

Summer 2008: Measuring Rehabilitation Outcomes

The National Institute on Disability and Rehabilitation Research (NIDRR) funds a Rehabilitation Research and Training Center (RRTC) that is housed within the Center for Rehabilitation Outcomes Research (CROR) at the Rehabilitation Institute of Chicago (RIC).

One of the main goals of the RRTC on Measuring Rehabilitation Outcomes and Effectiveness is to develop better tools for measuring rehabilitation outcomes. This edition

of *CROR Outcomes* is devoted to several of our research projects related to that goal.

We also share information about an international symposium planned for October 14 -15, 2008 related to measuring community participation as a rehabilitation outcome. We hope you will join us in October!



*Allen W. Heinemann, PhD
Director, CROR*

Dr. Rita Bode: Celebrating the Career of a Distinguished Measurement Expert

Rita Bode, a senior research scientist at the Center for Rehabilitation Outcomes Research (CROR), has spent the last twelve years applying her expertise in statistics and psychometrics to a variety of rehabilitation and quality of life projects. Now, as the September date of her retirement quickly approaches, Bode says that one of the most satisfying aspects of her experience at the Institute has been the opportunity to explore clinical research in a collaborative atmosphere.

"While I'm not a clinician, I have found that my skills are a nice complement to theirs, and we both bring something unique to the table," she explained. "It has been such a great experience working with people that have such good ideas. They have hunches about what will work best, and I've been able to help by narrowing down the right questions to ask and analyzing the data."

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Computer Adaptive Testing: Making Rehabilitation Care and Research More Efficient

Rehabilitation hospitals across the country routinely ask patients to complete surveys about mobility, functional status, community participation, and other outcomes measures before and after discharge. These surveys are an important part of clinical research efforts to improve and document the effectiveness of rehabilitation care. Unfortunately, because rehabilitation outcomes data collection relies on completion of fixed-length, paper-and-pencil surveys, or tests using server-based PCs, collecting this information can be burdensome for patients and their families, and costly for care providers and researchers.

According to Dr. Trudy Mallinson, Associate Director of the Center for Rehabilitation Outcomes Research (CROR) at the Rehabilitation Institute of Chicago (RIC), the need for increased data collection efficiency is significant. Staff time is limited and productivity demands are growing, Mallinson said. In addition, patients would appreciate more flexible ways of providing feedback to

"Computer-adaptive testing is a much less time consuming way to gather information from patients. [It] is easy and convenient for patients because it is so short."

Dr. Jin-Shei Lai, Psychometrician

rehabilitation programs.

Dr. Allen Heinemann, Director of CROR, is excited about the use of surveys that are administered using computer adaptive testing (CAT). This approach can significantly minimize the burdens and costs associated with

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Inside

Upcoming Symposium

Join us in Toronto October 14 - 15, 2008. A symposium on the measurement of participation is being held prior to the 2008 ACRM-ASNR Joint Educational Conference. See *Page 4* for more information.

ENH-CORE

CROR collaborates with a number of scientists from the Center on Outcomes, Research and Education (CORE) at ENH Research Institute. Details on *Page 3*.

Our Publications

A few highlights of recently published articles and book chapters and presentations our are listed inside.

The Center for Rehabilitation Outcomes Research (CROR) conducts studies measuring how medical rehabilitation and health policies impact people with disabilities. The Center also examines methods to increase effectiveness and efficiency of the rehabilitation process. CROR is a part of the Rehabilitation Institute of Chicago – ranked #1 Rehabilitation Hospital for 18 Consecutive years by U.S. News & World Report.



Rehabilitation Institute of Chicago
#1 Rehabilitation Hospital in America

Community Participation Instrument: More Efficient Outcome Measure In Development

The Americans with Disabilities Act of 1990 placed critical importance on an individual's participation in society regardless of their level of impairment. According to Dr. Allen Heinemann, Director of the Center for Rehabilitation Outcomes Research at the Rehabilitation Institute of Chicago, the importance of community participation cannot be overstated.

