2ia BUCKHORE
CARDIOLOGY

Elective report

Evaluation of a new clinical pathway for managing low risk patients with chest pain

Background

One of the commonest presenting complaints in the Emergency department is chest pain. The differential for patients with chest pain is huge and includes acute coronary syndrome (ACS), dissection, PE, pneumonia and musculoskeletal to name but a few. Given that some of these causes are life threatening and need rapid intervention and others may simply need reassurance it is sensible that patients are rapidly assessed and triaged along appropriate pathways. For the high risk patients in North East Thames presenting with ST elevation ACS (STEMI) a primary angioplasty centre was established at the London Chest hospital for these patients to access life saving treatment. For those patients deemed as intermediate risk i.e. non ST elevation ACS (NSTEMI) another pathway has been established that acts to offer a fast initial referral directly to a specialist heart centre (the London chest hospital) so that primary angioplasty can be rapidly carried out if necessary, thereby bypassing the non-specialist district general hospitals for the initial assessment. Finally the third group of patients are those deemed to be of low risk and are thought to make up the largest proportion of chest pain admissions. This report is an evaluation of the latest pathway to be trialled in effectively managing the low risk chest pain group. Before the new pathway was trialled patients deemed as low risk were admitted under the care of the general medical team, where they would then await the results of the cardiac enzyme blood tests and possible exercise tolerance tests. This typically could take up to two days and as a result use valuable hospital resources such as nursing care and beds for what essentially is a low risk of an adverse cardiac outcome. In addition the patient's themselves are at risk of catching a hospital acquired infection and as such this pathway has important implications on patient safety. In addition, this system meant that the A&E breach time was threatened as patients were waiting to be further assessed by the medical team.

The new pathway aims to quickly categorise the patients using the Grace risk stratification model, which has been successfully trialled in a number of other London hospitals and is based upon a population with equivalent demographics to those of East London. The patients are assessed on clinical history, examination findings, 12 lead ECG and cardiac enzyme blood tests (myoglobin, CK-MB & Troponin). The patients are then observed over a two hour period and then discharged if they are haemodynamically stable, have a normal ECG and negative cardiac enzyme tests. These patients are then followed up in a chest pain clinic within 72 hours. The overall risk of an adverse cardiovascular event within 30 days in this group of patients meeting these criteria is less than 1%.

Report using the STAR approach

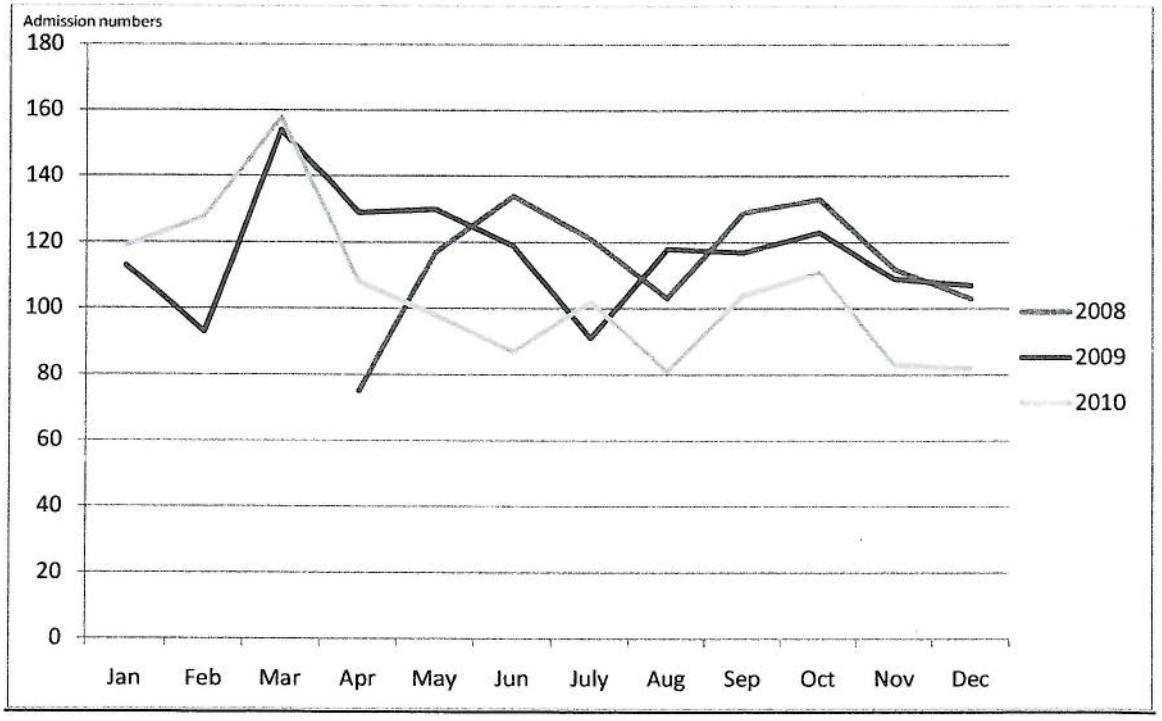
Situation/Task – Evaluate the effectiveness of the new low risk chest pain pathway and its effect on the admission rates to hospital.

