



Application of Non-Technical Skills (Human Factor) Principles in the Operating Theatre

By Loh Huey Peng, Assistant Director, Nursing, Operating Theatre, Singapore National Eye Centre (SNEC)

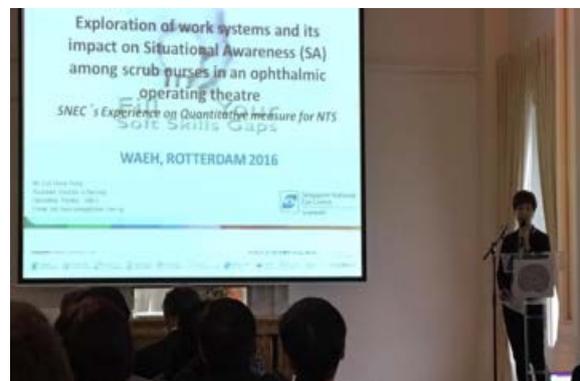
My interest in Non-Technical Skills (NTS), or human factors, began when I visited The Rotterdam Eye Hospital in Netherlands for the inaugural World Association of Eye Hospital (WAEH) meeting back in 2007. I was intrigued and fascinated by studies which applied aviation NTS training principles into the operating theatre, for example surgeons experiencing the role of a pilot. NTS is a combination of cognitive, social, and personal resource skills that complement technical skills and they are a crucial component in many high risk industries such as aviation, nuclear plants, and in my professional field, the operating theatre.

I realised NTS could potentially bridge a gap in adverse patient safety occurrences, a concern still prevalent today, more than 15 years after the Institute of Medicine first published the report “To Err is Human” in 1999. The report highlighted that many of such adverse patient safety events were attributed to failures in NTS rather than a lack of technical expertise. However, progress to assess, train, and improve NTS for similar high risk areas such as the operating theatre remains restricted. Identifying important non-technical skills and their associated behaviours underpin the development of future training programs in enhancing patient safety efforts.

That’s where my research comes in. I was determined to explore this area for my PhD despite its many challenges. Firstly, convincing fellow clinicians that this was a research area of significant impact and value was essential. I was fortunate to have support from my organisation as well as guidance from both my site supervisors, Dr Yin ShanQin, a human factor specialist and Dr Dirk De Korne, who came to Singapore from The Rotterdam Eye Hospital. Both are equally passionate in research about human factors in healthcare.



Ms Loh (3rd from right) with her NUS PhD classmates



Presenting her findings at World Association of Eye Hospital (WAEH)

Secondly, research and efforts to improve NTS itself remains challenging due to its highly subjective nature—conducting such research involves a long process of observation and transcript analysis. More significantly, it is limited by a lack of ability to measure its components objectively. NTS is neither easy to explain nor is it explicitly taught in academic curricula. Individuals are simply expected to develop such skills through experience on the job itself.

I decided to focus my research efforts around situation awareness (SA), one of the key components of NTS. In aviation, the emphasis of having good SA is the basis for safety. Diminished or poor SA can result in errors of judgement, carelessness, incomplete understanding, a lack of vigilance, and misperceptions or impaired recognition.

This, in turn, provides opportunities for slips, mistakes and errors. Preliminary findings have pointed to task overloads, poor communication, and a lack of leadership, lack of knowledge and also environmental influences; all of which have affected the attainment or sustenance of SA.

For example, poor SA and non-technical skill related errors within a high volume and rapid turn-over ambulatory setting have been shown to contribute in the wrong intra ocular lens (IOL) being implanted, which is one of the most widely reported adverse clinical events in the world.

As mentioned previously, NTS is not easy to teach. Existing methods of developing NTS in an individual includes didactic and simulation training, both of which requires extensive resources and cannot be conducted frequently. On the other hand, SA is an element that can be taught and practiced.

I hope to use novel platforms through gaming to deliver and train these NTS principles in a clinical setting such as the operating theatre. This platform may appeal and reach out to the younger, technology-savvy generation and shape the self-motivation required for continuous learning. One day, I aim to see NTS components incorporated in the orientation programs conducted before a staff member goes into actual clinical settings and that the role of gaming will serve an important function in healthcare training for all clinicians.

About the Author



Ms Loh Huey Peng is the Assistant Director of Nursing, Operating Theatre, at the Singapore National Eye Centre (SNEC). Her perioperative experience and background have given her opportunities to be actively involved in quality improvement, risk and patient safety management in SNEC. Ms Loh obtained her Masters in Health Administration and Advanced Diploma in Perioperative and is currently pursuing her part-time Doctoral of Philosophy studies at the Alice Lee Centre for Nursing Studies (ALCNS), National University of Singapore (NUS).

Have research stories, photos or opinions to share? Want to deconstruct science for the man on the street? Send your article to office.research@singhealth.com.sg or click [here](#) for more information.

This bulletin is brought to you by SingHealth Office of Research

To be added to the mailing list or to submit your event, email office.research@singhealth.com.sg.