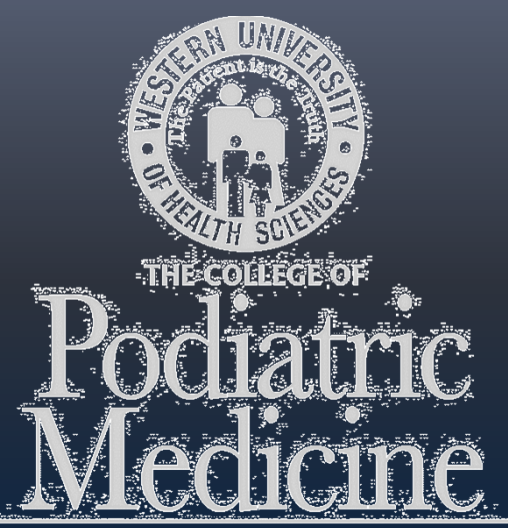


# The Incidence and Predictors of Nosocomial Infections in a Diabetic Population with Foot Related Complications

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## INTRODUCTION

Hospital acquired infections (HAIs) represent a significant challenge for health care secondary to the impact on patient safety and on social issues. HAIs are associated with increased morbidity and mortality as well as high healthcare costs. Diabetes mellitus patients are especially at risk for developing HAIs due to being more susceptible to infections compounded with some of the comorbidities that diabetic patients face such as diabetic foot ulcers and risk for lower extremity amputation. Because of the serious comorbidities, diabetic patients have a higher prevalence of being admitted to ICU departments of hospitals. Despite many published studies about HAIs from within the United States and globally, rates and risks associated with HAI in diabetic patients need to be further elucidated. The present study seeks to bridge that gap by determining the incidence of HAI in patients admitted to an acute care hospital with a lower extremity complication of DM as well as risk factors for developing a HAI.

### Purpose:

- Rates and Risks of Hospital Acquired Infections:** We aim to characterize the costs related to developing an infection during an acute care hospital stay.
- Diabetic Foot Complications:** Due to many of the comorbidities diabetes patients often present with, we aim to determine if common foot related complications of diabetes mellitus have an increased risk of developing an HAI.

## METHODS

Patients were identified by discharge diagnosis of diabetes mellitus and a foot related complication with the 2011-2014 Office of Statewide health Planning and Development (OSHPD) public discharge files. They were placed into cohorts, "No Hospital Acquired Infection" and "Hospital Acquired Infection". Patients were also placed into sub-cohorts based on the type of lower extremity comorbidity. Descriptive statistics and various regression models were analyzed using IBM SPSS Statistics. Cost during the acute stay and length of stay was determined for subdivisions of each of the cohorts. Costs are calculated by multiplying the charges and the cost-to-charge ratio and cost is adjusted to the US dollar 2019. The costs were adjusted using the criteria from the US Bureau of Labor Statistics.

## RESULTS

Odds of developing an HAI were significantly increased in populations with:

- Diabetic peripheral neuropathy
- Diabetic foot ulcers
- Diabetic foot infections
- Having more Elixhauser comorbidities

In an early multivariate analysis when controlling for the various complications, the greatest factor influencing whether a patient will have an HAI is Diabetic Foot Ulcers.

Future work includes continued multivariate analysis and a linear regression to identify how each complication may influence cost and length of stay.

**Descriptive statistics for cost and LOS in acute care diabetic foot complications with and without HAI**

Cohort	N	COST	LOS
		Mean ± SD	Mean ± SD
No HAI	249,427	\$ 15,848 ± \$ 17,716	5.4 + 17.3
HAI	1957	\$ 43,617 ± \$ 62,589	17.2 + 45.8

