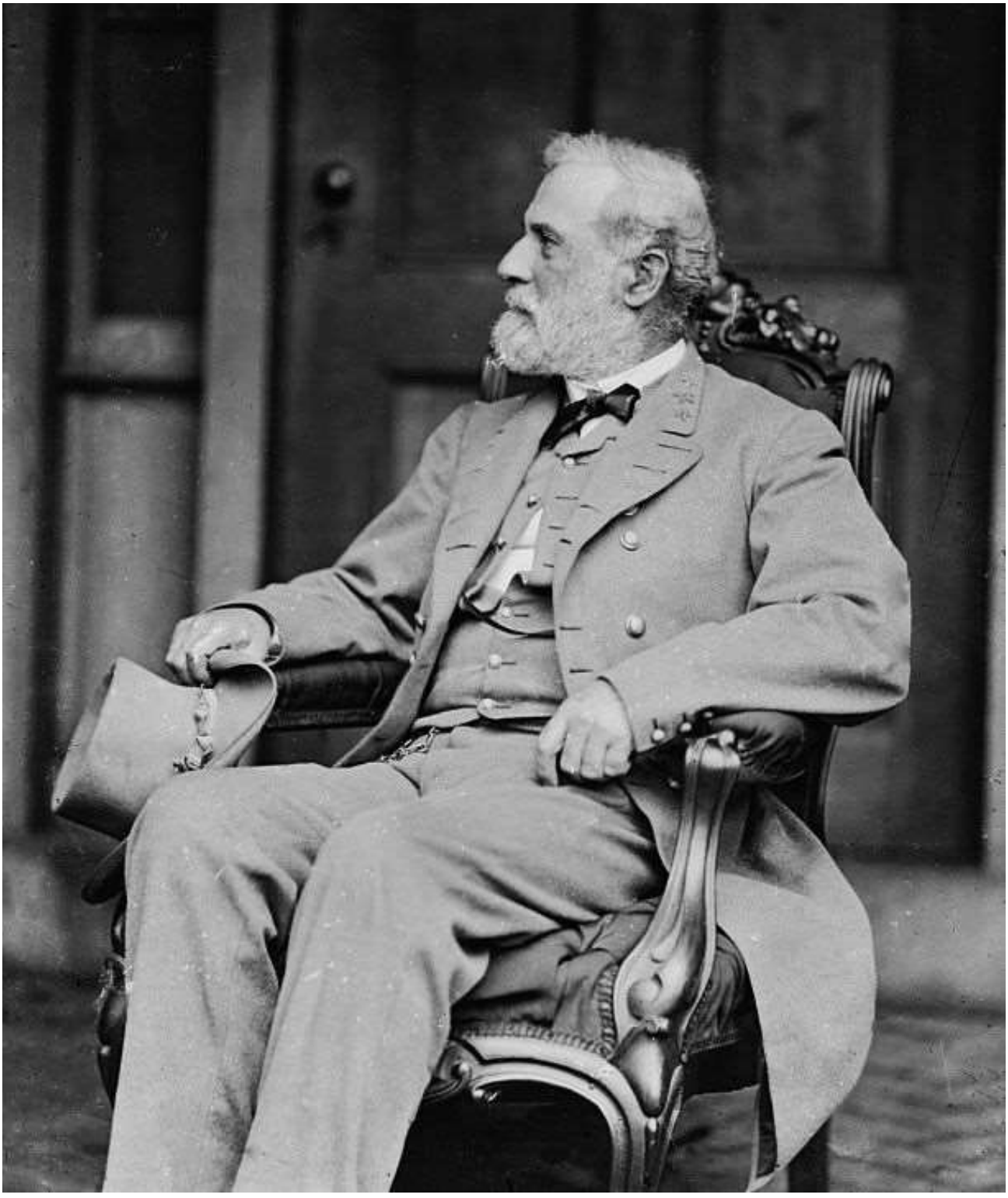
THE NORTHERN HOSPITAL

ACCELERATED DIAGNOSTIC PATHWAY - IMPACT PROTOCOL



Robert E. Lee, albumen silver photographic print, 16 April 1865, Mathew B. Brady, National Portrait Gallery Washington.

"Can anybody say they know the General? I doubt it. He looks so cold, quiet, and grand"
(Mary Chesnut).

"I think that Lee should have been hanged. It was all the worse that he was a good man and a fine character and acted conscientiously. It's always the good men who do the most harm in the world"
(Henry Adams).

