The PHASES Program

Preventing Heart Attacks and Stroke Events through Surveillance

Clinical Lead
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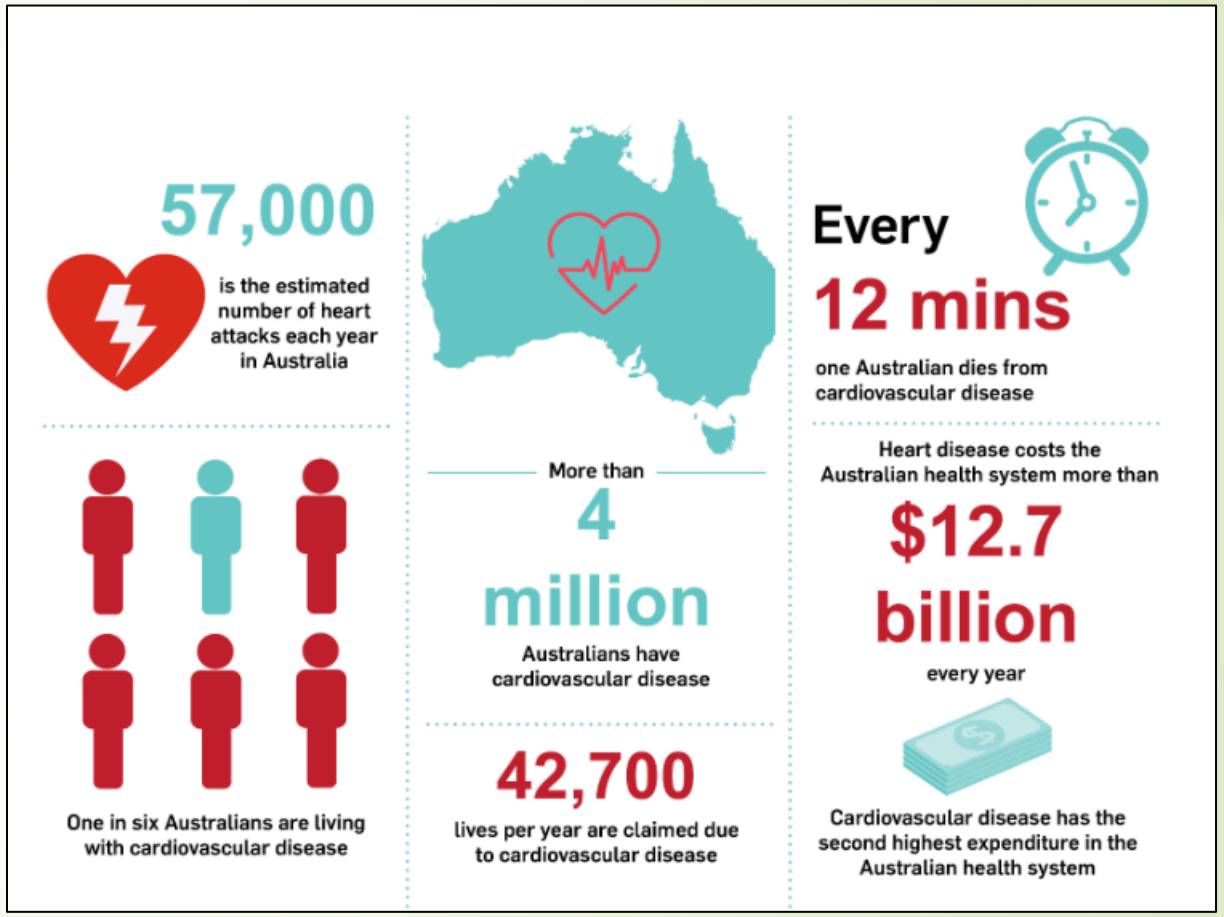
Challenge

- Cardiovascular disease (CVD) is the nation's biggest killer
  - 57,000 heart attacks
  - 43,000 deaths annually
  - 11% of all hospital admissions
- Disproportionately impacting priority groups.



Economic Costs

- Australian gross domestic product $2.5 trillion per annum
- Govt spent $176Bn healthcare
  - $12.7B on CVD
  - 7% of government healthcare expenditure

Economic Costs

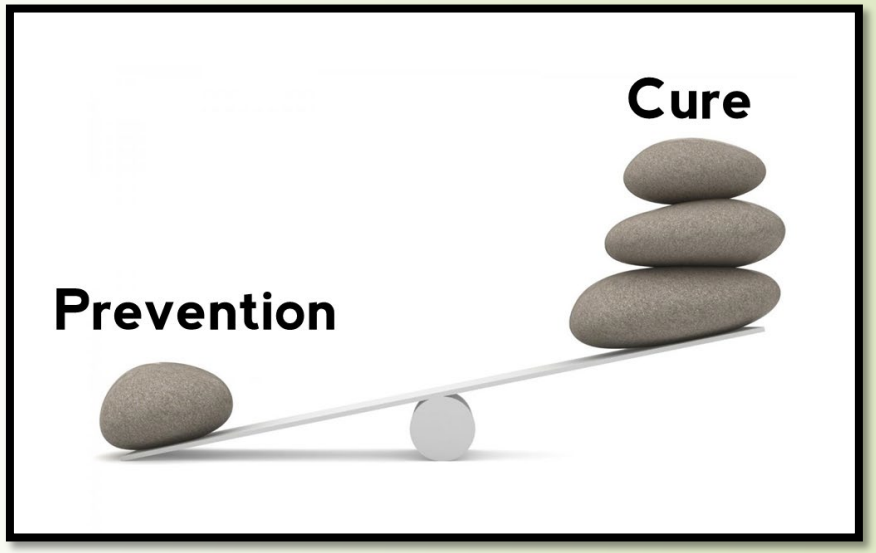
- Cost (acute) per heart attack: $22,000
- Cost (acute) for stroke: $27,000
- Lifetime cost: $200,000

- 57,000 heart attacks and 56,000 strokes per year…..
- $2.8Bn acute cost

The economics costs of heart attack and chest pain (Acute Coronary Syndrome)'. Access Economics 2012
Economic impact of stroke. National stroke foundation. Deloitte Access Economics 2013

Cardiovascular Disease

- Majority of these deaths are preventable
- Through effective behaviour interventions and preventive medications.
- Reductions in blood pressure and lipids using standard treatments can halve risk.
- Huge opportunity for CVD prevention



Cardiovascular Disease

- Total of 88,000 heart attacks and cardiac deaths (2009)
- Estimated $7.1 billion could be saved
- Use of preventative pharmacotherapy alone

Cobiac L, 2012 BMC Public Health

What is the current policy for CVD Prevention in Australia?

Combined Risk

- Rather than treating individual risk factors
- Overall effect of multiple individual risk factors
- Combined together
- Create a more accurate picture or '*risk category*'
- Individuals overall future risk of having a heart attack or stroke

Estimate 5-year CVD risk category

Estimated 5–year CVD risk

- **High:** ≥10%
- **Intermediate:** 5% to <10%
- **Low:** <5%

Australian Chronic Disease Prevention Alliance 2023

Australian CVD risk calculator

AusCVDRisk is a risk assessment, communication and management tool for health professionals. To learn more about how this calculator works, refer to the Australian Guideline for assessing and managing cardiovascular disease risk.

This risk assessment is recommended for the following individuals without known atherosclerotic cardiovascular disease:

- All people aged 45-79 years
- People with diabetes aged 35-79 years
- First Nations people aged 30-79 years (assess individual risk factors 18-29 years).

