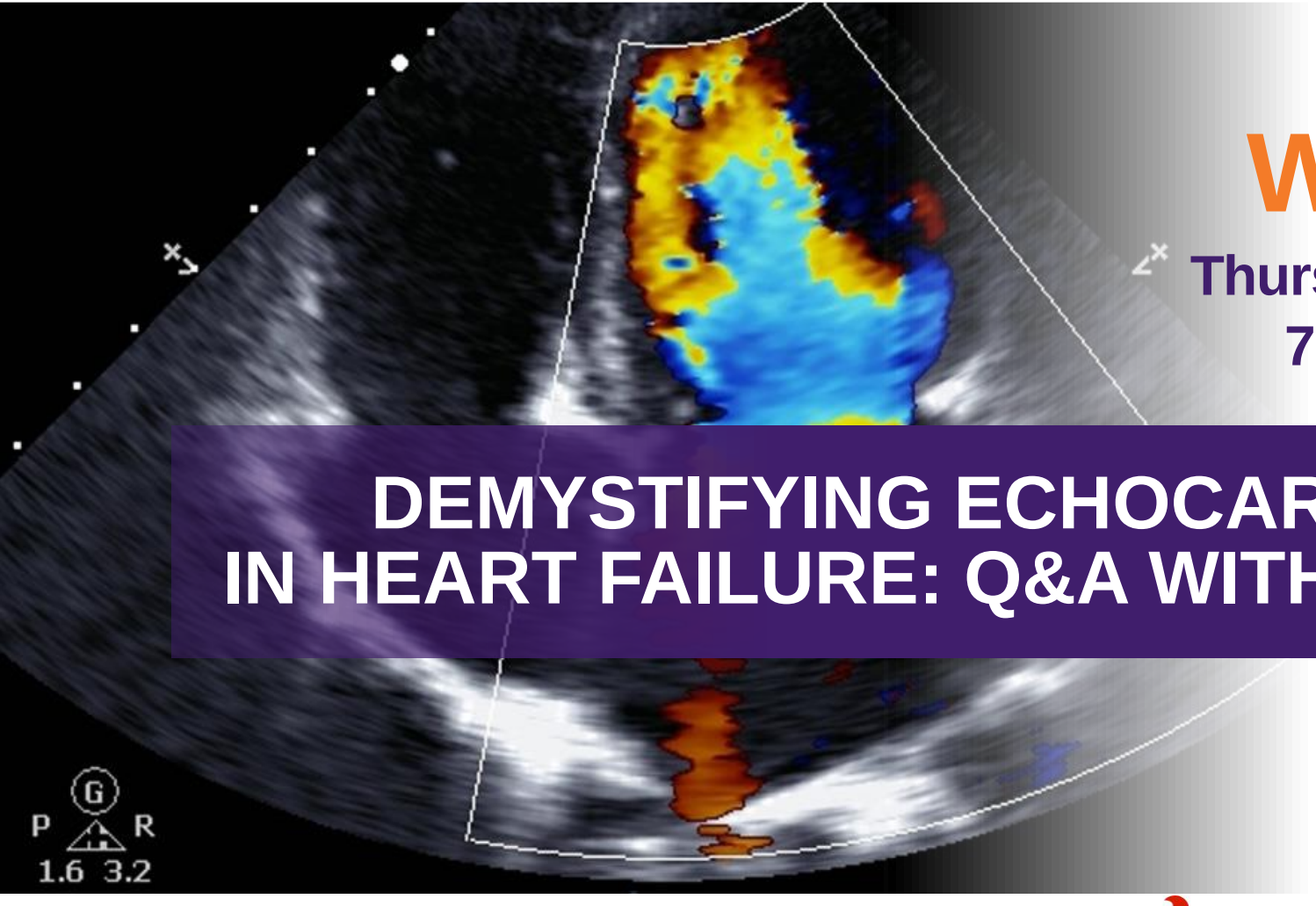

WEBINAR

Thursday, 27 May 2021
7.00–8.00 pm AEST

DEMYSTIFYING ECHOCARDIOGRAPHY IN HEART FAILURE: Q&A WITH AN EXPERT

Heart Foundation

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PANEL MEMBERS

Dr Jill Thistlethwaite

Dr Jennifer Coller

A/Prof Ralph Audehm

Dr Peter Piazza

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DISCLOSURES

Dr Jennifer Coller: I have received honoraria from Novartis, Bristol Myers Squibb and travel support from Novartis.

