

**Westcliffe Medical Practice**  
ShIPLEY

Westcliffe Cardiology Service

# Increasing diagnostics and diagnosis in Primary Care

**Dr Matthew Fay**

GP Principal Westcliffe Medical Practice

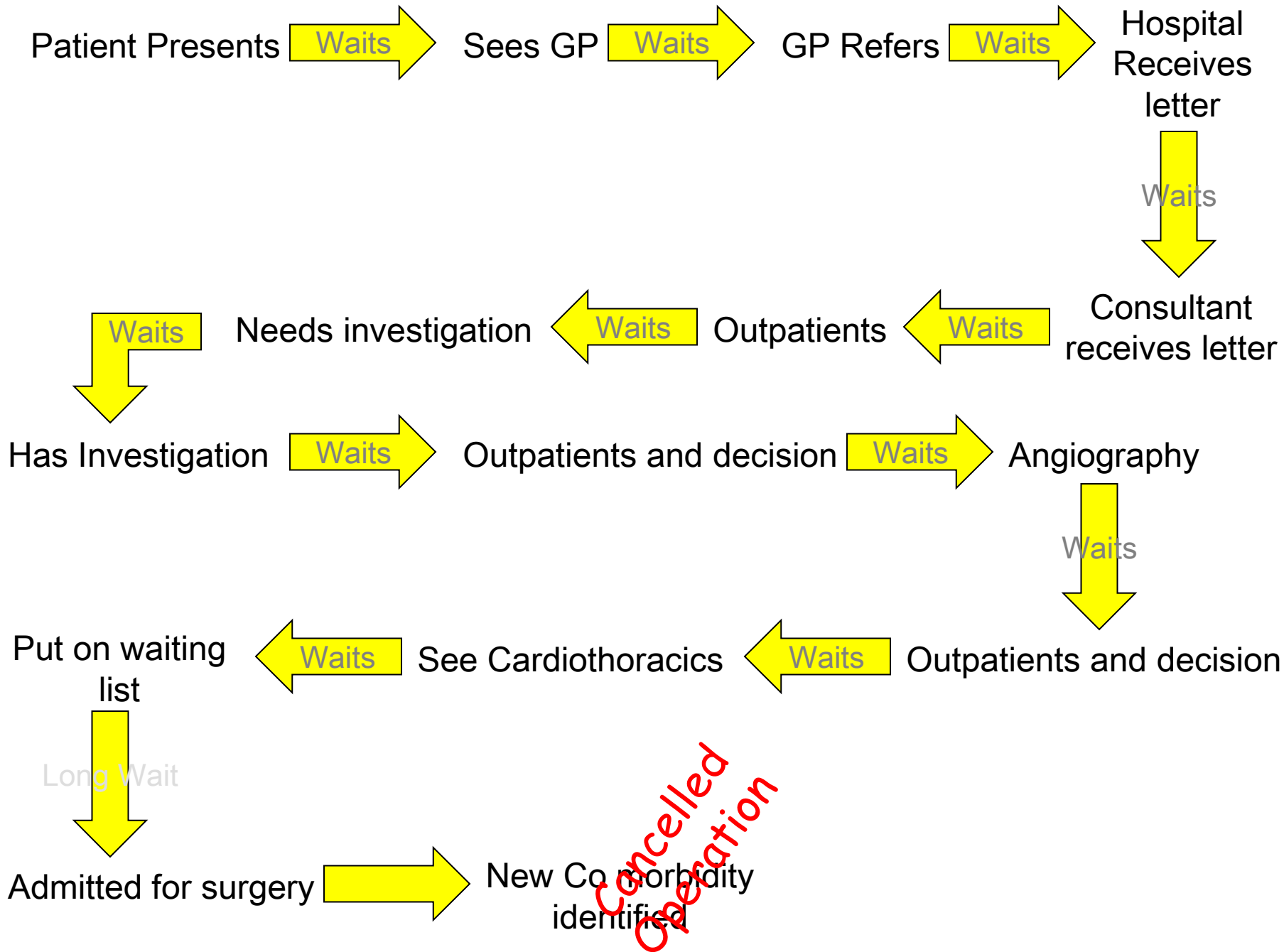
GPwSI Cardiology

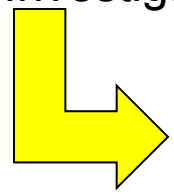
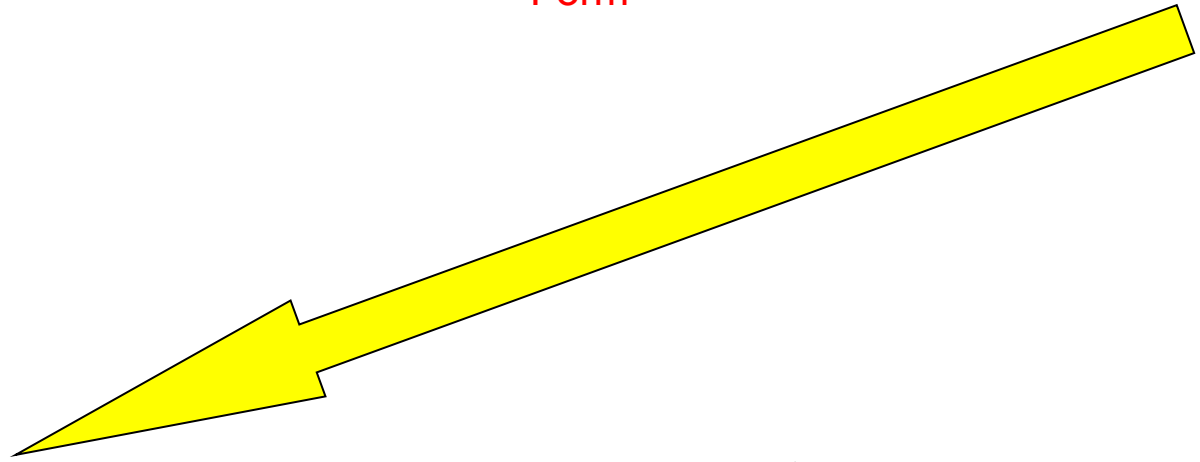
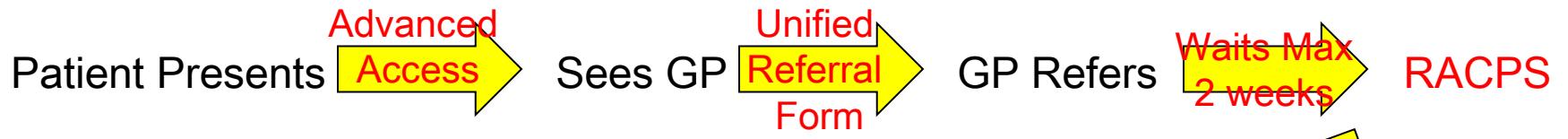
# Acknowledgements

- Dr Anthony Cummins
- Dr Steven Lindsay/Dr Chris Morley
- Dr Andreas Wolff

- **Leeds-Bradford circa 2002**

- Long waits for Cardiac Surgery
- Long waits for investigations
- Long waits for cardiology outpatients
- Poor access to 'secondary care' investigations
- Poor primary, secondary, tertiary care integration





Diagnosis, Advice and plan to GP

Informed of Plan at time of angio

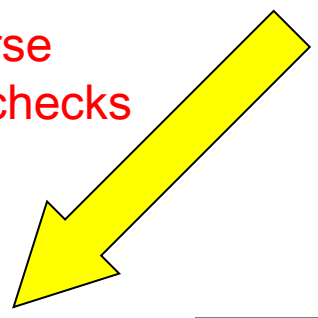


Put on waiting list



See Cardiothoracics  
Unified Referral Form

Pre hab nurse completes checks for surgery



Operation and Discharge

# •To early to celebrate

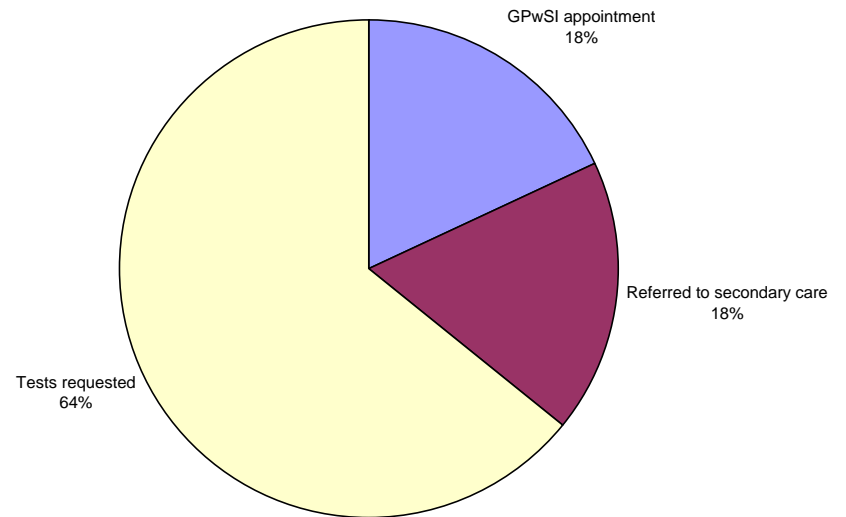
- Single symptom/disease entity
- Increased awareness>Increased demand
- Long waits for cardiology outpatients
- Poor access to 'secondary care' investigations
- Improved secondary, tertiary care integration

## •Next Steps

- Development of GPwSI services in cardiology
- Weekly clinic based in hospital with consultant guidance
- All referral directed to GPwSI
- Triage for direct access investigations
- Degree of opening of 'secondary care' investigations

# Triage

- Average 96 cardiology referrals sent to the cardiology triage office each week.



