



Predictors Of Good vs Bad Outcome After IV Thrombolysis In Acute Ischemic Stroke

Dr. Hina Yusuf, PG Neurology

Dr. Wasim Tariq, Consultant Neurologist

Dr. Raja Farhat, Consultant Stroke Specialist

Shifa International Hospital, Islamabad, Pakistan

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Disclosure

There is no conflict of interest to disclose in this study

Background

Worldwide, stroke is the second leading cause of death and the third leading cause of disability¹

Estimated stroke incidence in Pakistan is close to 250 per 100,000 population, which means that there are 350,000 new stroke patients every year in our country³

Globally, 70% of strokes and 87% of both stroke-related deaths and disability-adjusted life years occur in low and middle-income countries²



Objectives

- ▶ Identification of factors which can predict outcome after IVT in Acute Ischemic Stroke

- Retrospective chart review from Jan 2015-Feb 2019
- Both male and female
- Age > 18 years
- Received IVT for Acute Ischemic Stroke
- Outcomes: NIHSS at presentation and at one-week post IVT
- Number of variables recorded on a preset proforma
- Data was analyzed using SPSS 23

Methodology

Inclusion/Exclusion Criteria

Inclusion:

Good Responders: Patients whose NIHSS improved to 3 or less from baseline after one week of IVT

Bad Responders: Whose NIHSS did not improve by >5 points from baseline after one week of IVT

Intermediate Responders: Those whose NIHSS improved by >5 points but did not fall below or equal to 3

Exclusion: Missing Charts

Variables

Age	Dominant vs Non-Dominant
Gender	Extent Of Carotid Artery Disease
DM	Blood Glucose On Presentation
HTN	BP On Presentation
IHD	Duration Of Symptoms
AF	Door To Scan Time
EF	Onset To Needle Time
NIHSS On Presentation	CT Scan Appearance
Type Of Stroke	NIHSS After 1 Week

RESULTS

A 3D rendered image featuring the word "RESULTS" in large, bold, blue block letters. The letters are positioned on a white, reflective surface. In the background, a yellow construction crane is lifting the letter 'E'. Three orange and white striped traffic cones are scattered on the ground in the foreground. The entire scene is set against a plain white background.

Sample Size

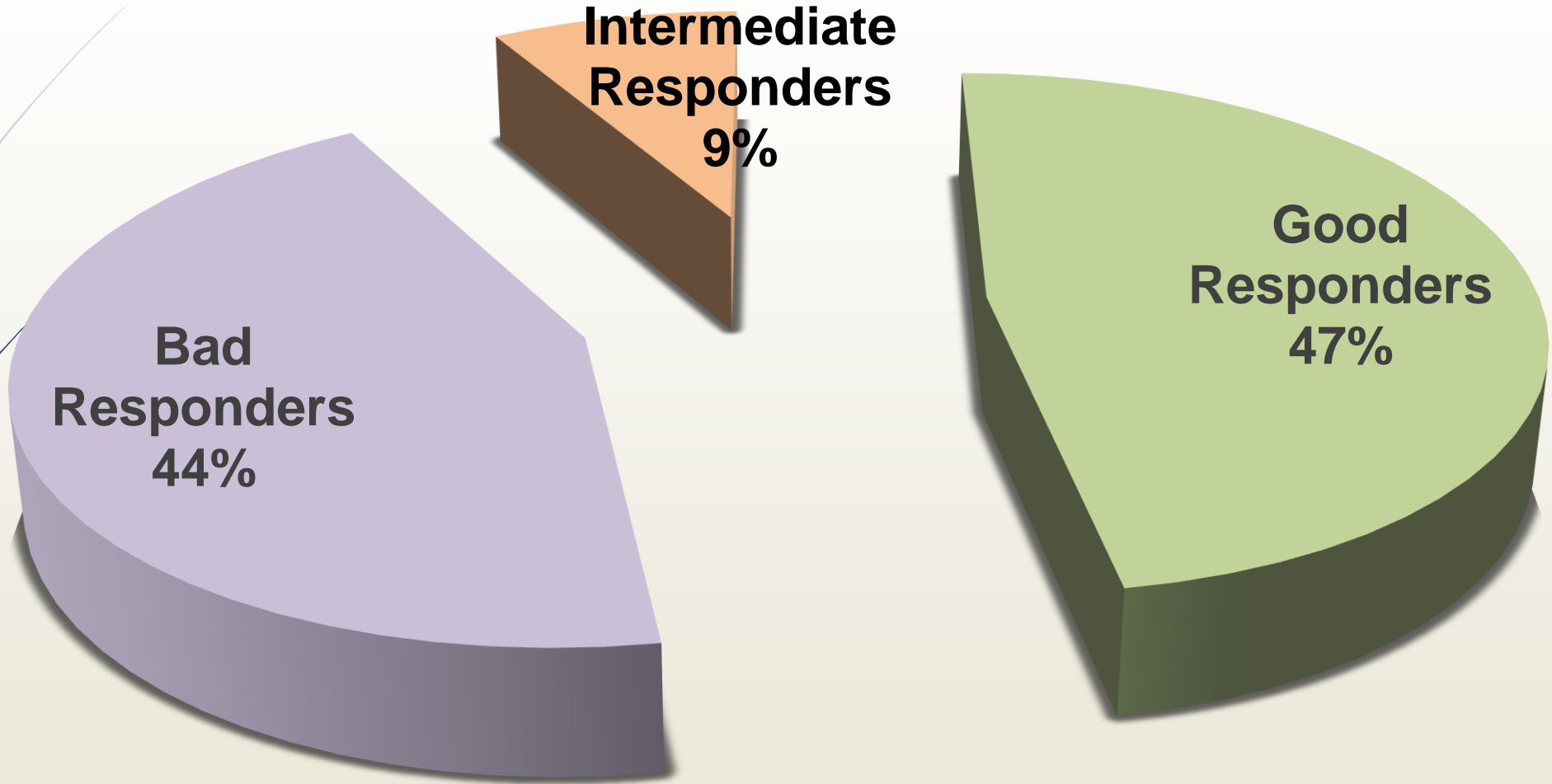
Out of 124 Patients, 95 were included in this study
Charts of remaining were missing