A/Prof Ralph Audehm: I have received honoraria from: Astra Zeneca; Aspen Pharmacare; Eli Lily; Novartis; Roche.

Dr Peter Piazza: I have participated on Advisory Boards and/or chaired, moderated or spoken at meetings for many pharmaceutical companies including A Menarini, AbbVie, Amgen, AstraZeneca, Bayer Australia, BMS, Boehringer Ingelheim, CSL Limited, Eli Lilly, GSK, MSD, Novartis, Novo Nordisk, Pfizer, Sanofi, Servier and Teva.

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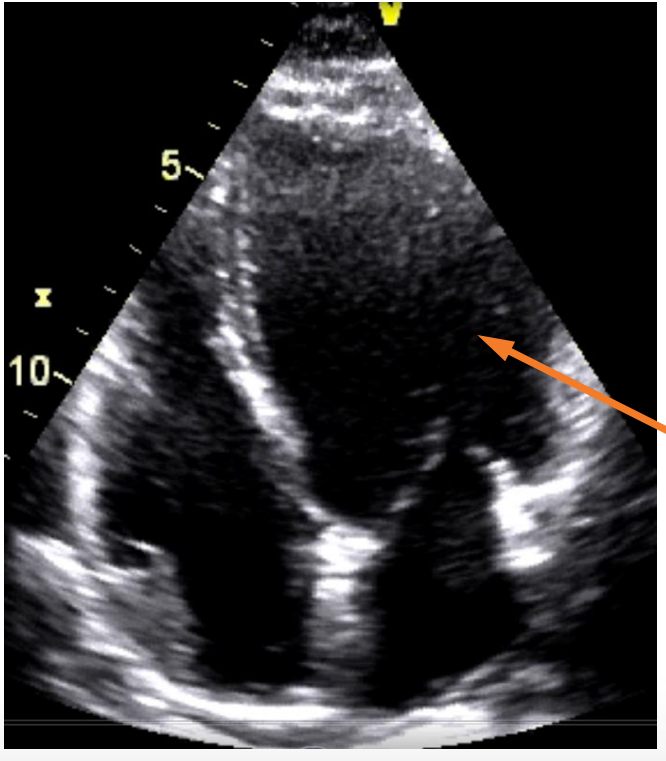
DEMYSTIFYING ECHOCARDIOGRAPHY IN HEART FAILURE: Q&A WITH AN EXPERT

The learning outcomes of the webinar are:

- Describe why an echocardiogram is the most important investigation to confirm the diagnosis, classification and guide the management of heart failure
- Demonstrate improved ability and confidence in referring, interpreting and responding appropriately to the echocardiogram report
- Identify when a referral to a cardiologist is advisable.