Lee is one of the most difficult people to talk about because he's been immortalized, or as they call him now, some people, "The Marble Man". He's been dehumanized by the glory and the worship. He was a warm, outgoing man, always had time for any private soldier's complaint. Once a Northern soldier being marched to the rear as a prisoner complained to Lee in person that someone had taken his hat. He said "That man's got it". And Lee made the man give him his hat back!
(Shelby Foote, Civil War Historian)

The man Grant faced across the Rapidan River in Virginia came from a family as celebrated as Grant's was obscure. Robert E Lee was born in 1807 at Stratford in Westmoreland Country, Virginia and was raised by his mother. She taught him to revere General Washington, a neighbour remembered, "To practice self-denial and self-control in all things".

His father "Light Horse" Harry Lee had been a friend and favourite Lieutenant of George Washington. But Light Horse Harry also squandered two wives' fortunes before deserting his family for the West Indies.

At West Point, Robert E Lee did not earn a single demerit. Classmates called him "The Marble Model", but liked him in spite of his perfection. He was graduated second in his class in 1829.

In 1831, he married Martha Washington's granddaughter, Mary Custis. She bore him seven children and endured his long absences as best she could. The mansion at Arlington with its 250 slaves was her home before it was his. Appointed to the prestigious corps of engineers, he was three times promoted for bravery during the Mexican War, where he once met a young Ulysses S. Grant.

Superintendent of West Point, captor of John Brown, he was at the start of the war the nation's most promising soldier. In 1861 Lee refused command of the Union army and followed his state out of the Union, not because he approved of slavery or secession, but because he believed his first duty was to Virginia.

"I did only what my duty demanded. I could have taken no other course without dishonor"
(Robert E Lee)

"The man who stood before us was the realized King Arthur. The soul that looked out of his eyes was as honest and fearless as when it first looked out on life. One saw the character as clear as crystal, without complication and the heart as tender as that of ideal womanhood".

(Mary Chesnut)

A Union girl watching Lee ride past her Pennsylvania home said, "I wish he were ours".

Early in the war he was ridiculed as the "The King of Spades" because of his fondness for entrenching, and "Granny Lee" because of his gray hair and strict ways, but after he drove McClellan off the peninsular, stopped Pope at Second Manassas, demolished Burnside at Fredericksburg, and destroyed Hooker at Chancellorsville - all despite overwhelming odds, he won the unshakable confidence of Jefferson Davis and the unqualified love of his officers and men.

He is a very great general. And he's superb on both the offensive and defensive. He took long chances but he took them because he had to. If Grant had not had superior numbers, he might have taken chances as long as Lee took. The only way to win was with long chances, and it made him brilliant.
(Shelby Foot, Civil War Historian)

No one ever called him Bobby Lee to his face. His men called him "Marse Robert" (Southern vernacular for "master") or "Uncle Robert". He had a terrible temper, which he worked all his life to control. When angered, his icy stare was unforgettable.

There was a young man brought before him for some infraction of the rules. And can you imagine being brought before General Lee for having broken the rules!? The young man was trembling. And Lee said, "You need not be afraid son. You'll get justice here". The young man said, "I know it General, that's what I'm scared of!
(Shelby Foot, Civil War Historian….quietly chuckling).

