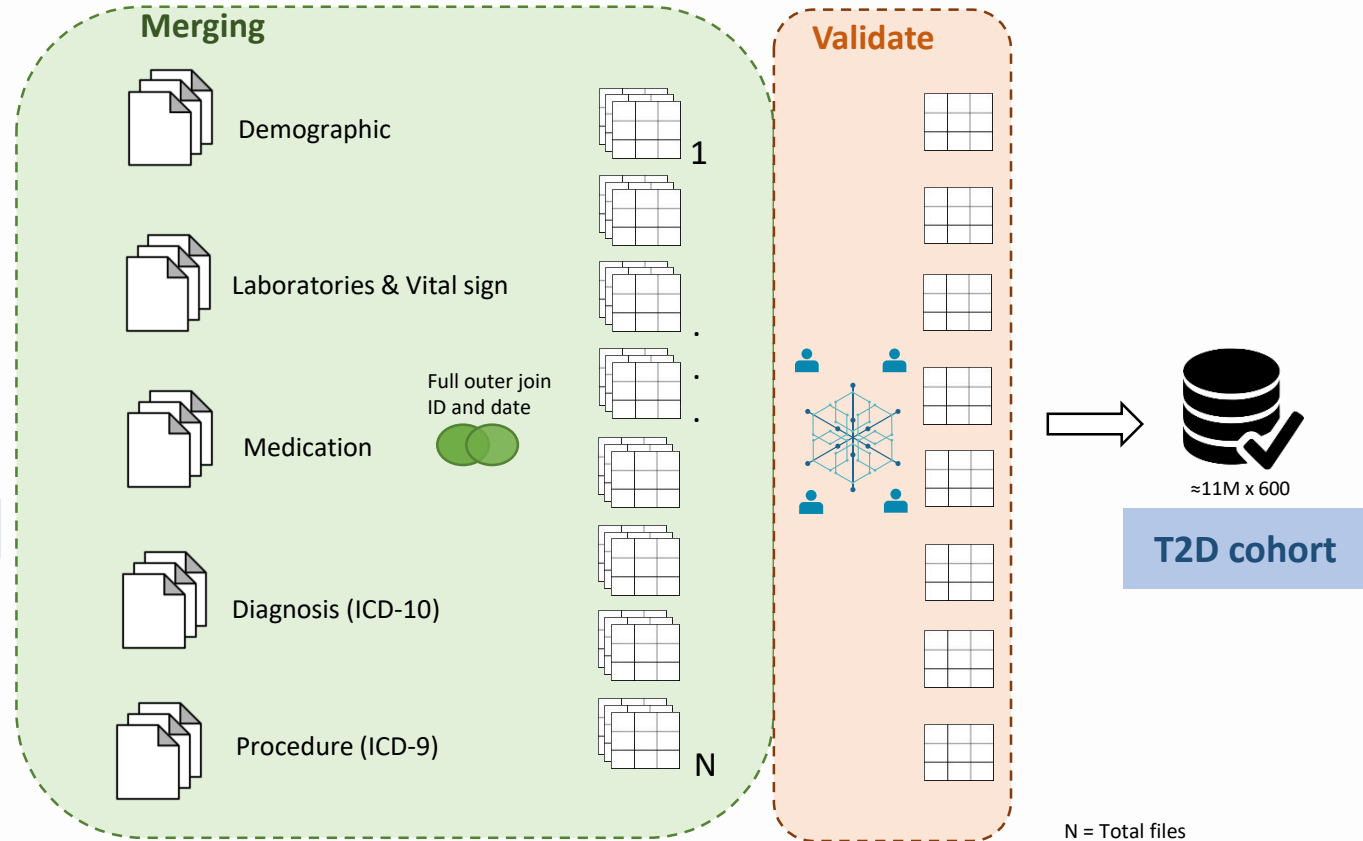
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T2D cohort development

