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# The effect of a national ambulance Quality Improvement Collaborative on performance in care bundles for acute myocardial infarction and stroke

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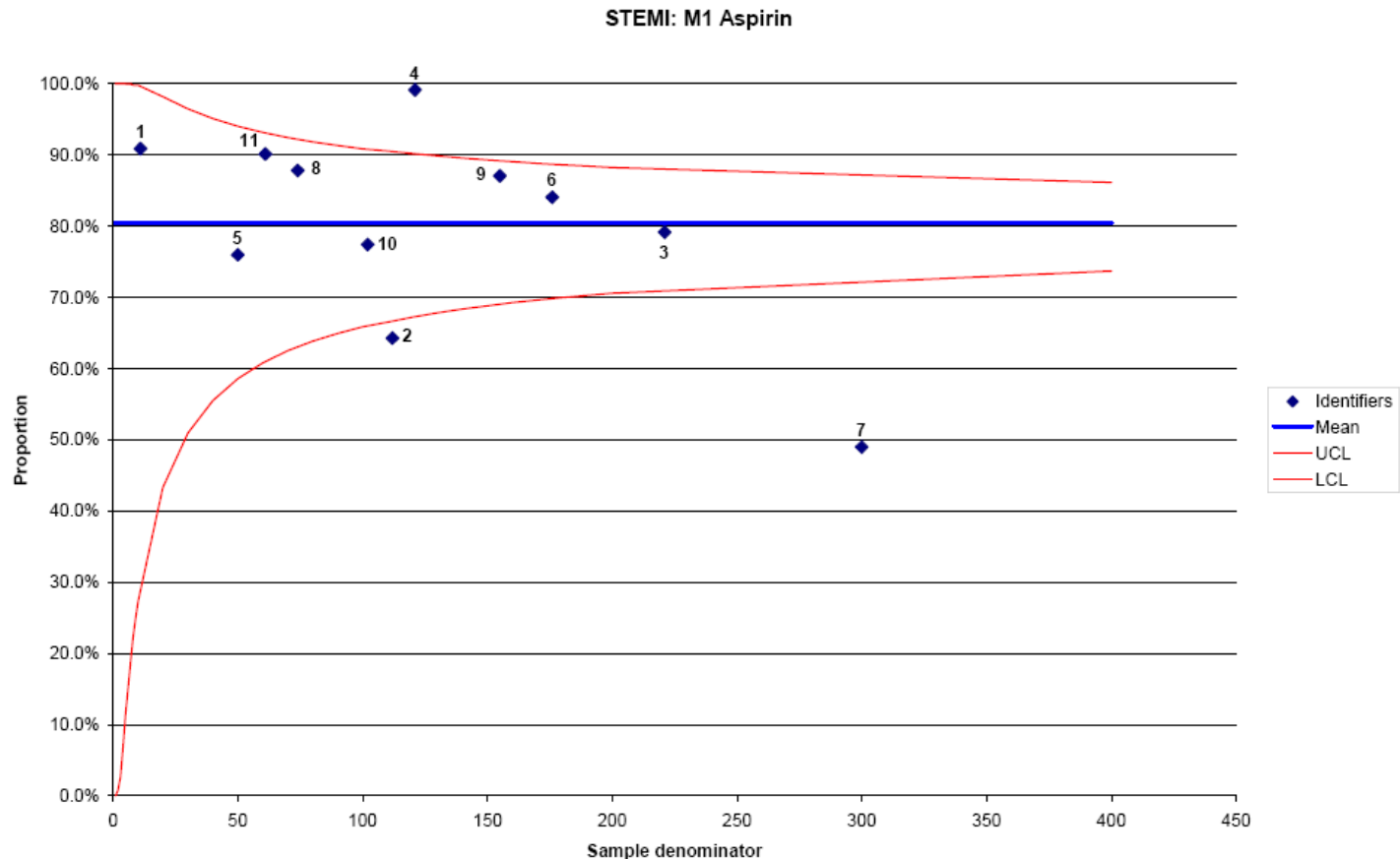
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# National clinical indicators

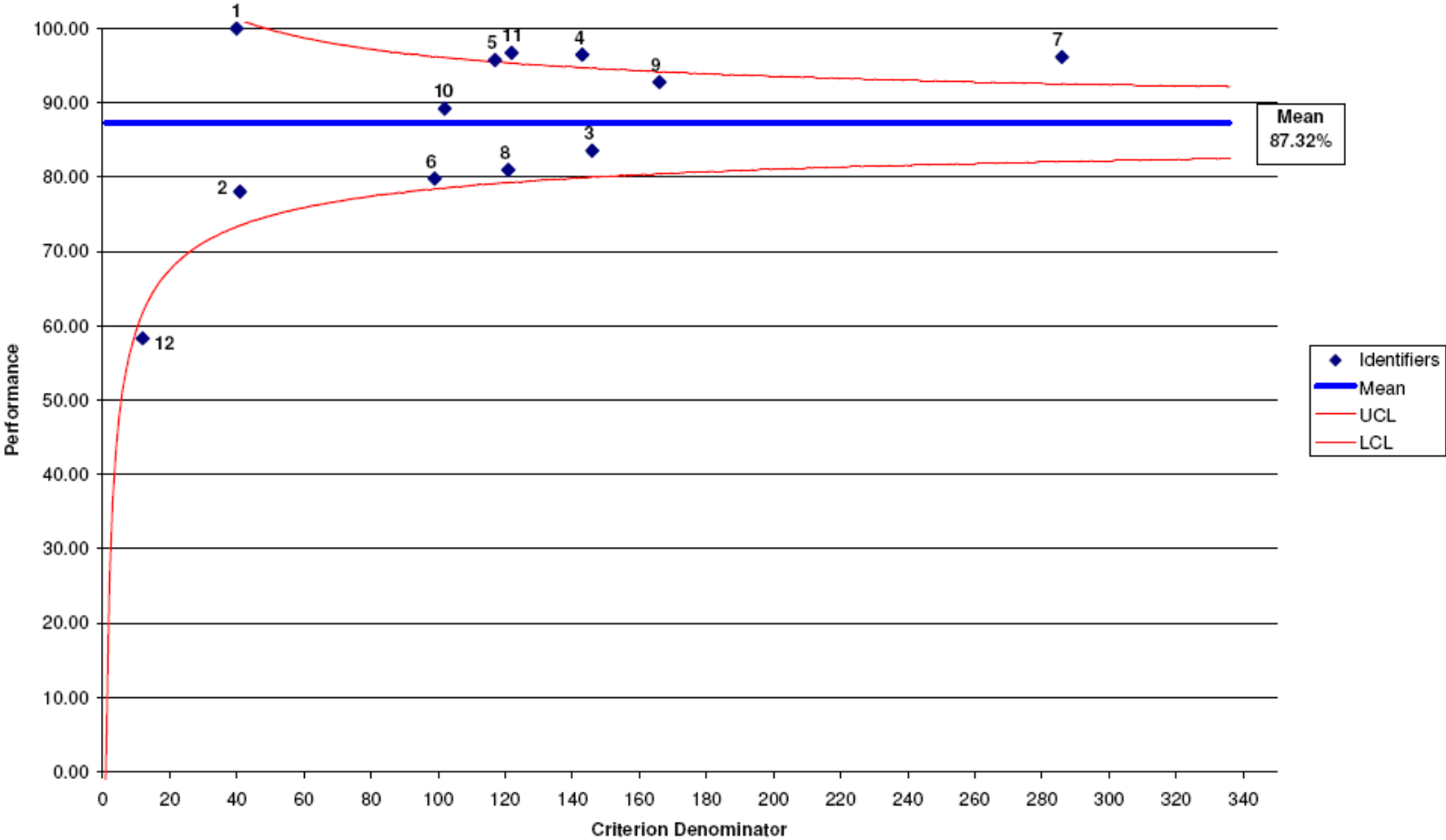
- 5 domains, 20 indicators: pilot 2007, now cycle 8



