

# How do you increase access to Cardiac Investigations in Rural Queensland

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## Journey Background

- Cardiovascular disease is the number 1 cause of death globally
- On average, one Australian dies as a result of heart disease every 27 minutes
- Coronary heart disease is the leading cause of death for both men and women in Queensland
- **Remote areas of Queensland have statistically higher rates of mortality from coronary heart disease than the state average, by about 25%**
- **Reasons:**
  - **Reduced access to primary health care programmes for early detection and treatment of people with risk factors compared to metropolitan locations**
  - **Results in less effective and equitable health care services with many people in the country being detected late in the course of the disease and dying young.**

**“ALONE WE CAN  
DO SO LITTLE;  
TOGETHER WE  
CAN DO SO MUCH.”**

**- Helen Keller**

# Solutions

- What can we do to address this problem to create local access to treatment for patients?

## Implementation of a Chest Pain Management Service Improves Patient Care and Reduces Length of Stay

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**Objective:** Chest pain is one of the most common complaints in patients presenting to an emergency department. Delays in management due to a lack of readily available objective tests to risk stratify patients with possible acute coronary syndromes can lead to an unnecessarily lengthy admission placing pressure on hospital beds or inappropriate discharge. The need for a co-ordinated system of clinical management based on enhanced communication between departments, timely and appropriate triage, clinical investigation, diagnosis, and treatment was identified.

**Methods:** An evidence-based Chest Pain Management Service and clinical pathway were developed and implemented, including the introduction of after-hours exercise stress testing.

**Results:** Between November 2005 and March 2013, 5662 patients were managed according to a Chest Pain Management pathway resulting in a reduction of 5181 admission nights by more timely identification of patients at low risk who could then be discharged. In addition, 1360 days were avoided in high-risk patients who received earlier diagnosis and treatment.

**Conclusions:** The creation of a Chest Pain Management pathway and the extended exercise stress testing service resulted in earlier discharge for low-risk patients; and timely treatment for patients with positive and equivocal exercise stress test results. This service demonstrated a significant saving in overnight admissions.

**Key Words:** chest pain management, clinical pathway, exercise stress testing  
(*Crit Pathways in Cardiol* 2014;13: 9–13)

### Exercise Stress Testing

- Created in 2004, to fast-track patients with chest pain presentation to cardiac investigation
- Early access to Exercise Stress Testing to enable safe discharge from DEM in a timely manner
- Resulted in the ACRE project



## ORIGINAL RESEARCH

# Limited utility of exercise stress testing in the evaluation of suspected acute coronary syndrome in patients aged less than 40 years with intermediate risk features

Adam C SCOTT,<sup>1,2</sup> Jennifer BILESKY,<sup>3</sup> Arvin LAMANNA,<sup>1,4</sup> Louise CULLEN,<sup>2,3,4</sup> Anthony FT BROWN,<sup>3,4</sup> Charles DENARO<sup>3</sup> and William PARSONAGE<sup>1,4</sup>

### Abstract

**Objective:** National guidelines for management of intermediate risk patients with suspected acute coronary syndrome, in whom AMI has been excluded, advocate provocative testing to final risk stratify these patients into low risk (negative testing) or high risk (positive testing suggestive of unstable angina). Adults less than 40 years have a low pretest probability of acute coronary syndrome. The utility of exercise stress testing in young adults with chest pain suspected of acute coronary syndrome who have National Heart Foundation intermediate risk features was evaluated.

**Methods:** A retrospective analysis of exercise stress testing performed on patients less than 40 years was evaluated. Patients were enrolled on a chest pain pathway and had negative serial ECGs and cardiac biomarkers before exercise stress testing to rule-out acute coronary syndrome. Chart review was completed on patients with positive stress tests.

**Results:** The 3987 patients with suspected intermediate risk acute coronary syndrome underwent exercise stress testing. One thousand and twenty-seven (25.8%) were aged less than 40 years (age  $33.3 \pm 4.8$  years). Four of these 1027 patients had a positive exercise stress test (0.4% incidence of positive exercise stress testing). Of those, three patients had subsequent non-invasive functional testing that yielded a negative result. One patient declined further investigations. Assuming this was a true positive exercise stress test, the incidence of true positive exercise stress testing would have been 0.097% (95% confidence interval: 0.079–0.115%) (one of 1027 patients).

**Conclusions:** Routine exercise stress testing has limited value in the risk stratification of adults less than 40 years with suspected intermediate risk of acute coronary syndrome.

**Key words:** acute coronary syndrome, chest pain, emergency department, exercise stress test, major adverse cardiac event.