CASE 1



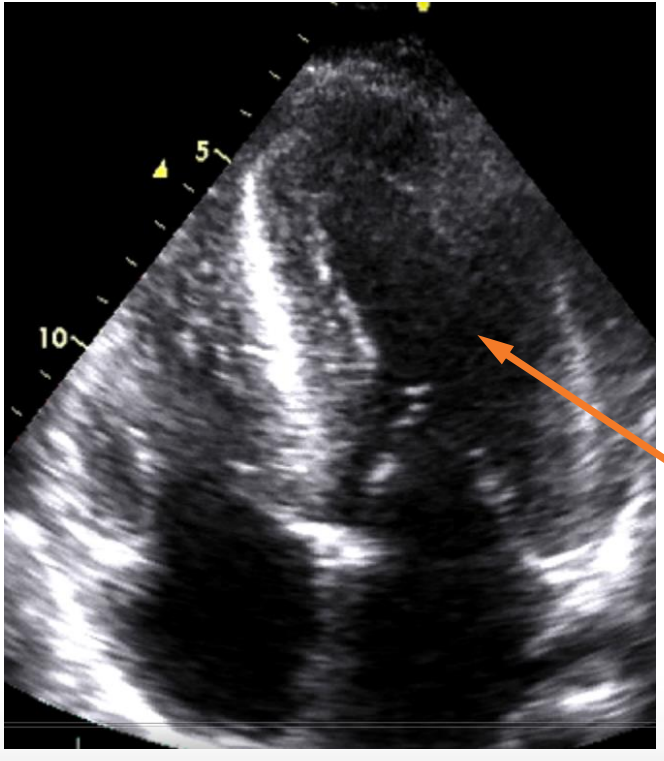
54 year old man

- increasing dyspnoea on exertion
- signs of fluid overload: elevated JVP 5cm, crepitations at both lung bases
- ECG: SR 96bpm, LBBB

LEFT VENTRICLE
- **dilated**
- **REDUCED ejection fraction - 30%**

Additional information
? Regional wall motion abnormalities
- may suggest ischaemic aetiology

CASE 2



78 yr old woman

- increasing dyspnoea on exertion
- signs of fluid overload: elevated JVP 4cm, crepitations at both lung bases, pitting oedema legs
- ECG: SR 72bpm, LV hypertrophy

LEFT VENTRICLE
- **LV hypertrophy**
- **NORMAL ejection fraction - 65%**

Additional information
Left atrial size
Diastolic parameters

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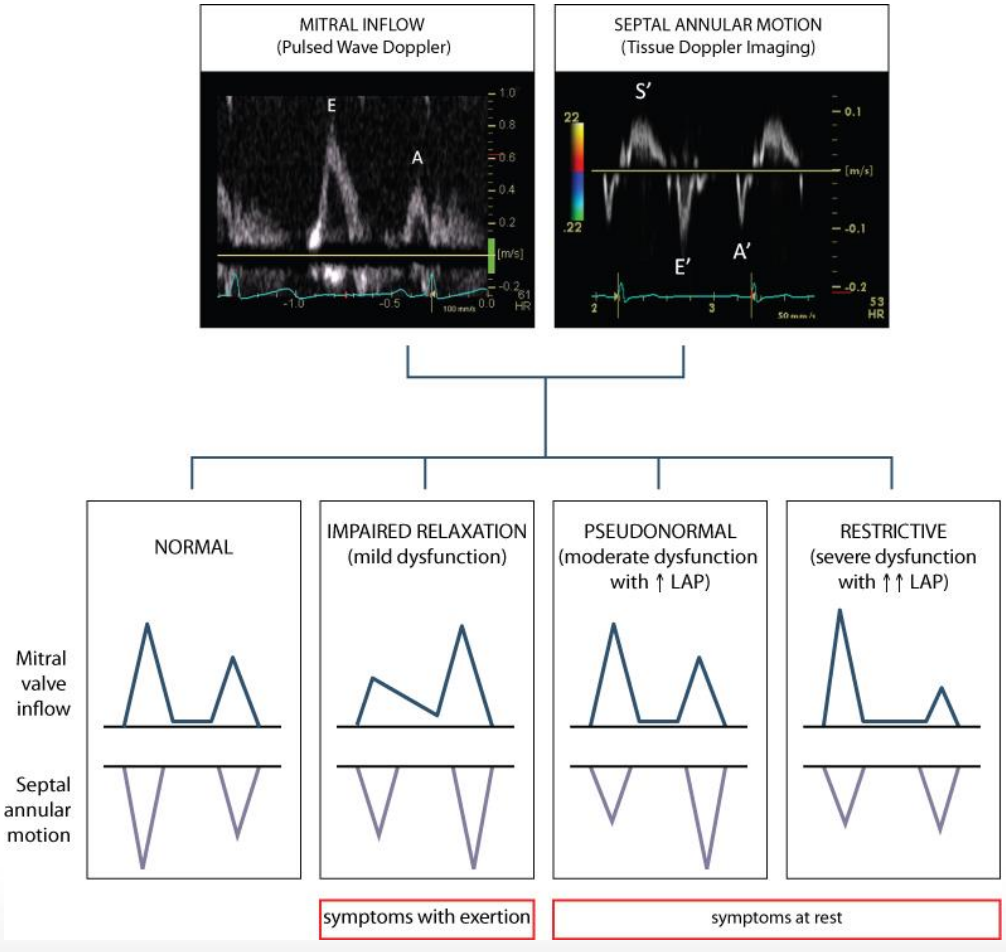

