

# Managing Superficial Thermal Cold Injury (Frostbite) in the Inpatient and Outpatient Setting using Sodium Carboxymethylcellulose Dressing with Ionic Silver\* (Na-CMC-Ag) as the Primary Dressing

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## Clinical Problem

Frostbite is a common and serious injury in Interior Alaska; deep (beyond subcutaneous tissues involving tendons, muscles, nerves and even bone), and superficial injuries (skin and subcutaneous tissues), are usually present on the same body part. Most patients show complete healing of superficial frostbite with traditional treatment of daily or twice daily mechanical debridement, application of antibiotic ointment, non-stick dressings and gauze. Similarities in the pathophysiology of thermal burns and ischemia/reperfusion injury prompted the use of Na-CMC-Ag dressings based on significantly less procedure pain, fewer dressing changes and debridement, decreased hospital stays/readmissions, and less overall cost as seen in burn care with advanced dressings.<sup>1</sup>

## Approach

Areas of frostbite were debrided as indicated then Na-CMC-Ag dressings were applied and left in place until detachment or removal. **Patient A:** 70 YO male frostbite to bilateral hands, knees, and feet from temperature of -40<sup>0</sup> F. Dressings applied post injury day (PID) 1. PID 11, 95-100% resolved. **Patient B:** 24 YO male, frostbite bilateral feet from temperature of -25<sup>0</sup>F. Initial care was traditional protocol. He was admitted to service on PID 5. Debridement and Na-CMC-Ag dressings initiated by CWCN PID 5, discharge PID 6. PID 25, 100% resolved. **Patient C:** 56 YO homeless male with frostbite bilateral feet in temperature of -30<sup>0</sup> F compounded by burn over frostbite from kerosene heater. He was admitted to service on PID 1 with traditional protocol. Debridement and Na-CMC-Ag dressings began on PID 3. Discharge PID 4. On PID 13 superficial frostbite injuries were 60-90% resolved. In these patients the dressing was applied using the partial thickness burn protocol of leaving the dressing in place for up to 14 day and allowing it to spontaneously detach.

## Conclusions

Pain control using frostbite care protocol with Na-CMC-Ag dressings was reported excellent or very good in these patients. The ability to discharge the patient from the hospital and no readmissions was viewed as favorable and may have lowered the cost of care. Maximizing outcomes with attention to available resources and cost, supports standardizing care with evidence based protocols in both the rural and urban areas.

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## References

1. Caruso DM, Foster KN, Blome-Eberwine SA, et al. Randomized Clinical Study of Hydrofiber Dressing with Silver or Silver Sulfadiazine in the Management of Partial-Thickness Burns. *J Burn Care Res* 2006; 27(3):298-309.

### Bibliography

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### Product Notations:

\*AQUACEL® Ag dressing

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Case A:



PID 1 - (R) Right Hand



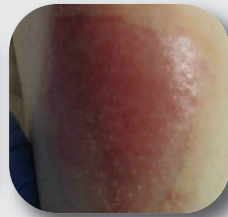
PID 11 - R Hand



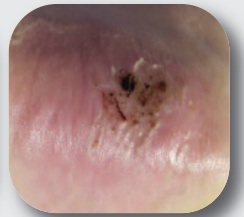
PID 1 - (L) Left Hand



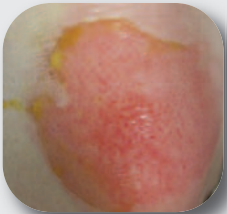
PID 11 - L Hand



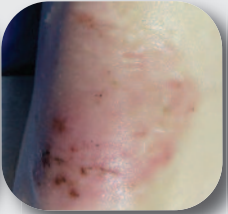
PID 1 - R Knee



PID 11 - R Knee



PID 1 - L Knee



PID 11 - L Knee



PID 1 - R Foot



PID 1 - R Foot



PID 11 - R Foot

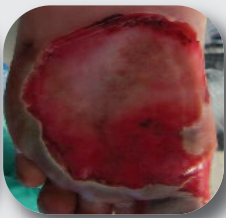


PID 11 - R Foot

Case B:



PID 5 - L Foot



PID 5 - L Foot



PID 5 - R Foot



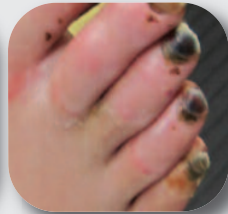
PID 5 - R Foot



PID 25 - L Foot



PID 25 - L Foot



PID 25 - R Foot



PID 25 - R Foot

Case C:



PID 3 - L Foot



PID 13 - L Foot



PID 3 - Plantar Surface of L Foot



PID 13 - Plantar Surface of L Foot



PID 3 - R Foot



PID 13 - R Foot