## Utility of EST

- Routine EST has limited value in the risk stratification of adults less than 40 years with suspected intermediate risk of acute coronary syndrome

## Non-Physician-Led Exercise Stress Testing Is a Safe and Effective Practice

*Kate L. Sanford, BExSS,\* Katie M. Williams, B App Sci HMS,\* Joel A. Archbald, B App Sci HMS,\*  
William A. Parsonage, DM, MRCP, FRACP,\*† and Adam C. Scott, PhD\*‡*

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**Abstract:** Exercise stress testing is a non-invasive procedure that provides diagnostic and prognostic information for the evaluation of several pathologies, including arrhythmia provocation, assessment of exercise capacity, and coronary heart disease. Historically, exercise tests were directly supervised by physicians; however, cost-containment issues and time constraints on physicians have encouraged the use of health professionals with specific training and experience to supervise selected exercise stress tests. Evidence suggests that non-physician-led exercise stress testing is a safe and effective practice with similar morbidity and mortality rates as those performed or supervised by a physician.

**Key Words:** exercise stress testing, non-physician led

*(Crit Pathways in Cardiol 2013;12: 177–180)*

**This service provision has optimised patient flow, by increasing access to EST, thereby allowing early, safe discharge or accelerated further treatment, thus enhancing the targets for NEAT.**

# Two Models to Conduct Non-Physician Led Exercise Stress Testing in Low to Intermediate Risk Patients

Scott AC, Whitman M, McDonald A, Webster M, Jenkins C  
In Press – Critical Pathways of Cardiology

**Objective:** Via inpatient and outpatient referral, this manuscript aims to present two standardised models of care for patients requiring EST for diagnostic and prognostic evaluation of numerous pathologies.

**Method:** An inpatient and outpatient model was implemented at the Royal Brisbane and Women's Hospital and Logan Hospital in Queensland, Australia between July 2013 and December 2015. Tests were performed by two cardiac scientists employed by each hospital. All tests were immediately reported by a cardiology advanced trainee registrar or consultant cardiologist

**Results:** 2095 tests were performed via the two models. Overall, 73 had a positive result (3.5%), 120 equivocal (5.7%), 129 inconclusive/submaximal (6.2%) and 1773 negative (85.2%). After further testing, 38 of the patients with positive and equivocal results were diagnosed with flow-limiting coronary artery disease. The remaining patients were resolved as negative through further diagnostic testing or lost to follow up.

**Conclusion:** After implementation of the two models, patient flow was improved for either earlier discharge, reduced waiting times or timely identification of possible cardiac pathologies, thereby optimising patient care.

## Offering to Regional and Rural Hospitals: Training of Nurses to conduct “Non-physician led Exercise Stress Testing”

- ACRE project identified suitable sites – regional and rural hospitals
- Referred to RBWH Cardiac Sciences to provide training to up-skill small groups of nurses at each site
- 2 nurses (Nurse Grade 6, 7, 8) from each site, present for 1 week of training
- Enables sites without Cardiac Investigations to conduct testing thus creating access

**Earlier discharge for low/intermediate risk patients**

**Timely treatment for patients with positive or equivocal EST results**

# Reality

- How can we:
  - Provide greater access to diagnostic quality cardiac investigations?
  - Improve everyday practice of stress testing and ECG interpretation?
    - Can supervision and education by a tertiary hospital be provided to rural locations?
  - WE need to think innovatively, collaboratively and laterally to provide patients with a high quality level of service regardless of their geographical location.

