

The *SPRinT* programme: high quality in-situ interprofessional team training leading to improved patient care and service delivery 2008-2012



M Burmester, M Lane, A Desai, J Cotterill, J Combes, K de Costa, O Ghez, S Jaggar, S Kakat, I Atamanyuk, I Saeed, N West,
S Afzal, P Knight, L Menadue, E Evans, S Uddin, J Woods: Paediatric Cardiorespiratory Intensive Care Unit, Royal Brompton Hospital, London, United Kingdom



The *SPRinT* programme has been a voluntary effort founded by clinical faculty to meet a need for increased awareness of team training and its relevance to improved patient safety and outcome. This programme has kept going because it works, is successful, and forms a vital service within the clinical arena. Deanery trainees have recognised the contribution of this training through their PMETB scoring, PICU nurses are increasingly recruited because they have heard of the success of the programme. The *SPRinT* directors were additionally the initial impetus together with clinicians from the Royal Marsden to develop the new combined skills and simulation centre.

Introduction

- We identified a need to improve the quality of care for paediatric cardiorespiratory patients through highly trained interprofessional faculty providing high fidelity in-situ simulated training.

Quality of Interprofessional Team Working

- A training framework of simulated SULs to identify failures of team performance, improve team performance through teaching crisis resource management including leadership and team-working skills with debriefing by trained faculty.

Quality of specialist clinical skills

- Provide targeted clinical skills training according to needs identified during in-situ training.

Optimize Systems and Mitigate Risk

- Identify latent threats/system errors within workplace during simulated events.
- Rectify errors through structured risk-management strategy and system changes.

Methods

- We founded the Simulated Paediatric Resuscitation Team Training (*SPRinT*) programme, consisting of 14 interprofessional, cross-departmental Harvard-trained faculty. *SPRinT* involves embedded in-situ simulation team training providing interprofessional courses in paediatric areas.

Team training

- In-situ courses: 2 hours every 2 weeks
- Development of novel tools to meet speciality simulation requirements
- Crisis Resource Management workshops
- Debriefing sessions for real PICU resuscitation events

Clinical Skills

- Training Workshops

System Optimisation.

- Documentation, investigation and mitigation of all latent threats identified during courses

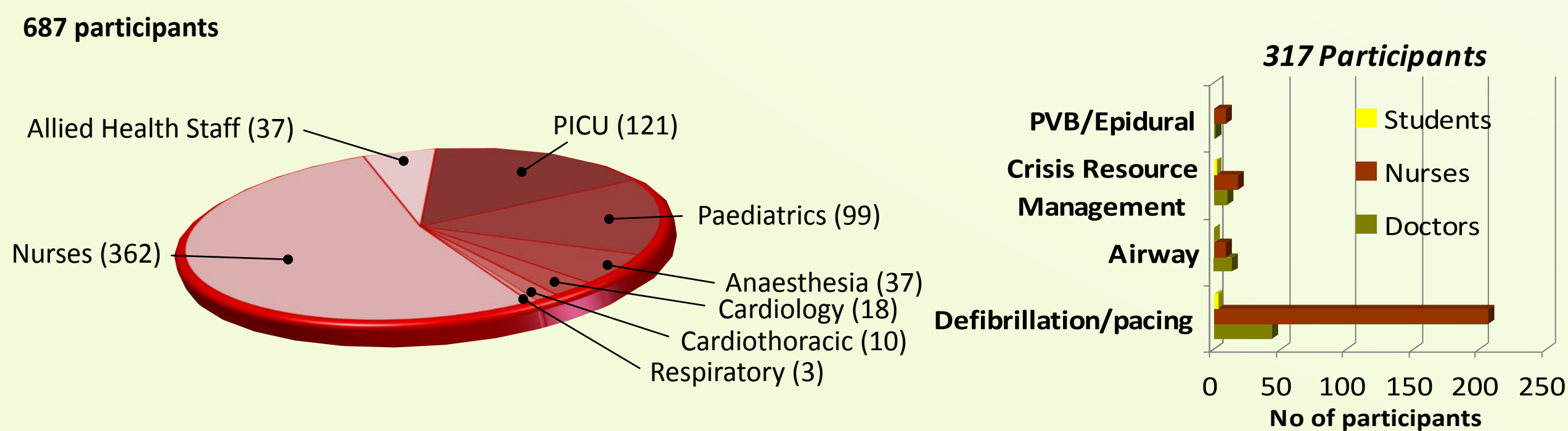
Results

123 In-situ *SPRinT* courses

Structure:

1. CRM training and introduction to simulation area and equipment
2. Real-time *Scenarios* with accompanying data/echo/radiology and real equipment/medications
3. *Video-assisted debriefing* by 2 facilitators emphasising adult learning techniques using advocacy–inquiry method
4. *Brainstorming*: Discussion of latent threats identified, to reform practice/service delivery RCN/RCPCH/RCoA/RCS accredited; 2 CPD points/course

Protected *SPRinT* training time for 2 PICU nurses/1 Charge nurse/1 HCA/1 anaesthetic and 1 PICU registrar/1 ST3 trainee + Dedicated PICU *SPRinT* room.



60 In-situ 40 minute Clinical Skills Workshops

- Courses evaluated with +ve impact on non-technical skills>90%, technical skills>70%
- PMETB Report for paediatrics 2010, 2011- 2 green stars related to *SPRinT* training.

Wider outcomes of *SPRinT* programme

Academic educational output

- 15 abstracts presented internationally
- 3 publications
- 6 national/international conference workshops

Training Days delivered

- 2010: Trust-wide day “*SPRinT*ing from disaster”- 40 NHS staff live simulation.
- 2011: Open-Chest ECMO Crisis at “The future of CT surgical training in the UK” cardiothoracic training day, Royal Society of Medicine.
- *SPRinT* teaching days North Thames core curriculum course for PICU Fellows, evaluated >85% +ve.