Clinically determined high risk*

Clinical conditions that automatically confer high risk. If either of these apply, you will be redirected to management for high risk category

- [ ] Moderate-severe chronic kidney disease
- [ ] Familial hypercholesterolaemia
- [ ] Neither present

Age* — Enter age 30-79 Years

Sex at birth* — ( ) Female ( ) Male

Smoking status*

- ( ) Never smoked
- ( ) Previously smoked
- ( ) Currently smokes

Systolic blood pressure* — SBP mmHg

Ratio of total cholesterol to HDL cholesterol* — Ratio of total cholesterol to HDL cholesterol

OR enter mmol/L

Use of CVD medicines within last 6 months*

- [ ] Blood pressure-lowering medicines
- [ ] Lipid-modifying medicines
- [ ] Antithrombotic medicines
- [ ] None

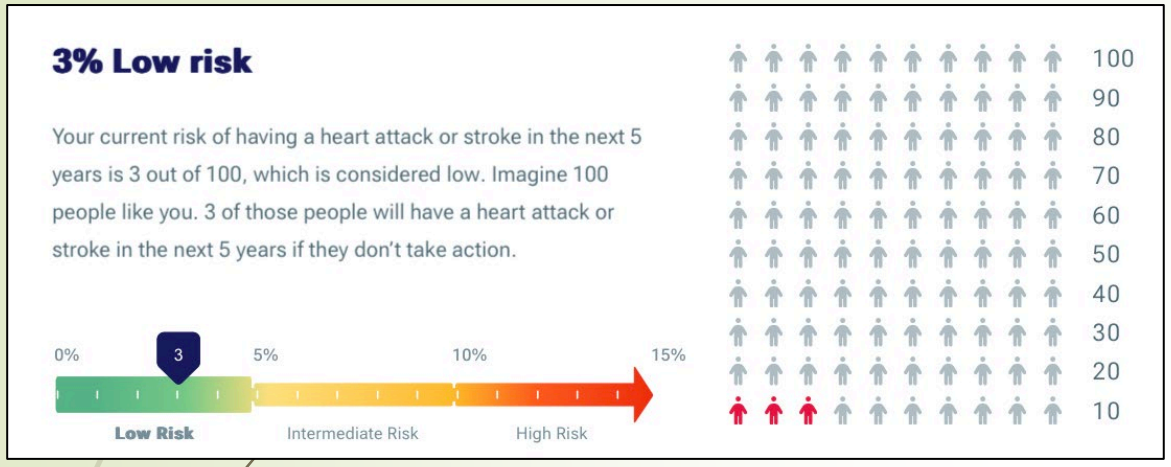
History of atrial fibrillation — (•) No ( ) Yes

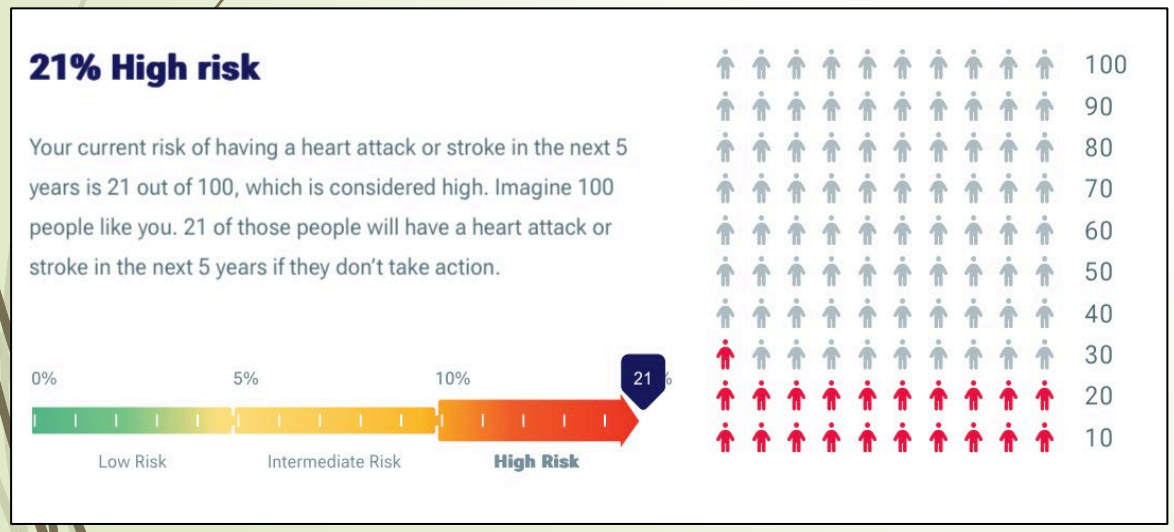
Postcode — Enter postcode to generate SEIFA quintile