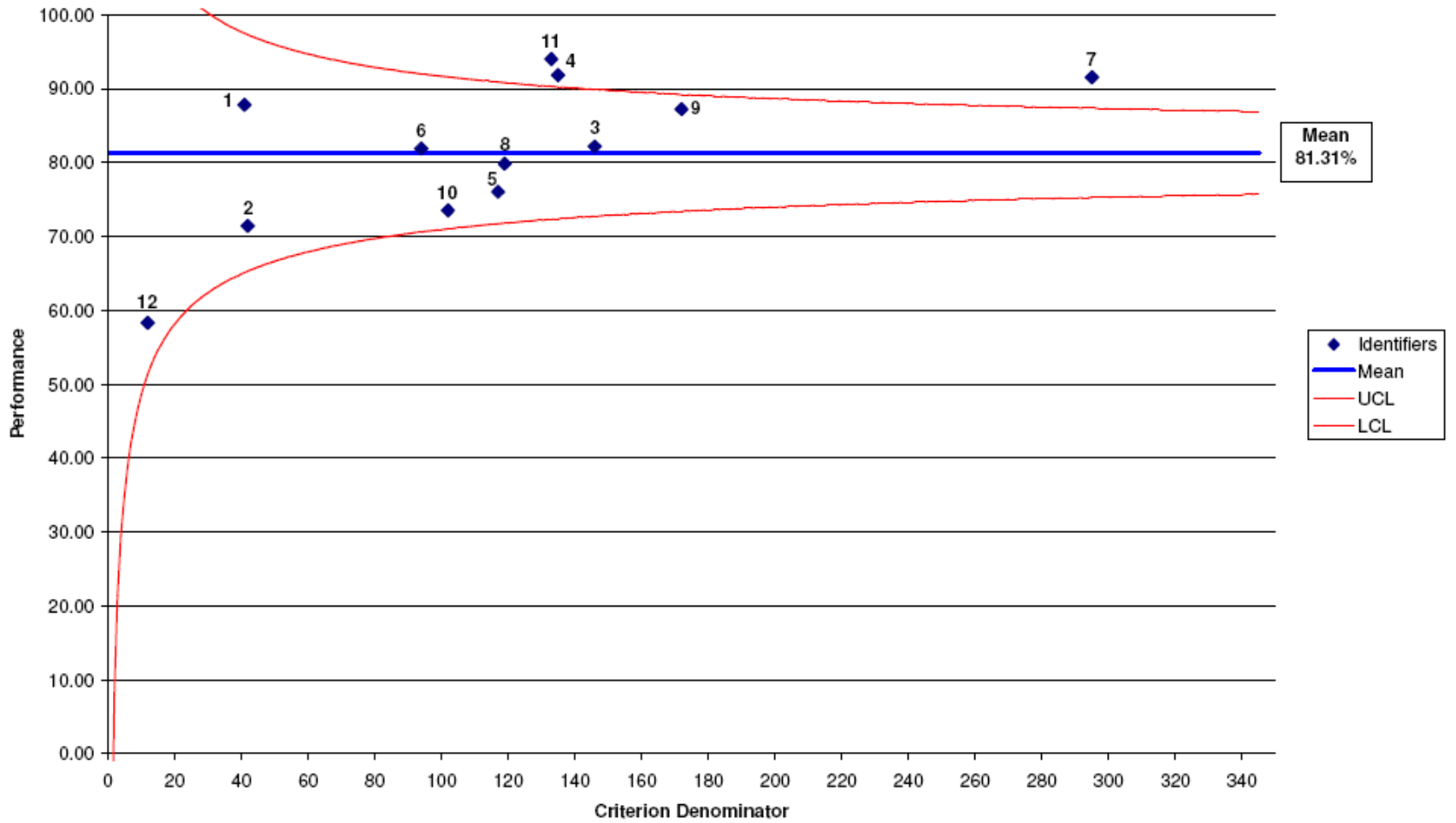
Siriwardena AN, Shaw D, Donohoe R, Black S, Stephenson J. Development and pilot of clinical performance indicators for English ambulance services. *Emerg Med J* 2010;**27**:327e331