**PLAY VIDEO HERE**

**I'M REALLY  
PROUD OF MY  
TEAM.**

QUOTEHD.COM

LaVonda Wagner

# Action

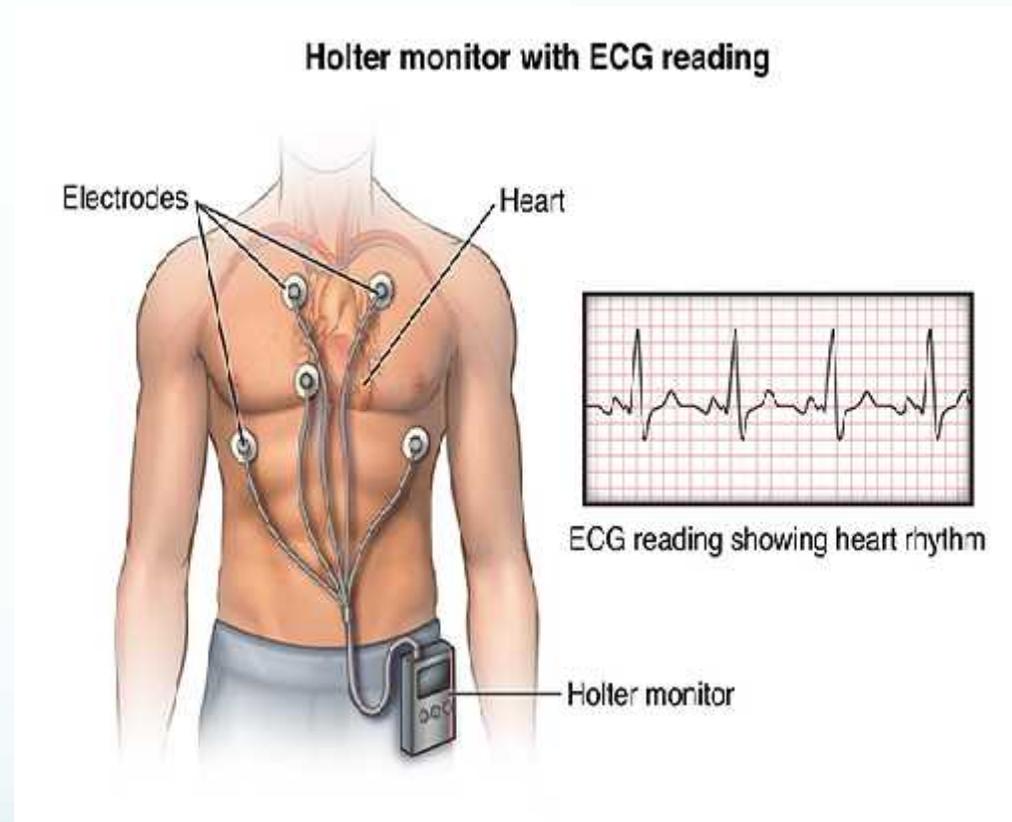
- Implemented – 11<sup>th</sup> February 2016
  - Increased education and diagnostic quality of testing
  - Reduction in waiting times: 3 months – 2 weeks
  - Improved reporting time of EST: 3 months to 1 hour
  - Reduction in travel time to repeat test and/or further provocative testing
  - Development of rapid access pathway for positive tests
    - 2 days of intensive investigation: CTCA, Stress Echo, Consultant review, Angiography.

# Future

- Expansion of service
  - Provide contemporary specialist services to rural/remote areas
  - Support reduction in wait times and costs associated with patient travel and repeat testing
- Funded \$1.515 million over 3 years by Health Minister
  - Funds don't go far:
    - 2 x Cardiac Scientists, 1 Registrar, 1 Admin Officer
  - 11 rural/regional hospitals in Qld
    - South West
    - Central West
    - Central Queensland
    - Wide Bay
    - North West HHS's

# Holter-Monitoring

- Symptoms:
  - palpitations, chest pain, shortness of breath, skipped beats, light headedness or dizziness, syncopal episodes
- Portable electronic device attached by 5 electrodes
- Continuous recording of the ECG for 24-48 hours



<http://www.hopkinsmedicine.org>

# The Issue

- Reduced access
  - long waiting lists or large travel distance for patients
- Leads to patients forgoing or delaying treatment – leaving cardiac arrhythmias go undetected
- Reduced volumes performed also sees de-skilling of staff, decreasing diagnostic accuracy



- Data can be securely transmitted to RBWH Cardiac Sciences.
- Decreasing travel times, costs and inconvenience
- Increasing access
- Ensuring high-quality interpretation
  - All tests are analysed by a Cardiac Scientist at the RBWH, signed off by an Advanced trainee Cardiology Registrar (escalated to a Consultant as required)

# The Solution



# Local access for patients

- Patients have improved access to local investigations
- Early identification of serious arrhythmias or cardiac conditions
- Improves diagnostic quality of tests and accurate reporting of results
- Decreases costs to patients and the health system
- All results will be sent to local team (eg GP, hospital, tertiary centre as requested)
- The BIG ONE: we have a solution for Echocardiography, but you'll have to wait for this one!!!

# Next Steps

- Offer Tele-Cardiac Investigations to regional/rural/remote locations to enable early, local access to investigation for patients.

“

Coming together is a beginning,  
staying together is progress, and  
working together is success.

— Henry Ford



## TODAY'S STRATEGY

**T** TOGETHER  
**E** EVERYONE  
**A** ACHIEVES  
**M** MORE

## WINNING TEAMS ...

Trust each other  
Respect each other  
Understand each other  
Enjoy each other



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A successful team beats with  
one heart.

• Unknown



WE ARE NOT  
**A TEAM**  
BECAUSE WE  
WORK TOGETHER.  
**WE ARE**  
*a team because*  
WE RESPECT,  
*trust, and care*  
*for each other.*

...  
@Macgyver

**TEAMWORK  
MAKES THE  
DREAM WORK**

Picture Quotes.com

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"Unity is strength...  
when there is  
teamwork and collaboration,  
wonderful things  
can be achieved."

- Mattie J.T. Stepanek