Diabetes* — (•) No ( ) Yes

Calculate

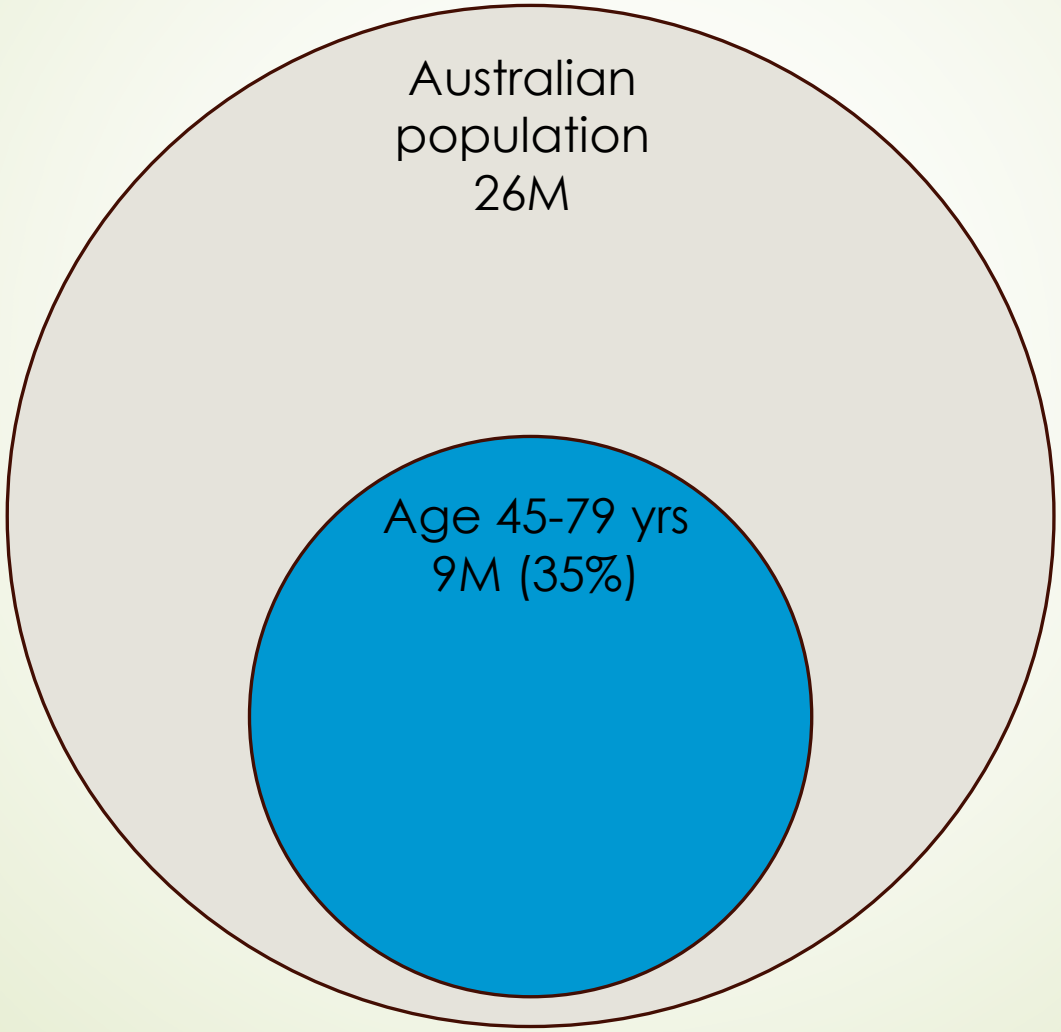
Please see our privacy statement here



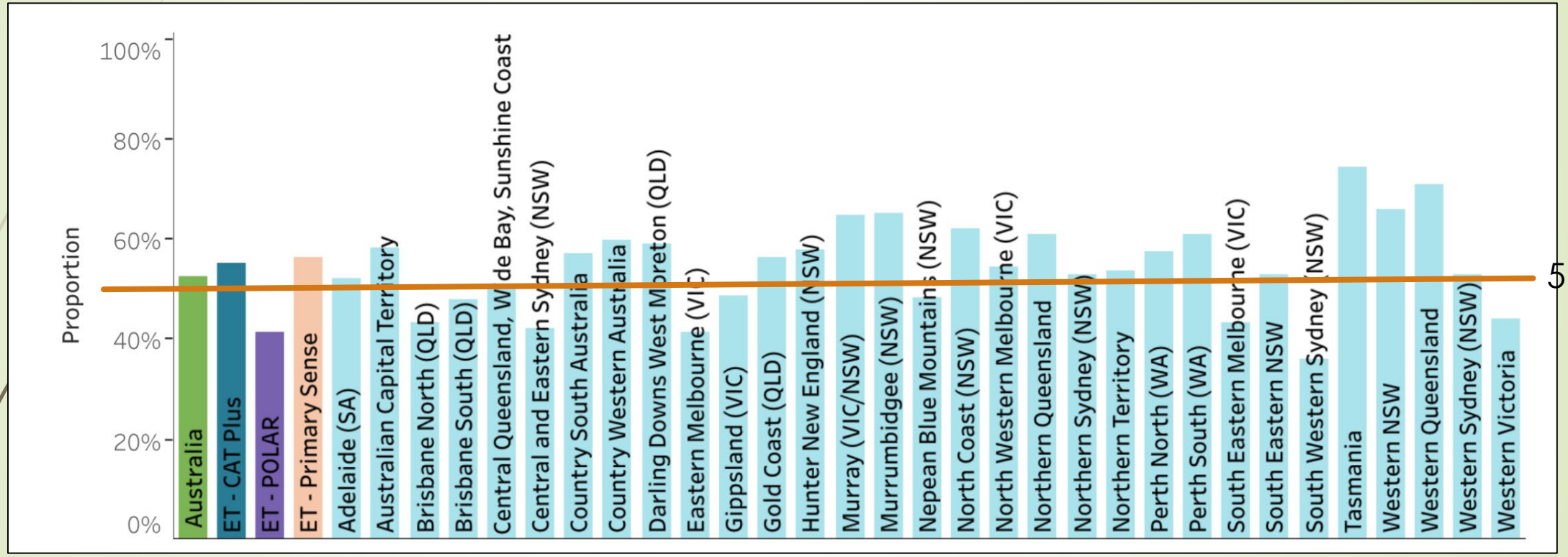


1. Lifestyle changes
2. Pharmacotherapy
   - Lipid lowering therapy
   - Anti-hypertensive therapy

What is the uptake of CVD risk assessment and appropriateness of treatment in Australia?

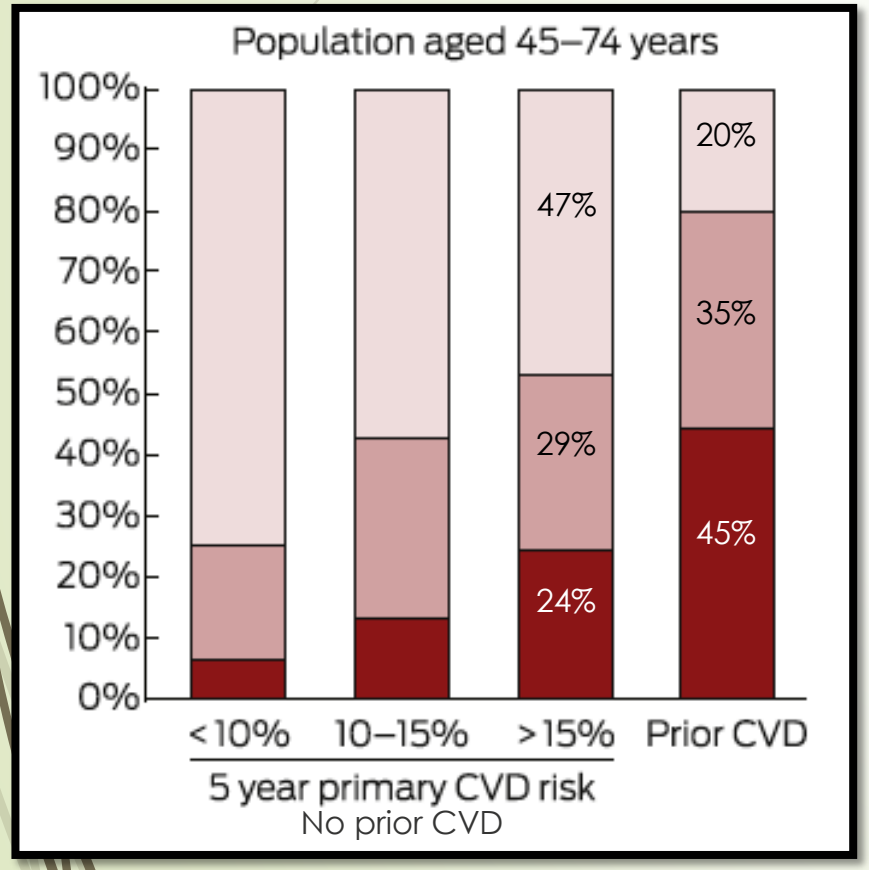


Only half of those Australians eligible for CVD risk screening have sufficient risk factors recorded to enable risk assessment.



AIHW 2022-23

Pharmacological treatment of ACVD risk in Australia



Taking neither medication type

Taking one medication type only

Taking a combination of BP- and lipid-lowering medications

- **970,000 at high ACVD risk** (13% of population aged 45-74 yrs)
- **Not receiving guideline-recommended therapies**

Of those screened and at high risk, more than 75% are not receiving recommended therapies.