# Tests

An average of 88 test results have been triaged each week.

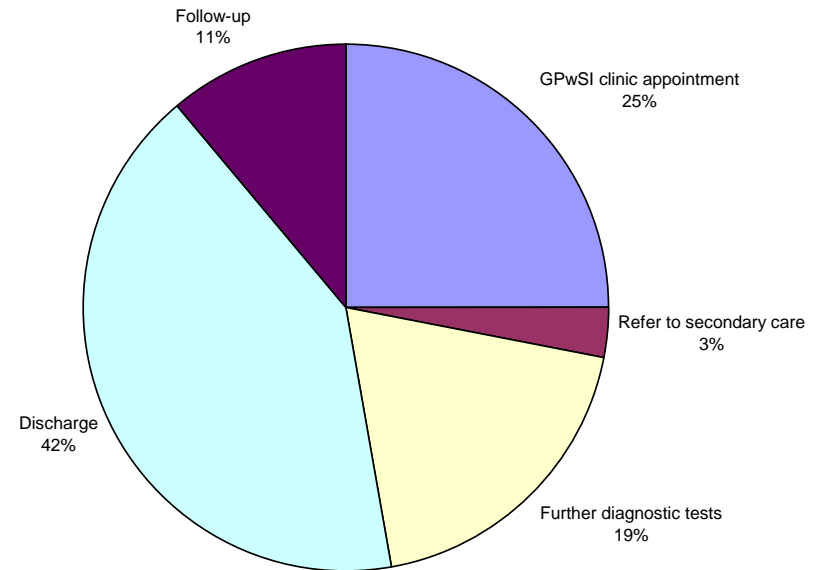
24 patients require clinic appointment

<1 patient per week is referred to secondary care

16 patients require further tests

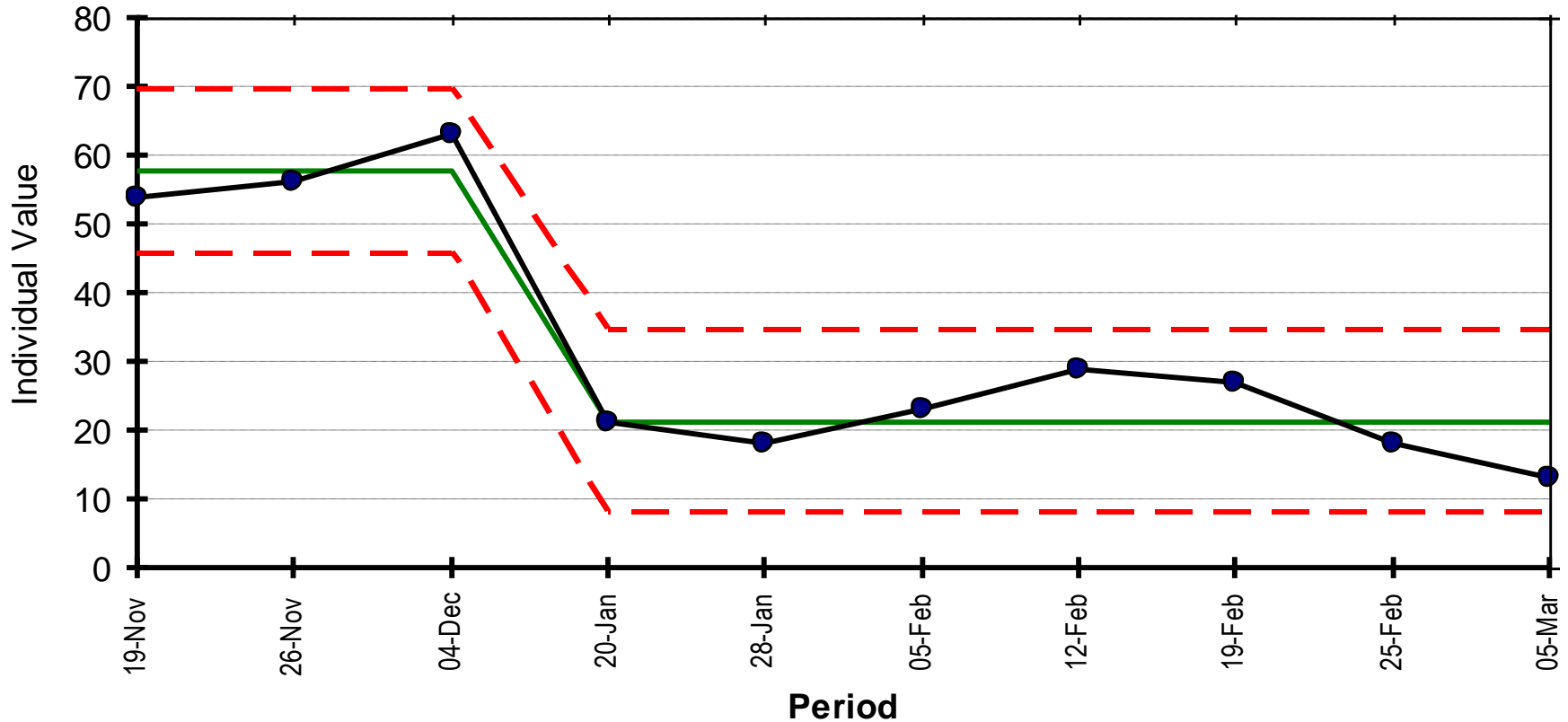
36 patients are discharged without being seen in clinic

12 patients are marked for follow up.



## Median 3rd available appointment (Bradford Cardiology)

Special Cause Flag



# •Factors assisting this success

- Short morning meetings (weekly)
- Good relationships evolved over 3 years
- Experience of modernisation techniques
  - Smart Care
  - CHD Collaborative
  - Primary Care Collaborative
  - Critical Friends Group
- Right people involved – including patients

- To early to celebrate

- GPwSI services triage became the delaying step
- Increased ease of access > Increased demand
- Long waits for GPwSI service
- PCT reorganisation
- Entrenching of the local Foundation Trust

## •Next Steps

- Ownership of the service and the formation of the Westcliffe Cardiology Service
- Agreement on patient selection
- Locality echocardiography
- Unified report format
- Direct entry of GPwSI consultation to shared record

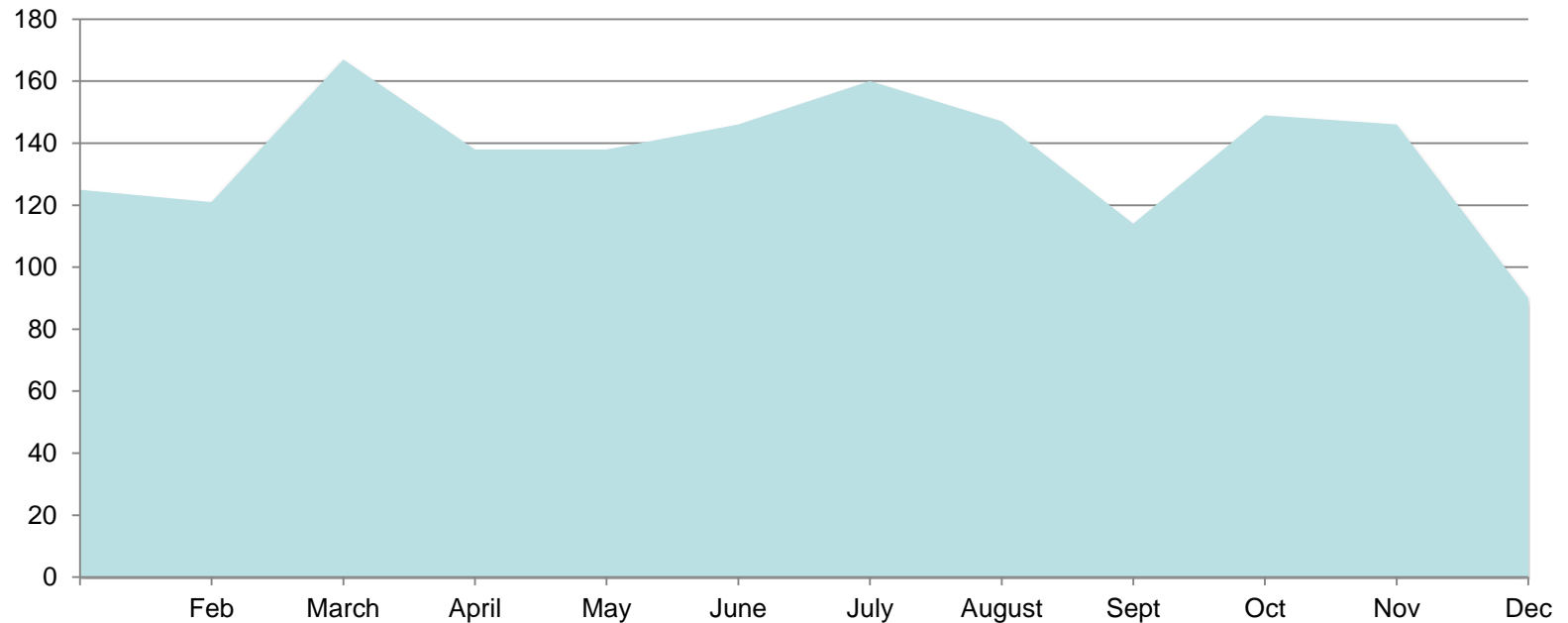
## •Next Steps

- Development of 'Open Access' to rhythm monitoring
- Report to referring Primary Care Clinician
- Governance/safety ensured by integration with cardiology
- Development of a Locality centre at Ilkley
- Plans to develop locality centre at Queensbury