"What people with disabilities typically care about most is getting on with their daily lives," Heinemann said. "Being able to participate fully in society can be a significant concern for people with disabilities." Community participation is an important rehabilitation outcome,

that follow-up surveys play an important role for post-acute care providers as a way of understanding how patients are doing after they leave inpatient care. "It's really important that we get a picture of how rehabilitation helps people when they return home," Heinemann said. The information from these surveys can be used to monitor quality of care and also inform service planning.

Typically, post-acute rehabilitation providers conduct follow-up surveys at about 3-6 months after discharge. Follow-up generally involves telephone or mail-in surveys that ask about everyday function and satisfaction with care. While these are important concerns,

these approaches to ensure patient outcomes, and the effectiveness of new interventions, are measured more efficiently.

One of the four primary research projects of the Rehabilitation Research and Training Center (RRTC) on Measuring Rehabilitation Outcomes and Effectiveness aims to shed light on the feasibility of CAT in rehabilitation outcomes measurement, said Heinemann, principal investigator of the RRTC.

Heinemann – along with co-principal investigators Dr. Richard Gershon, director of psychometrics and informatics at the ENH Center on Outcomes, Research and Education (ENH-CORE) and a faculty member of the department of psychology at Northwestern University, and Dr. Jin-Shei Lai, a psychometrician at ENH-CORE, and a licensed occupational therapist and research associate professor at Northwestern University Feinberg School of Medicine – will lead the two-year, NIDRR-funded study.

"If community participation is the ultimate, long-term goal of rehabilitation care, it is exceedingly important to have a valid, reliable, and convenient tool to measure it."

Dr. Allen Heinemann, Director

not only for people with disabilities, but for a variety of stakeholders – including family members, caregivers, insurance companies, government-funded health care programs, as well as doctors, nurses, and other rehabilitation stakeholders.

Despite its importance, outcomes data regarding community participation is not something that is routinely collected by rehabilitation providers across the country. Collecting outcomes data from individuals who have received rehabilitation care can be a time-consuming and arduous process for patients, researchers and providers. Surveys are long, by necessity, to encompass all of the potential answers a patient might offer to describe their post-rehabilitation outcomes. The excessive length of these surveys can sometimes act as a deterrent, prompting patients to forego providing much-needed feedback.

Dr. Allen Heinemann, explained

community participation is a key issue for rehabilitation recipients who have returned home and are resuming roles as worker, friend, club member, and citizen. Asking questions about all aspects of community participation involves an extensive list of questions, yet not all questions would be relevant to all respondents. This makes traditional approaches to answering surveys, where all respondents must answer all questions, time-consuming and inefficient.

The need to develop more efficient ways to measure rehabilitation outcomes has emerged as one of the main priorities of the National Institute on Disability and Rehabilitation Research (NIDRR). In a 2004 notice, NIDRR stressed the need to consider new methods of data collection such as item response theory (IRT) and computer adaptive testing (CAT) as strategies to improve

Specifics of the study

In an earlier phase of this NIDRR-funded study, researchers led by Heinemann gathered data from a range of stakeholders – including consumers, caregivers, payers, clinicians and policy makers – and used it to develop an instrument that could effectively measure community participation. Using the data from that study, researchers created an item bank of questions and algorithms that will allow for CAT.

Unlike standard assessments that contain a large number of questions which are asked of everyone, CAT tailors the presentation of each successive question according to the person taking the test. In this way, the CAT system allows surveys to be administered with far fewer items and equally high levels of precision.

At this point in the study, said Heinemann, patients have a choice between a phone interview,

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CROR Shares Common Goals with the Center on Outcomes, Research and Education at ENH Research Institute



Photo: Dr. David Cella

The driving force and most basic mission at the Center on Outcomes, Research and Education (CORE), ENH Research Institute, is providing patients with a voice in care and ensuring their input is taken into account.