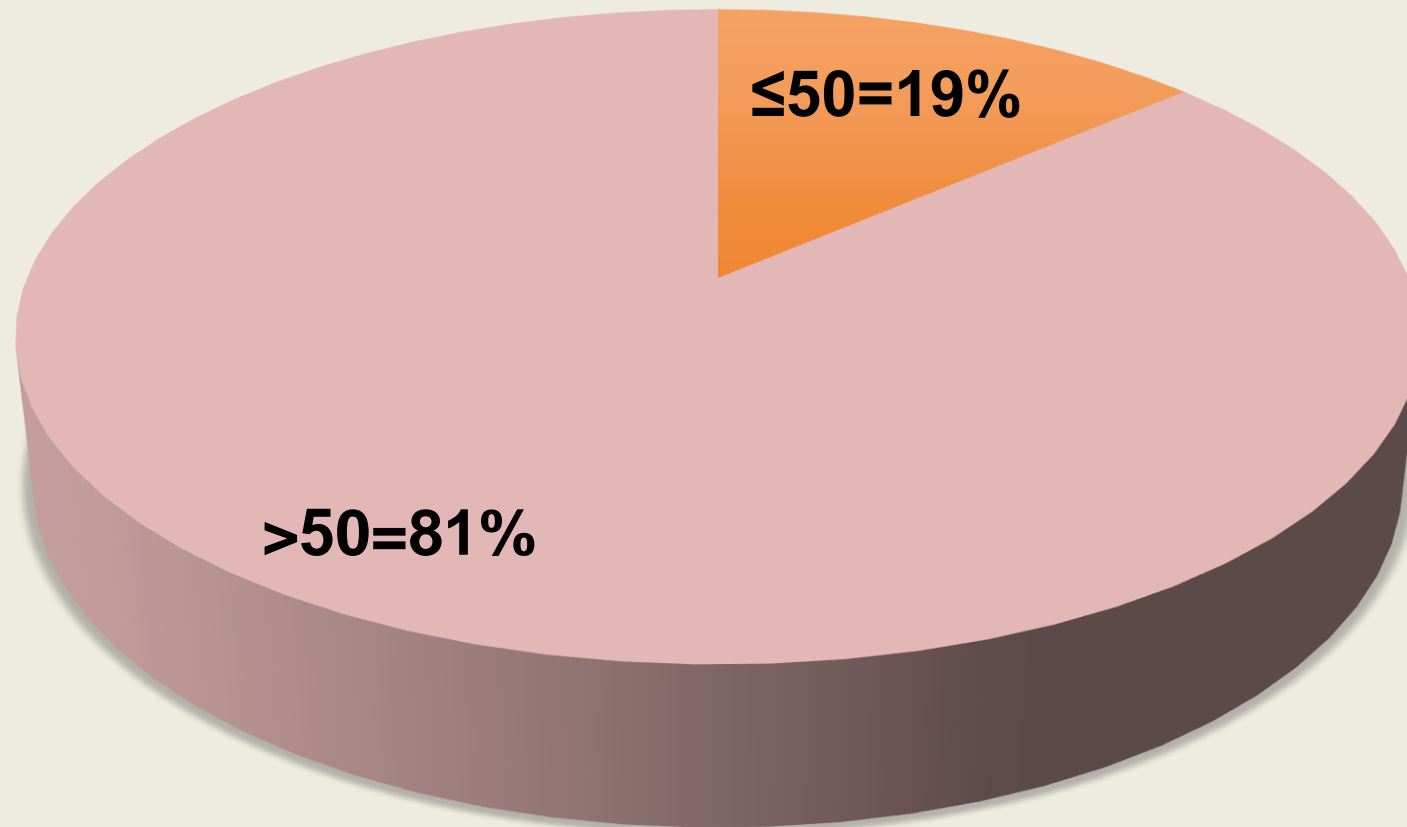
124

95

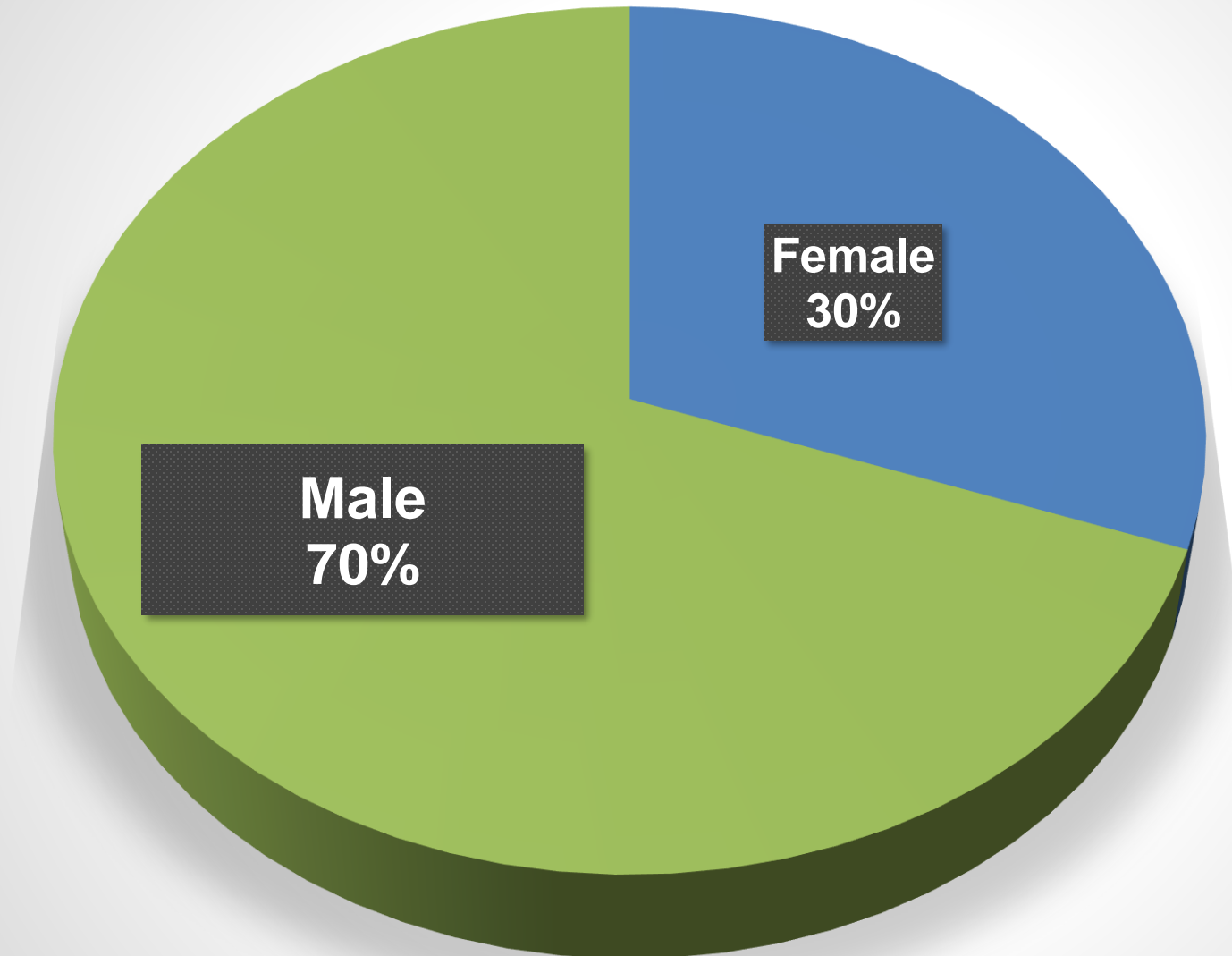
Categories N=95



Age (years) N=95
Mean: 65.5 years (SD=+/-14)