Ramathibodi hospital

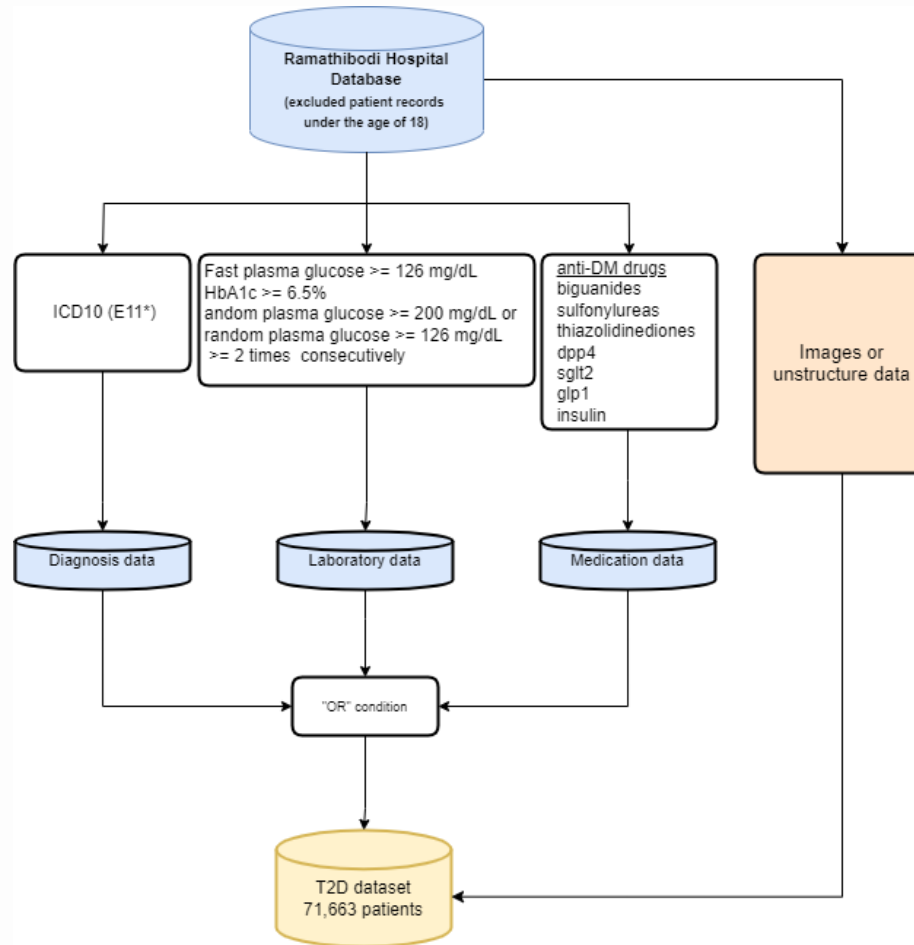


1st Jan 2010 – 31st December 2019





T2D identification





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Covariables

Laboratory tests	Vital Sign	Operations	Imaging	Medications	Comorbidities / Complications
Albumin Urine	BMI	Bariatric Surgery	Abdomen Ultrasound	ACE inhibitor	Hypertension
Blood urea nitrogen	Height	Fracture	Abdomen MRI	Alpha glucosidase inhibitors	Dyslipidemia
C-reactive protein	Weight		Abdomen CT	Alpha-adrenoreceptor antagonists	Diabetic Retinopathy (DR)
CK-MB Mass	Insurance Scheme		Fibroscan	Angiotensin receptor blockers	Chronic Kidney Disease (CKD)
Cholesterol	SBP			Antiadrenergic agents	Peripheral Vascular Diseases (PVD)
Creatinine	DBP			Antineovascularisation agents	Cardiovascular Disease (CVD)
FPG				Beta blockers	Heart Failure (HF)
HDL Cholesterol				Biguanides	Death
HbA1C (EDTA-blood)				Sulfonylureas	
LDL Cholesterol				Diuretics	
Triglyceride				DPP4	
Troponin T				Ergot alkaloids	
eGFR (CKD-EPI)				Fibric acid agents	
Uric acid				GLP1	
AST				SGLT2	
ALT				Insulin	
GGT				Statins	
				Meglitinides	
				Thiazolidinediones	



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Expected research



Treatment effectiveness of 2ndline anti-diabetic drugs



Prognostic factor of diabetic complications



T2D disease progression

Traditional statistical modeling

Machine learning models



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Hypertension Big data cohort

