Prophylactic antibiotic use following an out of hospital cardiac arrest

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Background

Around 30,000 Out of Hospital Cardiac Arrests (OOHCA) are attended to by medical professionals each year[1]. Despite advances in post-ROSC care, survival remains as low as 1 in 10. Targeted temperature management is accepted practice in optimising survival and neurological recovery once admitted to Critical Care, despite increased risks of VAP. The ANTHARTIC trials and other similar studies suggest prophylactic antibiotics reduce the incidence of early-onset VAP and could lead to shorter ICU/hospital stays[1].

Method

Retrospective analysis was conducted on routine patient data for adults admitted to ICU following OOHCA with ROSC between September 2019-20 and November 2019-2020 respectively. Data collected included age, Arctic Sun use, positive sputum cultures within 5 days, ventilator hours, ICU/hospital days and survival outcomes.

A departmental guideline outlining post-arrest management was published in March 2019 and was available to all staff on the local intranet.

Figure 1: Organisms grown in the first 5 days

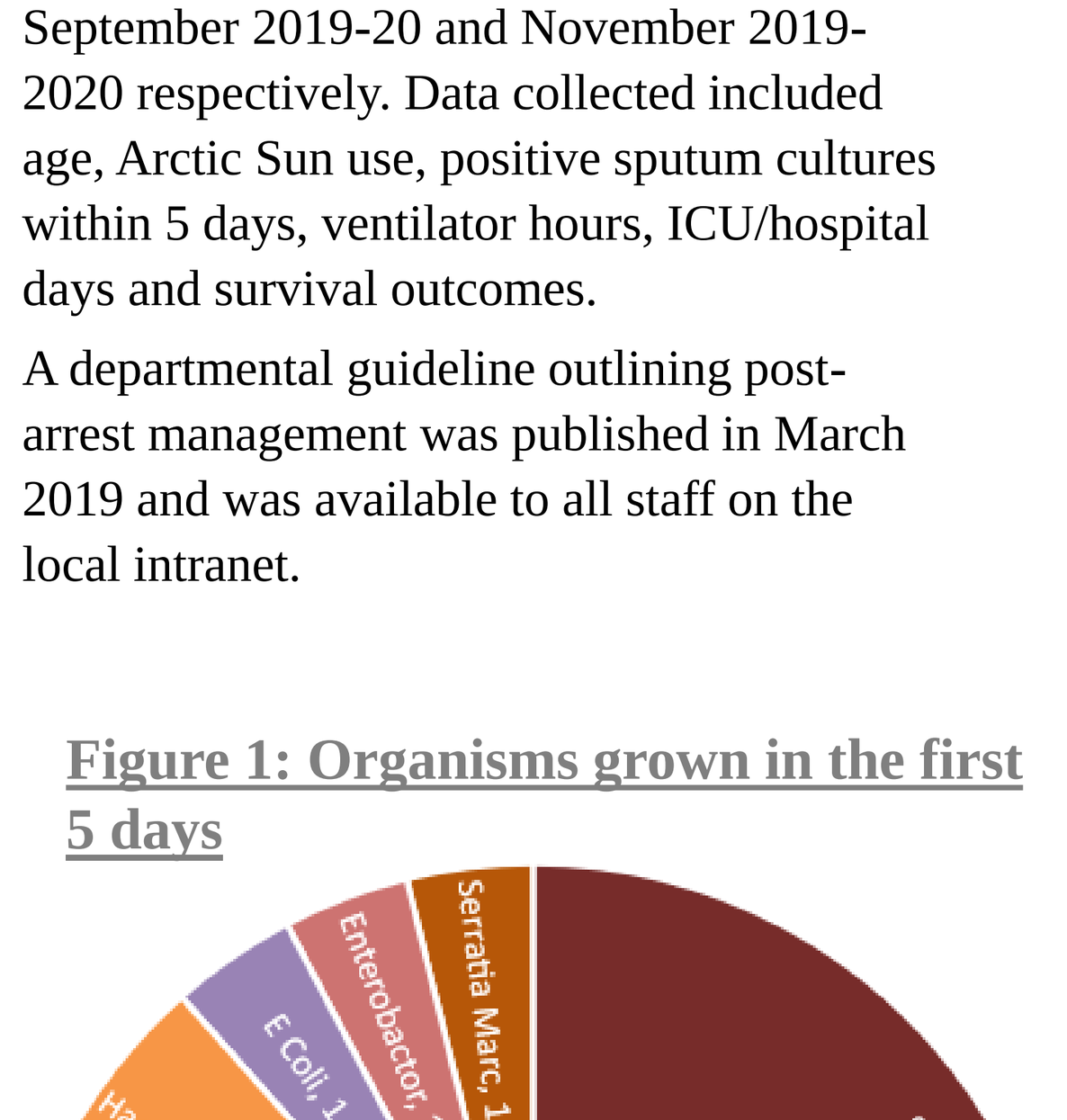

Figure 2:CPIS over the first 5 days

In Summary

- Average age was 55.
- 87% were started on prophylactic antibiotics on day one of admission, an improvement on 84% the previous year.
- In the most recent cycle, the Arctic Sun was utilised in 40.9%, on average seven hours into their admission.
- 29% grew at least one potentially harmful organism in their sputum in the first five days, with two more colonising shortly beyond this period.
- Average daily CPIS scores trended upwards linearly from 1.84 on day one, to 2.67 on day five.
- 40.9% survived to hospital discharge, spending an average of 86.26 hours on a ventilator, six days on ICU and 14.7 days in hospital.

Conclusion

The majority of our patients are started on prophylactic antibiotics within 12 hours of admission. A significant proportion of patients grew potentially harmful organisms, which alongside raised CPIS supports a high incidence of VAP. Similar results were seen in both cycles, supporting the use of prophylactic antibiotics amongst these patients.

References

[1] British Heart Foundation. 2021. *Out-of-Hospital Cardiac Arrests*. [online] Available at: <https://www.bhf.org.uk/what-we-do/policy-and-public-affairs/transforming-healthcare/out-of-hospital-cardiac-arrests

[2] Bruno François M.D., Alain Cariou M.D., Raphaël Clere-Jehl, M.D. et al. Prevention of Early Ventillator-Associated Pneumonia after Cardiac Arrest. New England Journal of Medicine 2019; 381:1831-1842