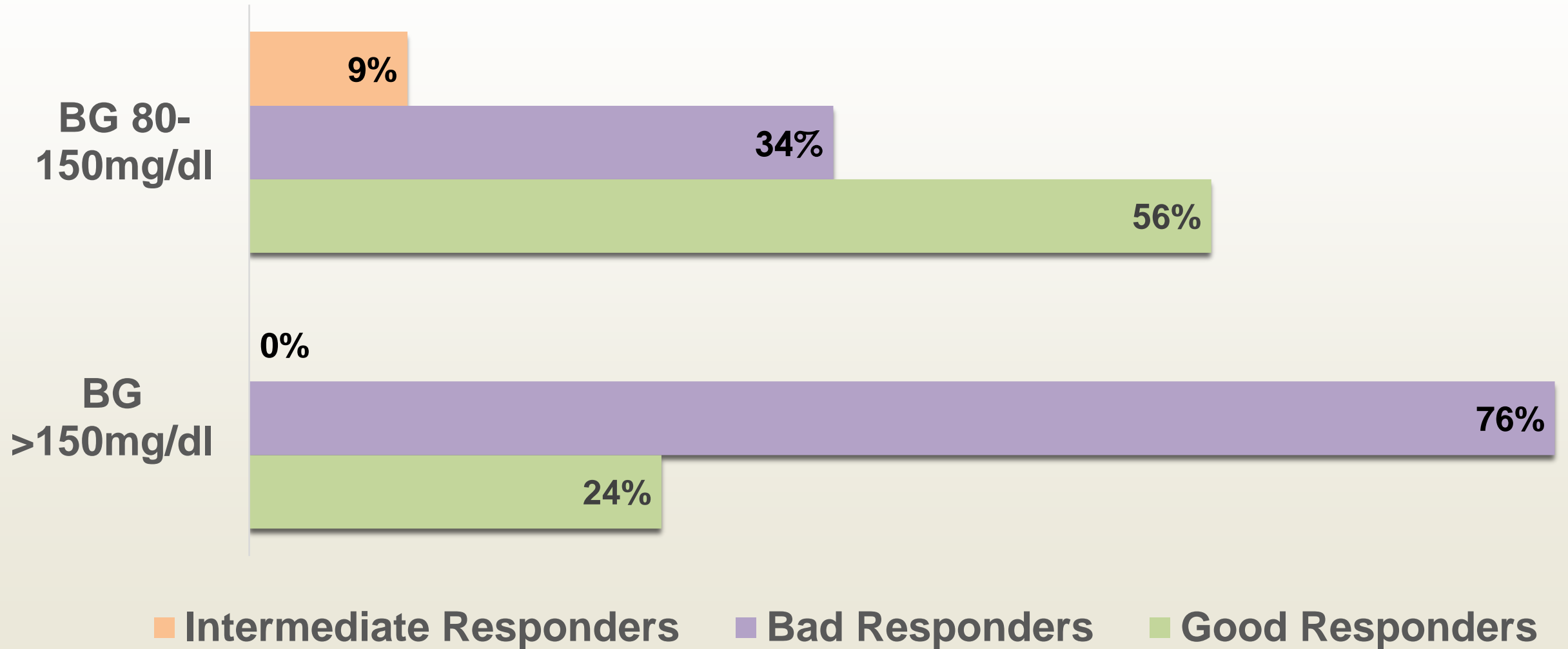


Gender (N=95)



Blood Glucose on Presentation

(High Blood Glucose >150mg/dl is statistically significant p=0.01)