Htun Teza

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Hypertension identification

- International Classification of Diseases – tenth division (ICD10)
 - I10, I11, I12, I13, I15

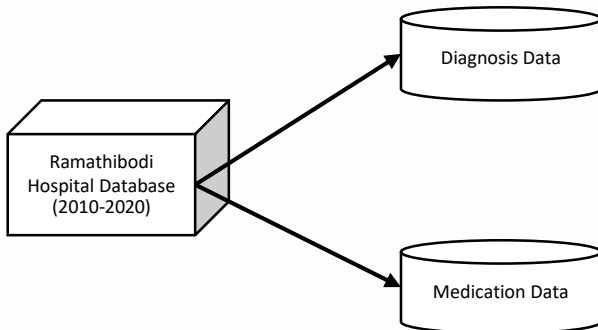
-and/or-

- At least one Antihypertensive (ANTH) drugs prescribed



Subject Selection

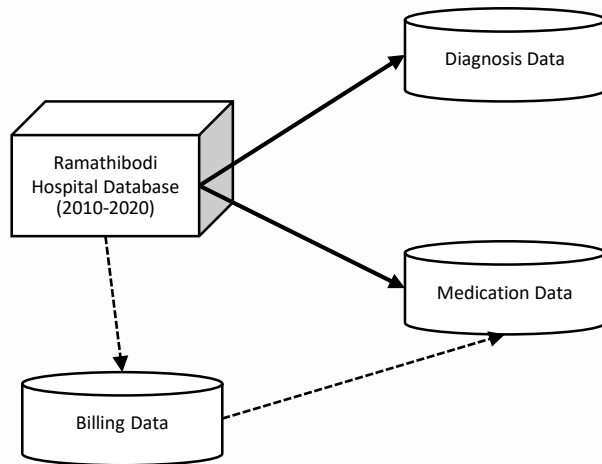
- Applying two datasets to identify Hypertension





Subject Selection

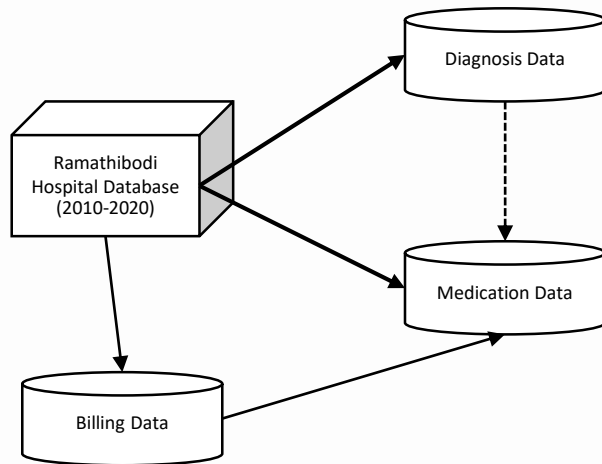
- Records of buying the medications as prescription