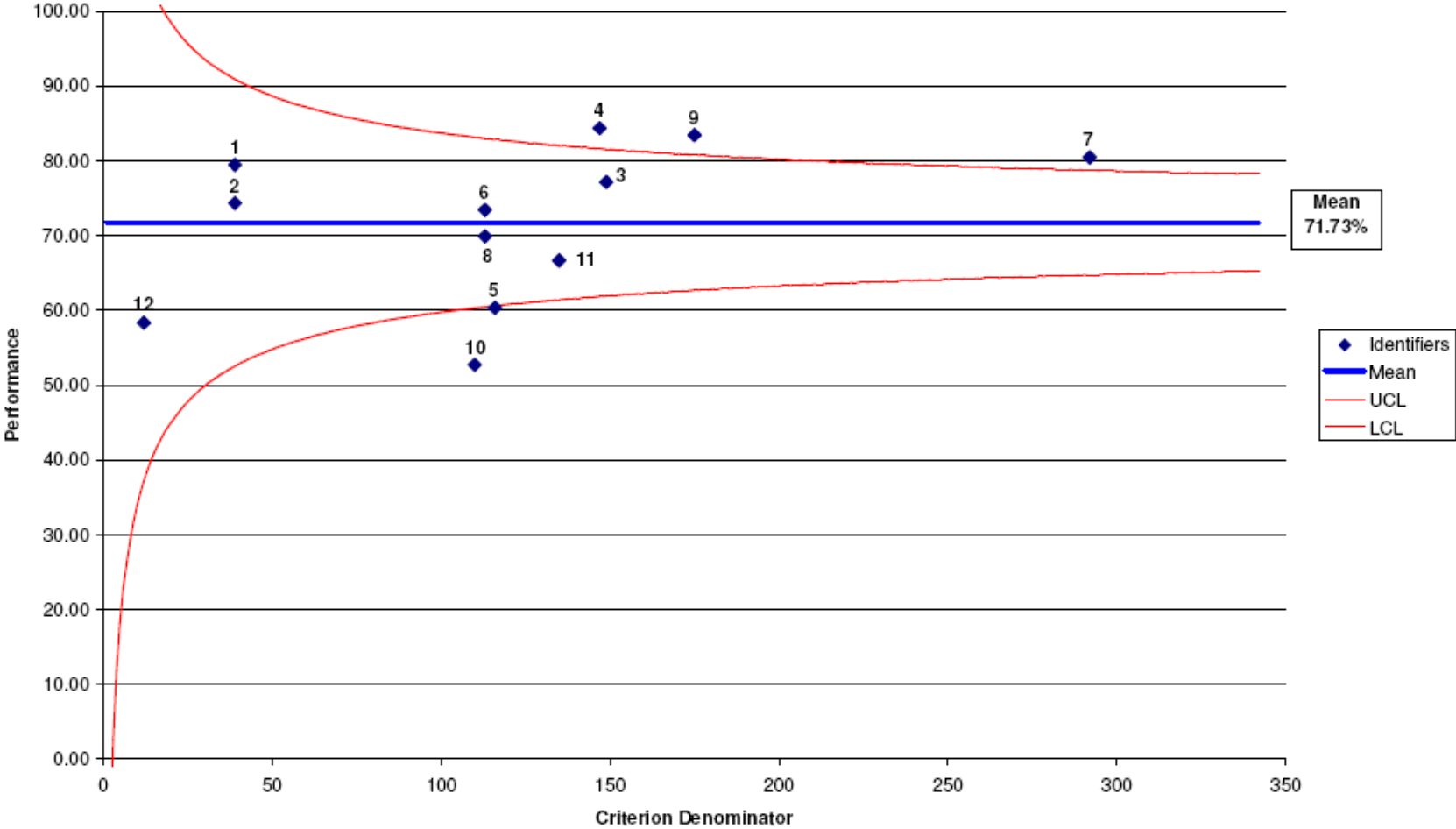
Criterion M1 Aspirin



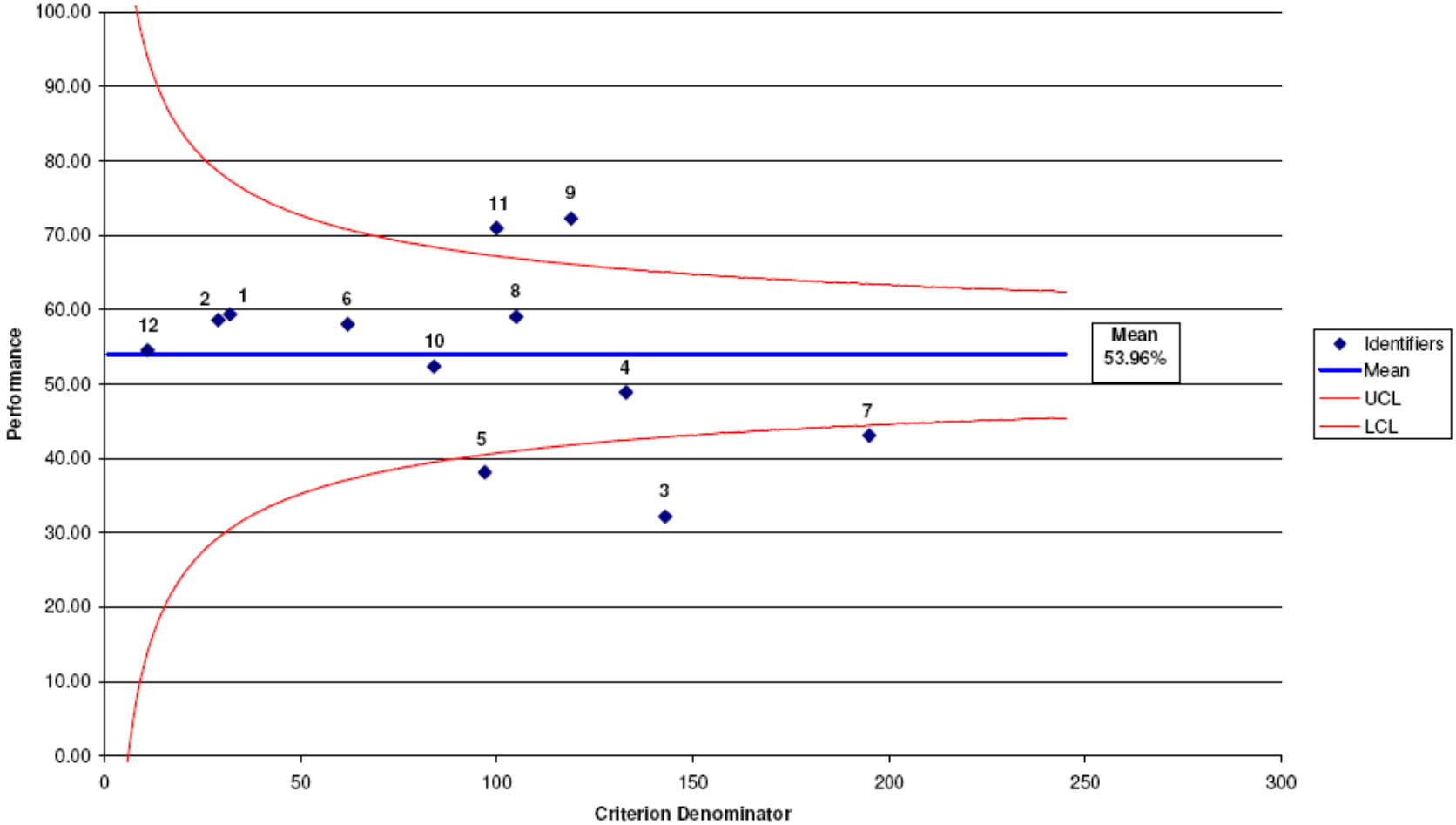
### Criterion M2 GTN



M3 Two Pain Scores recorded

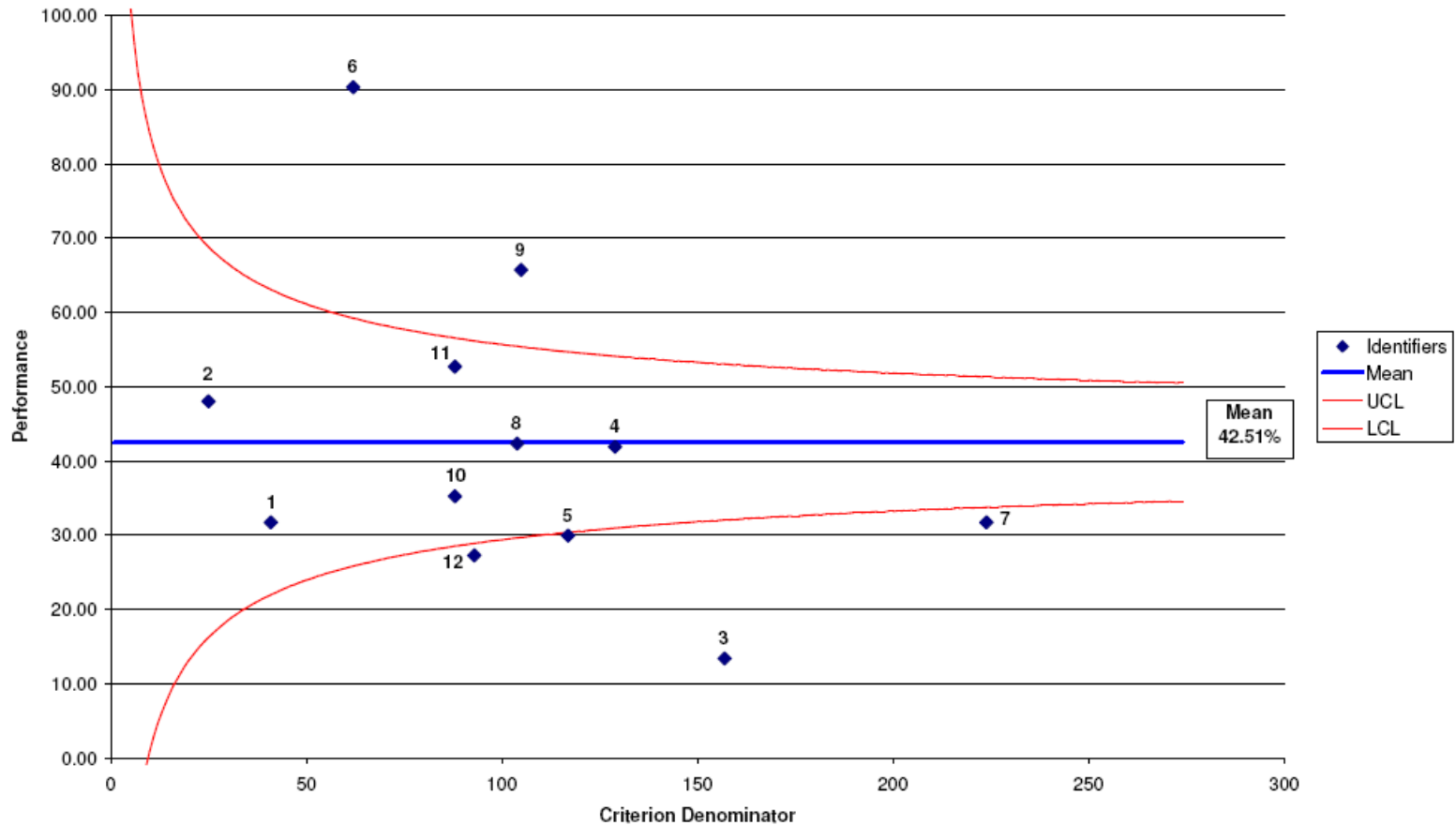


### M5 Analgesia Given (Morphine and/or Entonox)



# Care bundle for AMI M1+M2+M5+M5

MC (Pilot) Care Bundle for STEMI (M1+M2+M3+M5)