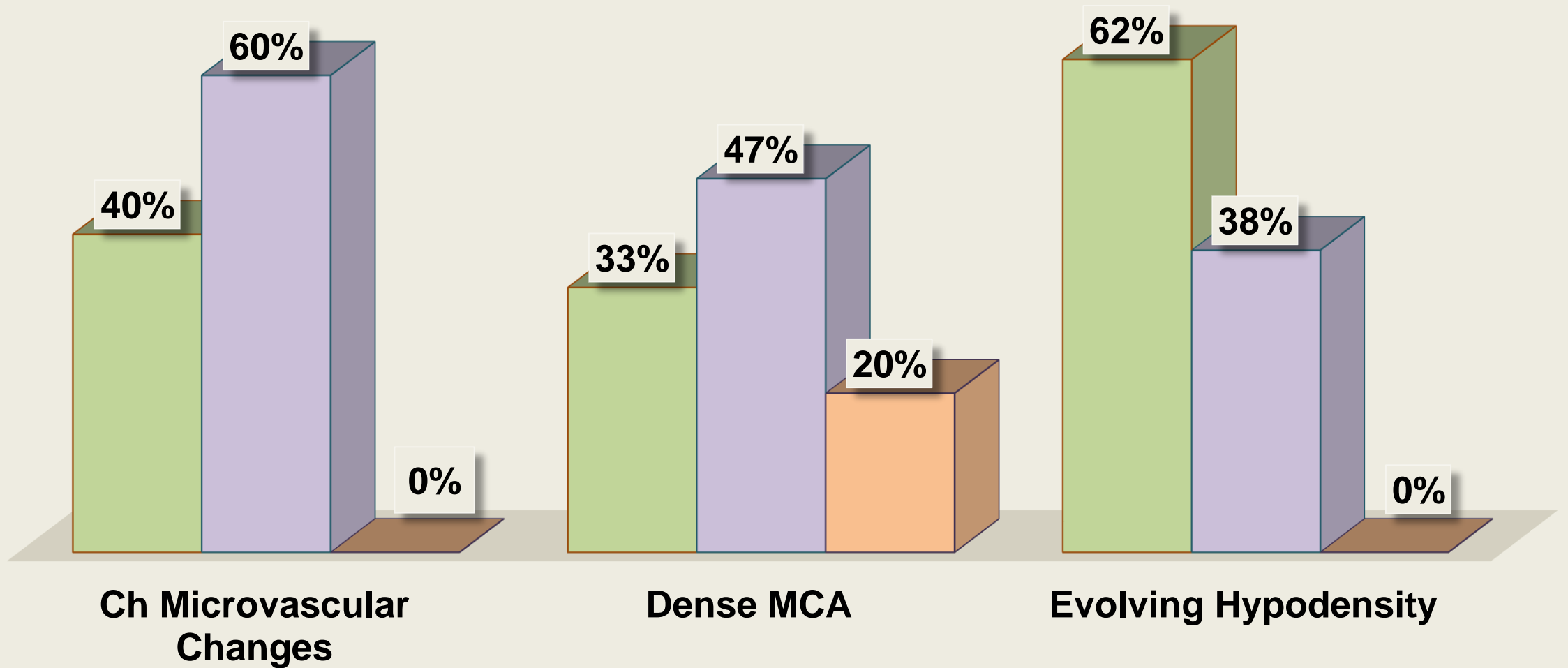
CT Scan

Ch Microvascular changes result in bad outcome (p=0.039)

■ Good Reponders

■ Bad Responders

■ Intermediate





Symptom Onset To Needle Time

- Mean time in good responders was 150 min or less (Range 45-250 min)
- Mean time in bad responders was 190 min or more (Range 70-370 min)

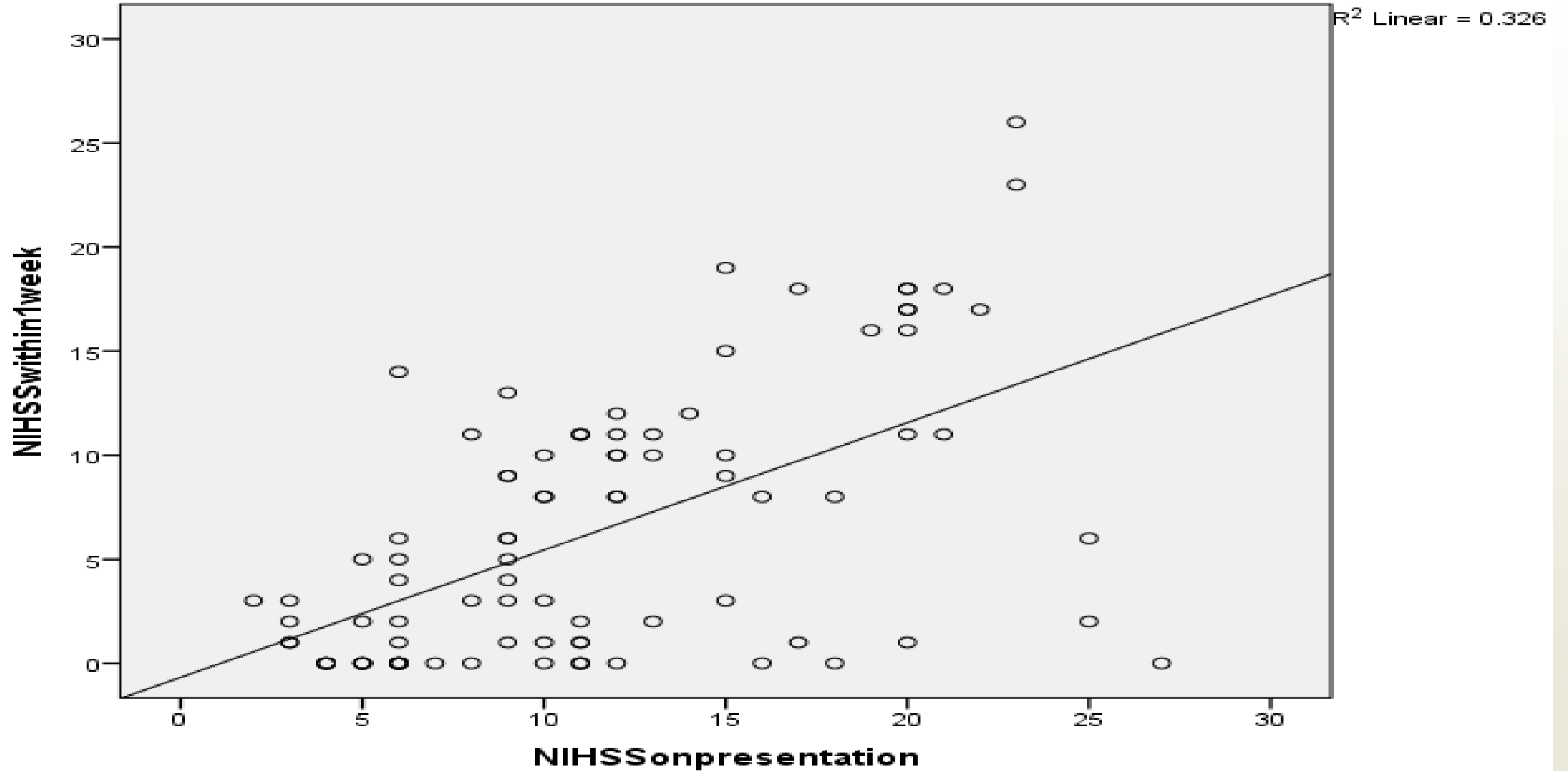
Time >190 min statistically significant $p=0.05$

