



PROVIDER VARIABILITY AND CHARACTERISTICS ASSOCIATED WITH BIVALIRUDIN USE FOR BLEEDING AVOIDANCE IN PERCUTANEOUS CORONARY INTERVENTION AFTER IMPLEMENTATION OF A DECISION SUPPORT TOOL

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BACKGROUND

- Decision support tools (DST) help physicians deliver care that is:
 - Evidence-based
 - Patient-centered
 - Facilitative to shared decision-making
- Little is known about how physicians respond to and use DSTs to improve treatment and outcomes
- In patients undergoing percutaneous coronary intervention (PCI), bivalirudin is:
 - Effective as a bleeding avoidance strategy (BAS)
 - More beneficial in patients at high risk for bleeding
 - Paradoxically used more often in low-risk patients
- We examined physicians' changes in bivalirudin use after providing patient-specific bleeding risk estimates at the time of PCI

METHODS

- Data obtained from 9-center OPS/PRISM study of novel software that provides personalized bleeding risk estimates prior to PCI
- Pre/Post comparison of DST effect on bivalirudin use as a function of pre-PCI bleeding risk
- Examined 145 physicians' changes in bivalirudin use in 9,383 propensity-matched patients
 - Excluded radial artery approach PCI cases
 - Multivariable hierarchical logistic regression modeling
 - Examined physician characteristics for association with bivalirudin use patterns:
 - Age
 - Sex
 - Foreign vs. domestic graduate
 - Number of publications
 - Interventional cardiology (IC) certification

RESULTS

- Overall, bivalirudin use increased after DST implementation (Table 1)
- Marked variability was observed in both:
 - Physicians' bivalirudin use as a function of bleeding risk, both before and after DST (Figure 1)
 - Changes in physicians' bivalirudin use after DST (Figure 2)
 - Overall use (OR Range 0.21-9.34; p 0.0006)
 - Use per 1% increase in bleeding risk (OR Range 0.34-1.78; p 0.02)
- In adjusted analyses, IC certification was significantly associated with greater bivalirudin use after DST, but this use was paradoxically increased most in the lowest risk patients, not the highest (Figure 3)

Table 1: Bivalirudin Use by Bleeding Risk Pre- & Post- DST

	Pre-DST Rate	Post-DST Rate	Odds Ratio (95% CI)	p-value	DST x Risk Interaction p-value
Overall	47.0%	52.4%	1.24 (1.02, 1.51)	0.03	0.02
By bleeding risk					
Low	48.1%	46.7%	0.94 (0.71, 1.25)	0.68	
Moderate/High	46.5%	55.7%	1.44 (1.13, 1.84)	0.003	