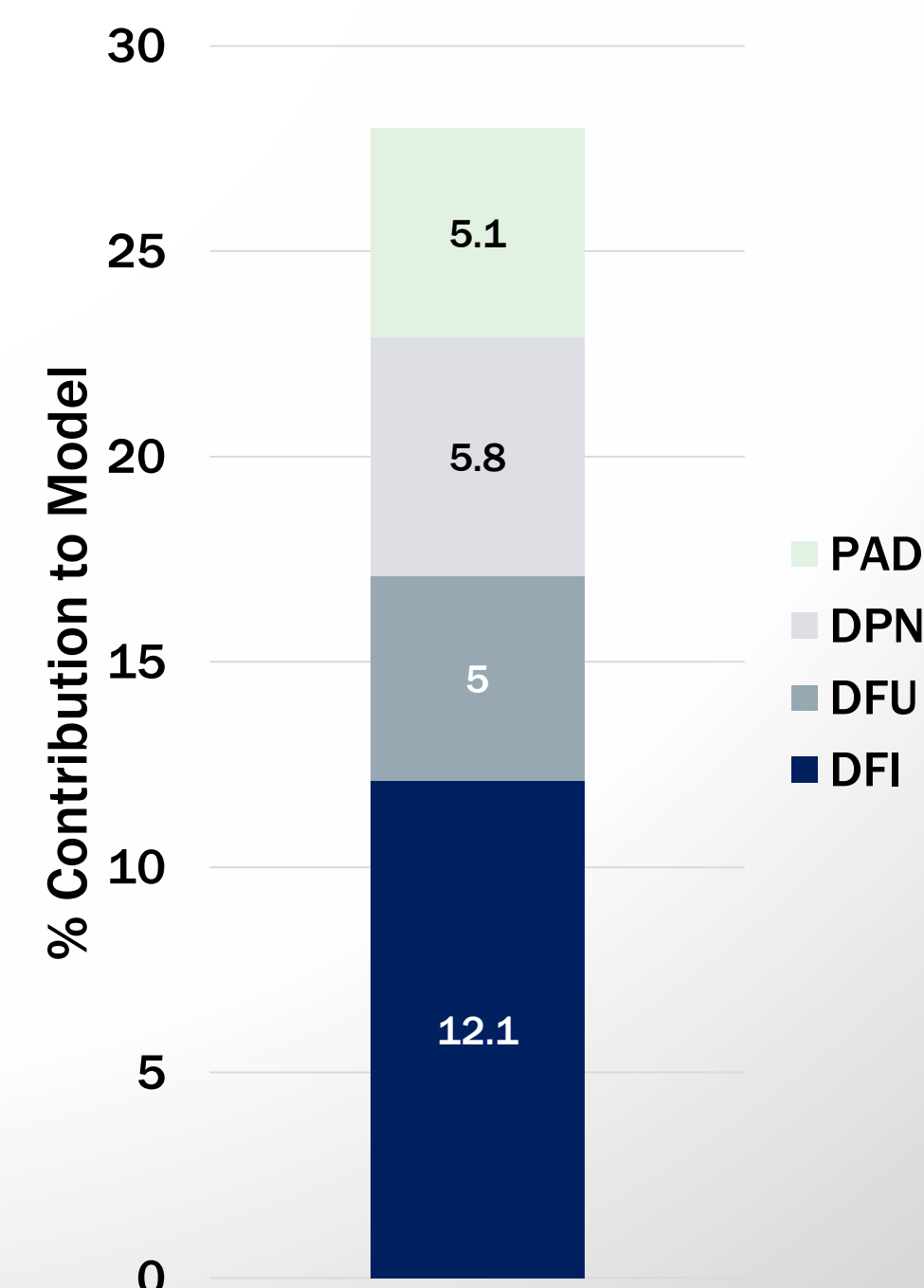
LOS = Length of stay; SD = Standard deviation; HAI = Hospital Acquired Infection

**Odds of developing an HAI if a diabetic foot complication is present at admission**

Complication	OR	95% CI	P-value
PAD	0.93	(0.81, 1.05)	0.26
DPN	<b>1.14</b>	(1.04, 1.24)	<b>0.005</b>
DFU	<b>1.44</b>	(1.01, 2.04)	<b>0.042</b>
DFI	<b>3.31</b>	(2.38, 4.60)	<b>&lt;0.0001</b>
Any Complication	1.08	(0.98, 1.19)	0.10
Elixhauser Index	<b>1.75</b>	(1.60, 1.91)	<b>&lt;0.0001</b>

PAD = Peripheral arterial disease; DPN = Diabetic peripheral neuropathy; DFU = Diabetic foot ulcer; DFI = Diabetic foot infection

**Contribution of each morbidity to the multivariate analysis model**



## CONCLUSIONS

Our research is consistent with current literature on the prevalence of HAIs. In addition the length of stay and cost are shown to be increased. Our study is beginning to elucidate the impact of diabetic food complications in HAIs.

## REFERENCES

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