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Evaluation of a daptomycin dosing protocol based on adjusted body weight at a community hospital

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BACKGROUND/INTRODUCTION

- Daptomycin is a lipopeptide antibiotic indicated for the treatment of complicated skin and skin structure infections, bacteremia resulting from *Staphylococcus aureus*, and right-sided infective endocarditis.²
- There are multiple studies that support the use of adjusted body weight dosing for daptomycin in obese patients.² The data from one study reported an increase of creatinine phosphokinase (CPK) in obese patients that were dosed based on actual body weight.¹
- At South Miami Hospital (SMH), there is a daptomycin dosing protocol that was revised. Now, pharmacists are to use adjusted body weight to dose patients with a body mass index (BMI) above 30 kg/m² and/or total body weight (TBW) above 20% of their ideal body weight (IBW).
- This study was developed to identify the benefits of following the new daptomycin protocol.

OBJECTIVES

- The data was evaluated in order to:
 - Analyze the difference in patients' length of stay at the hospital.
 - Calculate the cost savings subsequent to the new protocol.
 - Compare CPK levels for those patients included post-protocol.

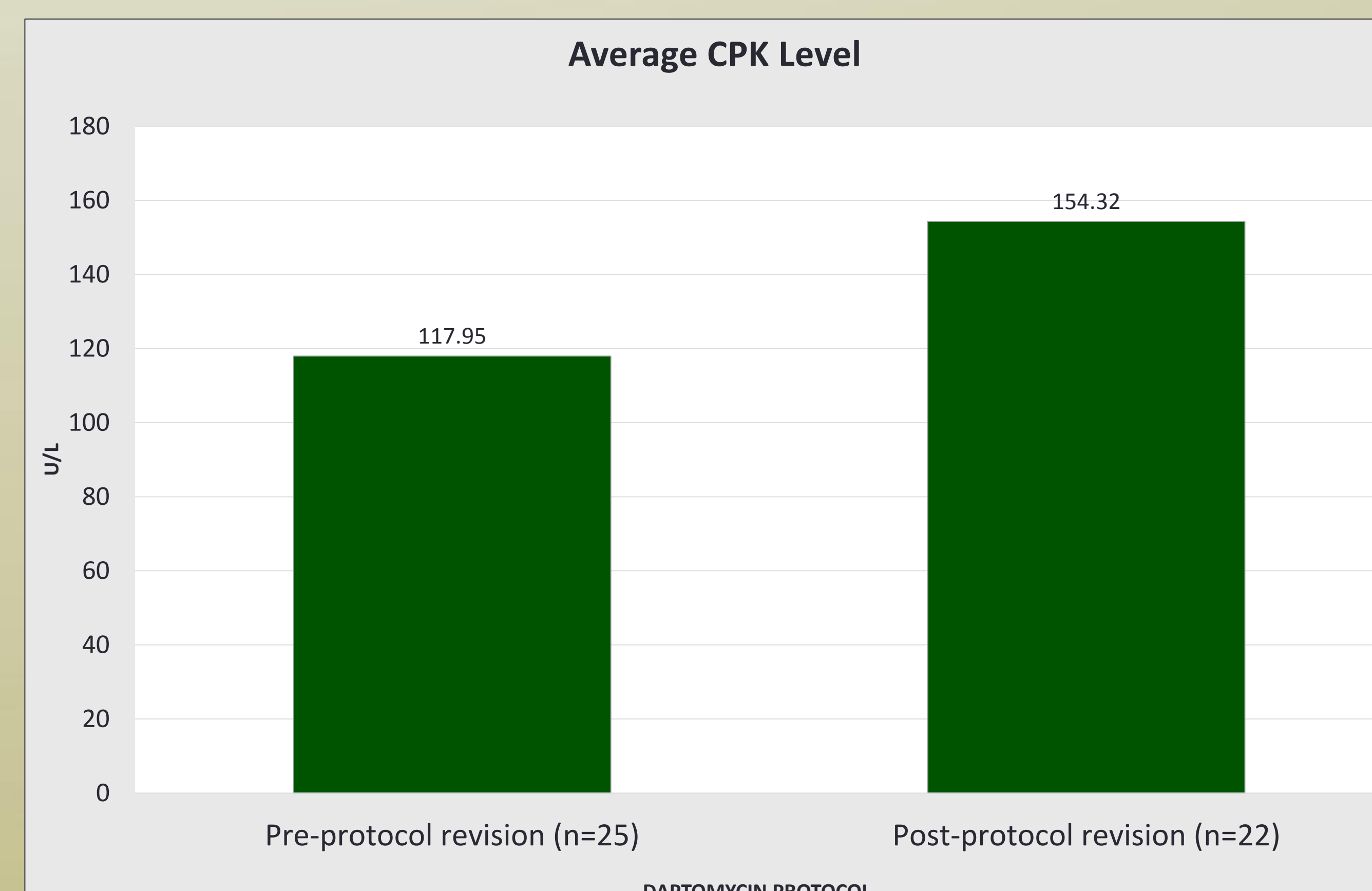
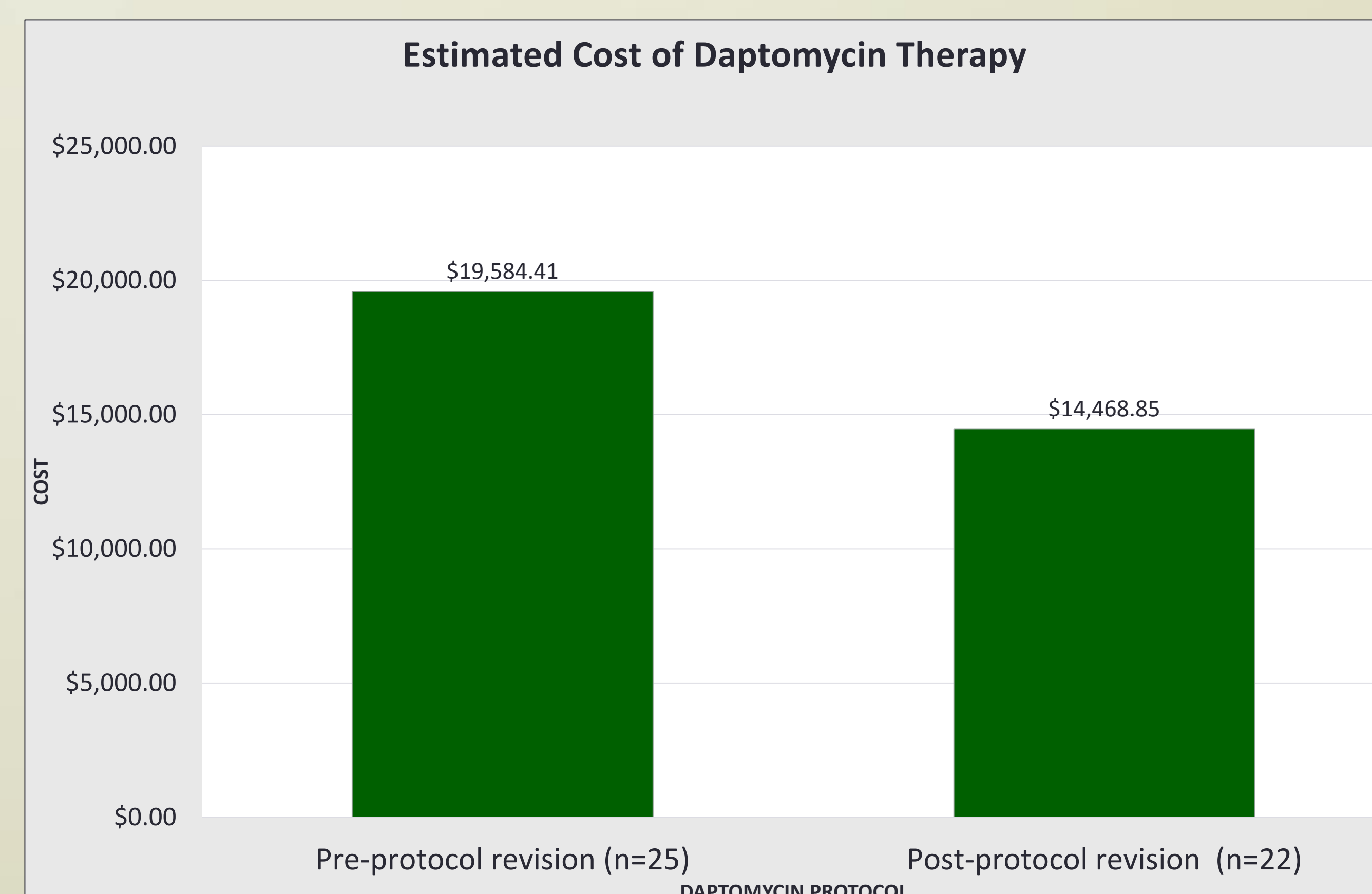
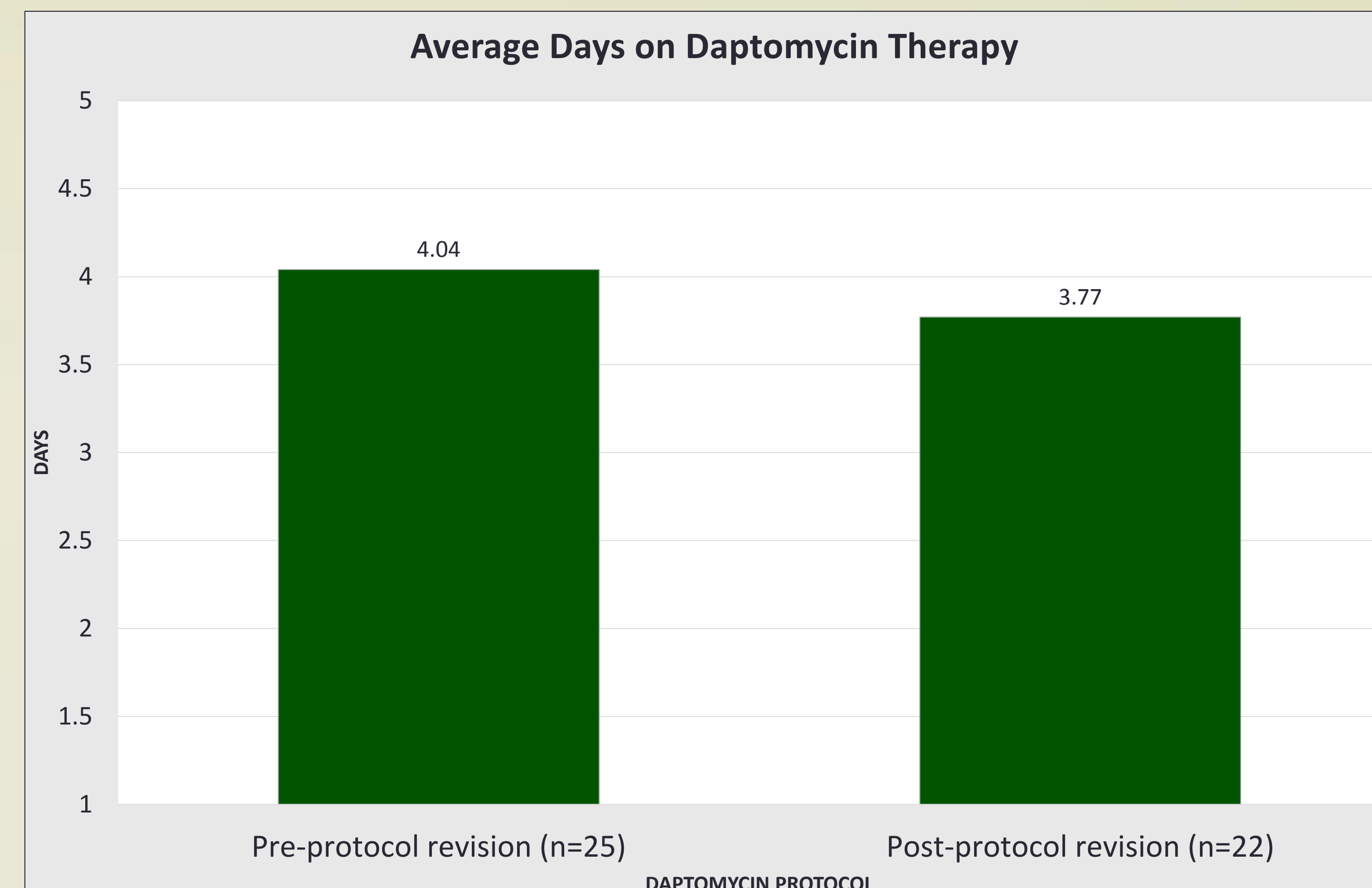
METHODS