KEY DIASTOLIC PARAMETERS

- ▶ left atrial size
- ▶ estimate of LV filling pressures
- ▶ estimate of pulmonary pressures

Figure 4. Patterns of diastolic dysfunction. The Doppler pattern of the mitral inflow and mitral annular motion are used to grade the severity of diastolic dysfunction, to provide an estimate of left atrial pressure and to indicate how likely diastolic function abnormalities are likely to cause symptoms
E = early diastolic filling wave, A = atrial filling wave, E' = early mitral annular motion, A' = mitral annular motion due to atrial filling, LAP = left atrial pressure, S = systolic mitral annular motion

Prior, D. Coller, J. Echocardiography in heart failure - A guide for general practice. Australian Family Physician. Volume 39, No.12, December 2010 Pages 904-909

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Classification of heart failure (HFrEF or HFpEF) guides management

Heart failure with **reduced** ejection fraction (HFrEF)

LVEF < 50%, symptoms ± signs of heart failure.[2]

Just under half of people with heart failure, 66% male.[3] For men, generally evenly distributed across age groups; for women, increases with age. Generally fewer comorbidities compared to HFpEF.[2]

Management

Pharmacotherapy, non-pharmacological treatments, device therapy.

Medicines should be continued long-term even if LVEF improves, to decrease the risk of recurrence (unless a reversible cause has been identified and corrected).[2,4,5]

Heart failure with **preserved** ejection fraction (HFpEF)

LVEF ≥ 50%, symptoms ± signs of heart failure and objective evidence of relevant structural heart disease and/or diastolic dysfunction without an alternative cause.[2]

Just over half of people with heart failure, 67% female.[3] Generally older, with multiple comorbidities (typically obesity, diabetes, hypertension, atrial fibrillation).[2,3]

Management

More difficult to treat than HFrEF. No medicine has been shown to improve survival.[6]

Management aims to reduce congestion and manage comorbidities.[2]

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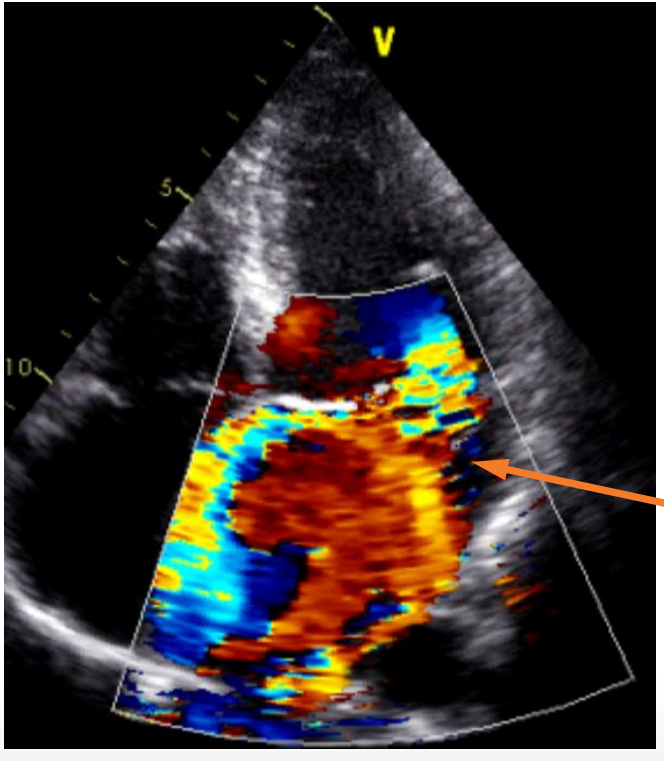
CASE 3