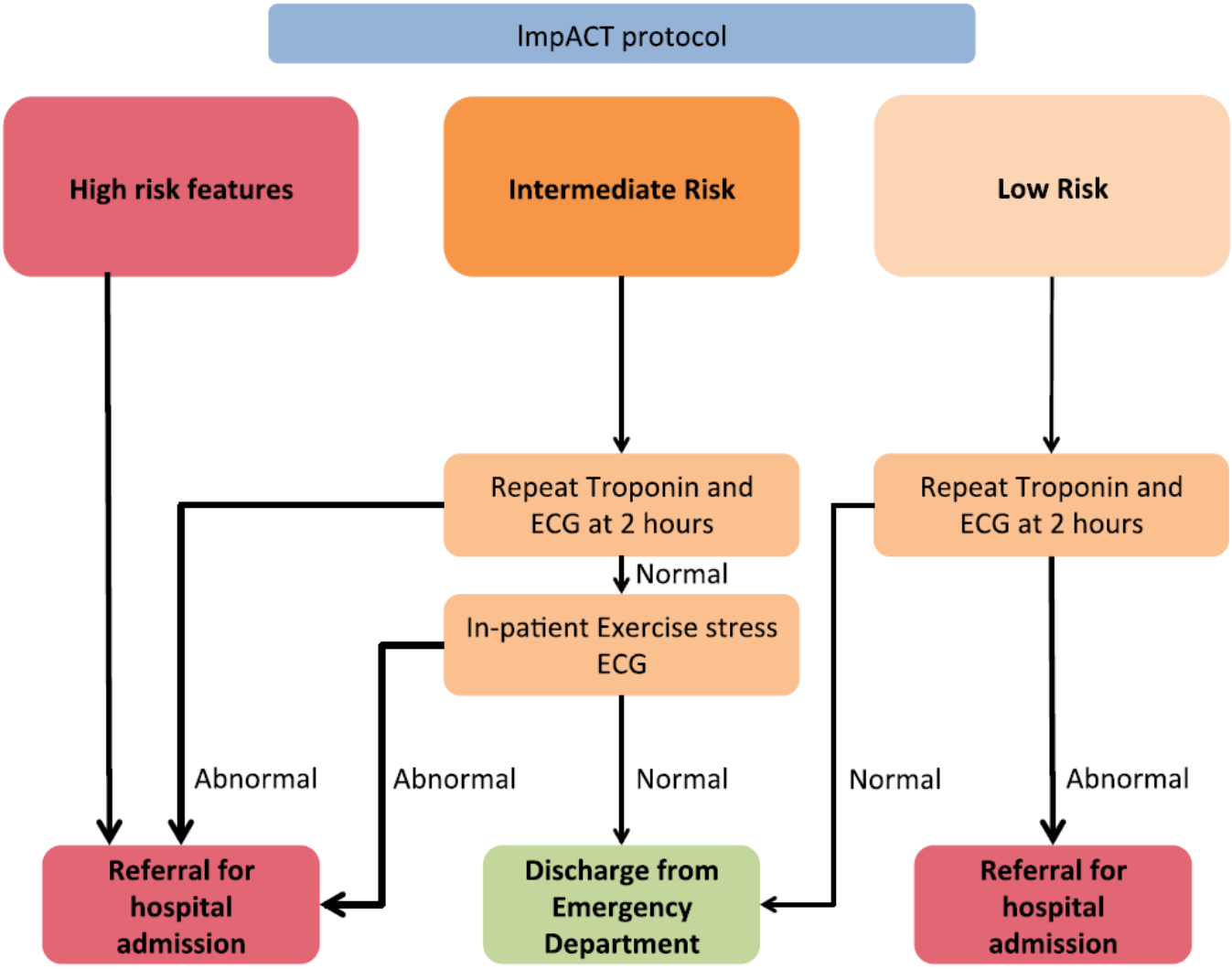
He referred to the Union Army as "those people", rather than as the enemy. Now, "those people" had a new commander (Grant) whom Lee had not tested.

David McCullough and Shelby Foote in Ken Burns', "The Civil War", 1990.

The IMPACT Protocol is currently our best strategy for assessing and risk stratifying ACS patients who present to the Emergency Department. It is a challenging strategy to have fully implemented however, primarily because of logistical and ingrained "cultural" practices as well as in many cases, limited resources.

However we may take inspiration from one of the greatest military commanders of all time, Robert E. Lee who by great leadership achieved very great victories with resources vastly inferior to those of his opponents, or "those people" as he referred to Northern Unionists. Like the great General dispensing judgement impartially, so by the IMPACT Protocol we may also dispense judgement impartially to our ACS patients - though as for the trembling private, the outcome of that judgement may not necessary be the one desired by them!

ACCELERATED DIAGNOSTIC PATHWAY - IMPACT PROTOCOL



Summary of the IMPACT Protocol

Introduction

The ADAPT, HEART and EDACS accelerated chest pain protocols for assessing patients with possible ACS in the ED do not inform clinicians about whether there is a need for **ongoing** objective investigation.

The **Im**proved Assessment of **C**hest Pain **T**rial (**IMPACT**) protocol maintains clinical safety while *reducing* the time required for chest pain investigation in the ED.

It *also* identifies **low risk** patients for whom further *objective* testing can be **safely forgone**.

The combination of risk stratification, 2-hour serial troponin results, and selected early objective testing for coronary ischaemia according to the IMPACT protocol

provides a safe and efficient means for assessing chest pain in the ED.

It should be noted that the IMPACT Protocol (or indeed *any* of the accelerated chest pain protocols) are designed for the assessment of ACS and do not inform management decisions for other potentially life-threatening *non*-cardiac presentations of chest of chest pain such as pulmonary embolism or aortic dissection.