## •Next Steps

- Phone and email advice available to local clinicians
- ECG advice through integrated ECG system
- E-Consultation through the shared record
- Ability to comply with 'Choice' to secondary care provider
- Ability to refer directly to tertiary care through agreed pathways

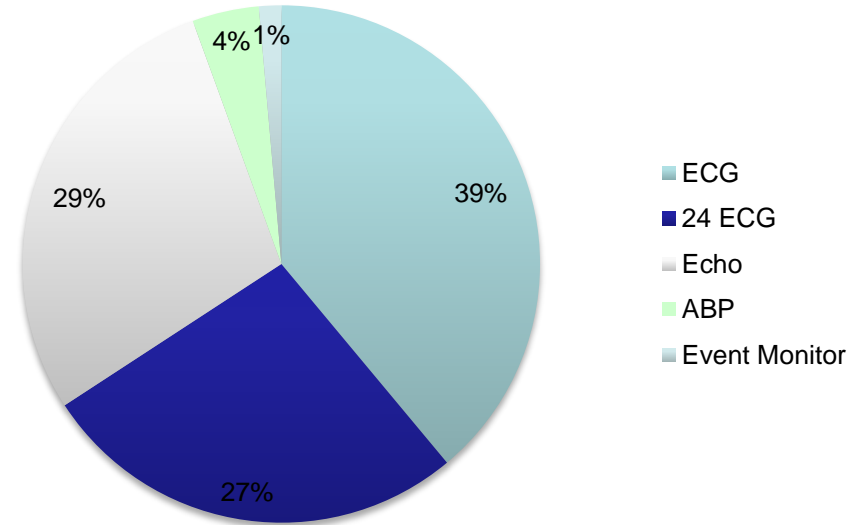
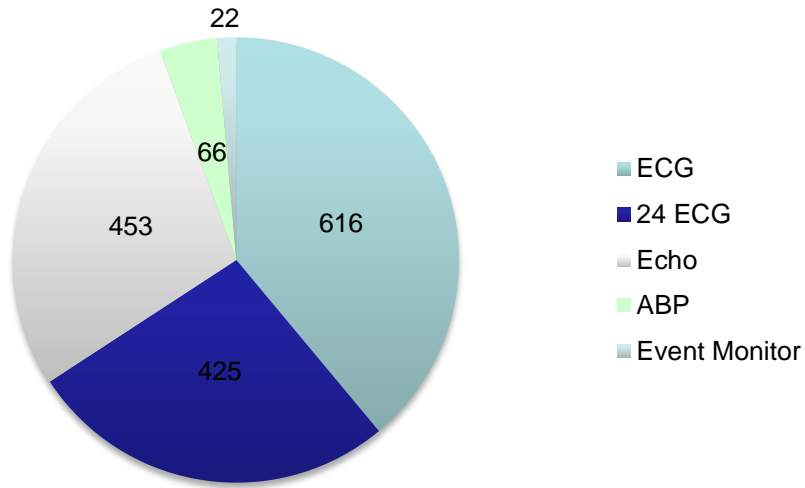
# Activity-Direct Access



Average of 96 cardiology referrals sent to the cardiology office each month.

Average of 159 cardiology referrals sent to the cardiology office each month.

# Activity-Direct Access

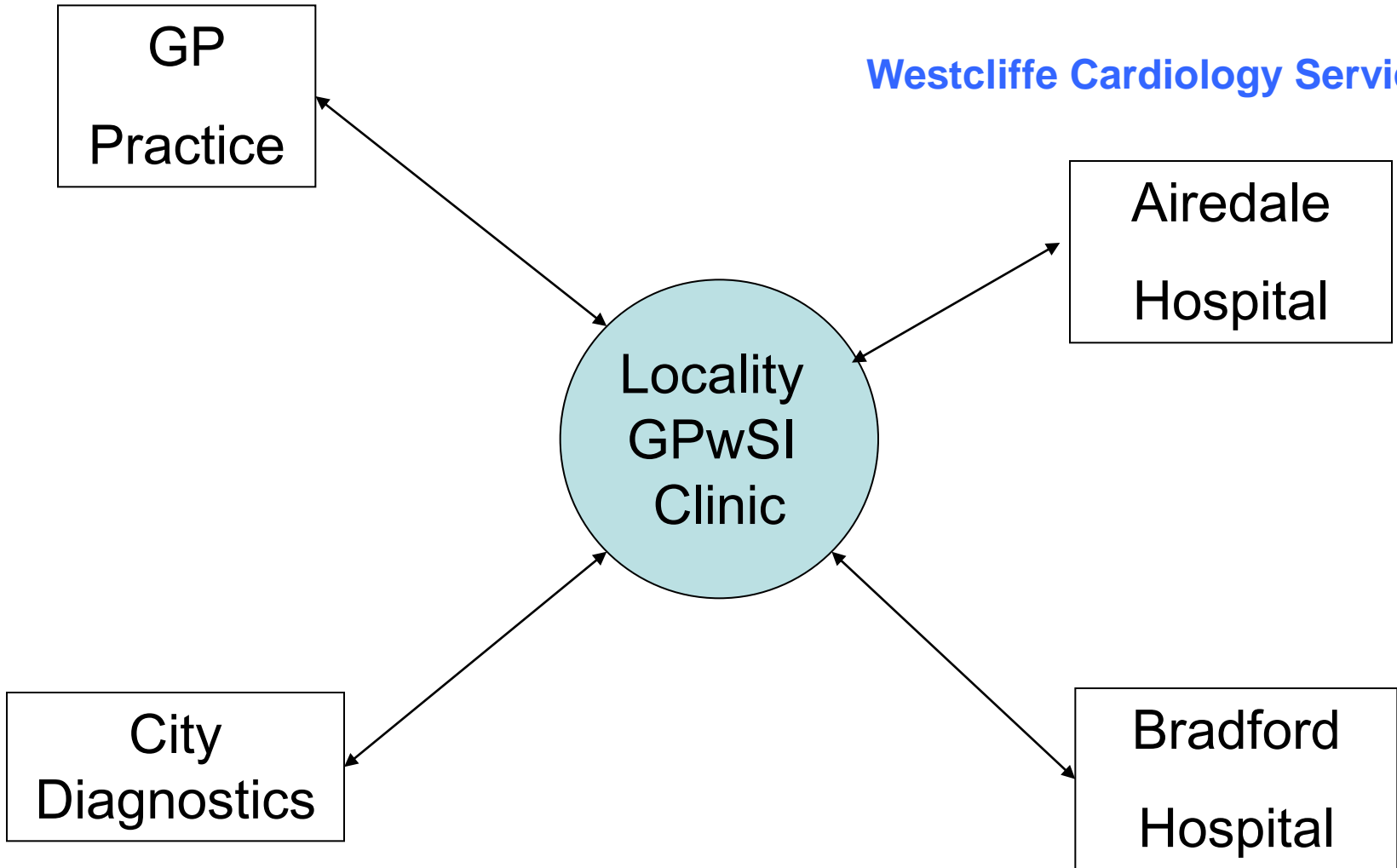


# •Operation of Ambulatory Monitoring

- Data Transmitted to Bradford Hospitals
- Analysed by Technicians
- Data returned to Admin/GPwSI and fitting Nurse
- Concerning traces, technician requests history details
- Technician can discuss with Consultant
- If Cardiologists feel urgent review required, appointment arranged

**Westcliffe Medical Practice**  
**Shipley**

**Westcliffe Cardiology Service**



Lead Dr Matthew Fay  
 Dr Andreas Wolff  
 Contact Mrs Bernie Cahill  
 Telephone 01274 580787

Telephone: 01274 580787  
 www.westcliffemedicalcentre.co.uk

# Westcliffe Medical Practice Shipley

## Westcliffe Cardiology Service

The cardiac team has been asked to assist in the management of your current symptoms we would be grateful if you could complete this questionnaire and hand it in before you leave to give some more information to help us understand the results we will receive from this test

