The Impact of an online self-directed medical Crisis Resource Management course on perceived confidence and behavior
Frank N. Parisi, Vivek K. Moitra, MD, Jessica L. Spellman, MD, Ashley Kingon, A. Mauricio Matiz, David O. Kessler, MD, MSc

**Introduction**
Both aviation and medicine are professions in which high stakes decisions need to be made by a team in time-sensitive crisis situations. Crew Resource Management (CRM) is used in aviation to enhance communication, situational awareness, and decision-making. The principles of CRM can be adapted and applied to medicine to assist in Crisis Resource Management among health care providers.

**Purpose**
To assess the perceived change in student’s self-reported confidence across 4 domains after completion of an online Crisis Resource Management course:
- Communication
- Help-Seeking Behavior
- Situational Awareness
- Psychological Safety

**Methods**
Design: Prospective, longitudinal study using online courseware.
Population: 2nd year medical students at Columbia University prior to starting their clinical year.
Intervention: Online Crisis Resource Management Course and pre and post course surveys administered to students.
Outcome Measures: Students retain anonymity but matched to pre and post course data. Mean change determined across each domain using paired t-tests to assess change in perceived confidence.

**Results**
- Five students completed course and surveys.
- All students were female.
- Three students aged 18-24, Two students aged 25-34.
- Student’s perceived confidence increased across all four domains.

**Discussion**
This online Crisis Resource Management course can increase student’s perceived confidence across the four domains.
- Effective communication ensures information is transmitted to and received by the appropriate members of the team.
- Improved help-seeking behavior ensures that team members ask for help before the crisis deteriorates below an acceptable level.
- Situational awareness ensures that team members are assessing both themselves and their surroundings to make the most informed decisions.
- Psychological safety promotes a culture where team members can freely express their thoughts without fear of being silenced.

**Limitations**
- Only female students completed the course.
- Only 2nd year medical students were recruited.
- Study does not assess effects of course after clinical exposure.
- No external metrics to assess student performance in domains.
- Not designed to assess if improved performance across domains will lead to increased patient safety.

**Conclusion**
- This course can increase student’s perceived confidence across the domains, which could translate to improved teamwork in hospital setting.
- Simulation could be added to the course and assessments to monitor progress.
- Further studies are needed to:
  - Assess performance after clinical exposure.
  - Determine if increased confidence results in more effective teamwork.
  - Determine if improved teamwork improves patient safety.