BACCN: Professional Advisors Report June 2022
Catherine Plowright & Louise Stayt

Item	Update
NICE	• No current guidelines under review
CPD	• Some CPD hours awarded for regional online events
HSIB	• Arterial line investigation report now completed in draft. Currently under review
Professional Group Representation	• CC3N National Critical Care Competency and Education group: Louise Stayt • UK Critical Care Research Forum: Suzanne Bench and Louise Stayt • Organ Donation Committees: Trish McCready • CC3N Nursing Associate Group – Trish McCready – no recent update • Critical Care Outreach National competencies Karin Gerber • ICS Wellbeing Steering Group (Thriving at work) – Louise Stayt & Catherine Plowright • NHSE Enhanced Perioperative Care Working Party- Louise Stayt • UKHACC – Trish McCready and reports filed on BACCN website
Research study support	• These continue to be submitted and are reviewed by us and publicised accordingly • Research governance guidance is in progress- to be ratified at June Board 2022 (See attached)
Review of BACCN Statement	• Prescribing statement in progress. • Aim to get it completed in 2022 in time to start the next one • Working on draft publications for NICC • Will be presented at Belfast October 2022 if we have a slot
Grants / Awards	• All approved awards on Board resources on website • BACCN support post regular reminders on SM
Critical Care SusNet	• Aim of SusNet is to foster environmental sustainability within critical care. • Useful webinars can be seen https://www.ics.ac.uk/sustainability • COP26 Abstract Competition at BACCN Belfast. Unfortunately none submitted were suitable for acceptance • Memorandum of Understanding signed by Nicki 15/2/22. Awaiting ICS sign off. HOWEVER, as it has been many months and ICS still not signed it as they wanted a few alterations the amended MOU is still to be signed off fully and BACCN need to see it again before final sign off
Ethnic minority winner 2021	• Louise has met Jasminara several times and she is making good progress.
Dragons Den 2021 winner	• Lisa McIlmurray has submitted a report (attached) and to date has fulfilled all we have asked her. She has submitted abstract for conference and awaiting outcome
UK Health Alliance on Climate Change More info at http://www.ukhealthalliance.org/	BACCN accepted in March 2022 and Trish represents BACCN on this group. Reports on BACCN website

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BACCN Learning Resources	• LCS has circulated some suggested changes to the working party. Awaiting comments and finalisation (See attached)

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Research Governance at the BACCN: DRAFT 080622

As a national professional organization and charity, the BACCN has a responsibility to encourage and nurture the highest possible standards of research in critical care. Researchers in the critical care community have a responsibility to conduct their research in the most conscientious and responsible manner possible. Good research practice must be adhered to in the planning, conduct, reporting, dissemination, and application of any research endeavour.

To promote good research practice, the BACCN will only fund and support research projects that comply with the following standards.

- All research projects involving human participants obtain appropriate ethics approval (E.g., University Ethics, Health Research Authority, Local Research and Development). The Health Research Authority decision tool can help assist you with identifying what kind of ethics approval is required. Available here: http://www.hra-decisiontools.org.uk/research/

- The processing of research information containing personal data must comply with the principles of General Data Protection Regulation (2018) and the research proposal must include a clear plan of how personal data will be stored and managed. Information available here: https://gdpr-info.eu/chapter-2/

- All applicants must demonstrate that they are appropriately qualified (or supervised by an appropriately qualified person) to conduct the proposed research

- Research proposals must demonstrate a clear pathway for reporting research misdemeanours or adverse events

- Professional accountability must be maintained and appropriate local approvals and insurance/sponsorship obtained as necessary

- Applications for grants, research awards or research support must be completed in full and include all documentation requested.

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Dragon's Den 2021 Project Final Report

The abundance of real time data streaming technology available in ICU equipment is vastly under-utilised. It could be more efficiently used to support clinicians if exploited by electronic decision support systems (eCDS). In recent years, clinical artificial intelligence has rapidly evolved from simple 'screen and alert' eCDS tools, to highly sophisticated systems that can act autonomously. Automated weaning modes have been integrated into high-end ventilator brands since soon after the millennium; despite their success in safely reducing duration of ventilation, their utilisation to date has been low. [1] Lack of transparency and loss of control sited as frequent reasons for not utilising these technologies in everyday ICU practice. This suggests that eCDS systems that both alert *and* direct clinicians based on best evidence, while allowing final decision-making autonomy to reside with the clinician, would be a more acceptable compromise for all involved. The Attitude study team set out to develop and evaluate an eCDS system to support clinical staff in weaning patients from invasive mechanical ventilation.