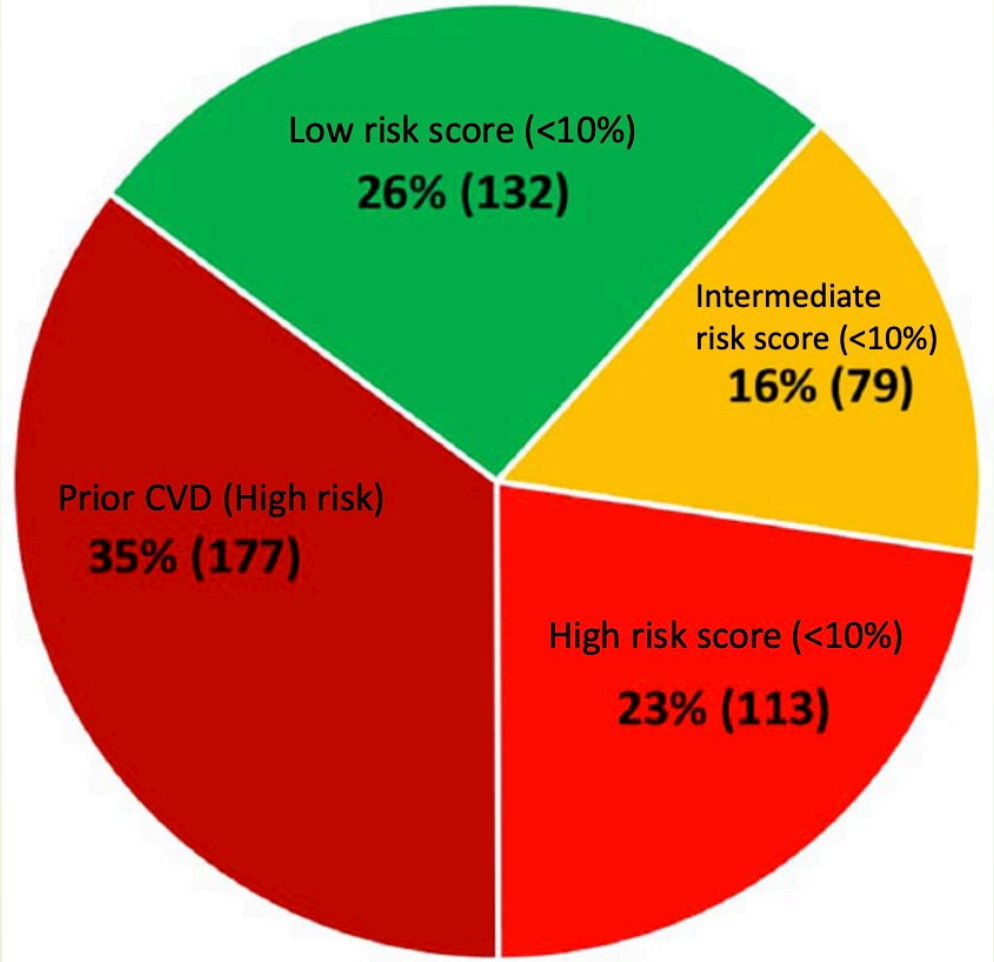
Banks et al 2016

Gold Coast Population 2022
CVD Risk Scores and treatments assessed using Primary Sense

- 54% of the eligible population have insufficient risk factors for CVD risk assessment
- 79% of those screened found to be at high CVD risk, inadequately treated

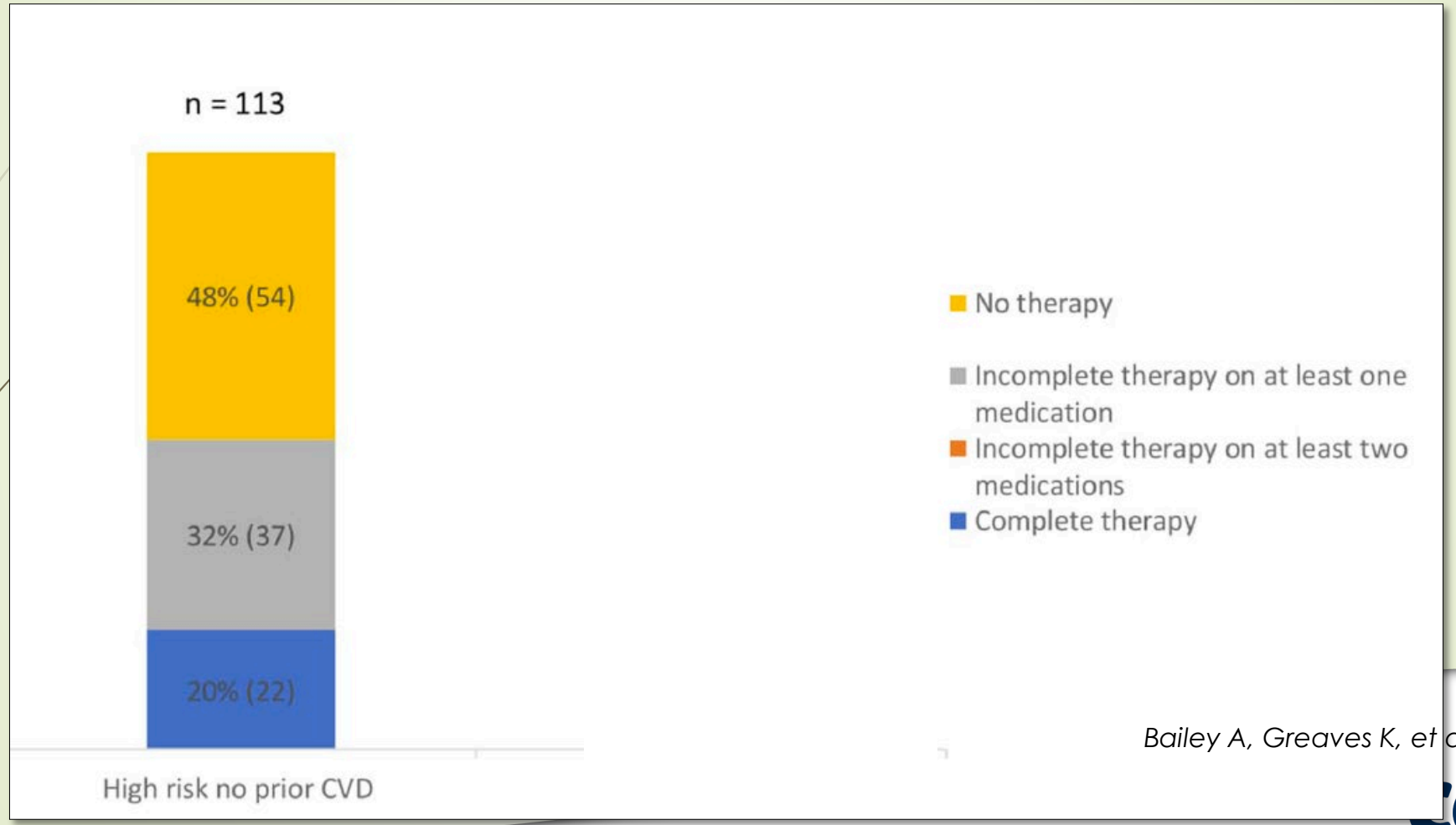
Blazak P, Greaves K et al Heart Lung Circ 2023

CVD risk score categories in patients presenting to SCUH over 1 year with acute coronary syndrome due to coronary artery disease



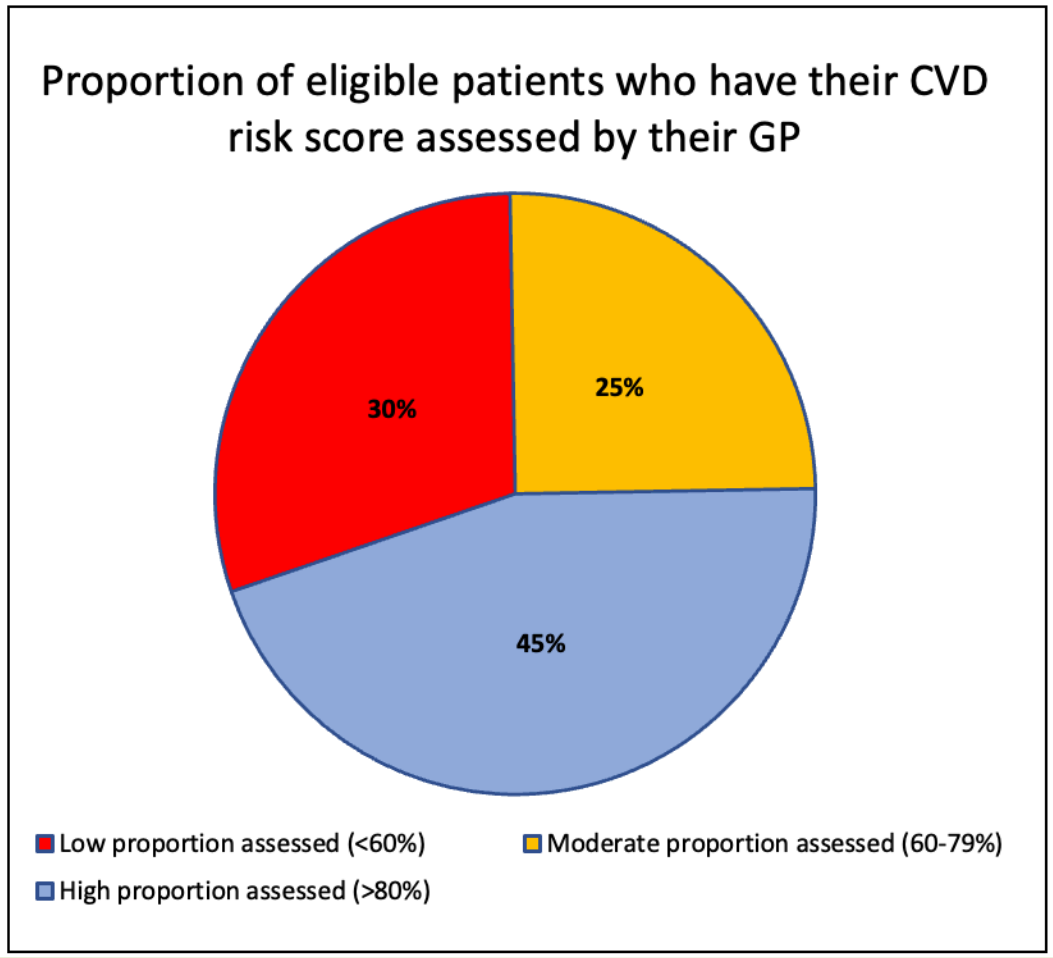
Bailey A, Greaves K, et al BMJ Open 2021

