

CAPITALIZING ON TRANSACTIVE KNOWLEDGE IN THE ICU

By Cindy L. Munro, RN, PhD, ANP, and Richard H. Savel, MD



The provision of high quality, patient-centered care for critically ill patients and their families is grounded in clinical knowledge and enhanced by effective health care teams. Three important and interrelated factors influence the application of clinical knowledge at the bedside. First, each member of the health care team possesses personal knowledge. Second, the team as a whole has knowledge that can be shared among team members. Third, there are sources of data and information that can be used by individuals or the team to build knowledge. The likelihood for excellent care is enhanced when we capitalize on the synergy among individual personal knowledge, team knowledge, and data sources.

Personal Knowledge

Each clinician brings a wealth of individual knowledge to the bedside. A core set of disciplinary knowledge serves as the clinician's foundation for planning, providing, and evaluating care. Competency in this basic disciplinary knowledge is demonstrated through licensure examinations; as an example, the National Council Licensure Examination for Registered

Nurses measures safe and effective entry-level nursing practice. Certifications (for example, CCRN) indicate that the individual has mastered additional specialty knowledge. In addition to core disciplinary knowledge, each individual has further clinical knowledge gained through experience or continued learning. Together, these constitute personal knowledge. Personal knowledge, directly held by individuals, is indispensable to clinical practice but it is not sufficient. Clinicians should never operate on personal knowledge alone. Personal knowledge alone cannot yield optimal outcomes, because no one can ever have complete knowledge in isolation.

Transactive Memory Systems

Fortunately, it is not necessary for each person in a group to know everything! Sharing of knowledge within a team of providers enables individuals to augment personal knowledge by accessing the knowledge of others in their group. In every critical care unit, there are people who are viewed by their peers as experts in a particular area, and who are informally consulted to augment each clinician's personal knowledge. Wegner and colleagues^{1,2} described this collective storing and sharing of knowledge within dyads or groups as a *transactive memory system*. A transactive memory system takes advantage of each team member's specialized knowledge. Each person

©2014 American Association of Critical-Care Nurses
doi: <http://dx.doi.org/10.4037/ajcc2014389>

“In order to be effective, transactive memory systems require that team members recognize and respect each other’s individual expertise.”

holds some knowledge that other members don’t; the sum of knowledge within the group is distributed throughout the group members, and can be accessed as needed by each member. In a transactive memory system, clinicians do not need to know everything directly. Rather, each person in the transactive memory group acts as a repository for some set of specific information that can augment the personal knowledge of each group member.

Research indicates that members of transactive memory systems remember where information is stored rather than remembering the information itself, and do not retain information that is easily accessible through another member of the group.^{1,3} Networks of linked computers are a useful analogy to transactive memory systems; if each computer can access memory of other computers in the network, the same information does not have to be stored on every hard drive, but can be accessed from other computers in the network as needed. In transactive memory systems, some elements of expert knowledge are delegated to each member of the group. Knowledge about who knows what (whom to go to for specific information) replaces a need for every person to directly remember the information.

Respect and Recognition of Expertise

In order to be effective, transactive memory systems require that team members recognize and respect each other’s individual expertise. Further, processes for knowledge sharing have to be understood and coordinated in order for team members to retrieve information from others. These elements align with AACN’s standards for establishing and sustaining healthy work environments.⁴ For example, the Skilled Communication standard (“Nurses must be as proficient in communication skills as they are in clinical skills”) emphasizes respectful and effective information sharing that is critical to providing and

receiving knowledge within a transactive memory system. The True Collaboration standard (“Nurses must be relentless in pursuing and fostering true collaboration”) speaks directly to the importance of mutual interdependence among health care providers. Valuing individual expertise is essential to transactive memory and is reflected in the Meaningful Recognition standard (“Nurses must be recognized and must recognize others for the value each brings to the work of the organization”). Transactive memory systems benefit team effectiveness and positively impact the work lives of team members. A recently published study of French nurses found that transactive memory (along with perceived organizational justice and perceived organizational support) was a significant predictor of nurses’ quality of work life.³

The Power of Communal Knowledge

There is power in the communal knowledge of a highly competent group of providers, and that power is enhanced when patients and families are active partners in care. We often focus on clinical knowledge sharing within our own discipline. Whereas collaboration within one’s discipline is important, expanding the communal knowledge net to include interdisciplinary colleagues is even better. Interactions among interdisciplinary colleagues bring different sets of expertise and personal knowledge to the group’s knowledge store. Although there are commonalities in health care knowledge, including colleagues from a variety of disciplines enhances a transactive memory system by providing access to a wider realm of disciplinary research, literature, and experience. Diversity extends the shared group perspective. Inclusion of the patient and family in the clinical transactive memory system is critical to delivery of patient centered care. Patients and families holds expert knowledge about their values and preferences that providers must recognize, honor, and incorporate into care.

