

# GP OPEN ACCESS ECHOCARDIOGRAPHY SERVICE

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## GP OPEN ACCESS ECHOCARDIOGRAPHY SERVICE

“GP open access echocardiography refers to cardiac ultrasound imaging which is requested by, reported to, and acted upon by GPs.”

## AIMS OF PRESENTATION

- Service pathway.
- Structured approach to reading echo reports.
- Address issues encountered by referring GPs.



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# SERVICE PATHWAY

## CURRENT – FAX

- Request form faxed to cardiology department.
- Urgent appointment – 2 weeks  
Routine appointment – 3 weeks
- Results faxed to GP within 2 working days of the test.

## FUTURE – TQUEST

- Request via TQUEST. Not “choose & book”.
- Urgent appointment – 2 weeks  
Routine appointment – 3 weeks
- Results faxed to GP within 2 working days of the test.

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# ECHO REPORT

## HOMERTON UNIVERSITY HOSPITAL NHS FOUNDATION TRUST GP OPEN ACCESS ECHOCARDIOGRAPHY REPORT

SURNAME		FORENAME	
DATE OF BIRTH		GENDER	
HOSPITAL NUMBER		DATE OF STUDY	

### INDICATION

### MEASUREMENTS

		Men	Women		
Ventricular septal thickness (mm)		6-12	6-12	Mitral E velocity (m/s)	
LV end diastolic dimension (mm)		42-59	39-53	Mitral A velocity (m/s)	
LV posterior wall thickness (mm)		6-12	6-12	Aortic flow (mmHg)	
LV end systolic dimension (mm)				Pulmonary flow (mmHg)	
Left atrium (mm)		30-40	27-38		
Aorta (mm)					
LV ejection fraction (%)		≥55	≥55		

### FINDINGS

ECG shows sinus rhythm.

LEFT VENTRICLE: Normal left ventricular size. No left ventricular hypertrophy. No regional wall motion abnormality. Good long axes function. Overall good left ventricular function.

LEFT ATRIUM: Normal size. No colour flow across atrial septum.

AORTIC VALVE: Trileaflet, opens well.

MITRAL VALVE: Mobile leaflets. Normal filling pattern.

RIGHT VENTRICLE: Normal size. No right ventricular hypertrophy. Good long axis function. Overall good right ventricular function.

RIGHT ATRIUM: Normal size.

PULMONARY VALVE: Normal.

TRICUSPID VALVE: Normal.

### CONCLUSION

Normal study.

OPERATOR	Dr Waleed Arshad	POSITION	Associate Specialist Cardiologist
The operator holds Accreditation in Transthoracic Echocardiography by British Society of Echocardiography, Accreditation in Transthoracic Echocardiography by European Society of Echocardiography, Diplomate Adult Comprehensive Echocardiography by National Board of Echocardiography USA and Fellowship of American Society of Echocardiography.			

## ECHO REPORT

### **INDICATION:**

The value of echocardiogram is greatest when a single focused question can be asked, answered by echocardiographer, & lead to change in management by GP.

If trends in improvement or deterioration are of interest, echocardiographer needs results of previous studies, especially if they are carried outside Homerton Hospital.



## ECHO REPORT

### **DATE OF STUDY:**

Does this report reflect the patient's current clinical status?

### **RHYTHM:**

Was the rhythm interpretable?

What was the rhythm? Sinus rhythm/Sinus rhythm with ectopics/Atrial fibrillation

Did the rhythm interfere with assessment of left and right ventricular function?

