South West London
Academic, Health and Social Care
System

Case Studies- Series 1

Misdiagnosis of Aortic Aneurysms

At least 3000 NHS patients a year suffer a potentially fatal ruptured aortic aneurysm (rAAA); yet on the scene misdiagnosis in the UK has remained unacceptably high. Now, using a small grant from the SWLS, Dr Alan Karthikesalingam at St George's Vascular Institute is developing an innovative smartphone approach to improve emergency teams' life-saving diagnostic abilities.

Scorecard System for On-scene Diagnosis

An Aortic Aneurysm (AAA) is a diseased weakening of the body's largest artery. Ruptured aneurysms (rAAA) are fatal without urgent lifesaving surgery. The challenge is that this specialist aneurysm surgery can only be performed in a few regional specialist centres. Identifying ruptured aneurysms at the scene of the emergency is difficult, and around half of all cases are initially misdiagnosed. Patients are often collapsed and seriously ill, and taken quickly to the nearest hospital. It is clear that enabling first responders to make the right decisions fast is part of the answer.

After a full review of literature on the subject confirmed that the rate of misdiagnosis had remained consistently high (42% on average, 32% since 1990) Alan and his team decided an effective clinical decision tool was needed to enable accurate diagnosis and triage at the scene of the emergency.

SWLS's Small Grant funding enabled them to conduct a retrospective study that compared ambulance team notes on a patient to their eventual diagnosis. This information was then used to develop a scoring system that they hope will allow them to

'Making best practice accepted practice'

differentiate and identify patients with ruptured aneurysms versus any other emergency.

"The small grant funding was absolutely crucial as it allowed us the staff, time, and resources to perform this systematic review and analysis. But it also gave us credibility and enabled us to build a network of collaborators, providing access to the level of staff we needed to let us use the ambulance service data." - Alan Karthikesalingam, NIHR Clinical Academic Lecturer in Vascular Surgery, St George's Vascular Institute

Smartphone App for Ambulance Teams

But how best to validate those retrospectively-sourced findings and confirm the scoring system really works? Using additional funding from the Academy of Medical Sciences Alan decided to go hi-tech and turn the mathematical calculation into a downloadable smartphone app.

The Aneurysm FILTR app is now being used in the field by the London Ambulance Service to record an 'aneurysm score' of any patients over 18 who collapse or present with back or abdominal pains. The data is then uploaded to a secure database where the score will eventually be compared to the hospital's final diagnosis. At this time ambulance teams are not told of the probability of an aneurysm as the team are mindful not to influence patient care until findings are proven.

"The Aneurysm FILTR app is the child of the small grant project from SWLS. As far as we know it is the world's first smartphone decision tool for ambulance crews, and it's certainly the first prospective study of a triage tool for aortic emergencies. So it's very exciting." – Alan Karthikesalingam, NIHR Clinical Academic Lecturer in Vascular Surgery, St George's Vascular Institute

A Feasible Triage Tool of the Future?

Since launching in November 2014 the app has proved extremely popular with the ambulance service. They have already uploaded scores for over 1000 patients; putting the year-long study well on track to meet its target of 2500. The team are currently awaiting approval to access patients' final diagnoses from individual hospitals and should be able to tell by end of 2015 whether or not their scorecard system works and is a feasible triage tool.

Small Grants, Lasting Impact

Small Grants is a programme that supports collaborative projects across academic, health and social care sectors. This is a unique programme in south west London, helping to promote innovation that could potentially be of great benefit for the population of the area and even beyond.

Could your idea be one of our next Small Grants beneficiaries? To find out more about SWLS Small Grants funding click here

To learn more about the Aneurysm FILTR App click here

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