Abstract 28 Table 1

	Screening DAP (mGycm^2)	Total DAP (mGycm^2)	Fluoro time (seconds)	Number of acquisitions
Standard (15 fps)	28564.5	60746.9	770	26.7
Low (7.5 fps)	19248.5	50953.4	800	26.8
Mean DAP reduction	−33%	−16%	–	–
Significance	p<0.01	n/s	n/s	n/s

frame rate (15 frames per second). Digital fluoroscopic technology has improved imaging making the use of lower frame rates feasible. This study assessed whether low frame rate screening (7.5 frames per second) reduced radiation without affecting patient outcomes.

Method We prospectively collected data from consecutive coronary angioplasty procedures performed at reduced screening frame rate (7.5 frames per second). We included elective, urgent and emergency procedures. Audit data from procedures performed at standard frame rate with the same inclusion criteria were used as a control group. Phillips Allura flat plate XPER FD10 catheterisation equipment was used. The frame rate could be increased at the operator's request, and any safety concerns were reported immediately.

Data collection

Patient data:

- Age
- Weight (Kg)
- Height (cm)

Radiation data:

- Screening DAP (mGycm^2)
- Total DAP (mGycm^2)
- Total Fluoroscopy time (mm:ss)
- Number of acquisition runs

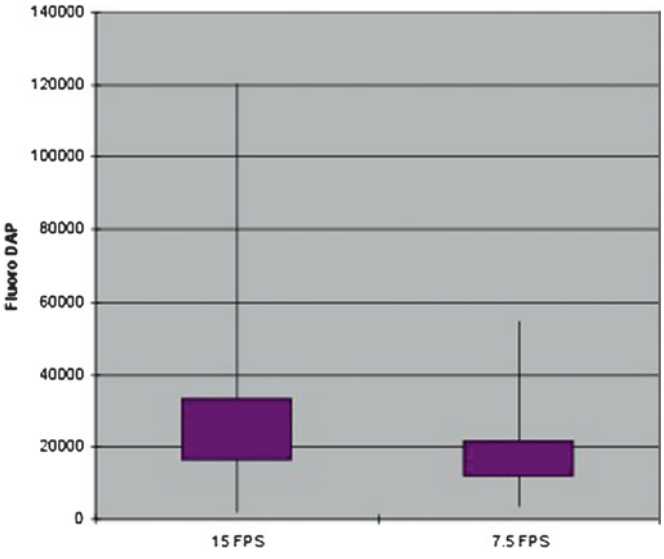
Operator outcome:

- Need to increase screening frame rate

Patient outcome:

- 30 day incidence of major adverse cardiovascular event (MACE): death, non-fatal myocardial infarction or need for urgent revascularisation.

Results 55 consecutive studies were examined at low-frame rate and compared with the audit control group (n=105). Mean age was 67 in the low screening rate group and 65 in the control group. Weight was similar in both groups (83 kg vs 82 kg). The screening times and number of acquisition runs were similar in each group. In every case image quality was acceptable, with no requirement for increased screening frame rate. No safety concerns were reported. 30-day incidence of major adverse cardiovascular events (MACE) was similar in both groups. In the screening group there was 1 MACE event at 30 days (2%), with 2 MACE events (2%) in the control group. Screening and Total DAPs (mean mGycm^2) were 33% and 16% lower respectively in the low frame rate group. Statistical comparison was made with the Man-Whitney U-test. This showed a significant reduction in the Screening DAP ($p \leq 0.01$) with low frame rate screening. See Abstract 28 table 1 and graph.



Abstract 28 Figure 1

Conclusions Low frame rate screening is a practical way of reducing radiation exposure in line with the ALARA "As Low As Reasonably Acheivable" principle. Having shown that low frame rate screening for coronary angiography gives good imaging quality and is safe, we now demonstrate that low frame rate screening coronary angioplasty is also safe. Radiation exposure from screening is significantly reduced by 33% and total exposure is reduced by 16%. Low frame rate screening should be standard practice where modern facilities allow. We suggest that centres currently using 15 frames per second screening should undertake a similar assessment in order to minimise radiation.

