

## Letter to the Editor

### Crew Resource Management to Improve Patient Safety

Crew resource management (CRM) is a quality improvement initiative which focuses on people but not technology, and CRM tools help in reducing non-technical human errors and performance gap.<sup>1</sup> The following patient is used to illustrate its clinical application. A full-term boy was born to a Group B Streptococcus carrier lady. He developed respiratory distress after birth. Physical examination reviewed tachypnea and subcostal retractions. Capillary blood gas showed pH: 7.353, PaCO<sub>2</sub>: 5.27 kPa, PaO<sub>2</sub>: 4.18 kPa. Post-ductal SpO<sub>2</sub> was 89-93% in first few hours. He received Continuous Positive Airway Pressure 6 cm H<sub>2</sub>O, 35% O<sub>2</sub> later without improvement and Chest X-rays showed streaky lung fields: The post-ductal SpO<sub>2</sub> remained around 90%. In senior round, critical congenital heart disease or persistent pulmonary hypertension was suspected. Pre- and post-ductal SpO<sub>2</sub> showed difference of more than 5% (88% vs 95%). A hyperoxaemia test showed both pre- and post-ductal SpO<sub>2</sub> <95%. Echocardiography showed total anomalous of pulmonary venous drainage at 24 hours of life. Surgery was successfully done on Day 3.

#### **The Commonly Used CRM Tools Include the Followings:**

1. Assertiveness (A): This is a skill in which individuals speak up, state their concern and assert their right with appropriate persistence irrespective of hierarchy while respecting the feeling of others until there is a clear resolution. Nurses should be assertive in informing borderline SpO<sub>2</sub> till a clear resolution is achieved.
2. Communication (C): Effective communication enables mutual and error-free understanding between sender and receiver. The two commonly used methods are ISBAR (Introduction, Situation, Background, Assessment, Recommendation) and Closed Loop Communication (CLC). The resident may use ISBAR to communicate with senior for advice and the resident-nurse dyad may use CLC for adjusting ventilator setting for borderline low SpO<sub>2</sub>.
3. Leadership and Followership (L): A good leader should clarify goals, inspire trust and unleash potentials among teammates and to align system so that the team can work better. For followers, they need to follow team's directives and to contribute S and A timely. Sometime, followers need take up leadership role if a situation deems necessary. In this case, the leader should perform debriefing to identify the team/individuals' performance gap and implement measures for improvement.
4. Situational Awareness (S): Staff may not understand SpO<sub>2</sub> <95% is suboptimal for a full term baby. In NICU, various SpO<sub>2</sub> limits are adopted for different populations. SpO<sub>2</sub> between 90-95% is for premature babies <28 weeks' gestation while SpO<sub>2</sub> >95% for full term babies or ex-premire >34 weeks.<sup>2</sup> Situation awareness includes the ability (i) to realise what is going on and what is likely to happen next; (ii) to realize if something happens unexpectedly, one needs to speak up; (iii) then to fix it. In this case, staff overlooked the borderline SpO<sub>2</sub> and accepted it as normal till senior round. If someone has better situation awareness, the patient would have been managed differently.

To err is human, CRM is an important remedy to improve patient safety and clinical outcome. These tools like ACLS should be taught in undergraduate and postgraduate medical curricula.

#### References

1. CRM Scenario Practice Course book. First Edition. Hospital Authority May 2014.
2. Askie LM, Darlow BA, Finer N, et al. Association Between Oxygen Saturation Targeting and Death or Disability in Extremely Preterm Infants in the Neonatal Oxygenation Prospective meta-analysis Collaboration. JAMA 2018;319: 2190-201.

KL Siu

Queen Elizabeth Hospital, Hong Kong SAR

Correspondence to: Dr KL Siu  
Email: siukl@ha.org.hk