The ATTITUDE eCDS tool is a stand-alone device at the patient bedside designed to collect and screen data from the electronic health record, bedside monitor, and ventilator in real time. The computer algorithm compares the patient data to physiological parameter thresholds in an established ventilator weaning protocol. When the patient reaches or breaches thresholds the device generates an alert in the form of a pop-up message on the display screen and also 'nudges' with recommendations as to how to progress the wean for this patient. For example, the message may identify tidal volumes have exceeded 8mls/kg and ask if the clinician would like to consider weaning pressure support by 2cm H_2O. The tool will not be capable of automatically adjusting ventilator support parameters. The clinician will be required to indicate their choice of action to dismiss the pop-up message. The eCDS will commence analysing the patient data when the ventilator is changed to a support mode of ventilation and will continue to generate alerts with prompt messages until the patient is reduced to extubatable settings. It is hypothesised that this eCDS tool will support clinicians, particularly non-ICU and junior ICU clinicians, and optimise the duration of IMV.

This prototype project sought to determine ICU clinician acceptability of a proposed eCDS nudge tool prior to conducting a feasibility study in a single centre adult ICU. To maximise acceptance of the eCDS nudge tool we required input from the clinical staff who would ultimately use this tool in their everyday practice. They understand the nuances of their pre-existing healthcare culture and are best placed to advise on modifications to the interface design to overcome anticipated challenges prior to the planned feasibility study. [2, 3]. Funding from the BACCN Dragon's Den award was used to design and host prototype workshops to achieve this.

ICU clinicians (n=150) engaged in focus group workshops (n=9) exploring their perception of the eCDS nudge prototype device interface and communication elements. Six of the focus group workshops took place during a series of mandatory study days for ICU nursing staff in an attempt to ensure a diverse range of nurses had the opportunity to provide feedback and suggestions for refinement of the eCDS device. The initial proposed design developed by the computer engineers at ECIT (School of Electrical Engineering and Computer Science) is shown

on the left in the image below. Feedback was utilised to enhance the interface appearance and additional requested interactive features. Development was an iterative process conducted over a 3- month time frame. Additions, modifications and refinements were completed on a weekly turnaround prior to the next focus group workshop. The interface was simplified and made more visually appealing over a series of draft versions to achieve the resulting prototype, image to the right below, for testing in the planned feasibility study.

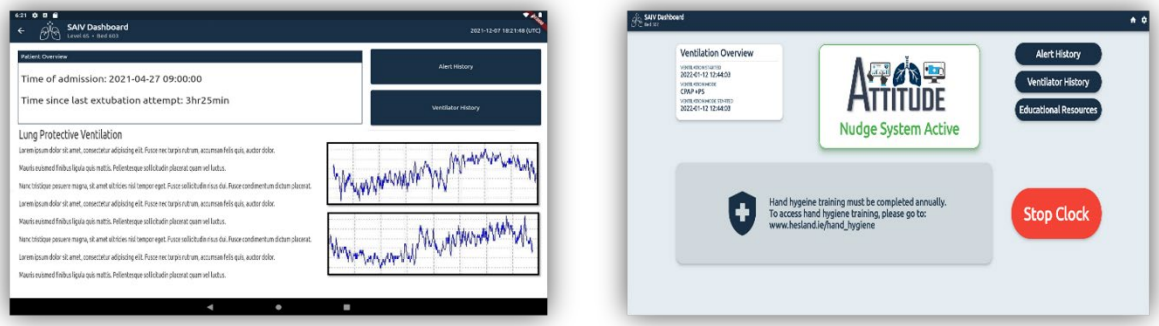

Fig.1 eCDS Tool in original proposed format *(left)* and current refined prototype format *(right)*

Data gathered from interviews conducted as part of my PhD project highlighted challenges with situational awareness and communication on a unit level in an all-single side room environment (32 beds). In addition to the eCDS nudge tool bedside device (Fig. 1) a unit-level communication dashboard (Fig.2), linked to the eCDS nudge tool device, was created. This device facilitates real-time multidisciplinary collaboration and improved situational awareness throughout the four ICU zones situated over two floors. Senior staff expressed concerns regarding non-ICU support nurse and newly orientated ICU nursing staff failing to act on a recommended wean or progressing with a weaning recommendation without consulting senior staff for further advice. The addition of the unit-level dashboard linkage to the bedside devices allows the senior nursing and/ or medical staff to have overview of alerts currently active on all bedside devices from a central station outside the isolation rooms. An example of this is shown in Fig2. Below. When an alert is generated on a bedside device, the bottom green bar icon changes to a thick red bar with text displaying the physiological parameter requiring attention. Senior staff can address the alerts with less experienced bedside staff and offer further education to support future decision-making autonomy.