History

Because of their observational nature, earlier trials of protocols for identifying low risk patients, including the 2-hour Accelerated Diagnostic protocol to Assess Patients with chest pain Trial (ADAPT), HEART, and the Emergency Department Assessment of Chest pain Score (EDACS) could not inform clinicians about whether there was a need for ongoing / follow-up *objective* investigation, either as an in-patient or as an out-patient.

Further, none of these older pathways also provided a means to improve the care of the large cohort of patients deemed at **intermediate** risk for ACS.

"Objective" investigation refers to any of the following modalities:

1. Exercise stress test
2. Myocardial perfusion scintigraphy
3. Stress echocardiography
4. Computed tomographic coronary angiography
5. Formal catheter coronary angiography

Risk Stratification for ACS - IMPACT Protocol

The following risk stratification for use in the IMPACT Protocol is a modification of the 2006 National Heart Foundation of Australia/Cardiac Society of Australia and New Zealand (NHFA/CSANZ) guidelines.

High Risk:

- Ongoing / recurrent chest pain
- ECG - ischaemic changes - persistent or dynamic
- Elevated Troponin Level (TnI > 99th percentile of the local Tn assay)
- Left Ventricular Ejection Fraction (LVEF) < 40%·
- New Mitral Valve Regurgitation

- Haemodynamic compromise (systolic blood pressure < 90 mmHg)
- Sustained ventricular tachycardia
- Syncope
- Prior PCI (past 6 months) or CABG surgery

Intermediate Risk:

No high risk features, *and* any of:

- Age ≥ 40 years
- Chronic kidney disease, eGFR < 60 mL/min/ 1.73 m^2
- Diabetes
- ≥ 18 year old indigenous Australians.

Low Risk:

No intermediate or high risk features, *and*:

- No history of diabetes

Inclusion Criteria

These include:

1. Suspected ACS
2. Intermediate or low risk factors for ACS

Exclusion Criteria

These include:

1. **High risk** factors for ACS
2. Other *non-cardiac* cause of chest pain is more likely than ACS (the IMPACT Protocol cannot exclude a potentially lethal non-cardiac cause for chest pain and must always be kept in mind).

Application

The patient is risk stratified into **High, Intermediate,** or **Low Risk**

A treatment aim in patients with suspected ACS is to obtain effective analgesia as soon as possible on presentation. **Serial troponin testing needs to continue for patients in whom the symptoms are ongoing**.

High risk patients are excluded from the protocol - these patients will need a *minimum* of a **6 hour** troponin from the **time of ED presentation** and referral to inpatient Cardiology.

For patients who are risk stratified as **Intermediate** or **Low** risk:

- Perform a "stat" ECG (i.e at **presentation**) and a second ECG at **2 hours**.
- Perform a "stat" troponin (i.e at **presentation**) and a second troponin at **2 hours**.

  Note that the time of symptom onset, even if reliable, does **not necessarily** define the time point of coronary occlusion. Hence if symptoms are *ongoing*, the time points for serial testing may need to be **extended**.

  Early rule-out biomarker strategies must incorporate **serial** samples that detect an elevated troponin pattern, and potential rising/falling patterns timed from the initial sample taken at ED presentation.

  Exceptions to serial sampling this are in patients who are symptom-free for 12 hours prior to assessment, or present > 3 hours after symptom-onset with values less than the limit of detection (LoD) using a highly sensitive troponin assay.

Assess for:

1. ECG changes (including dynamic changes)
2. Recurrence of symptoms (becomes high risk)
3. Elevated troponin values; including dynamic changes (a rise or fall)

Disposition

High Risk:

All high risk patients are referred to in-patient Cardiology

Intermediate Risk:

Intermediate risk patients who remain pain free, who do not have ECG changes or troponin rises, should be followed-up with ***early*** **objective cardiac testing**.

"Objective" testing refers to any of the following modalities:

1. Exercise stress test
2. Myocardial perfusion scintigraphy

3. Stress echocardiography

4. Computed tomographic coronary angiography

5. Formal catheter coronary angiography

Under the IMPACT Protocol these patients have testing as an *in-patient* before they are discharged from the hospital.

In-patient testing:

1. Allows *early and definitive* risk stratification for ACS

2. Allows patients to go home without the need for further time off work/review in hospital Out Patient Departments.

3. Reduces the risk of loss to follow-up

4. May pick up important abnormalities, which will *inform and alter* disposition and management decisions.

Patients may be discharged following a normal objective investigation without the need for representation to hospital to finalise their assessment.