Proportions (%) of patients presenting with ACS due to CAD on guideline-recommended pharmacotherapy



Bailey A, Greaves K, et al BMJ Open 2021

Cross-sectional survey n=111 GPs



Greaves et al BMJ Open 2020

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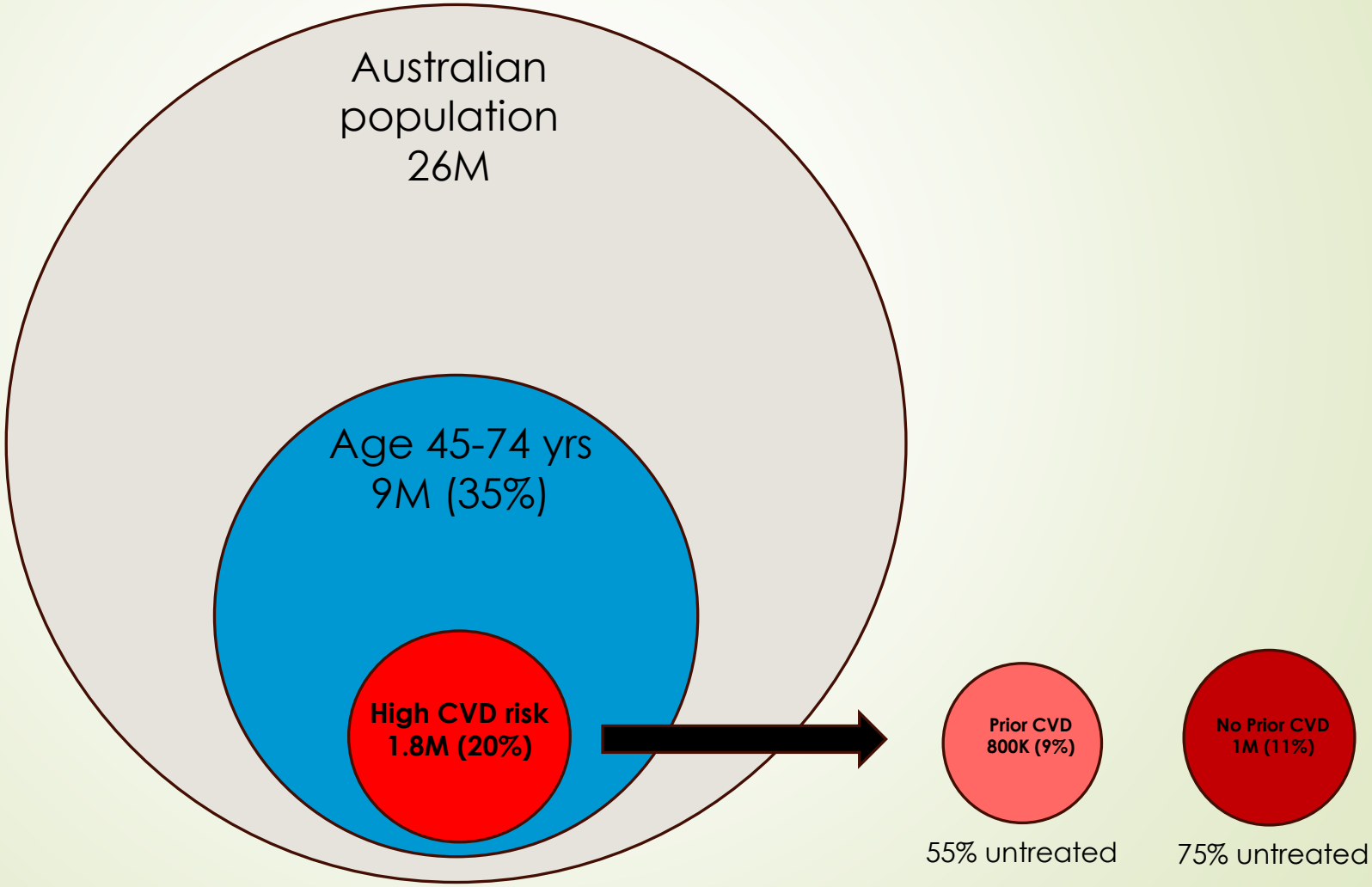

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August 2024

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Australian Government
Department of Health and Aged Care

Queensland Government
Queensland Health

phn QUEENSLAND PHNs
An Australian Government Initiative

CCQ COUNTRY TO COAST, QLD
Healthy, connected communities

Funding & Project Partners

Statewide PHN support through the QLD PHN Collective

50% co-funded by QLD Health

50% co-funded by Commonwealth

Australian Government
Department of Health and Aged Care
Queensland Government
Queensland Health

PHASES Background

The PHASES Program takes a multi-pronged approach to reducing cardiovascular disease (CVD)

Multiple sources of funding have been secured to commence two projects

1. PHASES with Primary Sense™ (CCQ PHN)
2. PHASES Linkage (SCHHS)

1. PHASES with Primary Sense™

- The *PHASES with Primary Sense™* project is focussed on the **surveillance**, **identification**, **early intervention**, and **ongoing management** of CVD within the **primary care sector**.

2. PHASES Linkage Project

- The *PHASES Linkage* project is to link primary care CVD preventive care data with outcomes (CI B: Dr Ellie Paige, QIMR)

PHASES Projects Summary

PHASES Projects

PHASES with Primary Sense

Improve CVD preventive care in primary care statewide

Aims

1. Dashboard to monitor CVD preventive care
2. Implement interventions
   - Increase assessments & appropriate treatment
3. Analysis
   - Demand (and cost) to Queensland's hospital and health services

