

# A Multisite Review of Concomitant Use of Daptomycin and Statins and the Effect on CPK

Bethany Lehman DO<sup>1</sup>, Carlos Isada MD<sup>2</sup>, Elizabeth Neuner PharmD, RPh<sup>3</sup>

<sup>1</sup>Internal Medicine, South Pointe Hospital, Ohio

<sup>2</sup> Infectious disease, <sup>3</sup>Pharmacy, Cleveland Clinic Foundation, Ohio

**Contact Information:**  
Bethany Lehman DO  
Resident, Internal Medicine  
lehmanb@ccf.org  
Carlos Isada, MD  
Staff, Infectious disease  
isadac@ccf.org  
Elizabeth Neuner, PharmD  
Staff, Pharmacy  
neunere@ccf.org

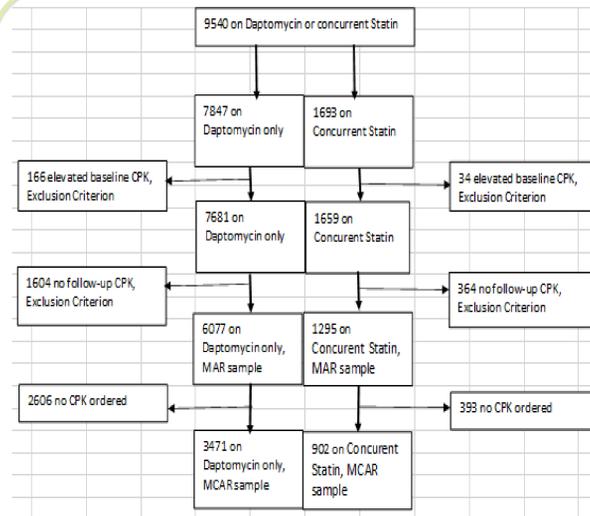
## Introduction

- Daptomycin has been associated with increased creatine phosphokinase (CPK) due to muscle injury leading to myalgias and muscle weakness. Statins have proven to cause the same effects.
- This study investigated the use of daptomycin and statins together to determine if there was an increased risk of CPK elevation.

## Methods

- Multisite retrospective case study of patients at the Cleveland Clinic Health System who received daptomycin.
- Inclusion criteria: daptomycin therapy with an initial CPK and a follow up CPK.
- Exclusion criteria: patients with a baseline CPK elevation
- Primary outcome: was there an increased incidence of elevated CPKs in patients receiving daptomycin plus a statin versus daptomycin alone.
- Secondary outcomes: incidence of myalgias, myositis, or rhabdomyolysis
- To estimate the association between CPK elevation and daptomycin therapy controlling for other risk factors, logistic regression was used to analyze data. Statistical significance was determined at alpha of 0.05.

## Results



	P Value	Odds Ratio	95% Confidence Lower	Interval Higher
Daptomycin only	0.029	1.627	1.052	2.514
Female	0.215	0.815	0.589	1.127
White	0.363	2.511	0.345	18.254
Black	0.213	3.561	0.483	26.257
BMI	0	1.032	1.017	1.047
MI	0.184	1.46	0.836	2.551
CKD	0.175	1.246	0.906	1.714
Myalgias	0.363	0.728	0.367	1.444
Rhabdomyolysis	0.001	4.61	1.862	11.413

The total incidence of CPK elevation in the population was 4.1%.

**The incidence of CPK elevation in the daptomycin group alone was 4.4%.**

**The incidence of CPK elevation in the daptomycin and statin group was 2.89%.**

**The daptomycin only group is 1.63 times more likely to have an elevated CPK when compared to the daptomycin and statin group.**

The daptomycin alone group had consistently higher hazard rates when compared with the daptomycin and statin group.

## Discussion

Each agent has a separate mechanism leading to CPK increase.

In statins, the risk of muscle injury has been related to genetic variations and drug interactions. There is an increased risk of muscle toxicity in patients with SLCO1B1 polymorphism. Elevated CPKs are found in drug-drug interactions with medications that are strong inhibitors of the CYP3A4. The leading mechanism on statin induced myopathy is thought to be secondary to abnormal mitochondrial function with depletion of CoQ10 leading to decreased protein synthesis which may lead to myopathy.

In daptomycin, the mechanism of muscle injury is not completely understood. It is known that daptomycin is cleared by the kidneys and does not affect the CYP3A4 isoenzymes in the liver. Animal models have suggested a link between daptomycin and sarcolemma damage.

## Conclusion

- There was no elevated risk of CPK elevation in the daptomycin and statin therapy group compared to daptomycin therapy alone.
- Daptomycin and statins are likely safe to use together.

## References

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