<b>NAME</b>				
<b>Age</b>	<b>Sex</b>	<b>Date of Birth</b>		
Are you taking any medication? Please List below				
	<b>Please circle the correct response</b>		<b>If YES, please describe the circumstances</b>	
<b>1. Have you ever fainted?</b>	During Exercise	Yes / No		
	Following Exercise	Yes / No		
	Unrelated to Exercise	Yes / No		
<b>2. Do you experience dizzy turns?</b>	During Exercise	Yes / No		
	Following Exercise	Yes / No		
	Unrelated to Exercise	Yes / No		
<b>3. Do you experience palpitations (i.e. heavy, rapid or irregular heartbeat)?</b>		Yes / No		
<b>4. Do you experience chest pain, heaviness or tightness?</b>	During Exercise	Yes / No		
	Following Exercise	Yes / No		
	Unrelated to Exercise	Yes / No		
<b>5. Do you feel that you get more breathless or more easily tired than other people your age?</b>		Yes / No	If YES, which	
<b>6. Is there a history of heart disease in your family?</b>		Yes / No	If YES, what	
<b>7. Are you aware of any history of sudden cardiac death in your family? This may have been as a death by drowning, a car accident or epilepsy.</b>		Yes / No	If YES, who and what age	
<b>8. Please tick one box to show which of these best describes you?</b>				
I am	White	Black – Caribbean	Black-African	Black-other (write in)
Indian	Pakistani	Bangladeshi	Chinese	Any other group (write in)

# Primary Care Rapid ECG Screening

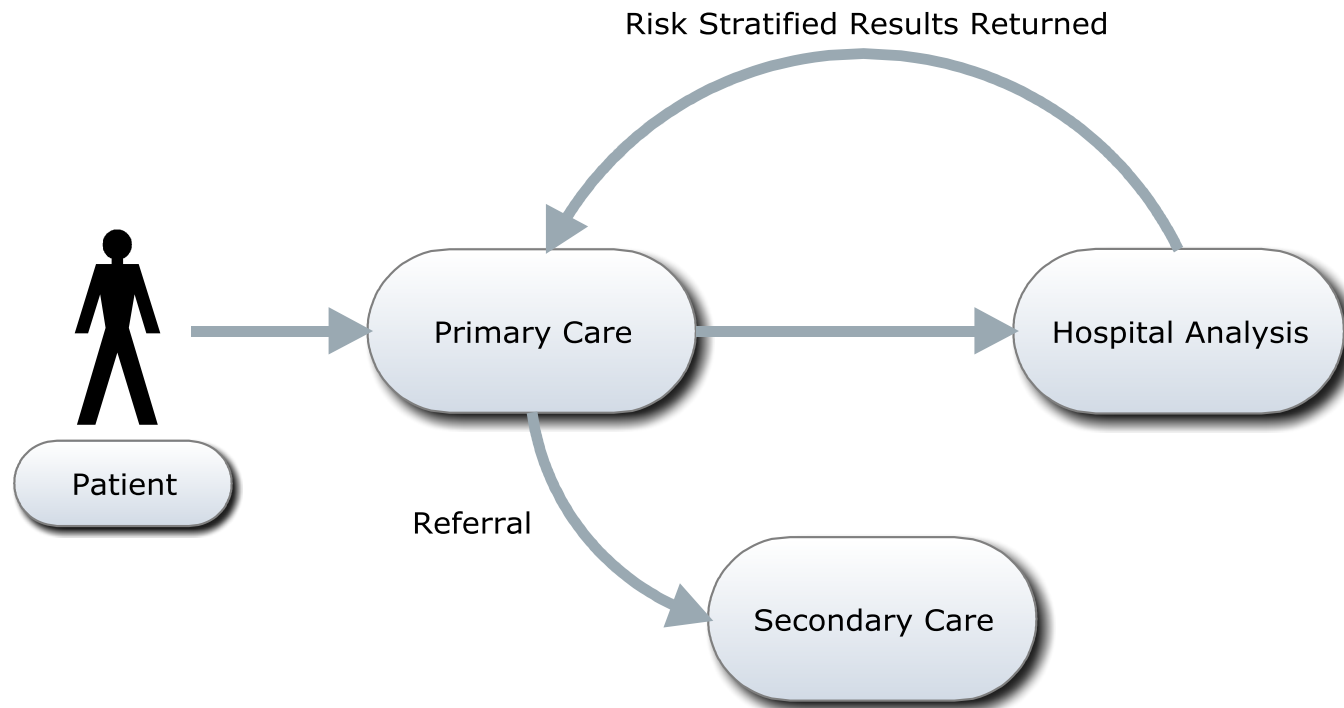


# Primary Care Rapid ECG Screening

A networked cardiology infrastructure focused on the detection of:

- **Atrial Fibrillation** for stroke prevention treatment
- **Heart Failure** for resynchronisation device therapy
- **Conduction System Failure** for pacemaker therapy
- An efficient referral strategy which delivers patients who can benefit from medical therapy.

# How the system works?



# The Screening Process

A letter of invitation is sent to a patient group by the GP Surgery. The following is extracted from the patients electronic record and encoded into a barcode that is printed on the invitation letter:

- Surname
- First Name
- Date of Birth
- Sex
- NHS Number
- NHS Practice ID
- Atrial Fibrillation Read Code Status
- Heart Failure Read Code Status

# 3 Minute Procedure

- Patient demographics are entered using a 2-D barcode reader attached to a networked ECG machine.
- An electrode is attached to each of the ankles and wrists.
- A 10 second limb lead ECG is taken at a sampling frequency of (1000Hz) with the patient sitting in a chair with their legs supported.



# Analysis

Each ECG is measured and interpreted by a cardiac physiologist. The following measurements are taken before the ECG is classified:

- P-R interval
- P wave duration
- QRS duration
- Q-T interval
- R-R

Patient  
ID: 123456789  
DOB: 26.10.1975  
33 yr Male

Test

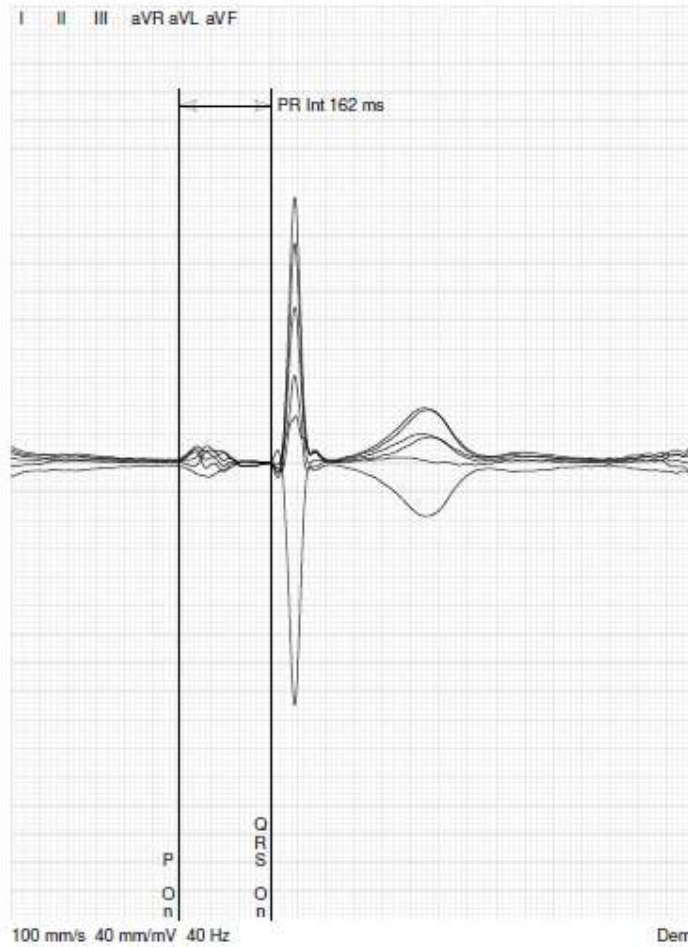
19/08/2009 15:27:39

Vent rate: 74 BPM  
PR int: 162 ms  
QRS dur: 92 ms  
QT/QTc: 362/390 ms  
P-R-T axes: 21 40 31  
QTcB: 403 ms  
QTcF: 389 ms