SPRinT facilitator interprofessional team training courses - 100% rated >4/5

- 3 Introductory 3dy courses -30 participants.
- 2 advanced 5dy courses - 10 participants

Combined teaching at London School of Paediatrics

- 4 ST3/4 courses *SPRinT* programme named Gold standard in ‘In-situ’ Team Training

Quality Assurance for *SPRinT* faculty

- Full immersion team-training - Management/Change Consultant (past vice president JP Morgan)
- Children’s Hospital Boston Simulator Programme-Harvard University, graduate and advanced training courses. Assessed by “Enhancing Clinical Teaching Through Observation and Reflection” representative.
- Full immersion team-training, debriefing assessed + Education Day, Guy Hirst , Atrainability



Wider outcomes of *SPRinT* programme

Mitigation of system errors through identification of latent threats

- *Improving Patient Safety Through Mitigation Of Latent Threats Identified In An Embedded In-situ Simulation Programme.* Knight, Burmester, Desai, Cotterill, Afzal, Combes, Lane.
- *SPRinT* has contributed to safety culture development by successfully identifying 31 latent threats in PICU/paed wards/PACU/HDU/CT, with category analysis highlighting 54 areas for improvement:-
- 50% latent threats were organisation/strategic and resources,
- 50% were education/training, equipment, work environment, medication and systems/protocols.

Development of cardiothoracic innovative tools

- *Impact of an open-chest ECMO model for in-situ simulated team training-a pilot study.* I. Atamanyuk, O. Ghez, M. Lane, I. Saeed, J. Hall, T. Jackson, A. Desai, N. Pool, M. Burmester. 26th EACTS 2012 Barcelona.
- We developed an affordable realistic open-chest ECMO model for training in emergency management of post-cardiac surgery child.
- Face validity, teamwork and confidence in attending future real events was effective.
- *Impact of an in situ multi-professional simulation team training program in pediatric cardiac arrest postcardiac surgery: a pilot project.* Lane M, Allen M, Ghez O, Desai A, Kakat S, Pool N, Cotterill J, Costa K de, Combes J, Burmester M. Pediatric Anesthesia 22 (2012) 916–922.
- We developed the patented open-chest Harley baby and open-chest adult mannequin that enable realistic emergency chest opening, pericardiocentesis.
- Face validity & impact on teamwork was effective, participant confidence was increased in attending future events. Increased model realism facilitated involvement of senior team members to replicate true teams.

Long-term impact on clinical services

Positive impact of *SPRinT* programme on interprofessional team:-

- *Impact of an Embedded Simulation Team Training Programme in a Paediatric Intensive Care Unit: a prospective, single-centre, longitudinal study.* Stocker M, Allen M, Pool N, De Costa K, Combes J, West N, Burmester M. Intensive Care Med (2012) 38:99–104
- Impact on non-technical skills was >90%, and on technical skills >70%

Better teamwork during real resuscitations

- *A feasibility study of team performance in real life resuscitation events.* L Menadue, A Desai, M Stocker, N Pool, M Allen, J Combes, K De Costa, M Burmester. Int Care Med 37, Suppl 1 (2011):67.
- Sessions subjectively improved teamwork in > 67% of cardiac arrest team members, closed loop communication with clarifications was identified for prioritising within the training programme.

Targeted emergency defibrillation workforce training

- *Impact of an in-situ Interprofessional Simulated Defibrillation Team Training Programme in PICU.* Kakat S, Burmester M, Lane M, Cotterill J, Combes J, Desai A, Menadue L. PCICS, Miami 2012.
- Latent threat identification of poor performance in emergency defibrillation led to a targeted training programme to ensure high-quality patient care.

Cross-Departmental Interactions

- Blood Transfusion to test existing Catastrophic Blood Loss CBL) through simultaneous simulated CBL across the 2 departments. Protocol deviations and system errors were identified and rectified.
- Cardiothoracic department to develop tools to engage senior surgeons in realistic scenarios:
 - paediatric and adult chest-opening model (patented, and televised–BBC)
 - Open–chest ECMO model

National/International Legacy

- *SPRinT* members seconded internationally to Australia, Switzerland and India
- *SPRinT* programme visited by Australian, German, Indian doctors and UK dentists and invited to teach at other NHS/ private hospitals
- On-going collaboration with national and international Simulation Leads
- *SPRinT* featured on BBC One Show and Radio London

Hospital Culture Change

- Hospital-wide acceptance of *SPRinT* programme/relevance of CRM
- New departments
- Paediatric and adult cardiothoracic innovative tools
- Invited European Association Cardiothoracic Surgery training day
- Haematology engagement in catastrophic blood loss scenario
- Invited to present at Regional Transfusion Committee education day
- Development of adult simulation
- Training adult staff during *SPRinT* introductory/advanced facilitator courses

Working liaison with patients’ parents and hospital charity

- Parents of children who have been in PICU, Friends of Royal Brompton and Octavia Appeal, have been actively involved in *SPRinT* programme development. They have expressed their interest when they have observed in-situ *SPRinT* courses to the extent that they have provided financial support.
- 4 *SPRinT* Team demonstrations/presentations to parents/Friends of Royal Brompton

London Deanery STeLI (Simulated Technology enhanced learning Initiative) Educational Excellence Innovation Awards received for *SPRinT* programme

- 2010: Commendation for *SPRinT* - Simulated Paediatric Resuscitation Team Training Program.
- 2011: Productivity Award
- 2011: Winner for ‘cardiothoracic innovations for high risk in-situ embedded interprofessional team training’.
- 2012: Winner for Educational Impact Award
- 2012: Winner for Academic Activity Award