NIHSS on presentation

	Good	Bad	Intermediate
Range	3-27	6-23	9-21
Mean	9	13	16
Median	8	12	16
NIHSS <10	65%	34%	14%
NIHSS >15	17%	31%	85%

Effect of Initial NIHSS on Final NIHSS was statistically significant with p-value of 0.00 on Pearson Chi Square Test

NIHSS On Presentation

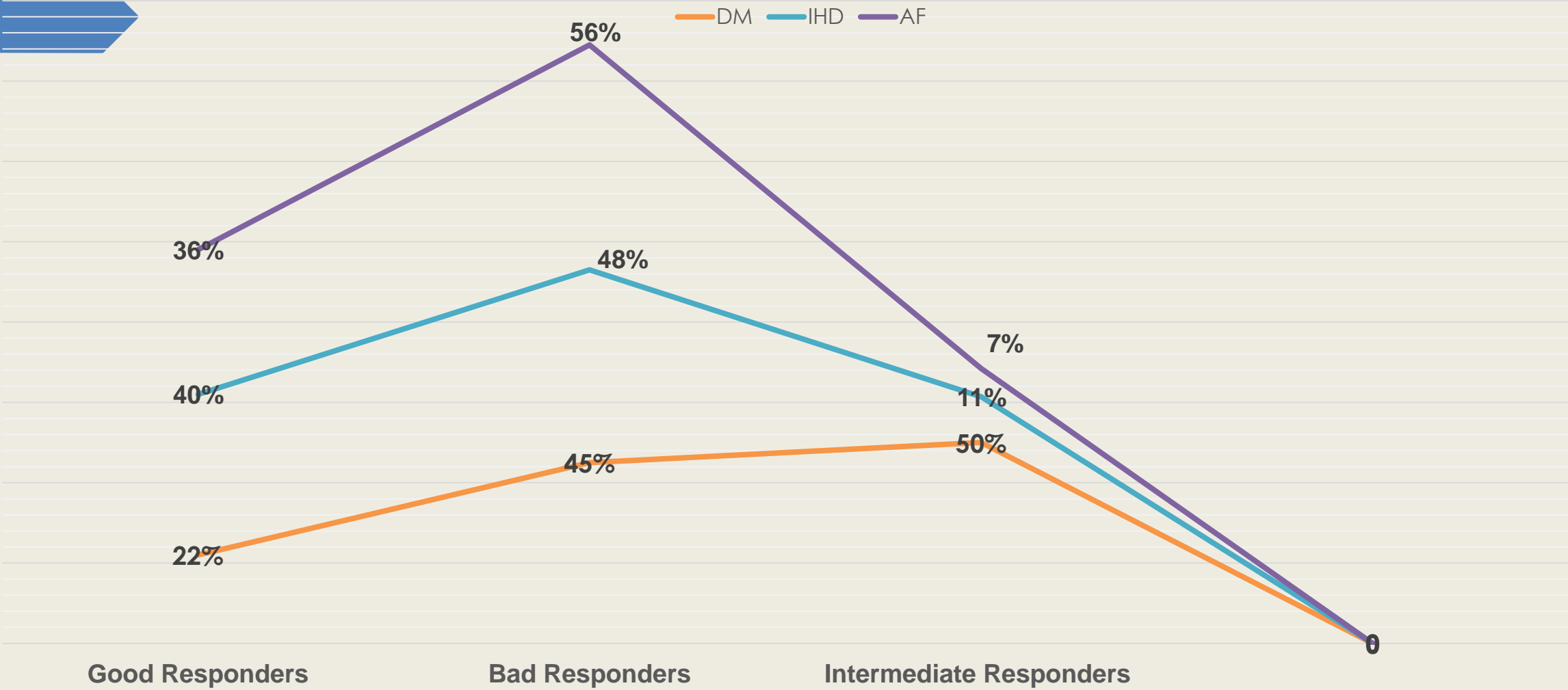


Co Morbids

Co- Morbids	Good Responders	Bad Responders	Intermediate Responders
Atrial Fibrillation	36%	56%	7%
Diabetes Mellitus	22%	45%	50%
IHD	40%	48%	11%