# Scale of the problem

- **Acute myocardial infarction: 250,000 per year, 101,000 deaths per year**
- **Stroke & TIA: 150,000 per year**
- **£29 billion**

Allender Coronary Heart Disease Statistics BHF 2007 [www.heartstats.org](http://www.heartstats.org)



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# Evidence for standards

- **National Service Framework for CHD**
- **National Stroke Strategy**
- **Joint Royal Colleges Ambulance Liaison Committee (JRCALC) guidance**



# Acute Myocardial Infarction

- **M1 Aspirin**
- **M2 GTN**
- **M3 Two pain scores**
- **M4 Morphine given**
- **M5 Analgesia (morphine or Entonox) given**
- **Care bundle = M1+M2+M3+M5**



# Stroke

- **S1 FAST assessment recorded**
- **S2 Blood glucose recorded**
- **S3 Blood pressure (SBP+DBP) recorded**
- **Care bundle = S1+S2+S3**



# **Aim: to improve prehospital care for CVD**

- **To improve delivery of AMI care bundle from baseline (43%) to at least 70% within 2 years**
- **To improve care delivery of stroke care bundle from baseline (83%) to > 90% within 2 years**
- **To develop patient reported outcome measures for AMI and stroke**
- **To increase diffusion of quality improvement (QI) methods to front line ambulance staff**



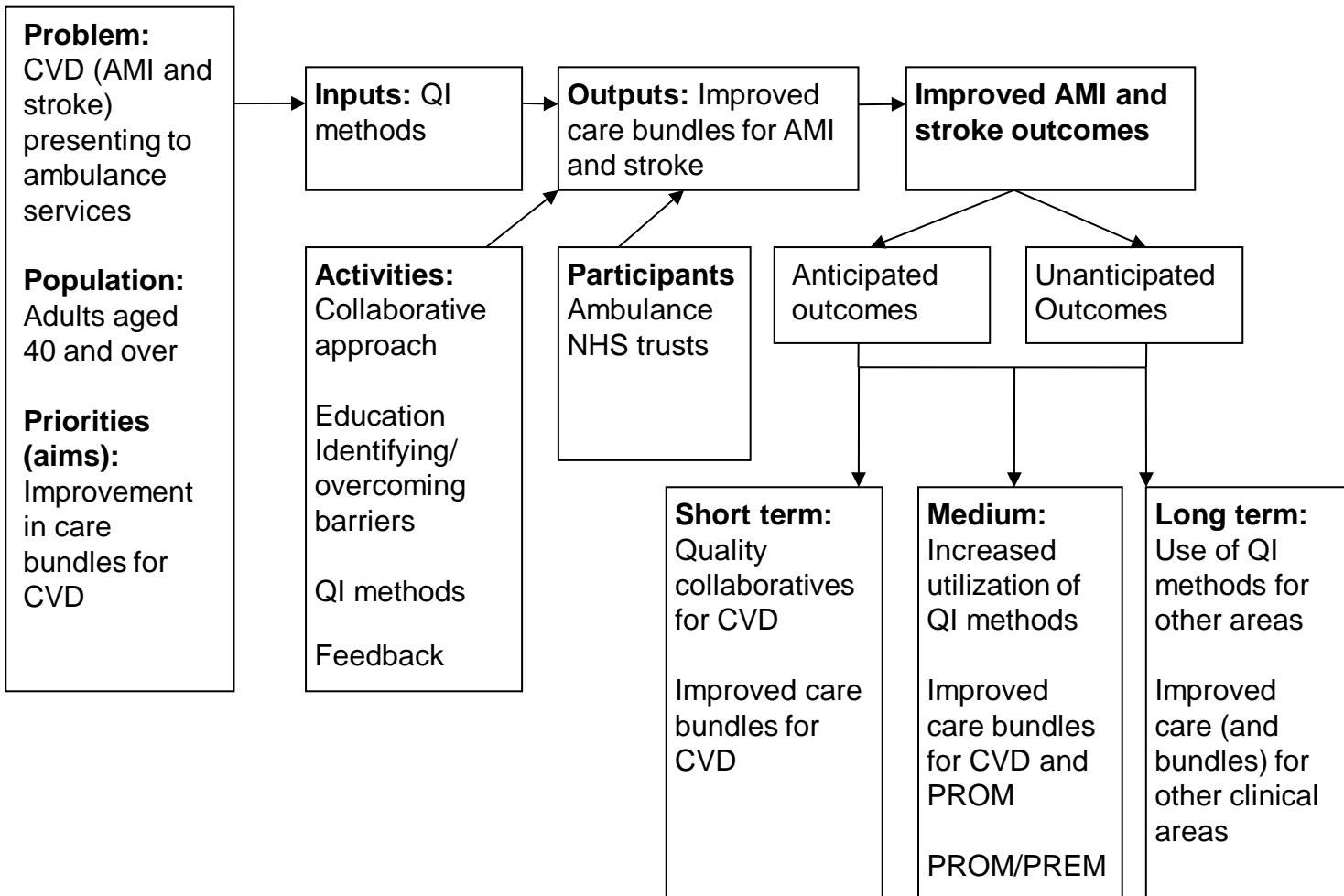
# Who was involved?



- **DOCC/CEOs**
- **Audit leads/NASQCG**
- **Central steering group/improvement team**
- **Local QI teams: QI leads & fellows**
- **Local QI collaboratives**