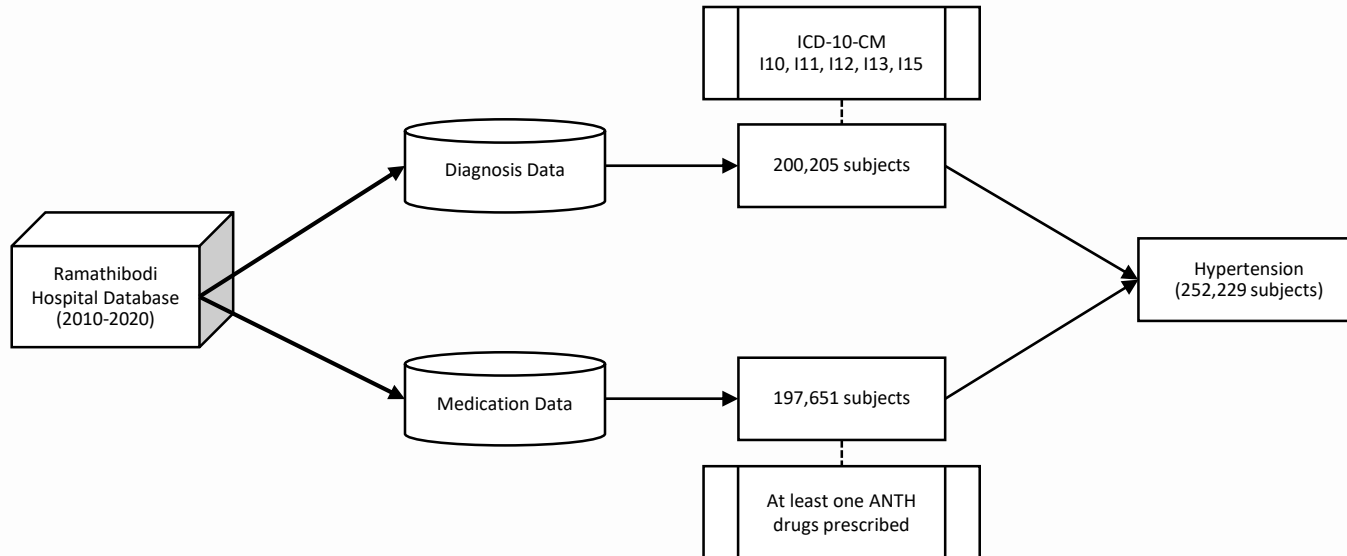
Subject Selection

- Anti-hypertensive medications can be prescribed for other purposes
- For example, Beta-blockers for Hyperthyroidism





Subject Selection





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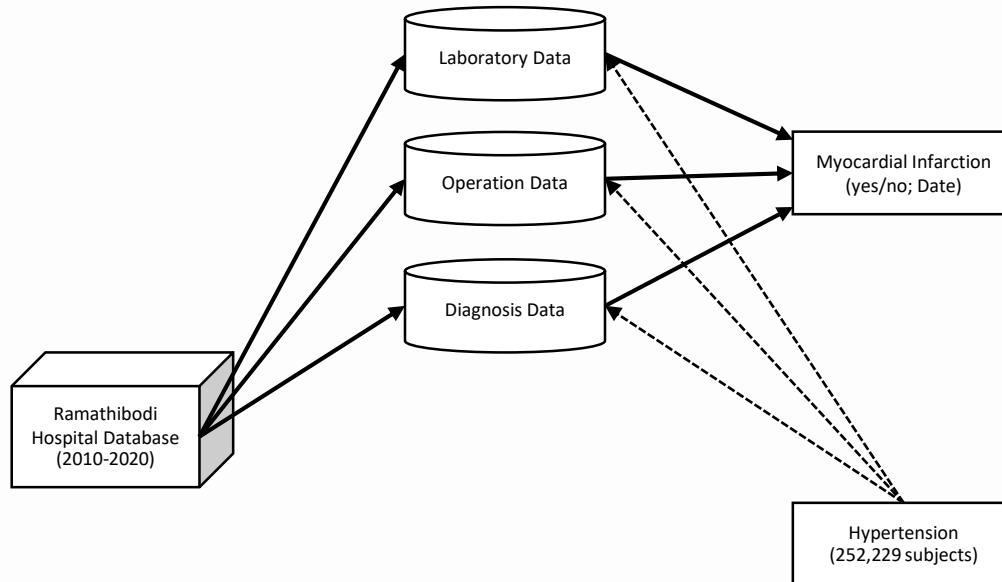
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Expected Research

- Disease progression of Hypertension
- Treatment effectiveness of ANTH medications