64 yr old man

- several weeks of dyspnoea and ankle swelling
- good response to spironolactone

Referred for echocardiogram

- normal LVEF 65-70%
- severe mitral regurgitation due to posterior leaflet prolapse
- moderate pulmonary hypertension

REQUESTING AN ECHOCARDIOGRAM

- Preparation – explain length, lying down left side
- Provisional diagnosis
  - e.g. suspected heart failure
- Clinical question
  - e.g. suspected heart failure ? LVEF ? diastology
- Relevant clinical details/family history
  - e.g. history of hypertension, family history of premature CAD/cardiomyopathy
  - history of IHD/myocardial infarct (regional wall motion abnormalities ? old)
  - previous echo result for comparison (? LV ejection fraction, severity valve disease)
- Referring doctor/contact details
- Signature and date

Phone: 03 9231 3000 Fax: 03 9231 3333

Patient			
UR		Sex	M
Date of Birth		Age	89
Address			

TRANSTHORACIC ECHOCARDIOGRAM

Referred by:		**Study Date**	24/04/2019 09:46
0321496Y		**Sonographer**	
		Location / Ward	
Quality		**Equipment**	Vivid E9

M-mode	**LV Diast**	4.8	cm	**LV Sept**	1.1	cm	**Ao Root**	3.8 cm		**TAPSE**	24	mm	**FS / EF**	21 / 35	%
	LV Syst	3.8	cm	**LVPW**	1.0	cm	**LA**	4.1 cm					**EF method**		
2D	**LVOT Vel**	0.783		**RA Area**	20 cm²		**LA Area**	19 cm²		**LAVI**	24	ml/m²	**LVVolBiP**	140	ml
Aortic	**Vel**	1.1 m/s		**Pk Grad**	5 mmHg		**Mn Grad**			**AV Area**		cm²	**AR**	TRIVIAL	
Mitral	**E/A**	0.4 / 1.0 m/s		**Pk Grad**			**Mn Grad**			**MV Area**		cm²	**MR**	TRIVIAL	
Diastology	**MVdt**	261 ms		**IVRT**			**E/E' sept**	12		**E/E'Avg**			**PV S/D**	0.47	/ 0.28 m/s
Pulmonary	**Vel**	1.3 m/s		**PV at**	85.4 ms								**PR**	MILD	
Tricuspid	**TR Vel**	2.6 m/s		**TR Pk Gr**	27 mmHg		**Est.RAp**	10	mmHg	**RV SP**	37 mmHg		**TR**	MILD	

Indications Recent APO, late presentation anterior STEMI. Reassess LV function

Rhythm Sinus rhythm **HR** 62 **BP** 119 / 70 **Ht / Wt : BSA** 171 / 76 : 1.9

Left Ventricle Normal left ventricular size with moderate segmental systolic dysfunction. There is akinesis of the mid anterior and all apical walls. The mid anteroseptum is dyskinetic. there is hypokinesis of the mid inferoseptum and mid inferolateral wall segments. There is also abnormal septal motion consistent with a left bundle branch block. The estimated LV ejection fraction is 35 ± 5%. Diastolic filling is consistent with impaired LV relaxation (grade 1 or mild diastolic dysfunction). GLPS avg is -8.6%

Right Ventricle Normal right ventricular size and systolic function (TAPSE = 24 mm, RVS' = 9 cm/s).

Left Atrium Normal left atrial size (LAVI - 24 mL/m²).

Right Atrium Mildly dilated right atrium (RAVI - 32 mL/m²).