# What did we do and why?



# How we made improvements?

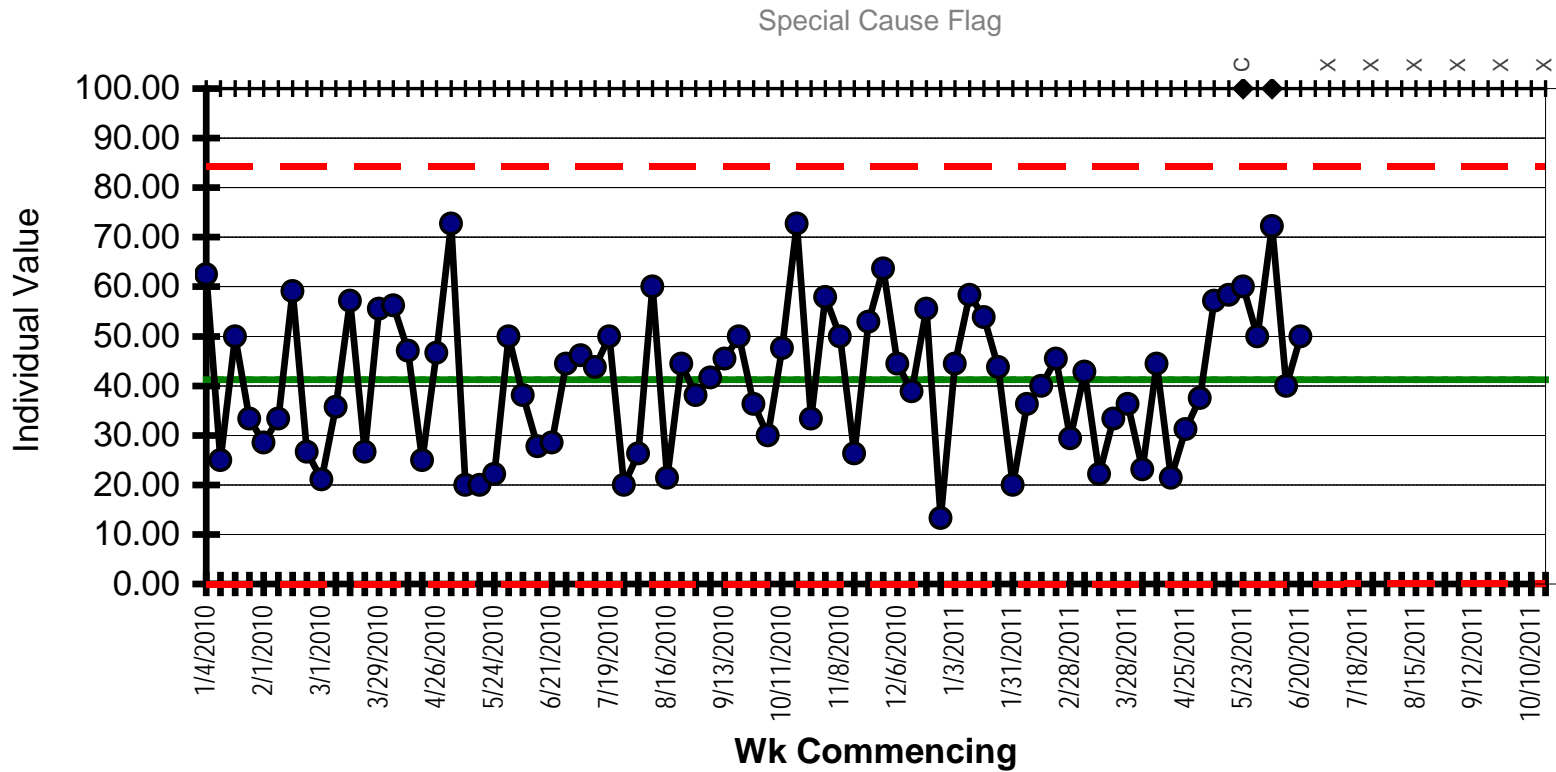
- **Focus groups & interviews (with practitioners and patients)**
- **Process mapping & critical-to-quality (CTQ)**
- **Plan-Do-Study-Act (PDSA) cycles**
- **Data collection, analysis and feedback using statistical process control (SPC)**