Action – I received admission rates for chest pain for the Royal London Hospital from April 2008 to December 2010. My first task was to group these data and then present the information so that the total number of admissions per month could be seen. As I knew that the low risk chest pain pathway was implemented by April 2010 I wanted to compare the admission rates of the two groups. I did this using a paired T-test. This analysed the mean admission rates for the period April 2008 - March 2010 and compared this to the mean admission rates for April 2010 - December 2010 (i.e. following

the introduction of the new pathway. This demonstrated a statistically significant difference in the means of the two data sets. I then produced a monthly breakdown of the admission rates for the years 2008, 2009 and 2010 along with the means for each group and a graph to show the trend of admissions. This illustrated the chest pain clinic had a dramatic effect on inpatient chest pain admissions.

Admissions data per month for years 2008, 2009, 2010

Month	2008	2009	2010
Jan	N/A	113	119
Feb	N/A	93	128
Mar	N/A	154	158
Apr	75	129	108
May	117	130	98
Jun	134	119	87
July	121	91	102
Aug	103	118	81
Sep	129	117	104
Oct	133	123	111
Nov	112	109	83
Dec	103	107	82
Totals	**1027**	**1403**	**1261**
Mean	**114.1**	**116.9**	**105.1**

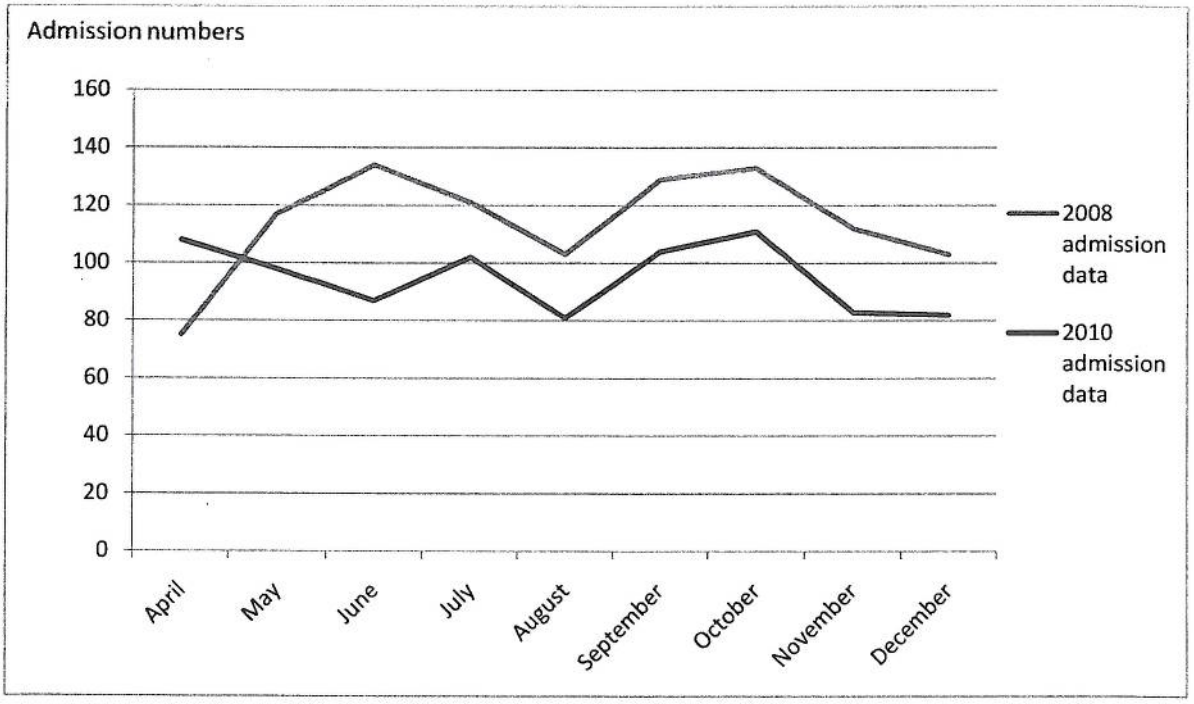


Following this I produced a direct month against month breakdown for admissions between 2008 and 2009 against 2010 (i.e. after the introduction of the low risk chest pain pathway). This enabled me to see month on month the absolute number and percentage reduction in the number of admissions following the introduction of the chest pain clinic. To demonstrate the impact I produced graphs of the data.

Month by month differences between admission data April 2008 – December 2008 compared directly with the admission figures for April 2010 – December 2010.

These are the admission figures for the months April 2008 – December 2008 compared directly with the admission figures for April 2010 – December 2010. Also shown are the net movement of admission numbers and the percentage movement.

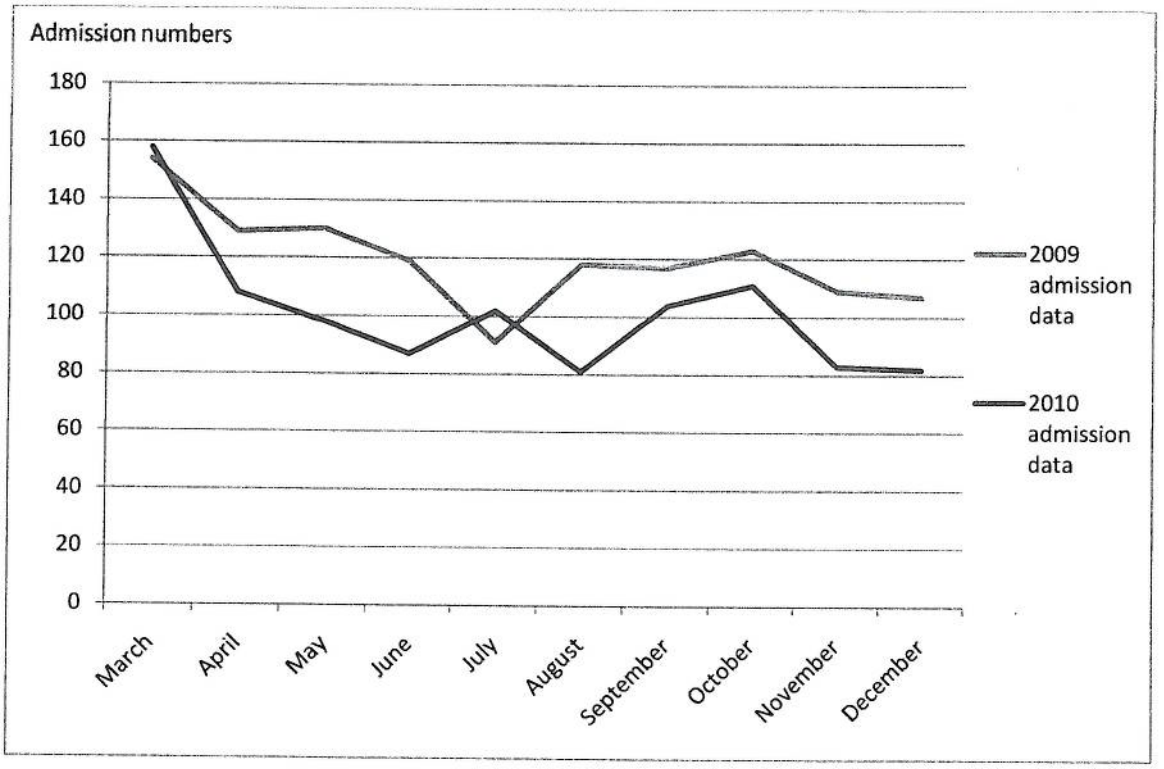
Months 2008	Admissions	Months 2010	Admissions	Net movement	% Movement
Apr-08	75	Apr-10	108	+33	+44%
May-08	117	May-10	98	-19	- 16.3%
Jun-08	134	Jun-10	87	-47	- 35.0%
Jul-08	121	Jul-10	102	-19	-15.7%
Aug-08	103	Aug-10	81	-22	-21.4%
Sep-08	129	Sep-10	104	-25	-19.4%
Oct-08	133	Oct-10	111	-22	-16.5%
Nov-08	112	Nov-10	83	-29	-25.9%
Dec-08	103	Dec-10	82	-21	-20.4%
Mean admission number	114.1		95.1		