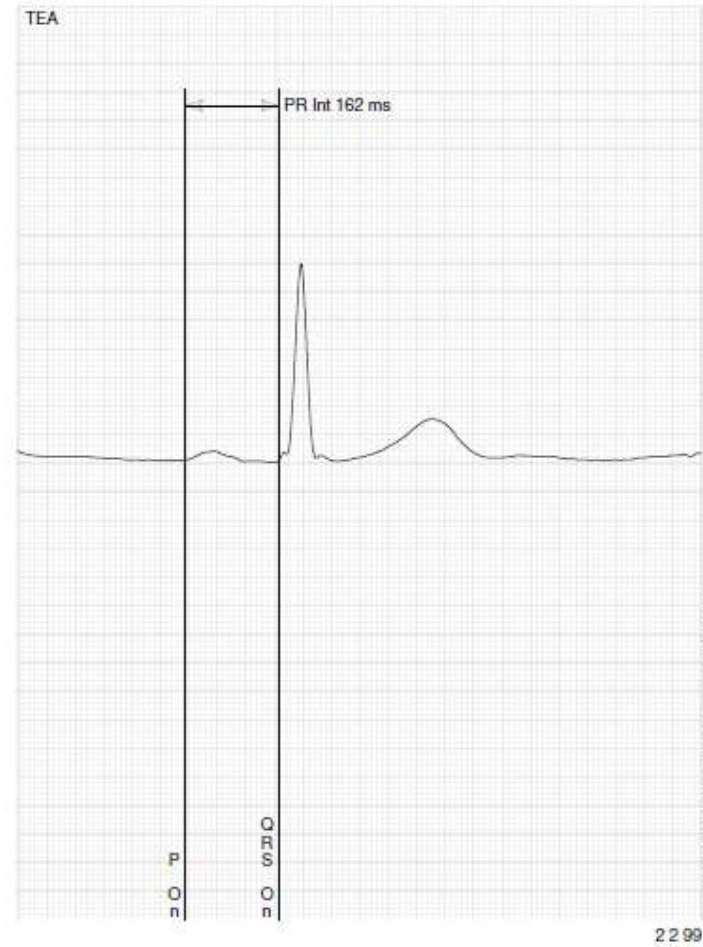
Limb leads only, all chest leads unused.  
NORMAL SINUS RHYTHM

Reviewed By Mark Hashemi 19/08/2009 15:29:01

*Mark Hashemi*



Demo Mark



Patient  
ID: 123456789  
DOB: 26.10.1975  
33 yr Male

Test

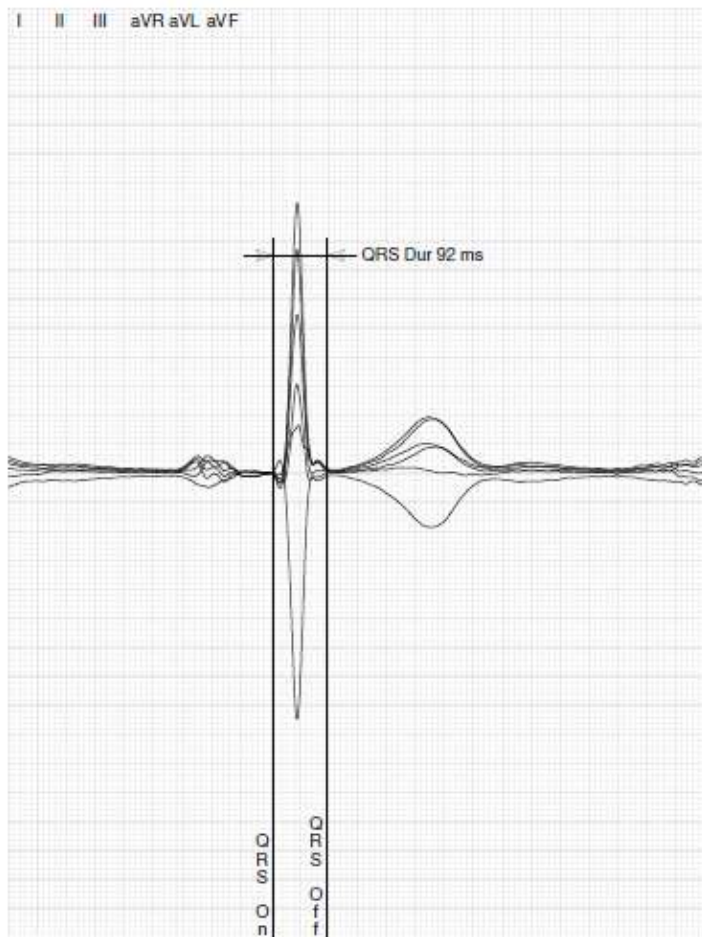
19/08/2009 15:27:39

Limb leads only, all chest leads unused.  
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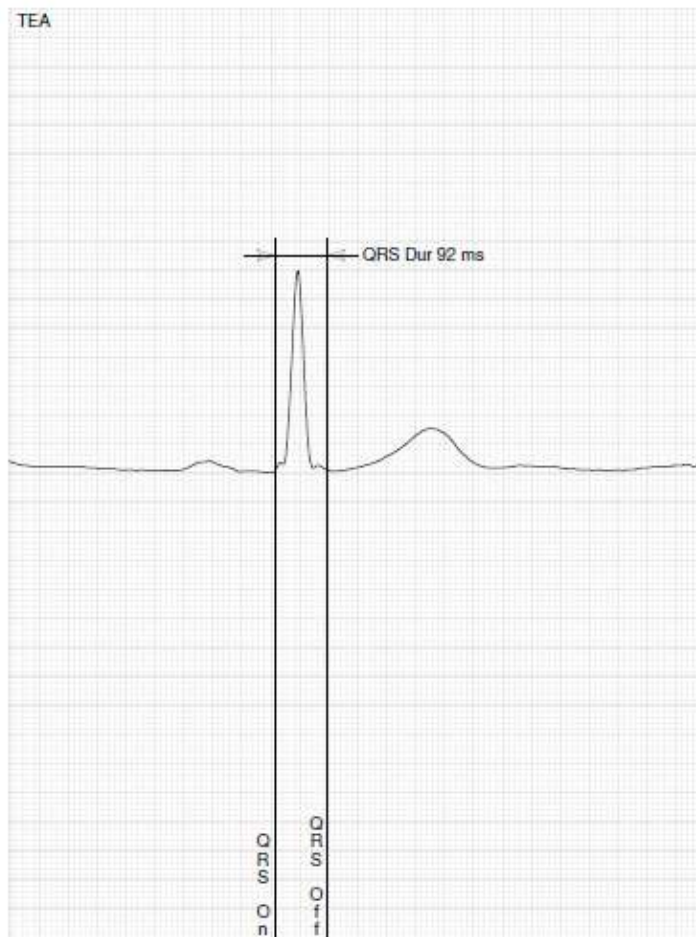
Reviewed By Mark Hashemi 19/08/2009 15:29:01