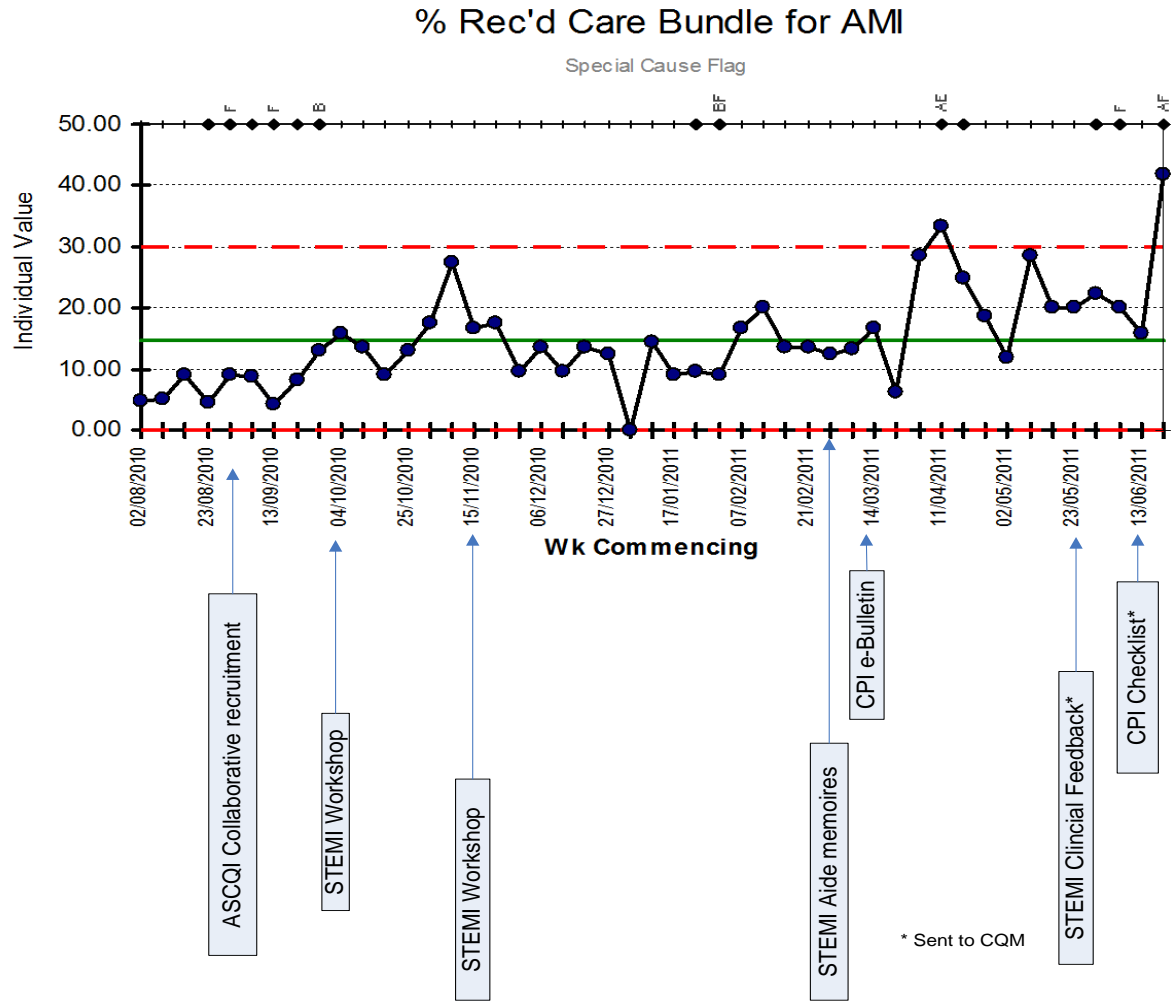


# Baseline

## EMAS % Rec'd Care Bundle for AMI

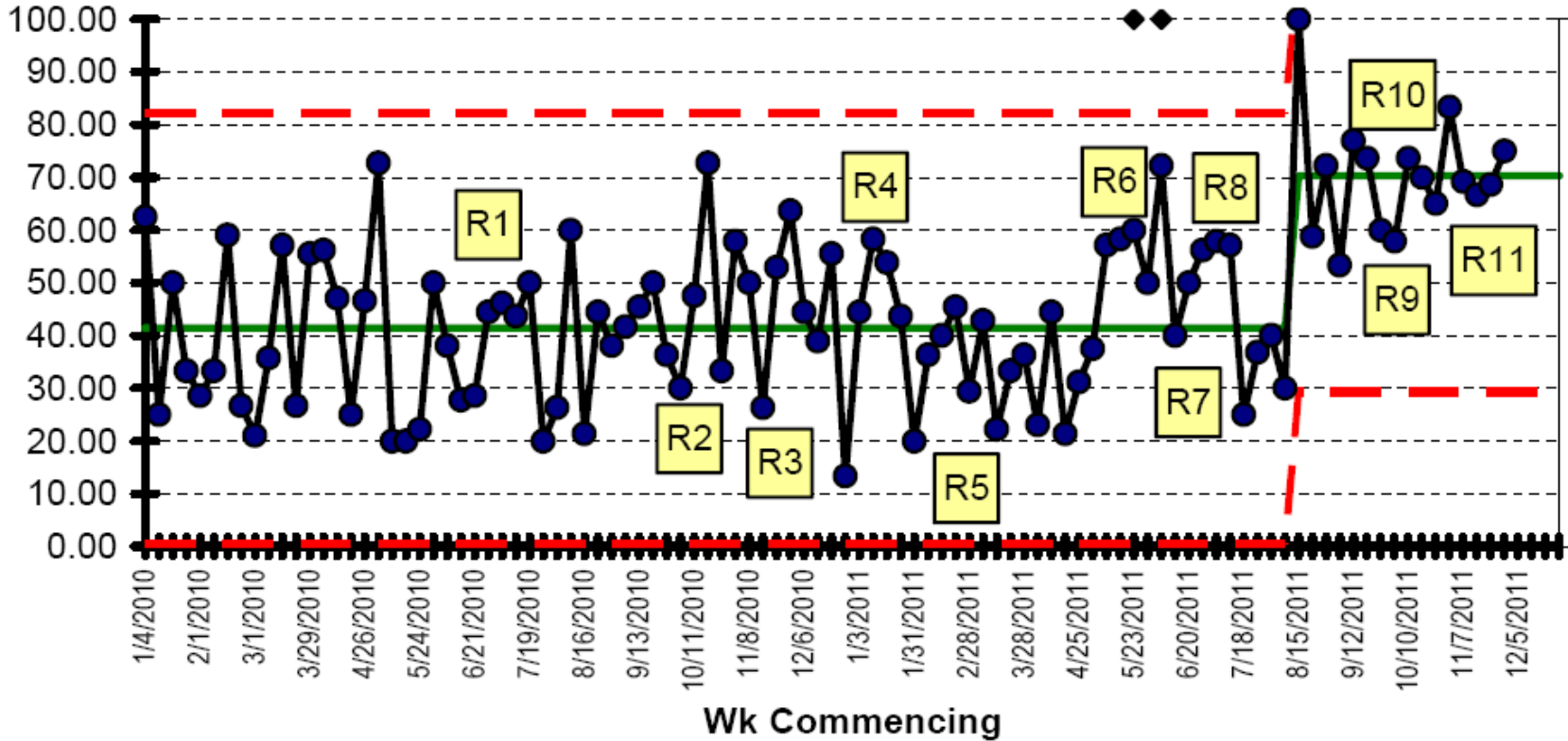


# Small tests of change

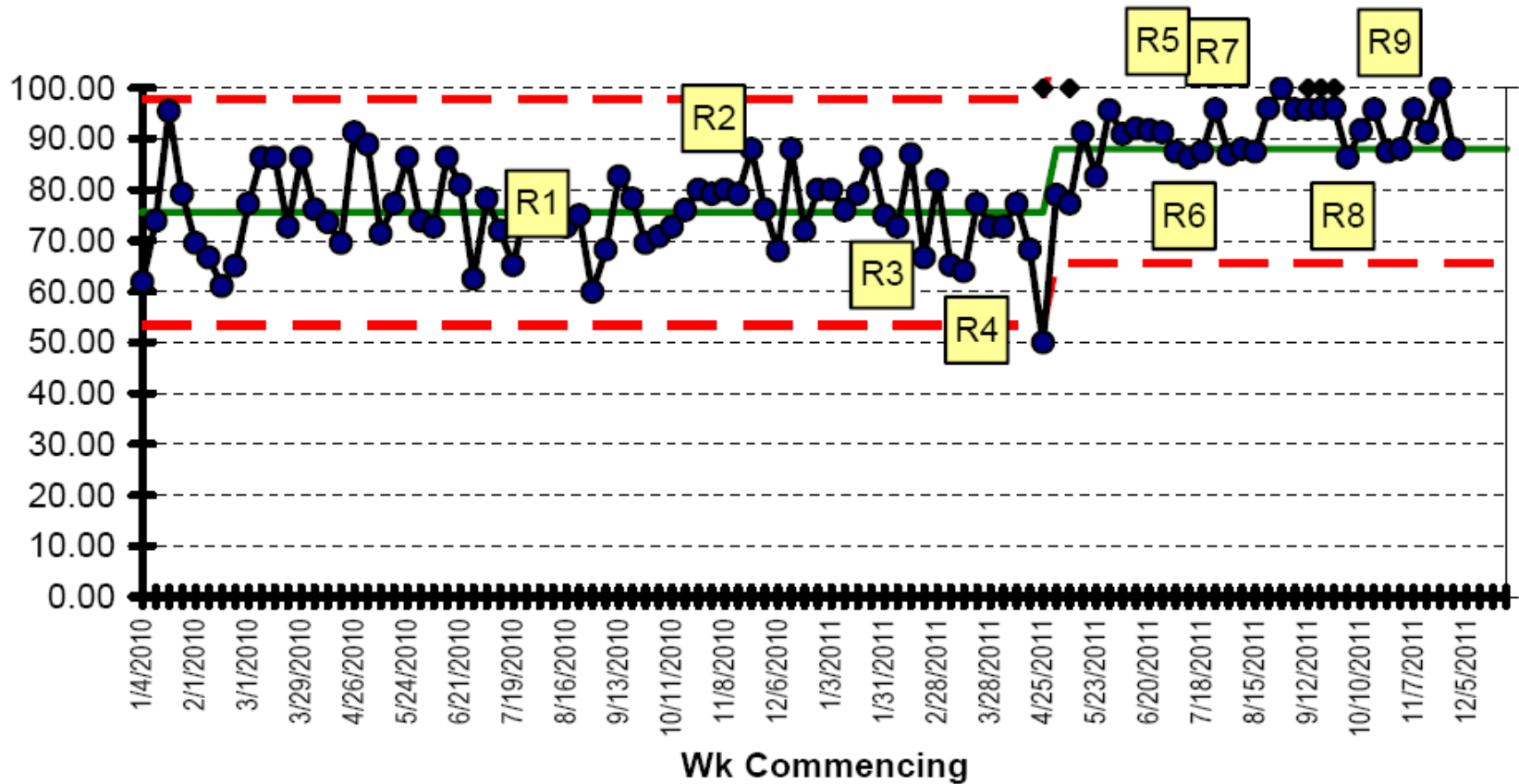


# Feedback

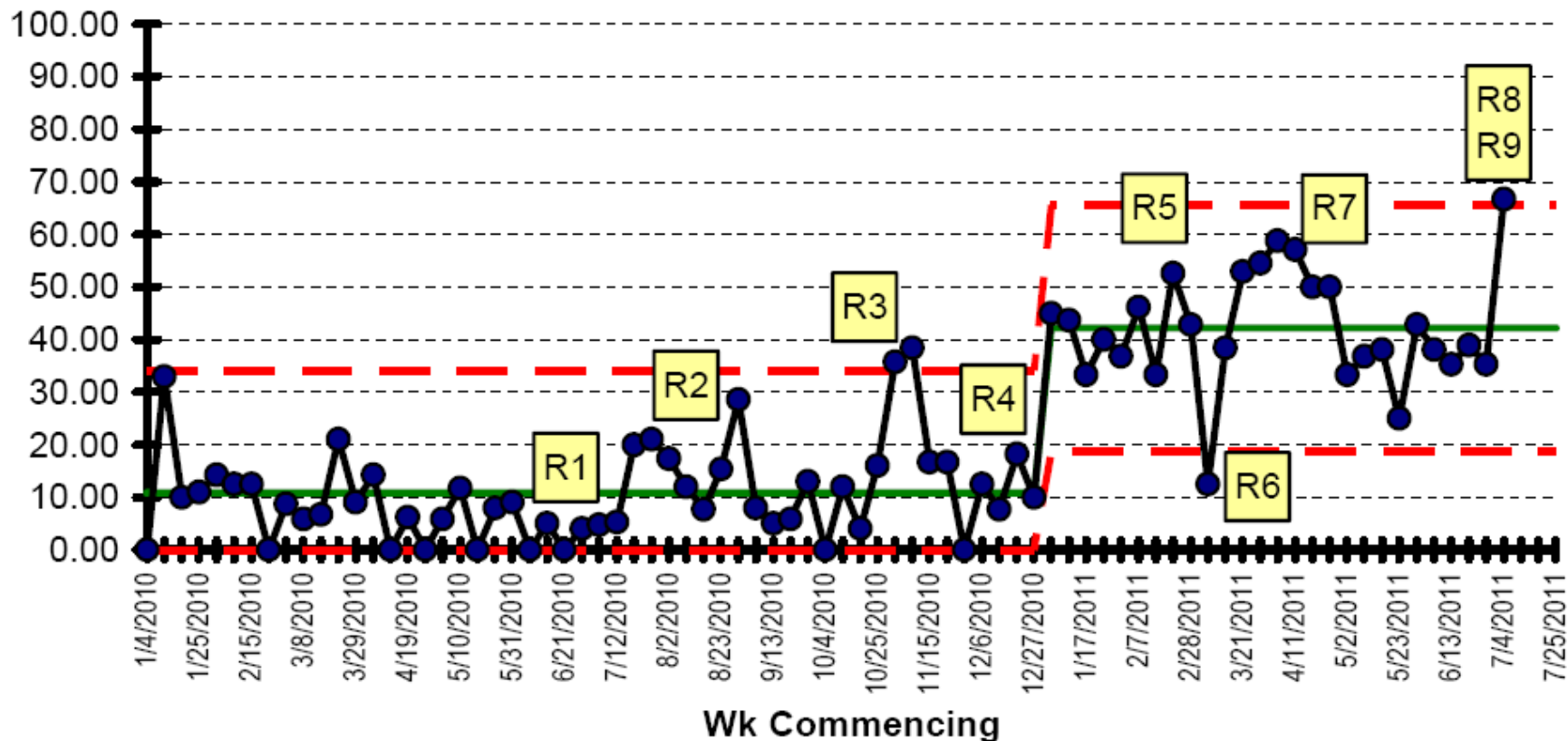
EMAS % Rec'd Care Bundle for AMI



# EMAS % Rec'd Care Bundle for Stroke

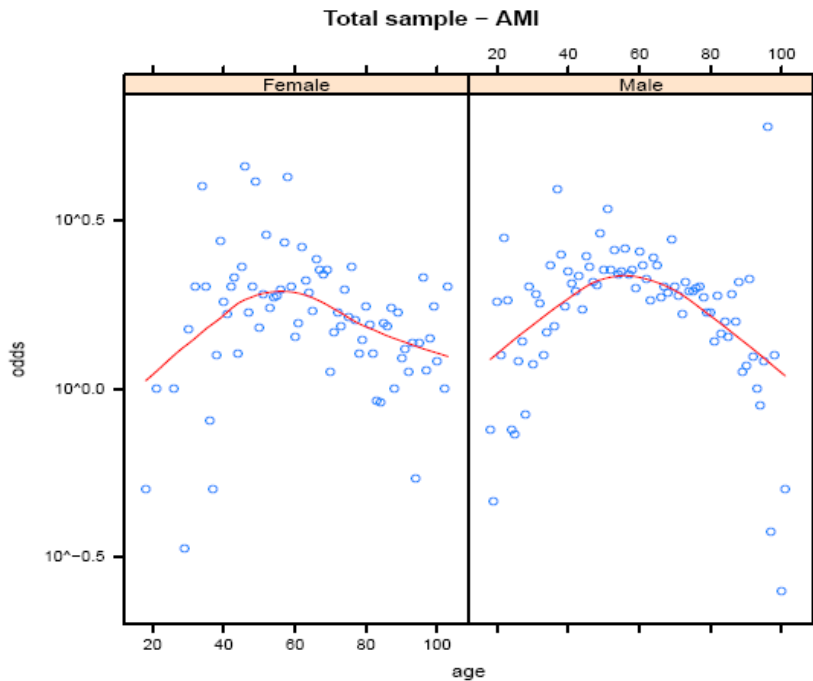


# NWAS % Rec'd Care Bundle for AMI

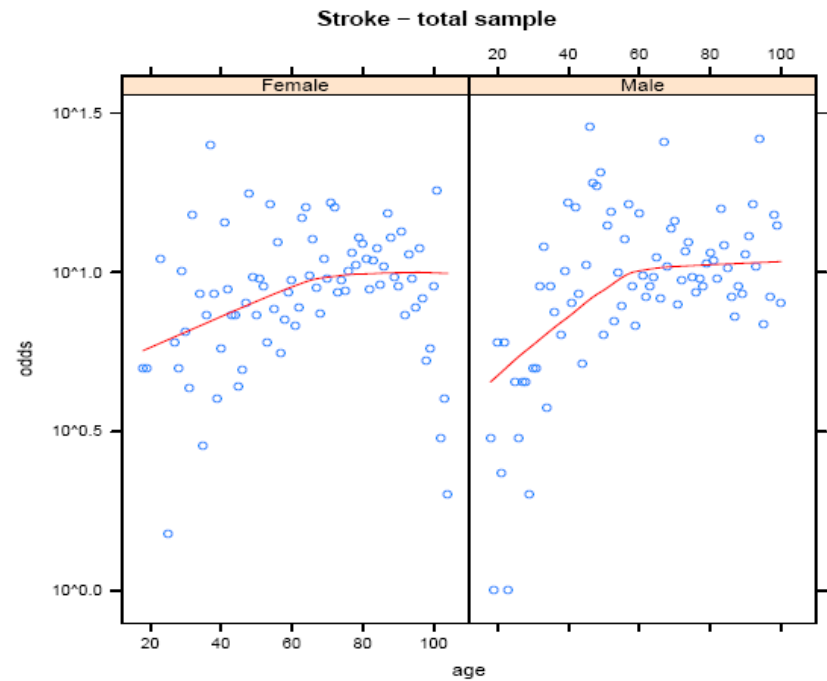


# Variation with age and sex

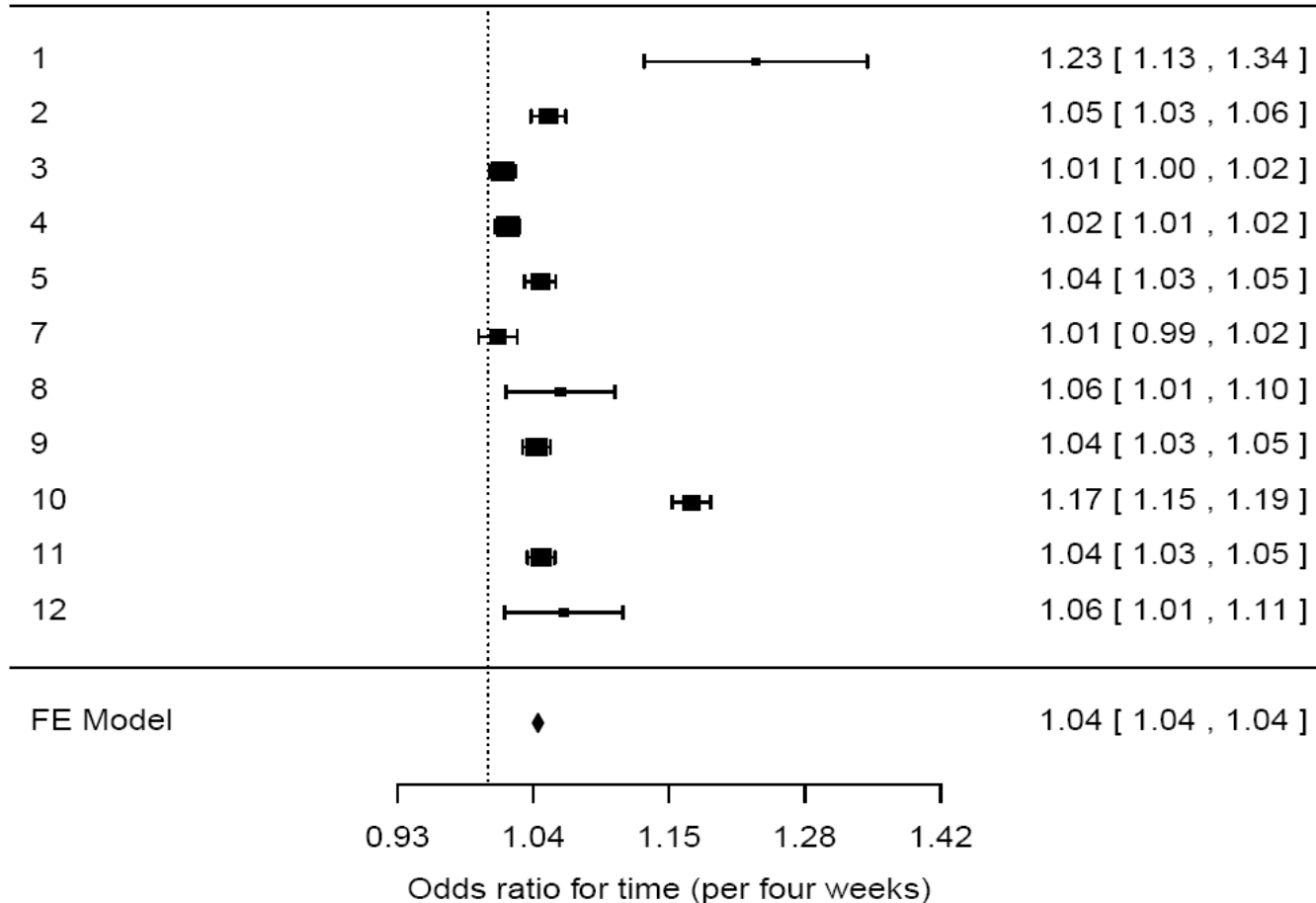
## AMI



## Stroke



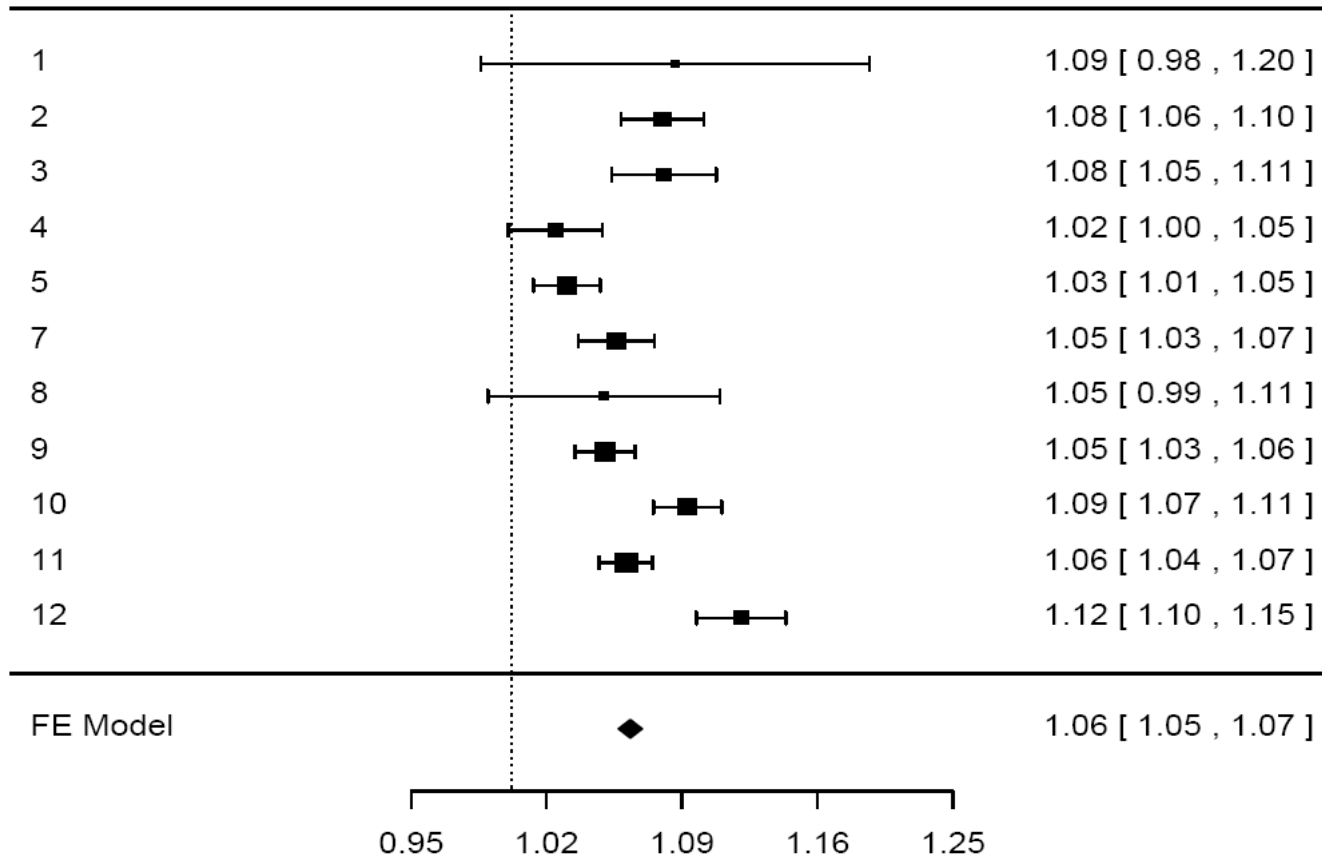
# AMI care bundle



1 GWAS 2 WMAS 3 SCAS 4 LAS 5 YAS 6 SEC 7 NEAS 8 EEAS 9 SWAS 10 NNAS 11 EMAS  