## ECHO REPORT

### **IMAGE QUALITY:**

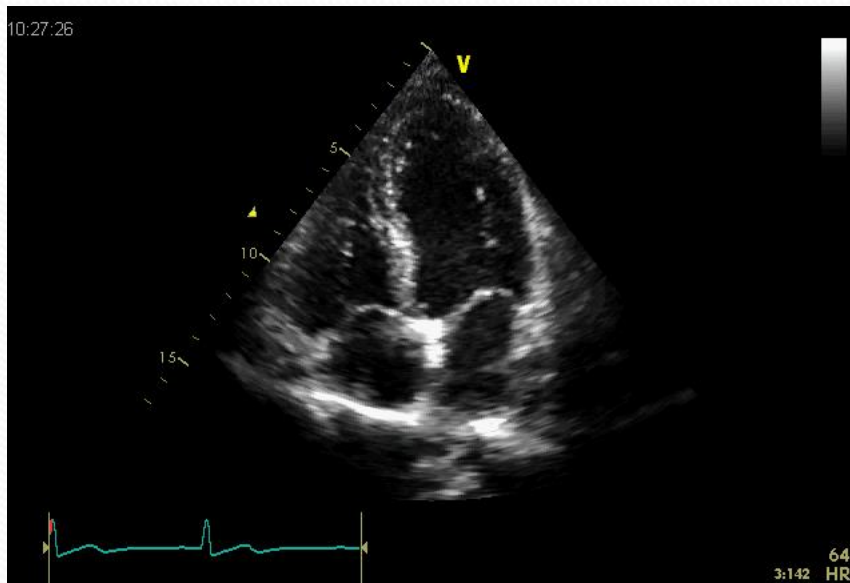
Can vary from excellent to uninterpretable.

In technically difficult/sub optimal studies, pathology “not seen” does not necessarily mean “not present”.

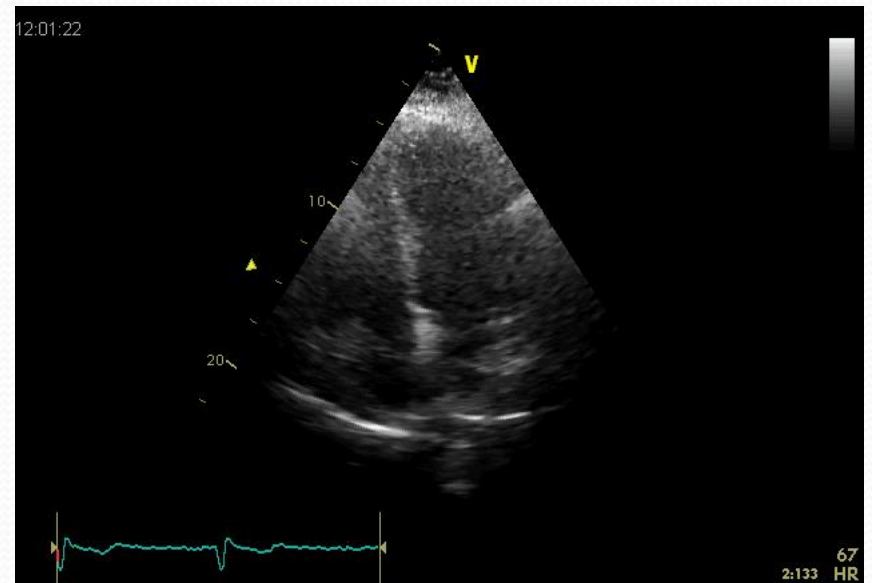
What was the reason for technical difficult/sub optimal study?

# ECHO REPORT

Good quality



Sub optimal quality





## ECHO REPORT

### CHAMBER SIZES:

The table lists the measured chamber size (diameters) and compares them with normal values.

Increased values indicate chamber dilatation.

Transverse diameter underestimates true volume of an enlarged left atrium.