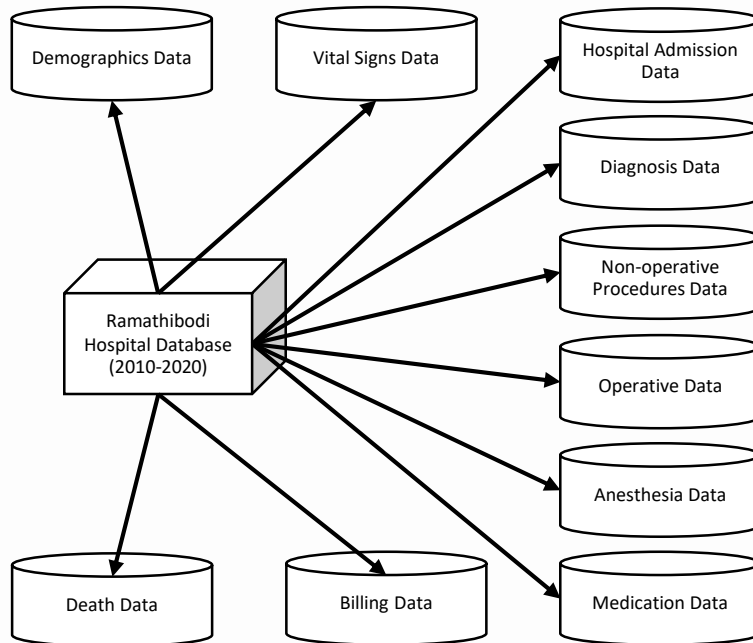
Sample



- MI in Hypertensive patients
- Identified with
 - Diagnosis; I21, I22, I23.
 - Procedure; PCI, CABG.
 - Troponin level; >14 ng/ml.



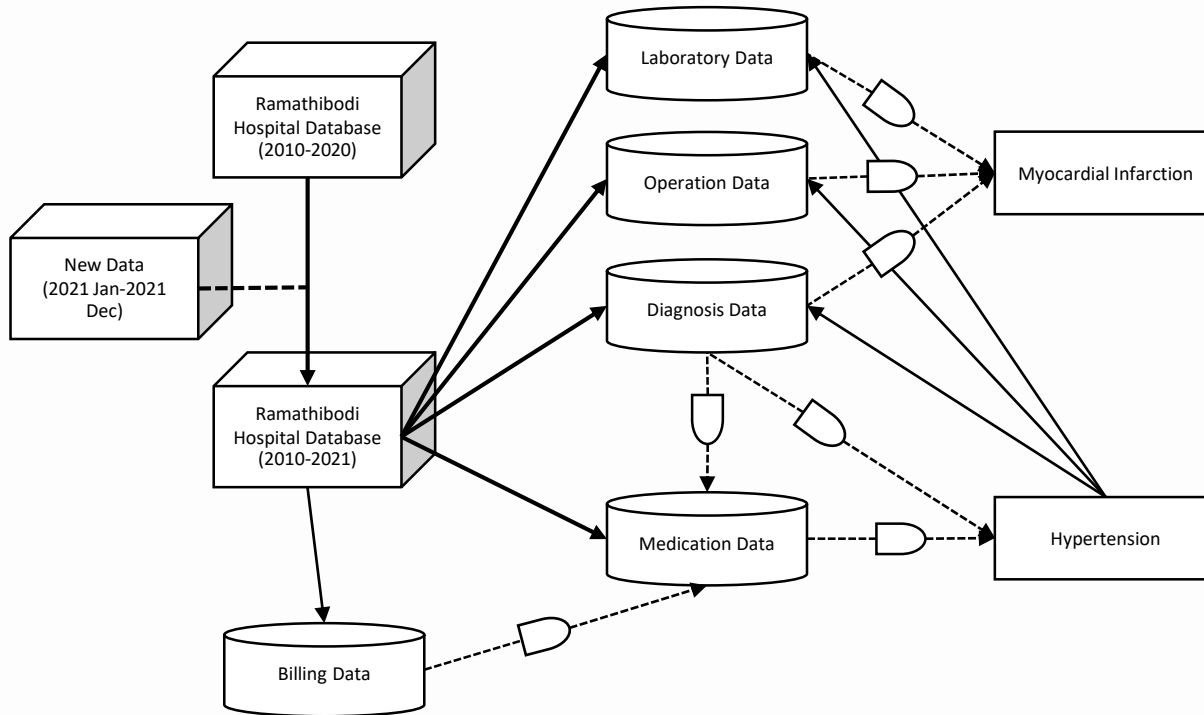
Feature extraction



- Similarly, we can extract features deemed relevant
- As needed by each research projects



Cohort update



- If same criteria & same format,
- the same code
- As pipelines into the data warehouse.