*Mark Hashemi*



100 mm/s 40 mm/mV 40 Hz

Demo Mark



2 2 99

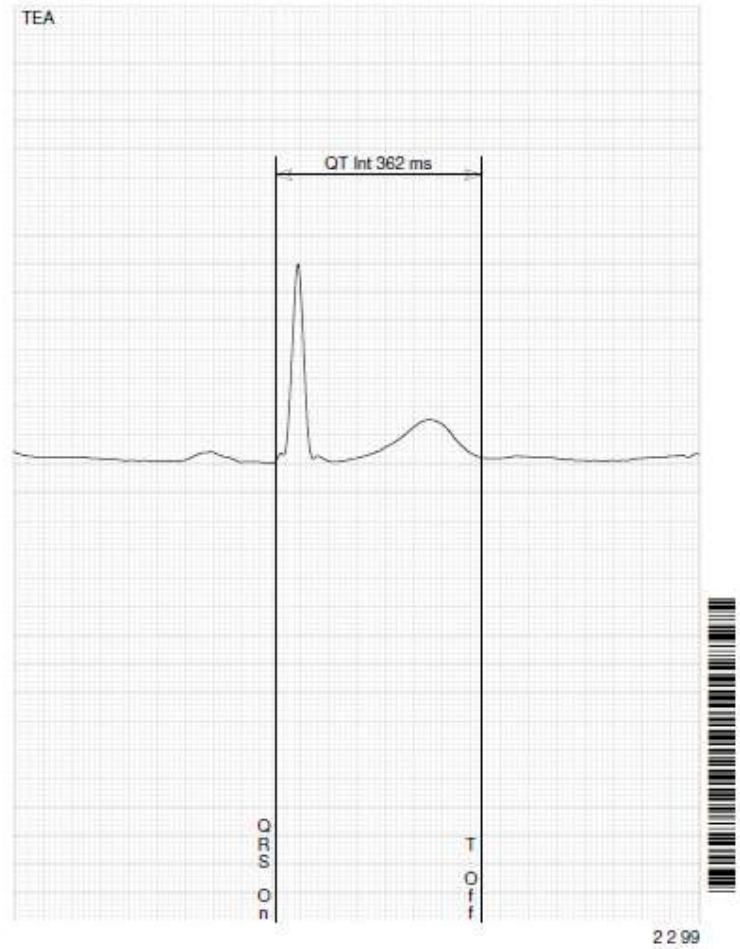
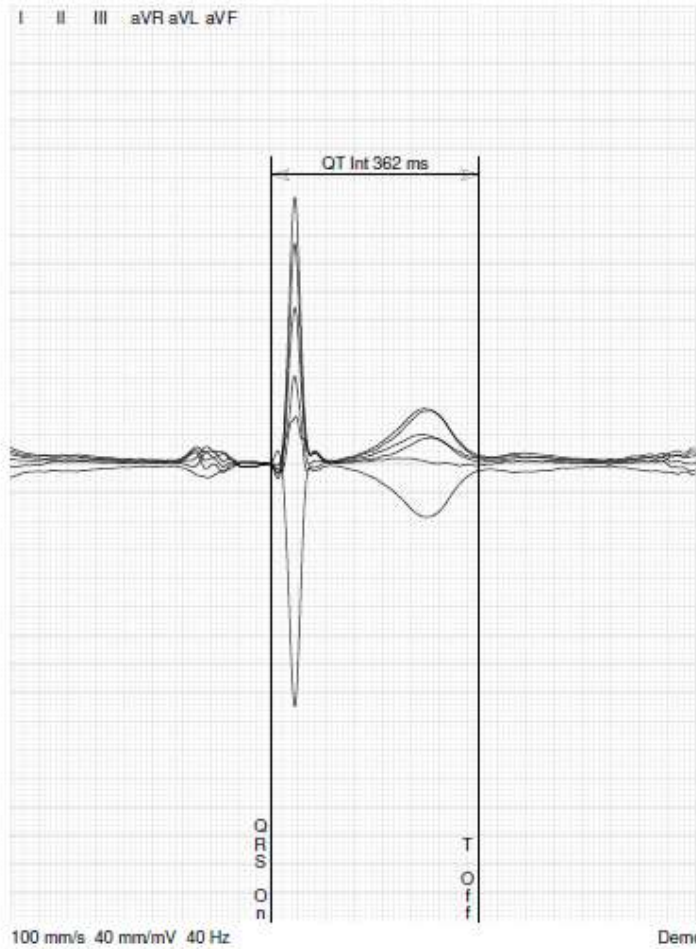
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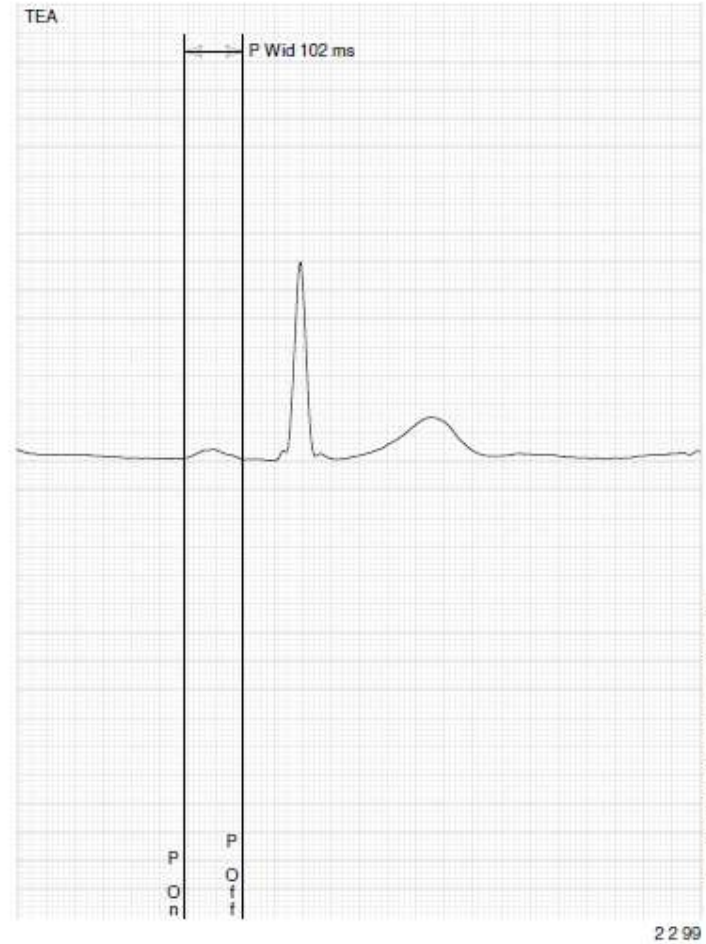
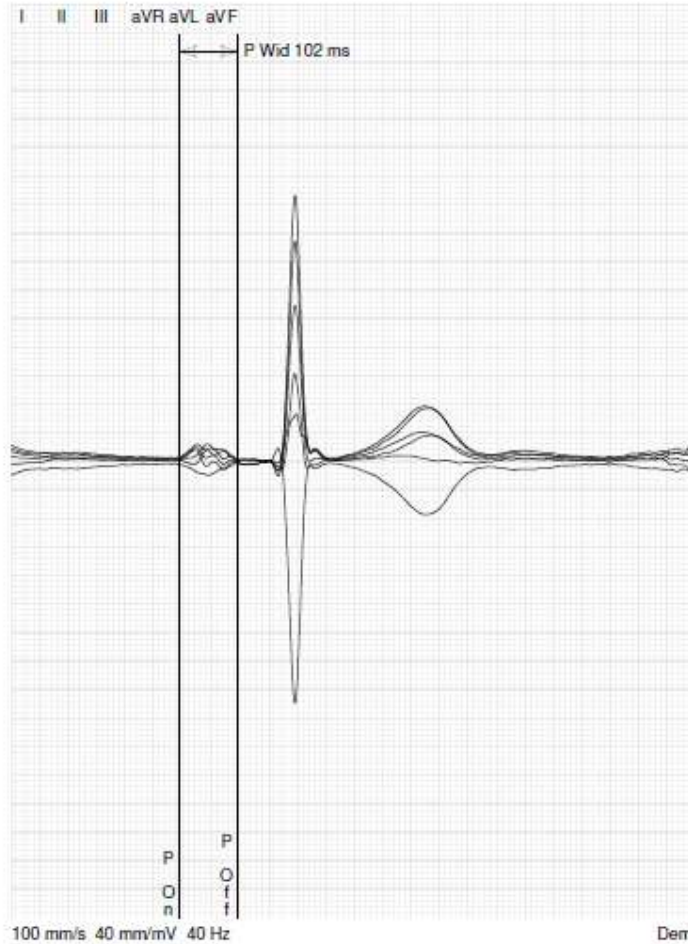
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NORMAL SINUS RHYTHM

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*Mark Hashemi*



25 mm/s 10 mm/mV 40 Hz

Demo Mark

2299

# Results

- A reported ECG in PDF format is delivered back to the local arrhythmia specialist and/or sending GP surgery.
- All ECG's are stored securely and if desired can be accessed by any member of the local care network.

Results List (click headings to sort) Comma delimited report output [Open in Excel](#)

Patient ID	Surname	First name	Date of test	Status	Recommended Action ^
<a href="#">4361152942</a>	sample		2010-01-12 14:14:36	Reported	Suggest 12-lead ECG   Suggest Medication Review
<a href="#">4329337150</a>	sample		2010-01-12 14:58:26	Reported	Suggest 12-lead ECG
<a href="#">4647829065</a>	sample		2010-01-06 12:14:55	Reported	Suggest 12-lead ECG
<a href="#">6244977939</a>	sample		2010-01-06 11:15:40	Reported	Suggest 12-lead ECG
<a href="#">6251319097</a>	sample		2010-01-07 15:14:43	Reported	Suggest 12-lead ECG
<a href="#">4647747417</a>	sample		2010-01-06 12:10:18	Reported	None
<a href="#">6230231441</a>	sample		2010-01-07 14:39:46	Reported	None
<a href="#">6247808704</a>	sample		2010-01-13 14:09:14	Reported	None
<a href="#">6372227711</a>	sample		2010-01-12 16:13:25	Reported	None
<a href="#">4662001021</a>	sample		2010-01-06 11:06:59	Reported	None

Patient  
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DOB: 26.10.1975  
33 yr Male

Test

19/08/2009 15:27:39

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PR int: 162 ms  
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Limb leads only, all chest leads unused.  
NORMAL SINUS RHYTHM

Reviewed By Mark Hashemi 19/08/2009 15:29:01

*Mark Hashemi*



25 mm/s 10 mm/mV 40 Hz

Demo Mark

2299

# Preliminary Results

	Occurrences	Percentage
4 Holy Croft	1	0
5 Queensbury Medical	66	0.9
11 Avicenna Medical Practice	252	3.5
Haigh Hall Medical		
12 Practice	399	5.6
13 Westcliffe Medical Practice	794	11.2
14 Highfield Medical Practice	85	1.2
15 The Willows	219	3.1
The Ridge Medical		
17 Practice	693	9.8
Horton Bank Medical		
18 Practice	223	3.1
19 Ilkley Moore	1445	20.3
20 Dr. Gill & Partners	28	0.4
21 Dr. Hamdni Surgery	114	1.6
23 Ling House Medical Centre	161	2.3
24 Bingley Medical Centre	301	4.2
25 Silden Group Practice	1000	14.1
Sunnybank Medical		
26 Practice	1325	18.6

7106 entries

# Preliminary Results

Total number of patients 65 or over = 6159

Patients with “normal” ECG = 63%

Rejected ECGs = 0.33%

Poor quality ECGs = 2.76%

Ventricular Ectopy = 8.48%

# Preliminary Results

Total number of patients 65 or over = 6159

Patients in Atrial Fibrillation = 252 (4.09%)