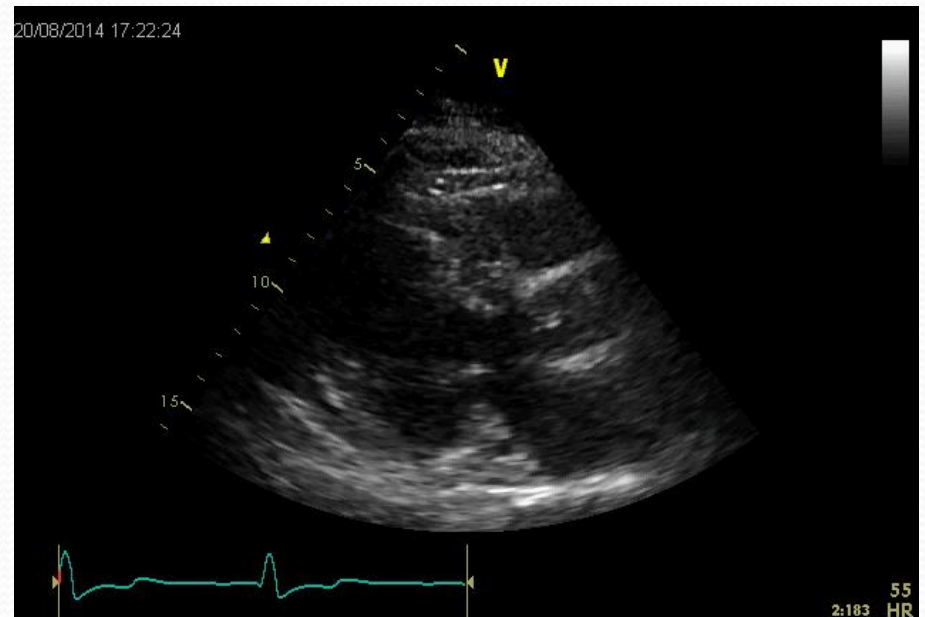
		Men	Women
Ventricular septal thickness (mm)		6-12	6-12
LV end diastolic dimension (mm)		42-59	39-53
LV posterior wall thickness (mm)		6-12	6-12
LV end systolic dimension (mm)			
Left atrium (mm)		30-40	27-38
Aorta (mm)			
LV ejection fraction (%)		≥55	≥55

## ECHO REPORT

### VENTRICULAR HYPERTROPHY:

Wall thickness usually indicate ventricular hypertrophy.

Sigmoid septum (or septal bulge) is common in the elderly.





## ECHO REPORT

### LV SYSTOLIC FUNCTION

- Circumferential/Radial  
Mid wall  
Base
- Longitudinal  
Subendocardial  
Subepicardial free wall  
Papillary muscles





# ECHO REPORT

## LV SYSTOLIC FUNCTION

### Radial

Ejection fraction is a poor indicator of LV function

Wall motion

Global abnormalities suggest cardiomyopathy

Regional abnormalities suggest ischaemia/infarction

Wall motion score Index

### Longitudinal

Amplitude

Velocity

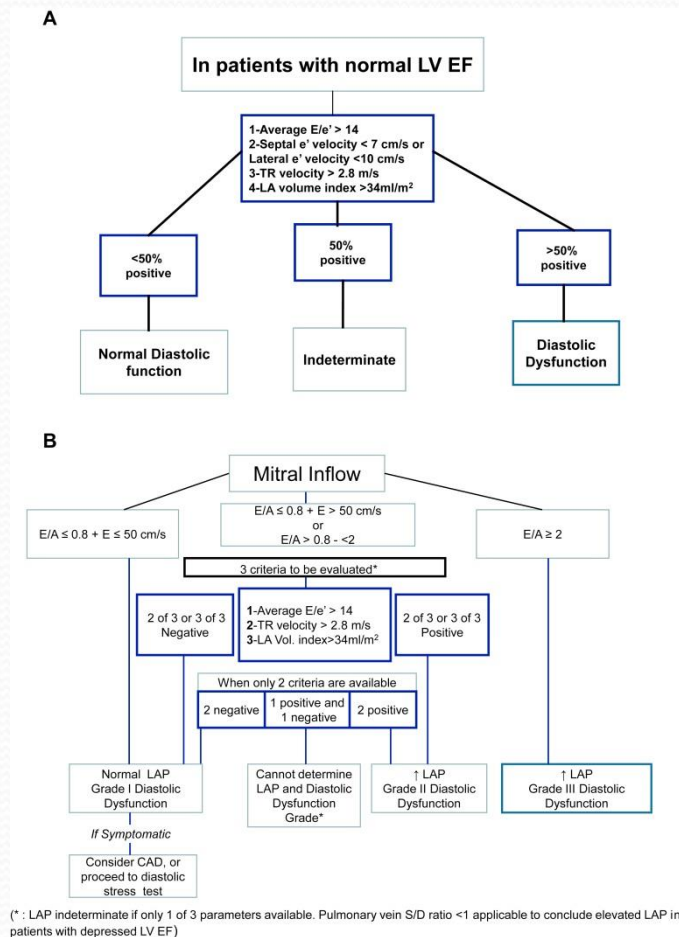
Timing

# ECHO REPORT

## LV DIASTOLIC FUNCTION

LV diastolic dysfunction precedes development of LV systolic dysfunction.