- This is a retrospective study that was approved by the Baptist Health South Florida Institutional Review Board.
- The study analyzed fifty electronic medical administration records of randomly selected patients.
- An electronic report was generated, including patients that were treated with daptomycin from 02/01/2018 – 10/01/2018. All patients were eighteen years of age or older and had a total body weight of greater than twenty percent of their ideal body weight.
- Twenty-five patient reports were compared prior to the protocol implementation date versus twenty-five patient charts after the implementation date of 06/12/2018.

RESULTS

	Demographics		Average Parameters	
	Pre-protocol Revision	Post-protocol Revision	Pre-protocol Revision	Post-protocol Revision
	N=25	N=22		
Females	14 (56%)	8 (36%)	BMI (kg/m²)	30.5 32.9
Males	11 (44%)	14 (64%)	TBW/IBW (%)	40.6 50.1
			Length of stay (days)	10.4 13.6

RESULTS



DISCUSSION

- A total of forty seven (47) patients were included in this study. Out of those 47 patients, 25 were treated with daptomycin prior to the revision of the protocol and the remaining 22 were subsequent to the protocol revision.
- The average length of stay for the patients treated with daptomycin prior to the revision of the protocol was 10.4 days, and 13.6 days post-protocol revision.
- Duration of therapy for daptomycin was similar among the two studied groups. Patients prior to the protocol revision were treated for an average of 4.04 days and patients after the protocol revision were treated for 3.77 days on average.
- The average CPK level for patients prior to the protocol revision was 117.95 U/L, versus 154.32 U/L for patients after the implementation of the revised protocol. There was an outlier in the post-protocol group with a CPK level of 1,620 U/L. This elevated level may be attributed to factors other than daptomycin. This one patient had an elevated temperature of 39.4 degrees Celsius in combination with osteomyelitis.
- Overall, the estimated cost of therapy was lower in the post-protocol revision group \$14,469.85 (n=22), compared to \$19,584.41 (n=25) prior to the protocol revision. The estimated cost savings in the study period was \$5,115.56.
- Limitations of this study were the small sample size, short-term study period, and a lack of direct correlation between daptomycin therapy and length of stay.

CONCLUSION

- The average duration of therapy for both study groups did not differ significantly in this study. This supports the existing literature stating that using adjusted body weight to dose overweight patients does not decrease the effectiveness of daptomycin.
- The protocol that is utilized at SMH proposes benefit not only for the patient but also for the institution. These benefits include decreasing unnecessary exposure to higher doses of daptomycin for patients and cost savings for the institution.

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DISCLOSURES

- Authors of this study have the following to disclose concerning possible financial or personal relationships with commercial entities that may have an impact or influence in the subject matter of this presentation:
 - Lorenzo M. Porras, Jr.: Nothing to disclose
 - Andre Moses: Nothing to disclose
 - Hasib Sheikh: Nothing to disclose