Patients in Atrial Flutter = 16 (0.26%)

Patients in Complete Heart Block = 3 (0.05%)

# Preliminary Results

Ventricular Rate (bpm)	Patients	%
None	6222	90.8%
Ventricular Ectopy	570	8.3%
Tachycardia	7	0.2%
Ventricular Bigeminy	14	0.2%
Ventricular Trigeminy	5	0.1%

# Undiagnosed AF



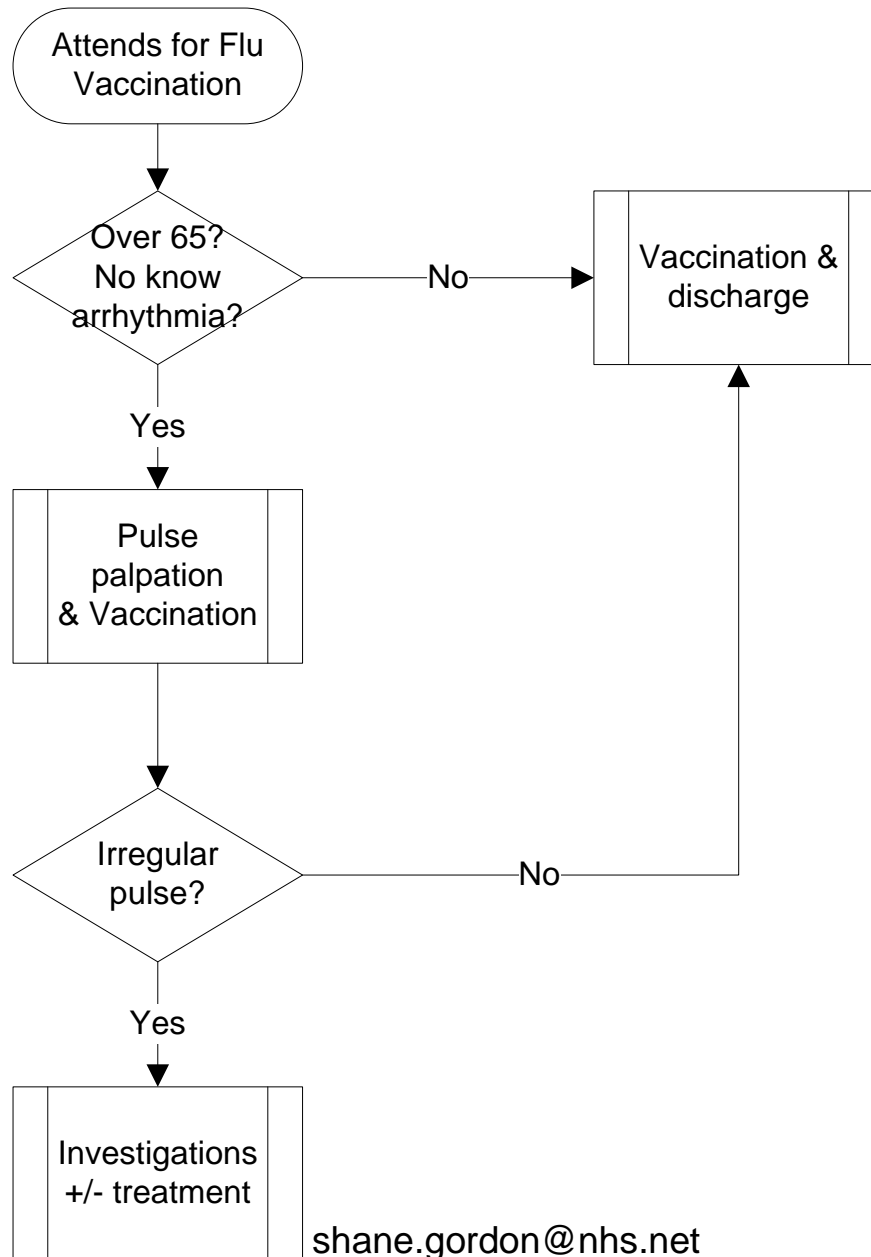
## QoF Prevalences

- AF
  - National 1.2%
  - North East Essex 1.6% average (up to 4.8% in some practices)
- Stroke
  - National 1.6%
  - North East Essex 1.7% (up to 4% in some practices)

# Pulse Palpation at Flu Vaccination



- Essex Cardiac & Stroke Network
- Dr. Max Hickman, Chairman Colchester PBC Group
- PBC Business Case August 2008
- LES agreed Sept 2008



# Outcomes



37/43 practices in N E Essex Signed up to LES

- **34,201 patients screened** in 6 weeks
  - 3154 Patients found with irregular pulse (9.2%)
  - 189 Patients found with AF (0.55%)
  - 342 Patients found with other Arrhythmias (0.99%) **including 2 in Complete H. Block!**

# Preliminary Results

Ventricular Rate (bpm)	Patients	%
< or = 40	5	0.08%
< or = 45	31	0.50%
< or = 50	120	1.95%
< or = 55	378	6.14%
< or = 59	750	12.18%

# Preliminary Results

PR Interval (ms)	Patients	%
> or = 210	441	7.16%
> or = 220	283	4.59%
> or = 230	182	2.96%
> or = 240	120	1.95%
> or = 250	80	1.30%

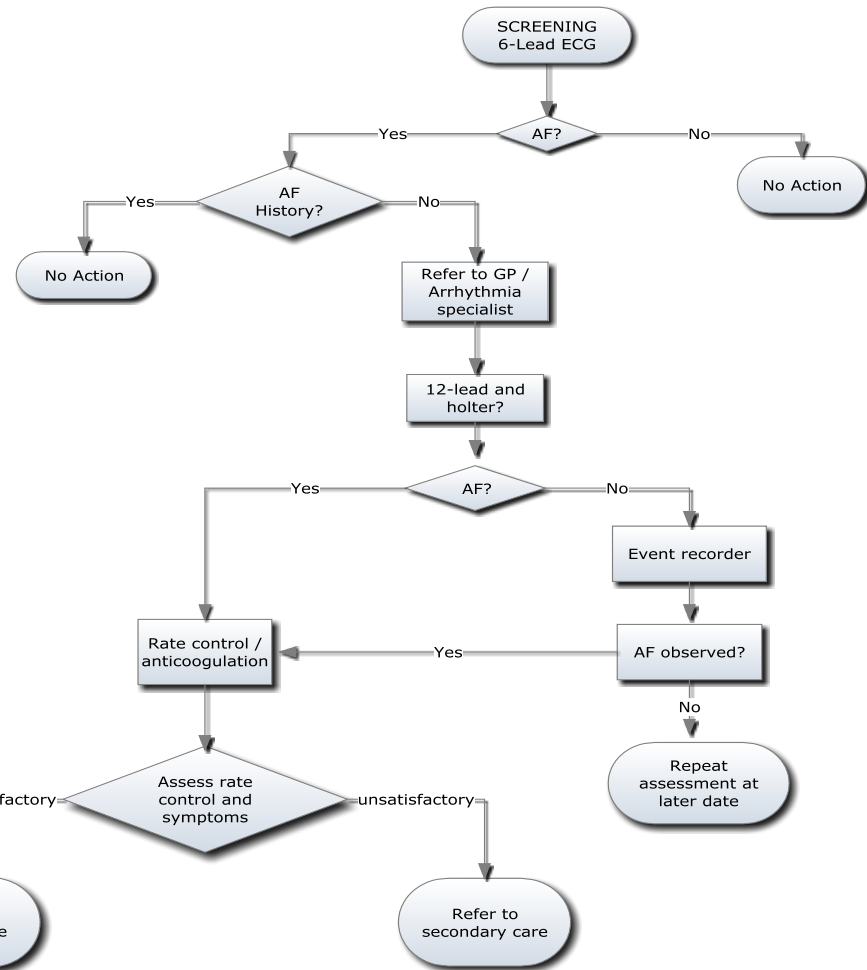
# Preliminary Results

QRS Interval including paced rhythms (ms)	Patients	%
> or = 120	568	9.22%
> or = 130	421	6.84%
> or = 140	278	4.51%
> or = 150	178	2.89%