PHASES Linkage

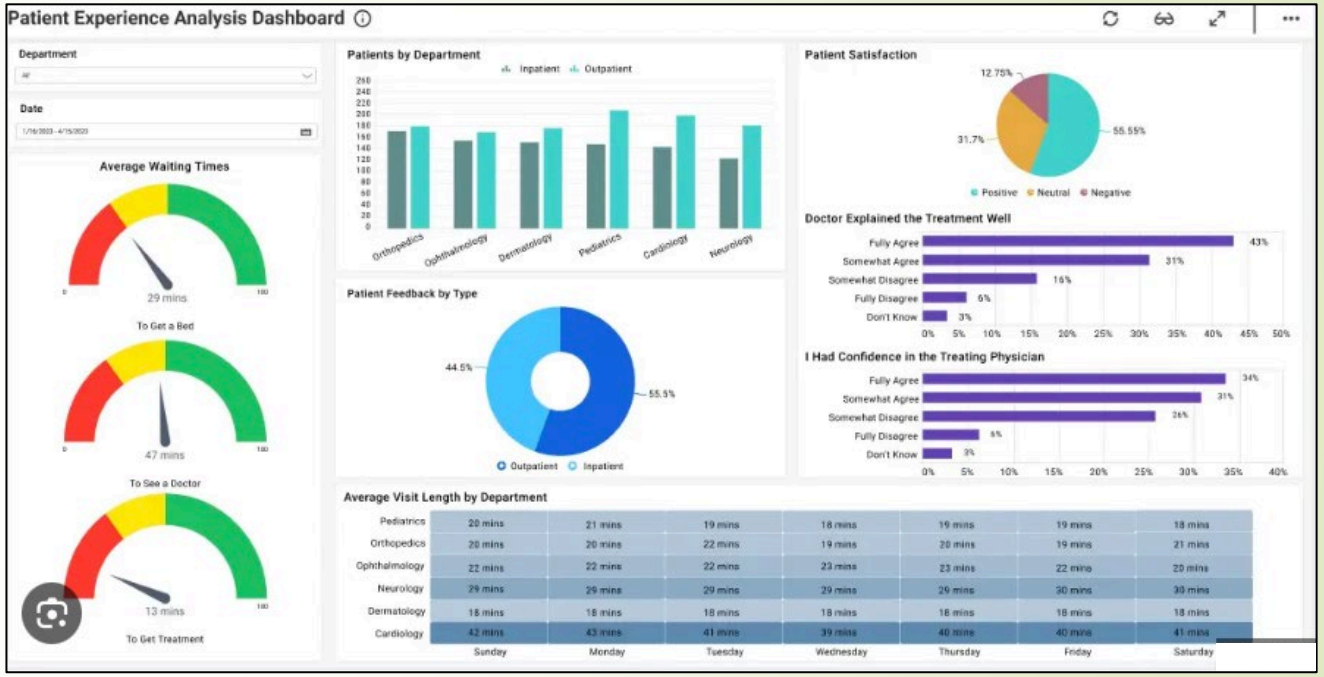
Link Primary Care CVD risk data with hospitalisation and mortality data

Aims

1. Understand how CVD risk impacts hospitalisation rates
2. Assess new CVD risk prediction equation accuracy
3. Estimate no. heart attacks and strokes averted if CVD preventive care improved
4. Identify gaps in CVD preventive care.

CVD risk score and treatment Dashboard

- Dashboard system is essential to:
  - To quantify the magnitude and distribution of a disease
  - To monitor effectiveness of prevention strategies
  - To inform public health policy and planning



Opportunity

- Leverage existing GP EMR and other software systems nationally
- GP electronic medical records store all CVD risk data

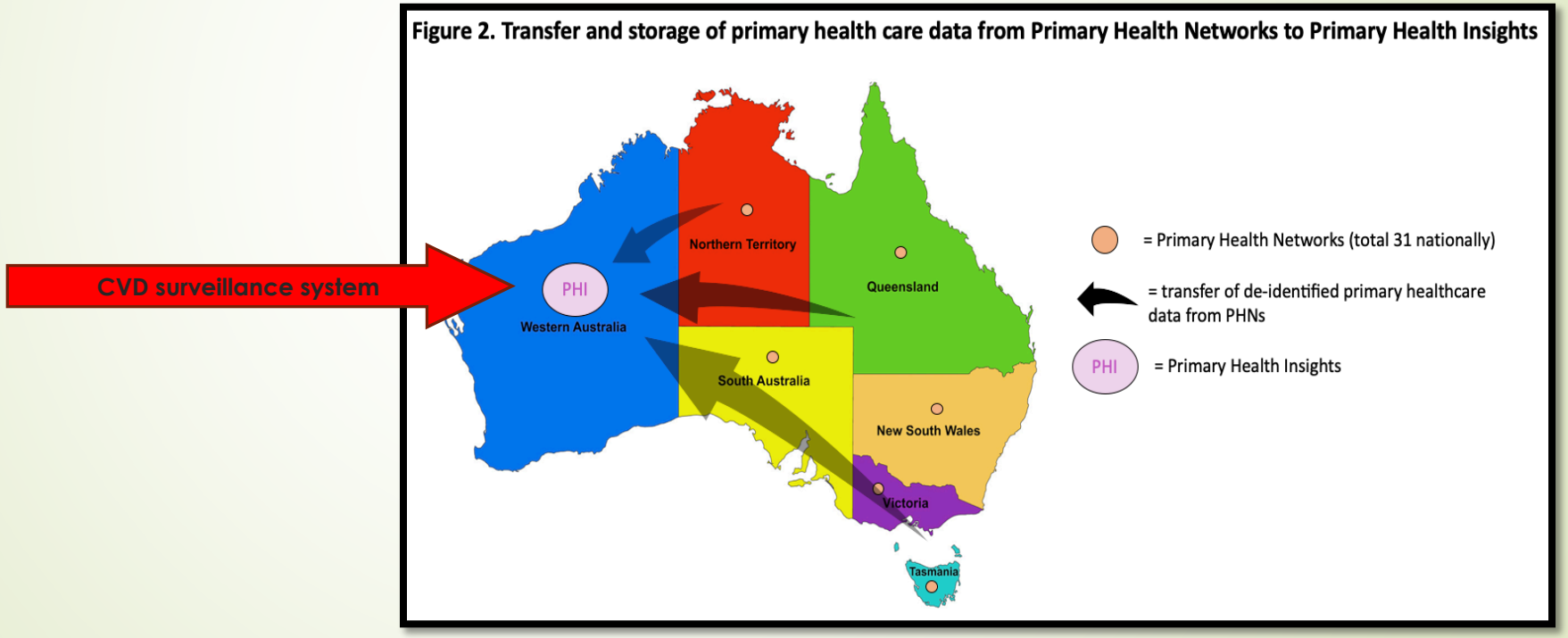
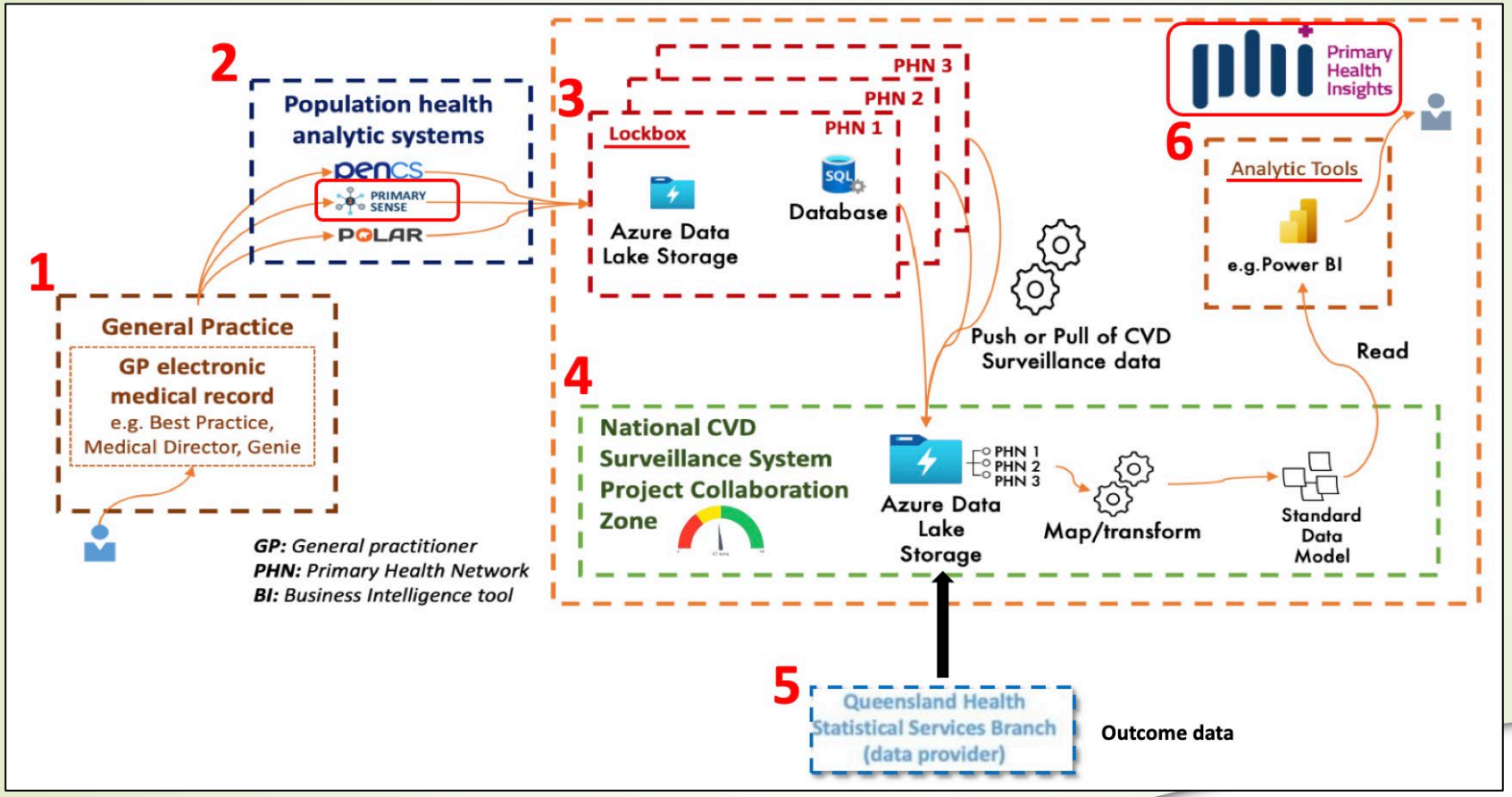