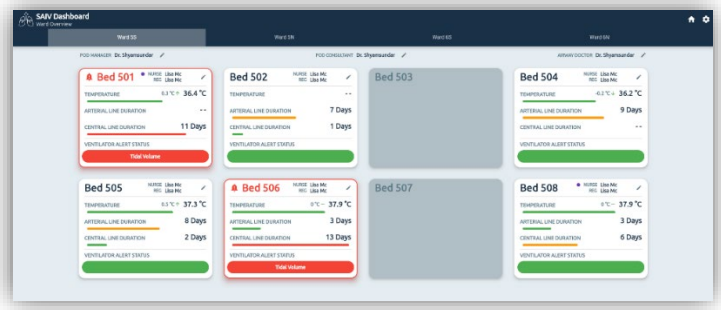

Fig.2 Ward level communication dashboard

The development and prototype testing process has not been without challenges. The prototype sessions were conducted with stored ICU patient data to simulate alerts and facilitate ICU clinician exposure to various features of the bedside and ward level devices. We anticipated

overcoming various hurdles with regards cyber security and Health Trust data regulations and allowed ample time for this process. However, when multiple devices were linked into the live patient data feed, we discovered the IT engineer in ECIT had misunderstood a major component of the device. The programme written only allowed the device to run the algorithm on one patient dataset at a time. They had not anticipated the need to analyse data on up to 32 patients simultaneously. The need to rewrite the programme to accommodate multiple devices analysing multiple patient datasets simultaneously has delayed our anticipated start date for the feasibility study by 10 weeks.

As a result of effective prototype sessions engaging a wide range of ICU staff in the refinement of the eCDS nudge tool, 32 bedside devices and 4 unit-level communication dashboards will be ready for feasibility testing in a 32-bedded ICU in late summer 2022. I would like to thank the Dragon's Den Committee and BACCN Board for providing the funding to facilitate the prototype workshop sessions. Without the funding our feasibility study would have proceeded with an inferior eCDS nudge bedside device and faced several unforeseen challenges. The ward level dashboard was not part of the original project brief and has been developed as a direct consequence of feedback received in interactive sessions with the multidisciplinary team in RICU. Our feasibility study has been enriched by your investment in our technology development.

Reference List

1. Rose, L., et al., *Automated versus non-automated weaning for reducing the duration of mechanical ventilation for critically ill adults and children: a cochrane systematic review and meta-analysis.* Crit Care, 2015. **19**: p. 48.
2. Kanagasundaram, N.S., et al., *Computerized clinical decision support for the early recognition and management of acute kidney injury: a qualitative evaluation of end-user experience.* Clin Kidney J, 2016. **9**(1): p. 57-62.
3. Harrison, J.D. and M.S. Patel, *Designing Nudges for Success in Health Care.* AMA J Ethics, 2020. **22**(9): p. E796-801.

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Learning Resources:
1. Delete the COVID-19 Nurse Educational Resource Centre (is it possible to archive the contents somewhere just in case all hell breaks loose?). However, keep the Staff Wellbeing tab and all its contents and put in learning resources for members.

2. In Learning resources for members tab, delete the National Guidance tab (the link is broken anyway, and we have the position statements and national guidance elsewhere)

3. Within the Learning resources for members tab, create a new tab called **"Useful learning resources"**
Include the following in this tab:

- CC3N Step Competency Framework. Available here https://www.cc3n.org.uk/step-competency-framework.html
- Health Education England provide a wide range of learning programmes available on the e-learning for healthcare platform. Available here: https://www.e-lfh.org.uk/programmes/
- Oxford Handbook of Critical Care Nursing: Gain free access to this essential guide. Perfect for those new to critical care. https://oxfordmedicine.com/view/10.1093/med/9780198701071.001.0001/med-9780198701071
- Life in the Fast Lane: This is a great website that provides a multitude of educational resources in emergency and critical care. Available here: https://litfl.com/ccc-critical-care-compendium/
- The Bottom Line: A useful summary and appraisals of recent intensive care research. Available here: https://www.thebottomline.org.uk/

Other useful websites:
- Intensive Care Society: https://www.ics.ac.uk/
- Faculty of Intensive Care Medicine: https://www.ficm.ac.uk/