↑ LA size is a morphologic expression of diastolic dysfunction.





# ECHO REPORT

## VALVES

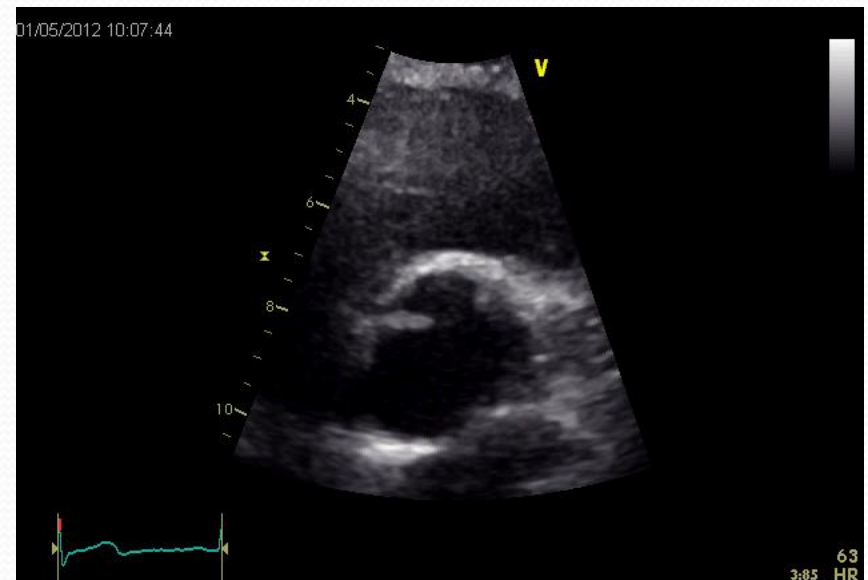
### Morphology

- Cannot always be identified in technically difficult scans.
- Bicuspid aortic valve is the most congenital heart disease.

### Regurgitation

- Trivial regurgitation is normal.

### Stenosis



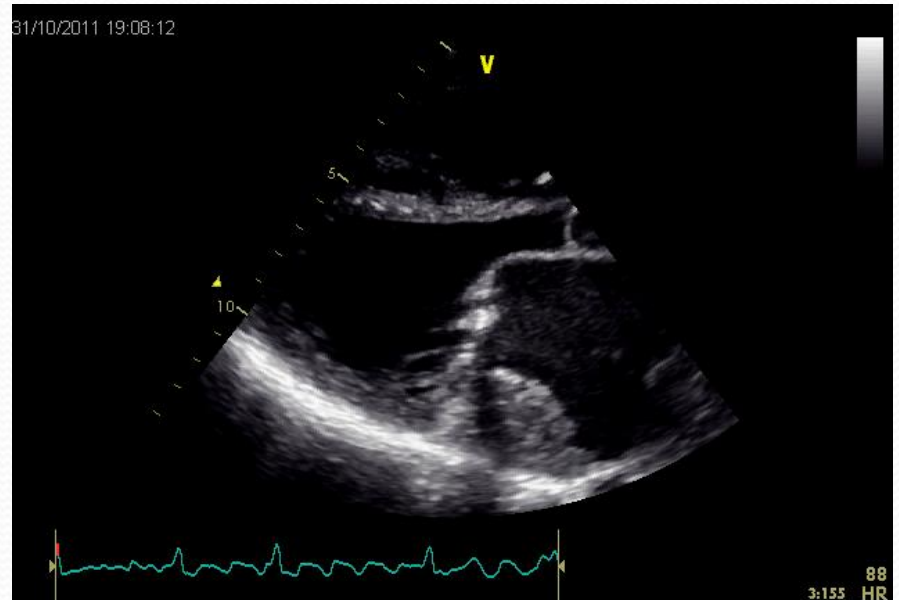


## ECHO REPORT

### MASS OR THROMBUS:

Ability to detect mass or thrombus is only as good as the images.