Aortic Valve The aortic valve is trileaflet with mild thickening, but no significant stenosis. There is trivial aortic regurgitation.

Mitral Valve Structurally normal mitral valve. There is trivial mitral regurgitation.

Tricuspid Valve The tricuspid valve is structurally normal. There is mild tricuspid regurgitation.
The estimated RV systolic pressure of 37 mmHg is at the upper limit of normal.

Pulmonary The pulmonary valve is normal with normal Doppler flow. Mild regurgitation.

Pericardium There is no echocardiographic evidence of a pericardial effusion.

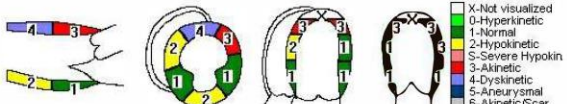
Conclusions
1. Normal LV size with moderate segmental dysfunction c/w LAD territory infarction and a LBBB.
2. No haemodynamically significant valvular abnormalities.

Cardiologist

Final Date:

Routine

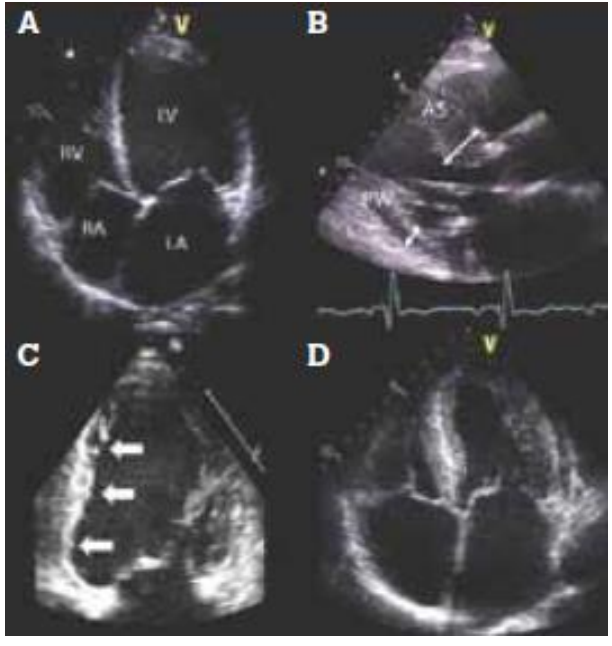
LVSI: 2.06
%FM: 43
LAD: 2.78
LCX: 1.25
RCA: 1.00



INDICATIONS FOR REFERRAL

Victorian Statewide Referral Guidelines for heart failure – public hospitals

- Known heart failure symptoms unresponsive to medical management (e.g. symptoms at rest, or on minimal exertion)
- New onset heart failure with reduced ejection fraction <50% (HR-REF) and structural or valvular heart disease
- New onset heart failure with preserved ejection fraction (HF-PEF) that have failed maximum tolerated diuretic treatment



A: Dilated cardiomyopathy
B: Hypertrophic cardiomyopathy
C: Previous myocardial infarction
D: Infiltrative cardiomyopathy (severe LV hypertrophy)

Heart failure | src.health.vic.gov.au
Coller, J, Prior, D. Transthoracic echocardiography findings – implications for clinical management. Australian Family Physician 2012 Dec;41(12):954-8

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COSTS OF ECHOCARDIOGRAPHY

Echocardiogram MBS item numbers

- 55126 – initial real time echo $234.15
  - GP/specialist referral
- 55129 – serial real time structural/heart failure $234.15
  - Specialist/physician referral

KEY POINTS

REFERENCES

1. Prior, D, Coller, J. Echocardiography in heart failure - A guide for general practice. Australian Family Physician. Volume 2010 Dec;39(12): 904-909
2. Essentials in an imaging referral - NPS MedicineWise, 28th May 2015
3. Coller, J, Prior, D. Transthoracic echocardiography findings – implications for clinical management. Australian Family Physician 2012 Dec;41(12):954-8

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THANKYOU

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