Figure 2. Transfer and storage of primary health care data from Primary Health Networks to Primary Health Insights

Phases Program IT Architectural Diagram
CVD Preventive Care Dashboard and Linked Data to Outcomes



A need to evaluate GP Desktop EMR and Health Extraction Tools

Primary Sense Evaluation as a Surveillance System for monitoring CVD Preventive Care

EVALUATION OF SURVEILLANCE SYSTEM – ERRORS FOUND	RECOMMENDATIONS FOR IMPLEMENTATION
Incorrect definition of CVD	Use correct ICD codes for CVD
Exclusion of patients over 74 years from absolute CVD risk assessment	Include those over 74 years
Absolute CVD risk score calculation of those already at known high CVD risk	Identification those at known high CVD risk and exclusion from risk score calculation
Smoking status - unable to determine smoking cessation date	Include smoking cessation date (to capture recent ex-smokers)
Diastolic BP not included, preventing identification of those at known high CVD risk	Include diastolic BP
Misclassification of certain types of preventive pharmacotherapy	Update list of medications for pharmacotherapy
Absolute risk score calculator formula error	Formula review and correction

Blazak P, Greaves K et al Heart Lung Circ 2023

A need to evaluate GP Desktop EMR and Health Extraction Tools

Proportion of First Nations aged 35-74 years without prior CVD who had a CVD risk assessment recorded in Australia, by Health Extraction Tool.

Health Extraction tool	Low risk 95%CI	Moderate risk 95%CI	High risk 95%CI
Tool 1	**72.0** (69.3-74.6)	**18.4** (16.2-20.8)	**9.6** (8.0-11.5)
Tool 2	**59.8** (59.0-60.6)	**5.9** (5.5-6.3)	**34.3** (33.5-35.1)
Tool 3	**65.5** (63.5-67.5)	**11.7** (10.4-13.1)	**22.8** (21.1-24.6)

Data from: AIHW: *Aboriginal and Torres Strait Islander specific primary health care: results from the nKPI and OSR collections*. 2023.

Agostino J, Greaves K et al, AJGP 2024

Phases with Primary Sense: Interventions for CVD Preventive Care

- **Comprehensive Digital Guide**: Step-by-step booklet for GPs with models to implement CVD care.
- **Tailored Solutions**: Customized care paths for smooth delivery.
- **Screening Options**:
  - Systematic: Planned patient recalls.
  - Opportunistic: Routine visit screenings.
- **Automated Risk Categorization**: Primary Sense system auto-generates CVD risk levels for streamlined management.
- **GP Desktop Prompts**: Alerts with simple steps for managing high-risk patients.
- **SMS/Email Recalls**: Targeted follow-ups for high-risk and under-treated patients.
- **Patient Education Links**: Links to Heart Foundation resources via SMS/email.
- **Health Literacy Tools**: Support for patients with low health literacy to understand risks and options.
- **Digital Support & Training**: Assistance for practices to use digital tools effectively.
- **Awareness Campaign**: Education for GPs and the public on CVD prevention.
- **Financially Sustainable Models**: Billing strategies to make CVD care cost-effective.

PHASES with Primary Sense: Project Outcomes (5 years)

Category	Metric/Outcome
Adoption of Primary Sense™	• 95% of practices with Primary Sense installed are actively using it.
Use of Alerts and Prompts	• 40% increase in use of Primary Sense Alerts and Prompts.
GP Capacity, Knowledge, and Capability for CVD	• 10% increase in CVD risk assessments, risk factors, and risk categories measured. • 10% increase in prescribing CVD-related medication for high-risk groups.
Consumer Awareness and Management of CVD	• Additional 205,000 patients screened for CVD.
Improved CVD Health Outcomes	• 10% reduction in acute incident events annually (after 5 years).
Sustainable Health System	• 10% reduction in wait lists. • QLD HHS realizes $150 million savings annually. • 50,000 bed days avoided.

PHASES Linkage Research Questions

Question	Key Points
Proportion of People at High Risk of Developing CVD in Queensland	Information on the proportion of high-risk individuals and variations by socioeconomic factors.
Proportion Using Preventive Medications	Analysis of how many high-risk individuals are using recommended preventive medications.
Variation by Socioeconomic Factors	Differences in preventive medication use and CVD risk by socioeconomic factors in Queensland.
Rate of Hospital Admissions and Length of Stay for CVD or Related Conditions	Examination of hospital admissions and length of stay variations based on CVD risk in Queensland.
Performance of New CVD Risk Equation in Queensland	Evaluation of the accuracy and effectiveness of the new CVD risk equation in Queensland.
Expected CVD Events Averted with Pharmacotherapy	Estimate of the number of CVD events that could be prevented if high-risk individuals received pharmacotherapy.
Requirements for Establishing Large-Scale CVD Risk Surveillance System	Real-world logistical and operational requirements for implementing a CVD risk and outcomes surveillance system in Queensland primary care.

Any Questions?