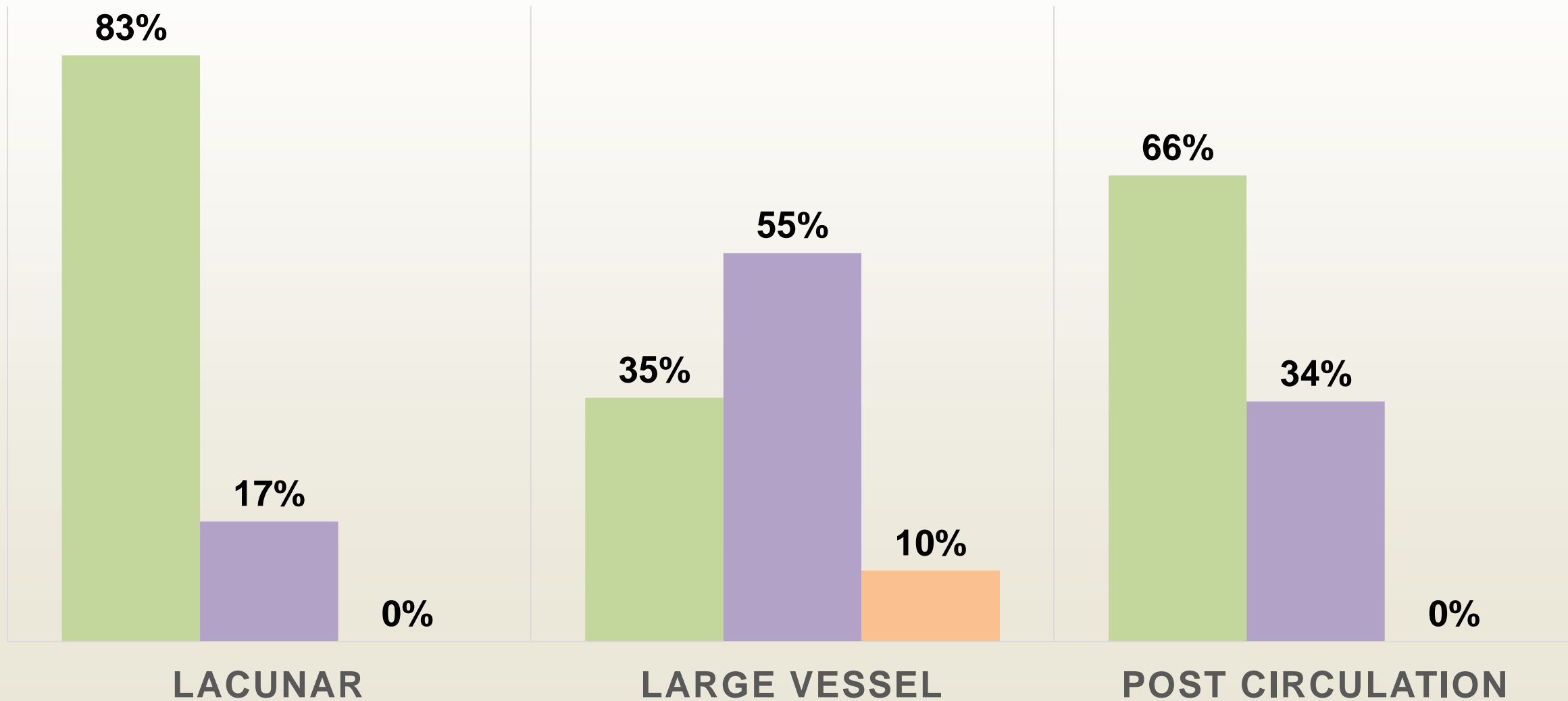
Co-Morbid

DM IHD AF

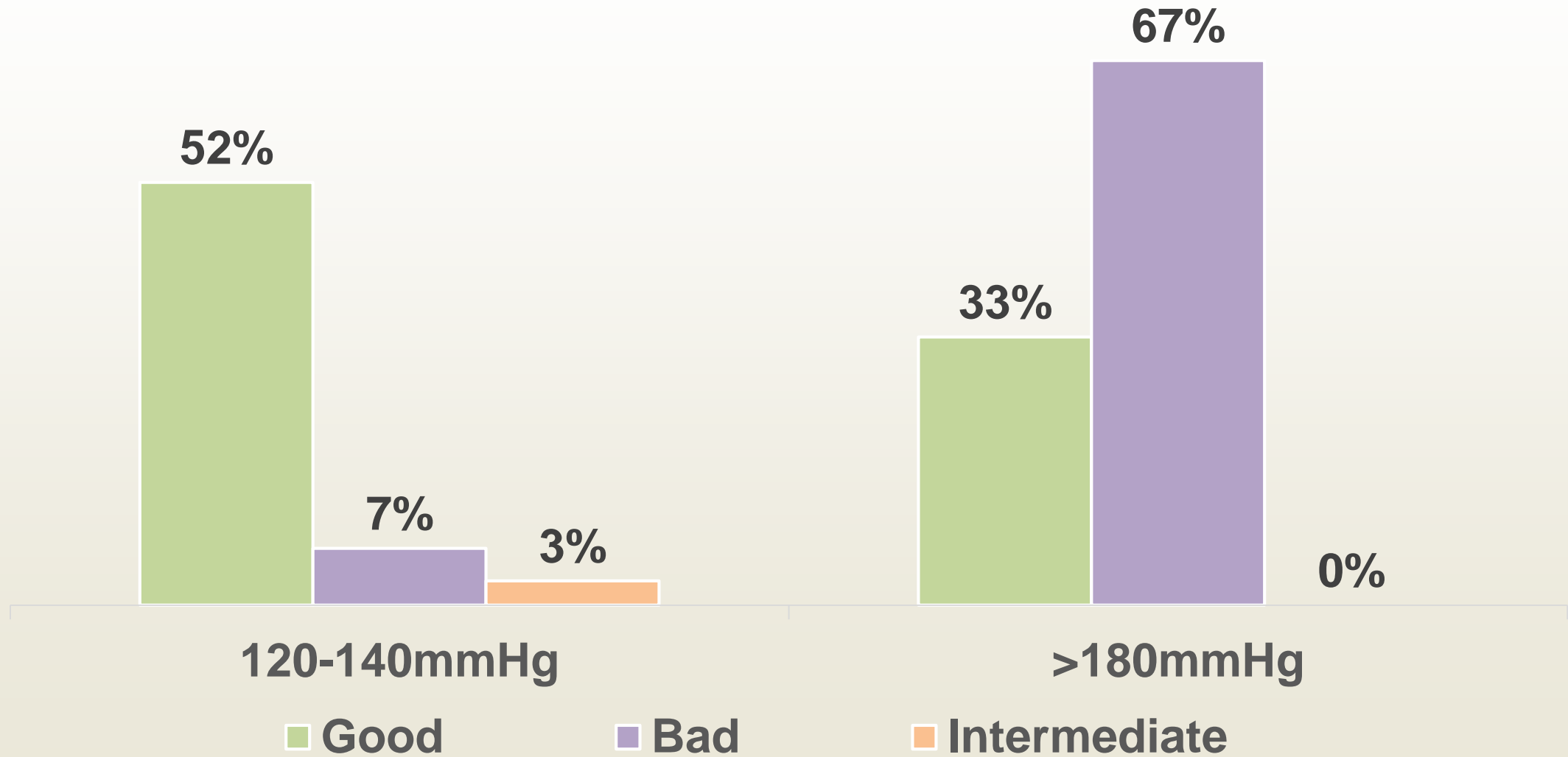


Type of Stroke

■ Good Responders ■ Bad Responders ■ Intermediate Responders



BP on Presentation



Discussion

Statistically
significant
characteristics
resulting in bad
outcome

High NIHSS on presentation

High Blood Glucose >150mg/dl
on presentation

Presence of chronic
microvascular changes on CT
Head

Prolonged symptom onset to
needle time >190 minutes

Discussion Continued...

The following characteristics showed a trend without statistical significance

- High sys BP >180mmHg on presentation
- Presence of AF and DM
- Dense MCA sign

Discussion Contd.....

Statistically Non-significant

- Age
- Gender
- Carotid Artery Stenosis
- Ejection Fraction



Comparison with International Studies

	Results	International Studies
1.	High NIHSS on presentation	Predictors of good outcome after intravenous tPA for acute ischemic stroke <i>Demchuk, et al. <u>Neurology</u>. 2001 Aug 14;57(3):474-80.</i>
2.	High Blood Glucose on presentation	Effects of admission hyperglycemia on stroke outcome in reperfused tPA-treated patient admission glucose value >140 mg/dL <i>(Alvarez-Sabín, et al. <u>Stroke</u>. 2003;34:1235–1240)</i> Intracerebral hemorrhage after thrombolysis for acute ischemic stroke: an update <i>(Derex L, et al. <u>Journal of Neurology, Neurosurgery & Psychiatry</u>. 2008 79: 1093-1099)</i>