Month by month differences between admission data March 2009 – December 2009 compared directly with the admission figures for March 2010 – December 2010.

These are the admission figures for the months March 2009 – December 2009 compared directly with the admission figures for March 2010 – December 2010. Also shown are the net movement of admission numbers and the percentage movement.

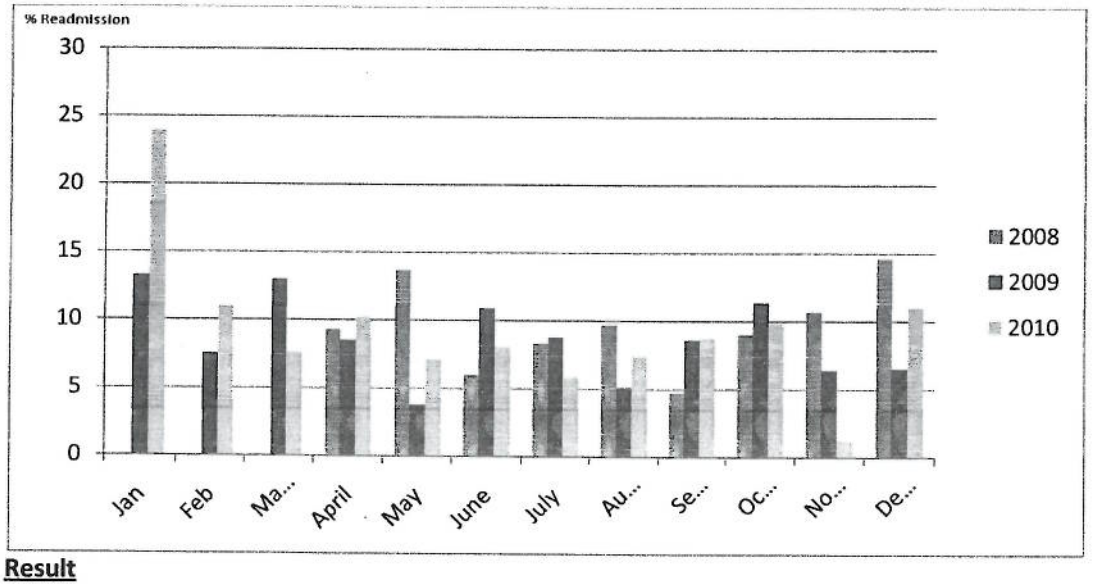
Months 2009	Admissions	Months 2010	Admissions	Net movement	% Movement
Mar - 09	154	Mar - 10	158	+4	+2.6%
Apr-09	129	Apr-10	108	-21	-16.3%
May-09	130	May-10	98	-32	-24.6%
Jun-09	119	Jun-10	87	-32	-26.9%
Jul-09	91	Jul-10	102	-11	-12.2%
Aug-09	118	Aug-10	81	-37	-31.4%
Sep-09	117	Sep-10	104	-13	-11.1%
Oct-09	123	Oct-10	111	-12	-9.8%
Nov-09	109	Nov-10	83	-26	-23.9%
Dec-09	107	Dec-10	82	-25	-23.4%
Mean admission number	119.7		101.4		



