INTRODUCTION
Vocational Rehabilitation (VR) services provide services to individuals with various disabilities who need assistance in obtaining gainful employment. These services are administered through state vocational rehabilitation programs and through the Veterans Affairs Vocational Rehabilitation and Employment program.

People with amputation can receive funding for prosthetic care through VR services when it assists the individual in obtaining employment and aids them in meeting the essential skills of that occupation. In this scenario, prosthetic care is administered by certified prosthetists in collaboration with the rehabilitation counselor assigned to the individual's case.

VR services are provided in all fifty states and records for each individual case are combined into a national database (RSA-911). RSA-911 data contains each person's demographics, type of disability (e.g. amputation), all services provided through VR, the cost of those services, and employment outcomes. Therefore, the RSA-911 database provides a national sample with relevant outcome measures (e.g. employment) that could be used to demonstrate the effectiveness of prosthetic care to third party payers.

The purpose of this research was to define the effect of having amputation and comorbidity through VR services on employment outcomes.

METHOD

Subjects: Any individual that listed amputation as the primary impairment, received vocational rehabilitation services, and was entered into the RSA-911 database between 2007 and 2012.

Apparatus: The RSA-911 database was used to retrospectively look at the effect of having an amputation with comorbidities on employment outcomes.

Procedures: RSA-911 data was combined across years 2007 and 2012 then filtered to include only those with amputation as the primary impairment and with VR cases closed with or without an employment outcome. A filtering algorithm (rehabilitation technology provided by an outside vendor + total cost > $4000) was developed to determine the number of people that received a prosthesis funded by VR services.

Data Analysis: A forward model logistic regression analysis determined best predictors of employment. Those potential predictors include gender, race, presence of comorbidity, all thirteen services provided by VR, and receipt of prosthesis. This was necessary so that the model could correct for the potential confounding effect of another service. Independent t-tests for significant differences between hourly wages at closure for those that did or did not receive prosthesis through VR services. A Pearson Chi-Squared analysis tested if the receipt of prosthesis had a significant effect on whether or not public support was a person's primary source of income after VR services were closed. Significance was set at p < 0.05.

RESULTS
There was a significant negative effect of having comorbidities in addition to amputation on attaining employment through VR services. After controlling for all other demographic and VR service factors (p < 0.001). Individuals with multiple amputations were 1.5 times less likely to gain employment, while individuals with amputation and drug abuse or dependence (other than alcohol) were 3 times less likely to gain employment. Compared to just individuals with amputation with no comorbidities.

DISCUSSION
There was an overall negative effect of employment, when individuals with amputation have comorbidities. These findings were significant after controlling for all other potential confounding variables such as gender, race, and other services provided through VR. The dataset is limited in that the level of amputation is not specified making it unclear the ratio of upper to lower limb prostheses being provided. Despite this limitation, the data does demonstrate that having multiple comorbidities complicates the rehabilitation process at all levels. Access to information can assist prosthetists in developing more thorough patient care, knowing some cases might be more complicated than they appear.

CONCLUSION
VR services should continue to pay for prostheses that are tailored to the specifics of the individual's vocational needs but need to be cognizant that a more thorough rehabilitation plan needs to be in place.

CLINICAL APPLICATIONS
This research provides justification for a more thorough approach to prosthetic care via prosthetic clinics. These findings show when comorbidities are present that a prosthesis is just one part of the rehabilitation process to achieve employment.

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The effect of having different comorbidities in addition to an amputation on finding employment through VR services

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