29 BIVALIRUDIN IN PATIENTS UNDERGOING PRIMARY PERCUTANEOUS CORONARY INTERVENTION FOR ACUTE ST-ELEVATION MYOCARDIAL INFARCTION: OUTCOMES IN A LARGE REAL-WORLD UK POPULATION

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Background The HORIZONS-AMI trial demonstrated a significantly lower early and late mortality in patients undergoing primary PCI (PPCI) treated with bivalirudin compared to a Glycoprotein IIb/IIIa inhibitor (GPI) + heparin. However, concerns remain regarding the increased incidence of acute stent thrombosis (ST) with bivalirudin, the apparently worse outcomes in the absence of additional pre-procedural heparin, and the translation of trial results into a real-world population. We evaluated the outcomes of patients undergoing PPCI with bivalirudin in a large all-comers UK setting.

Methods All patients who underwent PPCI in Leeds General Infirmary from 1 January 2009 to 31 December 2009 were prospectively entered into a dedicated registry. Demographic, procedural, and 30-day outcome data were obtained by abstraction from the ONS mortality database and BCIS PCI database, review of hospital notes, and telephone follow-up. Bivalirudin was administered as a bolus, high-dose intra-procedural infusion, and low-dose infusion for 4 h post-PCI. Additional heparin was not routinely given, but was favoured by some operators. Bail-out GPI was administered according to physician judgement. Primary endpoints were death, MACE (death, re-infarction, stroke, unplanned target vessel revascularisation (TVR)), and stent thrombosis (ST) (ARC definition definite/probable) at 30-days follow-up.

Results 968 patients (age 63.5±13 years, 71.9% male, 13.2% diabetics) underwent PPCI. Bivalirudin was given in 882 patients (91.1%), and GPI + heparin in 85 (8.8%). Of bivalirudin-treated patients 100 (11.3%) also received heparin (29 pre-PCI and 80 during) while bail-out GPI was used in 91 (10.3%). Thirty-day outcomes are shown in Abstract 29 table 1. All-cause mortality was 5.2% in the bivalirudin treated patients. Acute ST occurred in 1.0%, a median of 2 h post-PCI, and within 6 h in 90%. Mortality in

patients who suffered acute ST was 20%, compared to 80% following subacute ST. There was no difference in outcomes between bivalirudin treated patients who also received heparin compared to those who didn't (death 7.0% vs 5.0%, p value: 0.80; MACE 14.0% vs 10.8%, p value: 0.32; acute ST 0% vs 1.2%, p: 0.61).

Abstract 29 Table 1 Outcomes at 30 days

	All patients	Bivalirudin	GPI + heparin	p value
No. of patients	968	882	85	
Death	52 (5.4%)	46 (5.2%)	6 (7.1%)	0.450
Cardiac death	45 (4.7%)	39 (4.4%)	6 (7.1%)	0.277
Re-infarction	16 (1.7%)	14 (1.6%)	2 (2.4%)	0.645
Unplanned TVR	12 (1.2%)	10 (1.1%)	2 (2.4%)	0.286
Stroke	56 (5.8%)	54 (6.1%)	2 (2.4%)	0.222
Death, re-infarction, stroke or TVR	110 (11.4%)	100 (11.3%)	10 (11.8%)	0.906
Acute stent thrombosis	10 (1.0%)	9 (1.0%)	1 (1.2%)	0.604
Subacute stent thrombosis	15 (1.6%)	13 (1.5%)	2 (2.4%)	0.386

Conclusion Routine use of bivalirudin in a large UK all-comers primary PCI population was associated with excellent 30-day outcomes, including all-cause and cardiac mortality. Acute stent thrombosis was infrequent, despite the absence of routine additional heparin.

30 COMPARISON OF BIVALIRUDIN VS ABCIXIMAB VS "UNFRACTIONATED HEPARIN ONLY" FOR PRIMARY PERCUTANEOUS CORONARY INTERVENTION IN A HIGH-VOLUME CENTRE

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Introduction Primary percutaneous coronary intervention (PPCI) has been established as a standard therapy for ST elevation myocardial infarction (STEMI). In addition to thrombectomy and unfractionated heparin (UFH), thrombus burden in STEMI may require use of more potent antithrombotic agents. Bivalirudin is shown to be superior to abciximab in reducing the net adverse clinical events and major bleeding in STEMI in the HORIZONS-AMI trial (Stone *et al NEJM*, 2008). We aimed to carry out a "real world" comparison of different anti-thrombotic regimes in patients undergoing PPCI in our unit.