The most common and most readily available testing modality will be **exercise stress testing.**

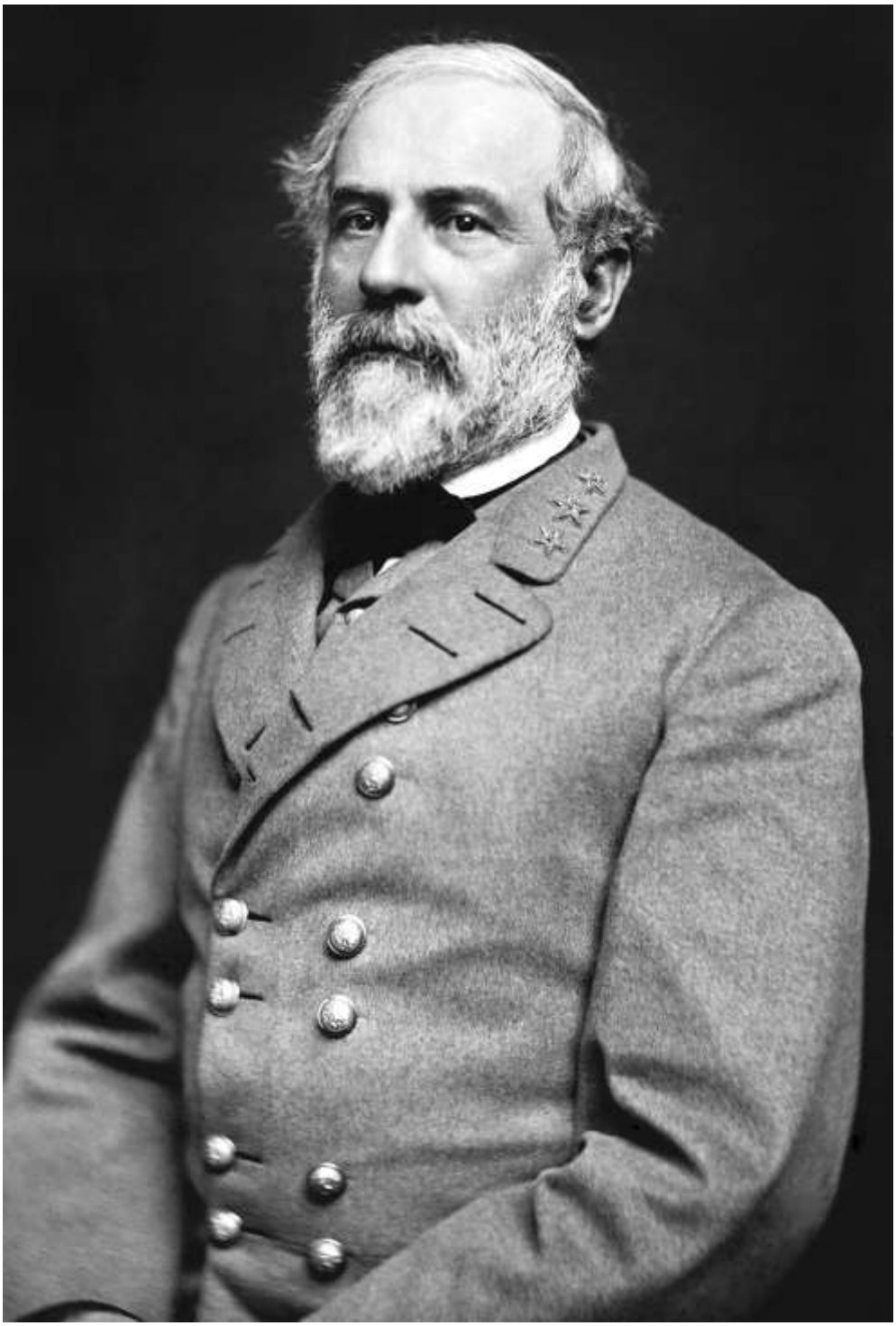
Exercise stress testing may be performed under an Emergency Department Short Stay Unit (or similar) admission

Patients who are unable to undergo exercise stress testing or are unsuitable for exercise stress testing should be referred to **Cardiology** or a **General Medical Unit** for an alternate modality of testing, (often this will be a CT coronary angiogram with a 24 hour admission).

Low Risk:

Low risk patients who remain pain free, who do not have ECG changes or troponin rises, do **not** require further follow-up with **objective cardiac testing**.

They may be followed-up with a letter to their general practitioner stating that further objective testing was not indicated.



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(Mary Chesnut).

References

1. Louise Cullen et al. Improved Assessment of Chest pain Trial (IMPACT): assessing patients with possible acute coronary syndromes. MJA 207 (5) 4 September 2017

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