# Preliminary Results

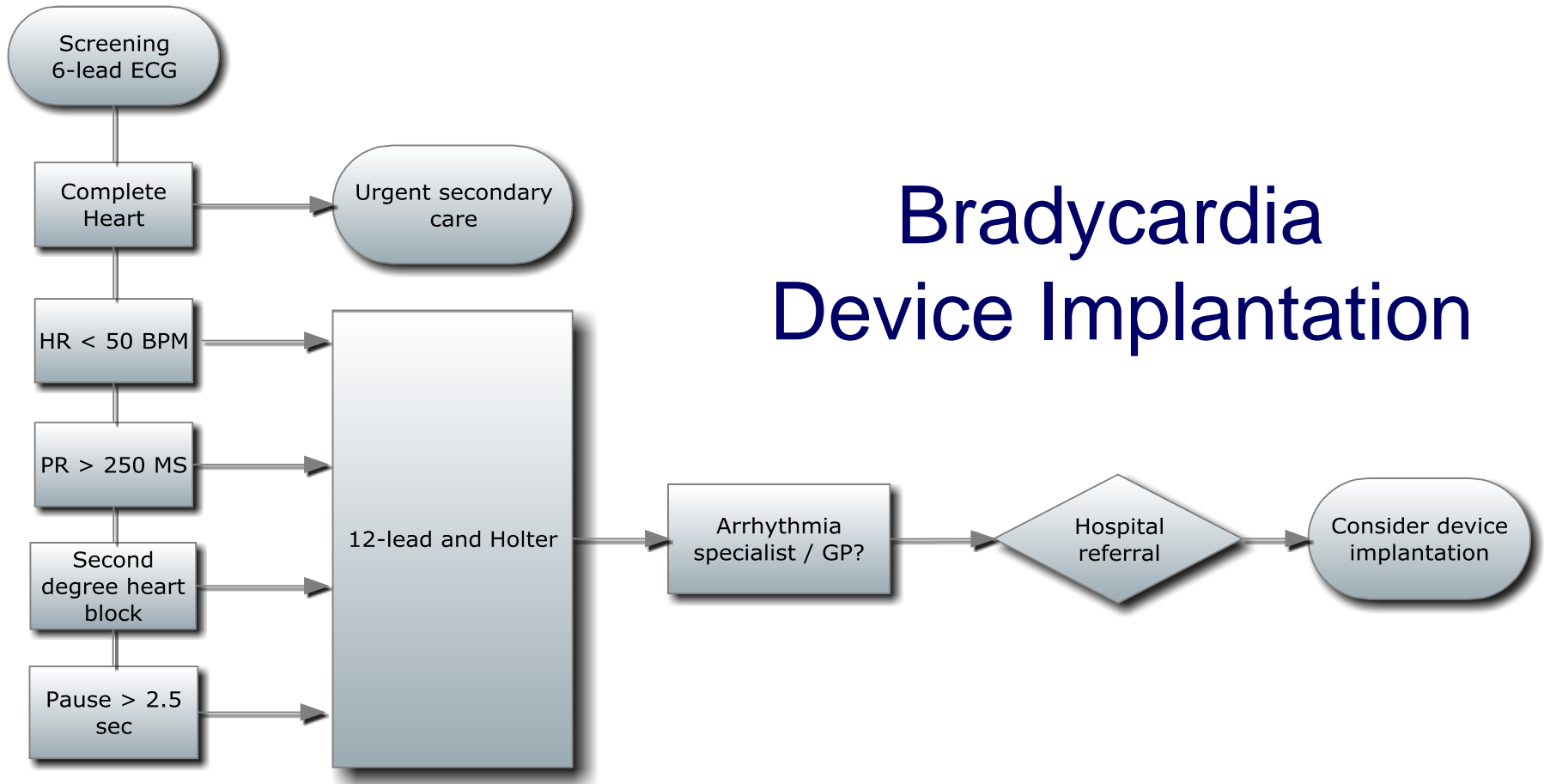
QRS Interval excluding paced rhythms (ms)	Patients	%
> or = 120	538	8.74%
> or = 130	381	6.19%
> or = 140	246	3.99%
> or = 150	145	2.35%

# Referral Strategy Option



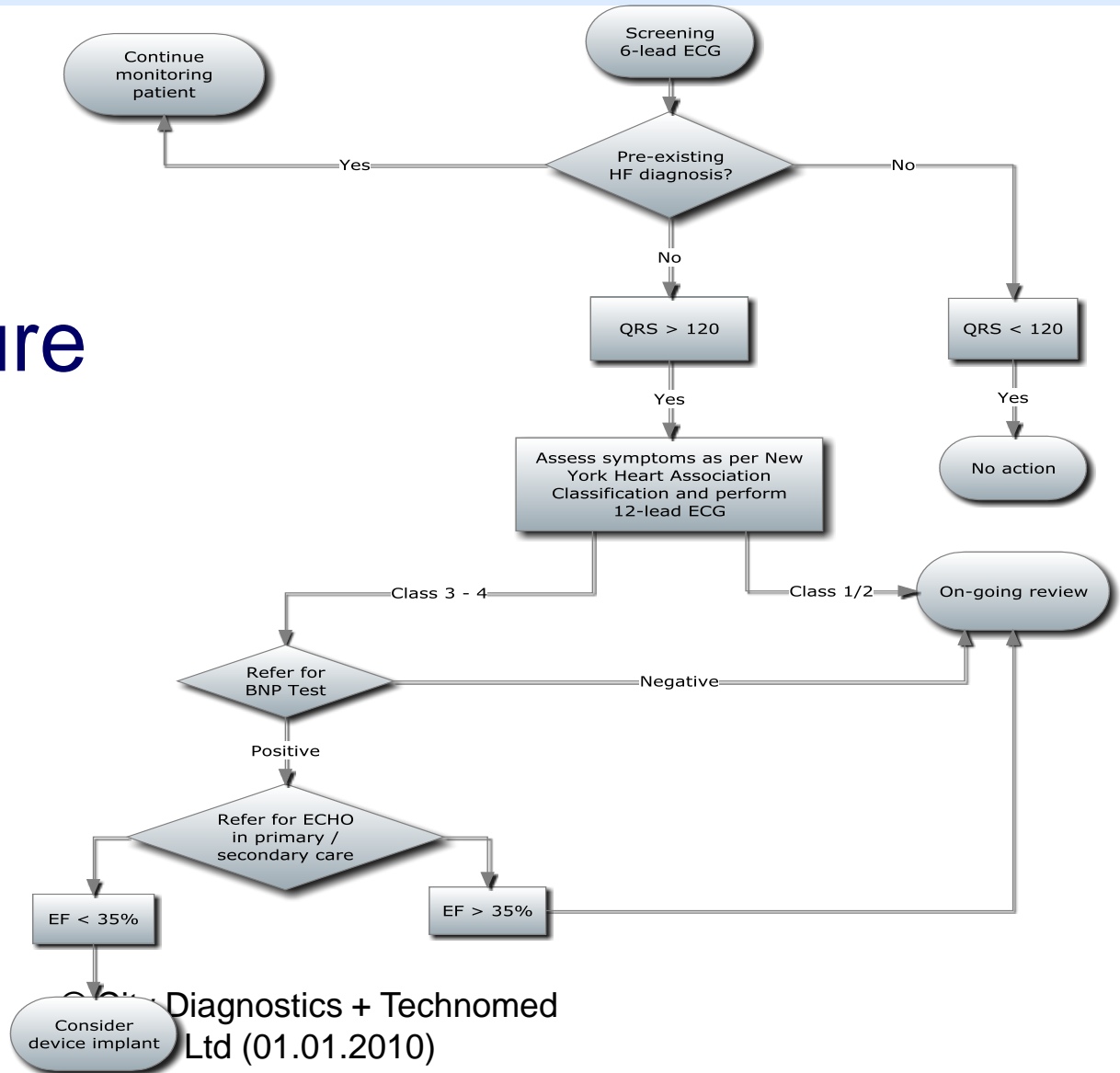
**Atrial Fibrillation**  
(In accordance with  
NICE recommendations)

# Referral Strategy Option



# Referral Strategy Option

## Heart Failure



# Costs for AF detection & Treatment

## Colchester vs Bradford per 1000 patients

Pulse (0.55% pick-up)		ECG (1.00% pick-up estimated)	
Invitation Letters	£500	Invitation Letters	£500
Cash (£2 per patient)	£2000	Cash (£2 per patient)	£2000
Labour (GP) (1 min p.pt.)	£961	Labour (HCA) (3 min p.pt.)	£793
Overhead (1 min)	£42	Overhead (3 min)	£126
		Disposables	£300
		Analysis	£3750
		Hardware (1500 pt/mach.)	£953
12-lead verification (9.2%)	£2300	12-lead verification (1%)	£250
Anticoagulation £383/pt	£1054	Anticoagulation £383/pt	£1915
Bleeds £292/pt	£803	Bleeds £292/pt	£1460
	<b>£7690</b>		<b>£12047</b>
Stroke Saving	<b>£1783</b>	Stroke Saving	<b>£3243</b>
Net operating cost	£5897	Net operating cost	£8804
Cost to save 1 stroke	£51735	Cost to save 1 stroke	£44574

# Benefits

Earlier diagnosis leads to reduced long term costs as well as a better quality of life for the patient.

## Hospitals

- Increased volume of relevant referrals
- Increased device implants
- Reduction in waiting list times

## PCT

- Reduced costs of inappropriate referrals to hospitals
- Reduced morbidity & associated costs of delayed treatment
- Reduced requirement for outpatient visits

## Patients

- Reduced wait times and more convenient care
- Reduced travel costs
- Rapid and specific diagnosis
- Better patient care.

**Westcliffe Medical Practice**  
ShIPLEY

Westcliffe Cardiology Service

Thank you for your attention

**Question**

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