Emerging evidence suggests that interpersonal transactive memory systems provide a pattern that individuals also apply to acquisition of factual information from the Internet. The Internet becomes part of the transactive memory, with individuals off-loading responsibility for information storage to a computer (or cloud) rather than storing it in personal knowledge. This has been described as the “Google Effect.”^{1,2}

About the Authors

Cindy L. Munro is coeditor in chief of the *American Journal of Critical Care*. She is associate dean for research and innovation at the University of South Florida, College of Nursing, Tampa, Florida. **Richard H. Savel** is coeditor in chief of the *American Journal of Critical Care*. He is director, surgical critical care at Maimonides Medical Center and a professor of clinical medicine and neurology at the Albert Einstein College of Medicine, both in New York City.

As occurs within human transactive memory systems, knowledge about where to find the information when needed becomes more important than retaining the information. The long-term implications of incorporating computers into our transactive memory systems remains controversial. One exploratory study in older adults found that experienced Internet users had enhanced activity in the regions of the brain controlling decision making and complex reasoning while searching the Internet compared to brain activity while reading a book.⁵ However, the risk is present that clinicians will join the ranks of those whom Wegner and Ward^{2(p.61)} describe as “people who feel they know more than ever before—when their reliance on the Internet means that they may know ever less about the world around them.”

Trust in Teammates

More research is needed to understand transactive memory systems (both human and machine) in clinical settings. How might we harness their power to improve patient outcomes? While we informally acknowledge expertise within our team, we should strive to understand each person’s personal knowledge and identify unique areas of expertise—we should know who knows what. We should foster an environment that encourages transactional thinking. Respect for individuals and the disciplines represented in the team contributes to trust.

Trust in teammates provides safety to seek and provide knowledge and strengthens transactive memory systems.⁶ Seeking colleagues’ thoughts and perspectives in clinical situations and engaging others in problem solving will develop our transactive skill sets. It is important to recognize personal strengths, but it is equally important to relinquish the impossible task of being the expert on every topic, and to acknowledge expert knowledge in others.

Above all, we should remember to use our transactive memory partners appropriately; computer resources and the Internet are excellent sources of data and information; however, colleagues are better sources of clinical expertise and wisdom. Patients and families deserve no less from their providers than optimal synergy among personal knowledge, shared knowledge among the health care team, and robust sources of information and data.

The statements and opinions contained in this editorial are solely those of the coeditors.

FINANCIAL DISCLOSURES

None reported.

eLetters

Now that you’ve read the article, create or contribute to an online discussion on this topic. Visit www.ajconline.org and click “Submit a response” in either the full-text or PDF view of the article.

REFERENCES

1. Sparrow B, Liu J, Wegner DM. Google effects on memory: cognitive consequences of having information at our fingertips. *Science*. 2011;333(6043):776-778.
2. Wegner DM, Ward AF. How Google is changing your brain. *Sci Am*. 2013;309(6):58-61.
3. Brunault P, Fouquereau E, Colombat P, et al. Do transactive memory and participative teamwork improve nurses’ quality of work life? *West J Nurs Res*. 2014;36(3):329-345.
4. AACN Standards for Establishing and Sustaining Healthy Work Environments: A Journey to Excellence. American Association of Critical-Care Nurses website. <http://www.aacn.org/WD/HWE/Content/hwehome.content?menu=hwe>. 2005. Accessed July 29, 2014.
5. Small GW, Moody TD, Siddarth P, Bookheimer SY. Your brain on Google: patterns of cerebral activation during internet searching. *Am J Geriatr Psychiatry*. 2009;17(2):116-126.
6. Smith-Jentsch KA, Kraiger K, Cannon-Bowers JA, Salas E. Do familiar teammates request and accept more backup? Transactive memory in air traffic control. *Hum Factors*. 2009; 51(2):181-192.

To purchase electronic or print reprints, contact American Association of Critical-Care Nurses, 101 Columbia, Aliso Viejo, CA 92656. Phone, (800) 899-1712 or (949) 362-2050 (ext 532); fax, (949) 362-2049; e-mail, reprints@aacn.org.