12 IOW



# Stroke care bundle



Odds ratio for time (per four weeks)

1 GWAS 2 WMAS 3 SCAS 4 LAS 5 YAS 6 SEC 7 NEAS 8 EEAS 9 SWAS 10 NNAS 11 EMAS  
12 IOW





# Overall

- **Significant improvements in 10 (of 12) participating trusts for the AMI care bundle and eight (of 12) for the stroke care bundle.**
- **Eleven of 12 trusts showed a significant improvement in either the AMI or stroke care bundle**
- **Six out of twelve showed significant improvements for both AMI and stroke.**
- **Overall performance for the care bundle for AMI increased nationally in England from 43 to 79 percent and for stroke from 83 to 96 percent.**



# Impact

- Identified gaps in processes and outcomes
- Investigated why gaps occurred
- Tested interventions to improve care
- Measured the effects of interventions



# Conclusion

- **Cooperation and collaboration**
- **Improving, not just measuring**
- **Future application to other areas**



# Thanks

- **Steering Group: Sarah Black, Gurkamal Viridi, Rachel Fothergill, Anne Spaight (co-lead), Nadya Essam (project manager), Deborah Shaw (data analyst)**
- **University of Lincoln: Dr Zowie Davy (research fellow), Fiona Togher (research assistant)**
- **Prof Michael Dewey (statistician)**





**Thank you for  
listening!**