I then looked at the readmission rates for the same time periods. This was done to ensure that the pathway was effective. It may be that patients were discharged earlier however if it meant that more patients were being readmitted then the pathway could be ineffective. I looked at the percentage readmission rates on a monthly basis per the years 2008, 2009 and 2010. The results showed that the low risk pathway did not result in more patients being readmitted following the introduction of the low risk chest pain clinic.

Readmission Data

Month	2008 Readmission Nos.	2008 % readmission rate	2009 Readmission Nos.	2009 % readmission rate	2010 Readmission Nos.	2010 % readmission rate
Jan	N/A		**15** from 113	13.3%	**29** from 119	24.4%
Feb	N/A		**7** from 93	7.5%	**15** from 128	11.7%
Mar	N/A		**20** from 154	13.0%	**12** from 158	7.6%
Apr	**7** from 75	9.3%	**11** from 129	8.5%	**11** from 108	10.2%
May	**16** from 117	13.7%	**5** from 130	3.8%	**7** from 98	7.1%
Jun	**8** from 134	6.0%	**13** from 119	10.9%	**7** from 87	8.1%
Jul	**10** from 121	8.3%	**8** from 91	8.8%	**6** from 102	5.9%
Aug	**10** from 103	9.7%	**6** from 118	5.1%	**6** from 81	7.4%
Sep	**6** from 129	4.7%	**10** from 117	8.6%	**9** from 104	8.7%
Oct	**12** from 133	9.0%	**14** from 123	11.4%	**11** from 111	9.9%
Nov	**12** from 112	10.7%	**7** from 109	6.4%	**1** from 83	1.2%
Dec	**15** from 103	14.6%	**7** from 107	6.5%	**9** from 82	11%
Mean	10.7	9.5%	10.3	8.7%	10.3	8.6%



Result

I have proved that the new low risk chest pain pathway significantly reduces the number of chest pain hospital admissions and this group is no more likely to be readmitted to hospital once discharged. In addition I looked at the death rates across the group and found that you are no more likely to die following the introduction of the new pathway, which is an important factor for patient safety.

Elective - Teaching

Situation/Task

After discussing practical clinical skills with a group of third year medical students, I identified that they were not confident in being able to demonstrate how to perform certain skills to an examiner. I offered to help with this and planned a practical skills training day at the Robin Brook centre at St. Bartholomew's hospital. I booked this session for May 11th 2011. The site was chosen so that we could make use of the clinical skills models available.

Action

I planned six OSCE skills stations. These were identified with the students earlier as areas they would like to be taught on. These stations included:

1. PR examination
2. Cannulation
3. Venepuncture
4. Arterial blood gas
5. Catheterisation
6. Fundoscopy

I enlisted the help of a colleague (Gary Sharp) and split the students into two groups. This was done so that a set of three skills could be demonstrated by me and a set of three skills could be demonstrated by my colleague at the same time (due to time constraints). Once each skill was demonstrated, each student carried out the task whilst they were marked using mark schemes. We provided them with both the written feedback schemes as well as oral feedback.

Result

Each student was able to practice the skills and they all improved throughout the morning. We received excellent written feedback and they all felt that they had improved considerably in the above skills. We have been asked to carry out another session, which we are planning to do in June.