TTE does not image the left atrial appendage adequately, therefore TOE is needed.



## ECHO REPORT

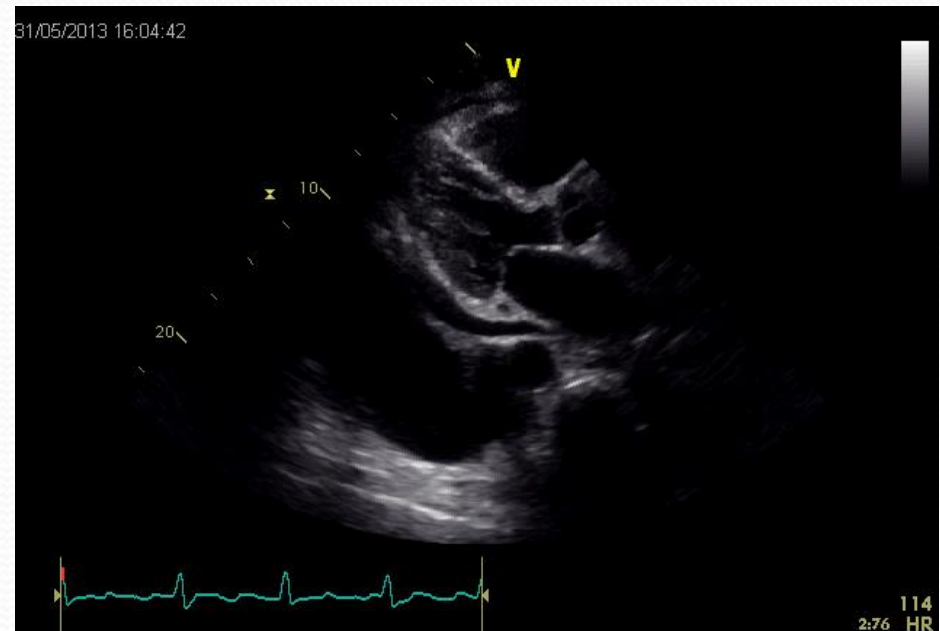
### PERICARDIUM:

Thickened or calcified.

Thin patients can have a highly echogenic, normal pericardium that appears to be calcified.

Uncomplicated pericarditis has no pathognomonic features on echo.

Small effusions are often physiologic, of no clinical significance.



## ECHO REPORT

### **CONCLUSION:**

Important cardiac findings.

Referral to Cardiology team might be advised – ideally clinical decisions should be made by physicians who have knowledge of their patients.



## AIMS OF PRESENTATION

- Pathway.
- Structured approach to reading echo reports.
- **Address issues encountered by referring GPs.**

Left ventricular ejection fraction was different in another recent echo.  
Which study was correct?

Probably both.

Ejection fraction depends on preload and afterload, both of which can change dramatically and quickly according to patient's condition.

Ejection fraction also depends upon the method by which it is calculated. Ejection fraction can be measured by Teicholtz, 2D Simpson's method and 4D Simpson.



## What is importance of longitudinal function?

The longitudinal/long axes function is abnormal in hypertension, hypertrophy, CAD, cardiomyopathy conduction disease, even before the clinical manifestations of heart failure.

Long axes is an independent predictor of prognosis in cardiovascular disease.





## How should I manage longitudinal dysfunction?

Systolic or diastolic dysfunction

Systolic – Same treatment as radial systolic dysfunction

Diastolic – Same treatment as global diastolic dysfunction

## How should I manage LV diastolic dysfunction?

The treatment remains empiric since trial data are limited.

The general principles are:

- Control of systolic & diastolic hypertension.
- Control of heart rate, particularly in patients with atrial fibrillation.
- Control of pulmonary congestion and peripheral oedema with diuretics.
- Coronary revascularisation in patients with coronary heart disease.





## Summary

Echo is essential for cardiovascular evaluation and follow up.

A structured approach to reading echo reports is necessary.

This brief review has tried to address common issues encountered by referring GPs.