Comparison with International Studies

Sr No.	Results	International Studies
3.	Ch Microvascular Changes lead to bad prognosis	Collateral circulation is an independent radiological predictor of outcome after thrombolysis in acute ischaemic stroke <i>Kucinski et al. Neuroradiology. (2003);45:11–18</i>
4.	Prolonged symptom to needle time is associated with bad outcome	Time to treatment with intravenous tissue plasminogen activator and outcome from acute ischemic stroke <i>Saver et al. JAMA. 2013 Jun 19;309(23):2480-8</i>

Conclusion

Factors associated with bad outcome after IVT are:

- High **NIHSS** on presentation
- **Chronic microvascular changes** on CT Head
- **High Blood Glucose** on Presentation
- **Prolonged symptom onset to needle time**



Limitations of study

- ▶ Small sample size
- ▶ Single Private Centre Study
- ▶ Charts of some patients were not available



References

1. Global Health Estimates. Geneva: World Health Organization; 2012
2. Global and regional burden of stroke during 1990-2010: findings from the Global Burden of Disease Study 2010
3. www.pakstroke.com
4. <http://emedicine.medscape.com/article/1160840>
5. Berkhemer, A randomized trial of intraarterial treatment for acute ischemic stroke. N Engl J Med 2015;

**Thank You
and
Any
Question?**

