Introduction
Negative Pressure Wound Therapy (NPWT) has been an effective modality to treat a variety of complex acute and chronic wounds. Its mechanism of action has numerous well documented advantageous effects in the healing continuum including decreasing the bioburden. However, in complex cases managing it becomes necessary to add an antimicrobial agent to assist in reducing the bacteria load and manage infection. Silver products have been utilized in conjunction with NPWT to achieve this result including silver foam and silver contact layers with varying healing results. The goal of this case series was to evaluate DACC technology as an alternative to silver products in conjunction with NPWT to manage the bioburden, manage infection, and achieve healing results in complex wounds.

Method/Material
DACC (Dialkylcarbamoyl Chloride) is a fatty acid derivative that irreversibly binds with bacteria through a physical mode of action (MOA) versus a chemical MOA. When the bacteria bind with the DACC coated dressing the bacteria are irreversibly bound, become inert, don’t replicate as readily, and as a result effectively reduce the bacterial load.1, 2

Results
This case series will discuss three complex cases which include necrotizing fasciitis, a dehisced sternal incision, and an infected spinal surgery. All patients were severely compromised with multiple comorbidities and decreased nutritional status. All patients were treated with DACC as a primary contact layer under NPWT and had standard dressing changes per NPWT protocol. All patients showed signs of healing with the combination of DACC and NPWT including an overall decrease in wound volume, decrease in drainage, and no evidence of infection despite their compromised status.

Conclusion
All three compromised patients with complex wounds were managed more effectively with the combination of DACC technology and NPWT versus historic results with NPWT alone or in combination with a silver product. The patients showed healing results with no progression of infection. DACC is an effective alternative to silver products to manage the bacterial burden in conjunction with NPWT.

References

CASE 1
57-year-old female that was admitted to Sparrow Specialty Hospital for gluteal necrotizing soft tissue infection, sepsis, and multi-organ failure following two initial debridegements. On arrival the patient was intubated and also diagnosed with pneumonia and UTI. She was taken to the operating room and underwent wide debridement of necrotic tissue to normal appearing margins, including down to muscle on the right gluteus. After debridement, topical treatment was initiated with a DACC WCL followed by NPWT which was changed per protocol. The patient continued to show improvement as evidenced by decreasing wound margins, a decrease in necrotic tissue and control of the infection.

CASE 2
78-year old female admitted to Sparrow Specialty with CHF and a dehisced sternal surgical incision with exposed bone following a CABG procedure. She has a history of HTN, CAD, substance ETSH abuse, and is a 60 year cigarette smoker. Treatment was initiated with a DACC WCL followed by NPWT and changed per protocol. The patient responded well to treatment as evidenced by decreasing wound size, exudate, and slough.

CASE 3
68-year old female with significant past medical history of a L3-S1 lumbar fusion surgery complicated by infection, spine abscess and bacteremia s/p surgery with multiple admissions, wound debridement's and attempts for wound closure who presented to Sparrow Hospital with complaints of malaise, nausea and diarrhea. The patient was in septic shock secondary to the complicated history of lumbar spine surgery with infection/abscess and bacteremia. Patient admitted to the unit for septic shock and was seen by Plastic Surgery and the wound team. She was started on topical treatment of a DACC WCL followed by NPWT which was changed per protocol. She responded well to treatment with decreasing wound margins and control of infection. The patient was able to obtain a skin graft with wound closure.