Fig. 1: Physicians' Patterns in Bivalirudin Use Pre- and Post-DST*

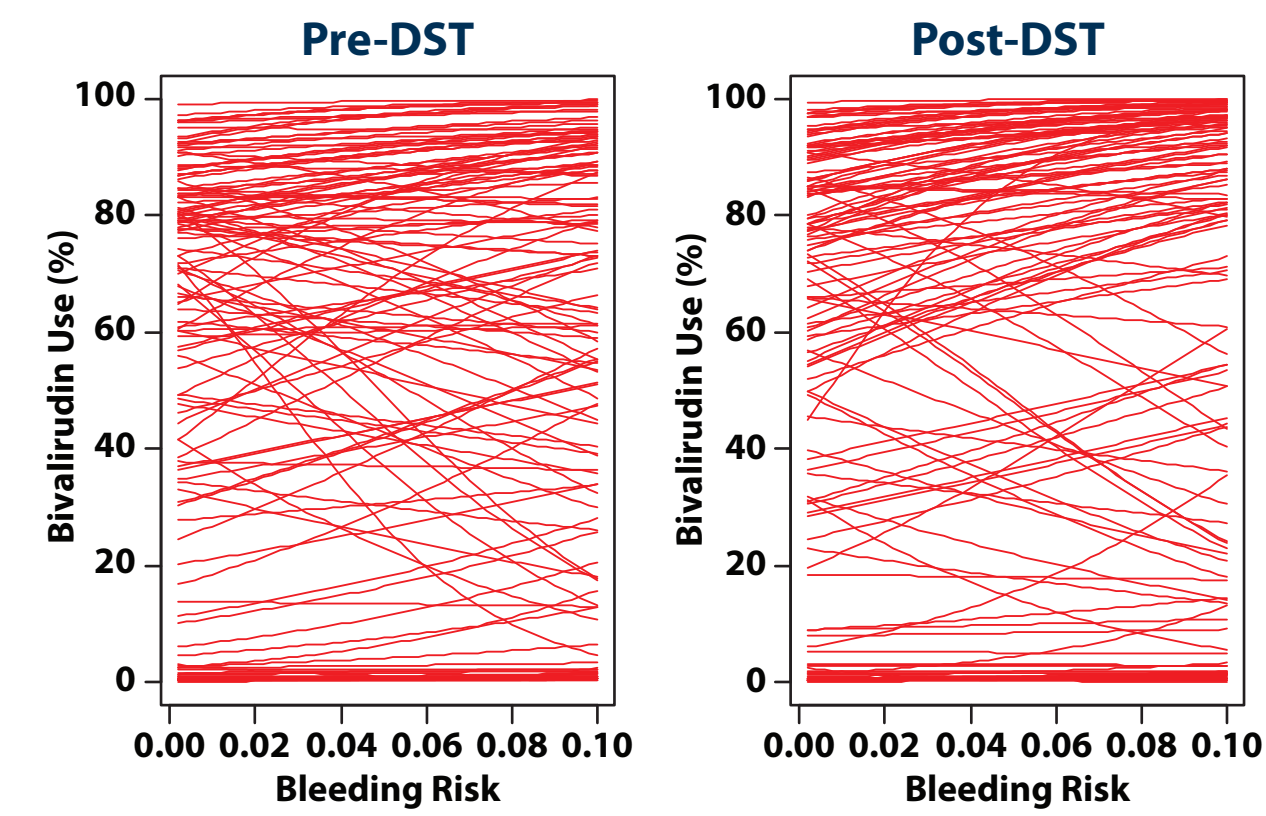


Fig. 2: Effect of DST on Physicians' Changes in Bivalirudin Use*

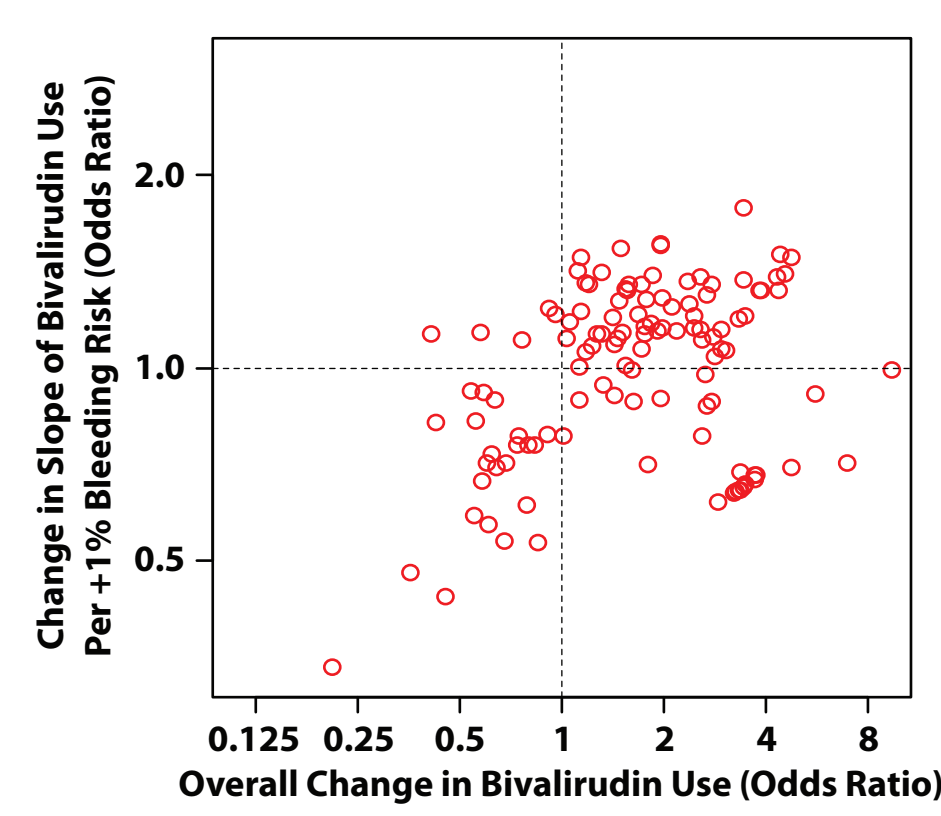
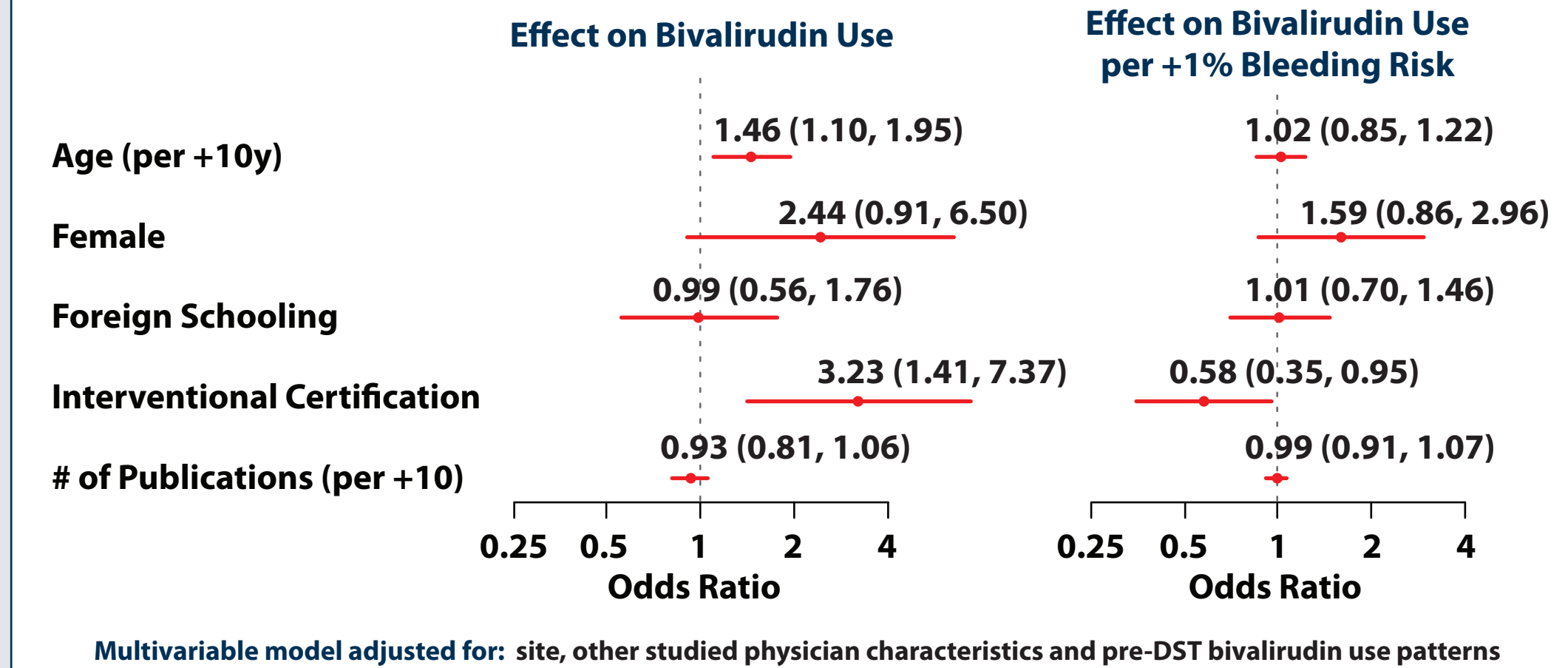


Fig. 3: Physician Characteristics Associated with Changes in Bivalirudin Use



LIMITATIONS

- Small sample size precludes ability to significantly associate physician bivalirudin practice patterns with bleeding outcomes
- Physician beliefs regarding efficacy of bivalirudin as a BAS represent one unknown confounder
- Other BAS (radial PCI, vascular closure device) not included in analysis

CONCLUSION

- Marked variability exists in physicians' use of best practices in decision-making after exposure to an evidence-based DST
- Further exploration of physician barriers to DST use may identify ways to foster safer, more effective patient care