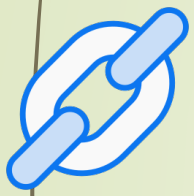
1. PHASES with Primary Sense Project Objectives

- Governance
- Digital Capabilities & Innovation
  - Surveillance, interventions, across primary care
- Stakeholder Engagement & Relationships
  - Develop new and improved ways of managing CVD risk
- Awareness Campaign
  - State-wide public health promotion campaign
- Evaluation
  - Outcomes and evidence successful models of care

Initial Outcomes (2 years)

Widespread adoption of Primary Sense™ across the state:

- 80% of eligible practices implemented Primary Sense™.
- 20% increase in use of Primary Sense Alerts and Prompts



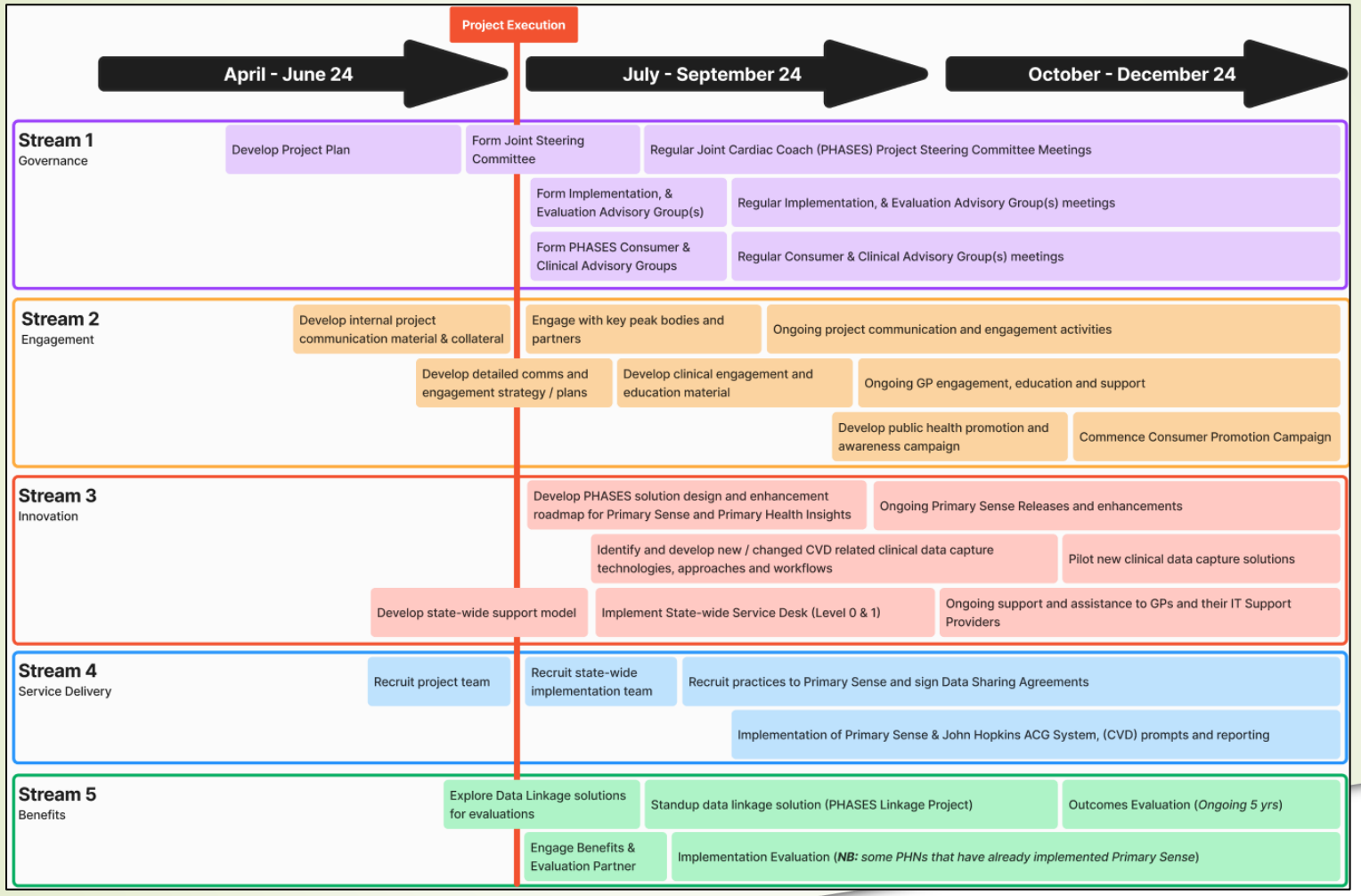
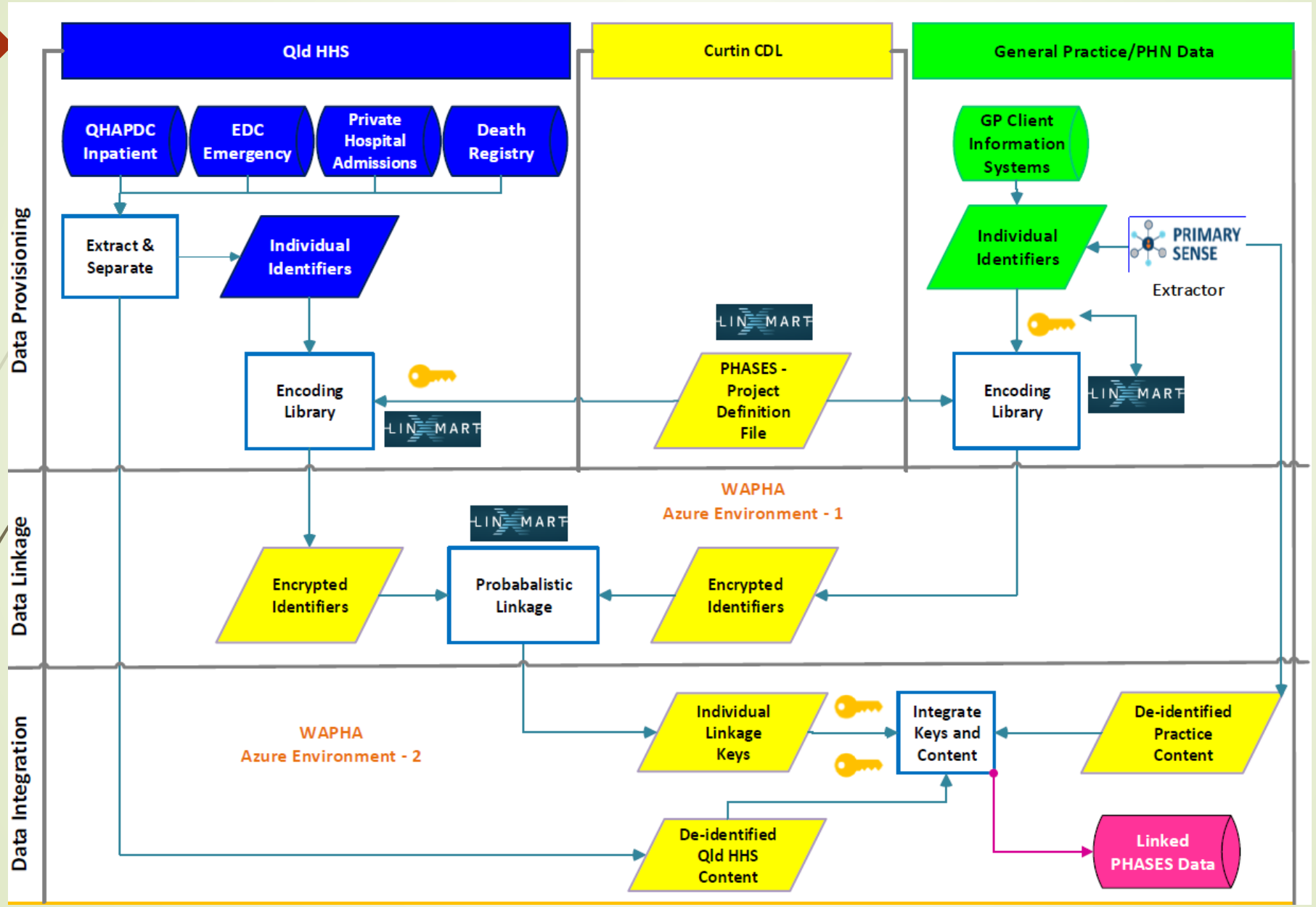
A more mature, robust, and future capable Primary Sense™ solution:

- 20% reduction in technical issues and support calls.
- Other priority surveillance, health screening and intervention alerts within Primary Sense™ product can easily be enabled.

Increased consumer awareness of CVD and their ability to receive effective early management and treatment through their GP:

- Additional 50,000 patients screened.

PHASES Primary Sense Work Streams



PHASES Linkage project – IT Build