Methods Our PPCI service started in September 2009 and we included all patients undergoing PPCI between September 2009 and September 2010. Prospectively entered data were obtained from our dedicated cardiac service database system (Philips CVIS). Mortality data were obtained from the summary care record (SCR) database. We used Fisher's exact test to compare clinical outcomes between the groups.

Results Of the 998 patients admitted with suspected STEMI to our unit during the study period, 776 (77.8%) underwent PPCI. After excluding patients who had both bivalirudin and abciximab during their procedure (n=15), we divided the others (n=761) into 3 groups according to the anti-thrombotic regime used (Grp 1- Abciximab +UFH, Grp 2- Bivairudin+UFH and Grp 3- "UFH only"). Patient demographics and procedural information are given in Abstract 30 table 1. Continuous data are presented as mean± SD. Clinical outcomes are shown in Abstract 30 table 2. In-hospital and 30-day mortality did not differ between patients who had bivalirudin vs abciximab (5.6% vs 3.8%, p=0.35 and 6.8% vs 5.2% p=0.53 respectively). Both acute and 30 day stent thrombosis rates were also similar in the two groups (0.6% vs none, p=0.3, 0.6% vs 0.9%, p=1.0 respectively). Even though the bleeding risk was higher in the abciximab group when compared with bivalirudin, this was not significant (5.8% vs 3.1%, p=0.27). There was also no difference in the outcomes between the bivalirudin and "UFH only" groups for mortality, stent thromboses (acute and 30-day) and major bleeding. The abciximab group had significantly higher major bleeding rates than the "UFH only" group (5.8% vs 2.4%, p=0.04); all other outcomes were similar.

Abstract 30 Table 1

	Abciximab + UFH (n=346)	Bivalirudin + UFH (n=162)	UFH only (n=253)
Age in yrs (range)	64±14.1 (25–99)	65±13.0 (31–94)	67±13.2 (30–96)
Male (%)	77.7	72.2	66.8
Diabetes (%)	12.4	6.2	11.5
Pre-procedure cardiogenic shock (%)	7.8	6.2	4.7
Drug eluting stent (at least one) (%)	56.1	56.8	53.8
No of stents	1.4±0.9	1.4±0.8	1.4±0.9
Single vessel PCI (%)	91.3	87	89.3
Three vessel PCI (%)	1.4	1.9	2
Radial procedure (%)	28	26.5	31.2

Abstract 30 Table 2

%	Abciximab + UFH (n=346)	Bivalirudin + UFH (n=162)	UFH only (n=253)
In-hospital Mortality (including cardiogenic shock)	3.8	5.6	5.1
30 day Mortality (including cardiogenic shock)	5.2	6.8	7.1
30 day Mortality (excluding cardiogenic shock)	3.5	4.9	5.5
Stent Thrombosis (within 30 days)	0.9	0.6	1.2
Acute stent Thrombosis (24 h) ≤	0	0.6	0.4
Major bleed requiring blood transfusion (non CABG related)	5.8	3.1	2.4
Access related bleed requiring transfusion (includes IABP related)	3.8	1.9	1.2

Conclusion These "real-world" data do not show any significant difference in the clinical outcome for patients who had bivalirudin or abciximab. There was no advantage seen with the more expensive agent (abciximab) in keeping with previous trial data. Therefore bivalirudin should be considered as a non-inferior alternative to abciximab. This would have considerable economic benefits in the present situation. The "UFH only" group had similar outcomes to both bivalirudin and abciximab, which suggests that this may be a viable alternative in its own right. However, our study is clearly limited by not being randomised and those patients treated with UFH alone may have been a lower risk group.

31 ASSESSMENT OF LEFT VENTRICULAR FUNCTION WITH CARDIAC MRI AFTER PERCUTANEOUS CORONARY INTERVENTION FOR CHRONIC TOTAL OCCLUSION

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Objective To assess the role of CMR in the treatment of true chronic total occlusions (CTO) with percutaneous coronary intervention (PCI) and drug eluting stent implantation.