“Our core value, at its most simple, is that patients’ voices need to be clearly articulated in determining if treatments are of value,” said David Cella, PhD, the center’s executive director, based in Evanston, Illinois.

“To accomplish that, we try to create scientific, standardized measures for

things like pain, social activity and well-being. We try to cover, from a measurement perspective, all of the things that are important to people who are affected by health problems and undergoing treatments.”

In addition to this overarching mission, CORE has four main goals, Dr. Cella said. Three of those aims are specific to ENH – generate and interpret outcomes data; demonstrate cost savings and increased quality of care; and facilitate outcomes research at ENH – while the final goal of conducting externally-funded health outcomes research is on a national level.

To accomplish this goal, CORE researchers often collaborate with other hospitals and centers, including the Center for Rehabilitation Outcomes Research (CROR) at the Rehabilitation Institute of Chicago.

“CROR is a very compatible research center with a keen interest in measurement, and we’ve bonded around having a common interest in the importance of measuring health outcomes,” Dr. Cella explained. “Our strengths are nice parallels to their strengths. We’re strong in cancer, mental health and pulmonary research, and they are strong in rehabilitation and neurological conditions. We have an almost non-overlapping set of interests that complement each other very well.”

PROMIS

One of largest projects currently underway at CORE is the Patient-Reported Outcomes Measurement Information System (PROMIS) – an effort funded by the National Institutes of Health (NIH) aimed at creating item banks that can be used to study patient outcomes for a variety of chronic medical conditions, explained David Victorson, PhD, a research associate at CORE and a licensed clinical psychologist.

As well as creating item banks for variables such as pain, fatigue and emotional distress, PROMIS researchers will also develop computer adaptive tests (CAT), and eventually set up a web-based repository of those tests.

“We’re trying to standardize generic measures of important symptoms and functional abilities from the perspective of that patient for use across a wide range of chronic conditions including acute, outpatient, and rehabilitation,” said Dr. Cella.

CORE’s work on PROMIS includes collaborative research with Allen Heinemann, PhD, CROR’s director, and Rita Bode, PhD, a senior research scientist at CROR. PROMIS is only one of several projects in which Dr. Bode, a statistician and psychometrician, analyzes items to ensure they are accurate measurements and are not affected by outside factors such as race and gender.

PROMIS is unique, said Dr. Victorson, because up until this point, there has been tremendous diversity in measurement. For instance, two different stroke trials might utilize different measures for patient outcomes.

“The goal is to create a platform where we’re all using the same metric and speaking the same language,” said Victorson. “We want the item banks to be easy to use and applicable to lots of different conditions.”

One of the most important features of PROMIS, said Dr. Cella, is the focus on computer adaptive testing (CAT) – a form of testing that tailors each question from the item bank based on an individual’s previous responses. Using mathematical algorithms, the computer is therefore able to assess a patient’s level of fatigue, for instance, with relatively few questions, he added.

“If a person answers an item and says he has trouble getting to the bathroom by himself, it’s a waste of time to ask if he can walk down the hall or jog around the block,” Cella explained. “This can be especially sensitive for people with functional limitations, and you haven’t learned anything new from asking all those extra questions.”

With CAT, on the other hand, users who access web-based tests will be able to administer them quickly and get an accurate, precise score.

“The computer knows which question won’t provide any additional information because it picks only from a certain set of items, much like a physician does during a clinical interview,” Dr. Cella added. “You can’t ask everything, nor should you.”

Neuro-QOL

In addition to PROMIS, CORE is also working on a five-year project to study quality of life for individuals with neurological disorders. Funded by the National Institute of Neurological Disorders and Stroke (NINDS), Neuro-QOL is an effort to develop an outcome assessment tool for people with common neurological conditions including stroke, epilepsy, Parkinson’s disease, and multiple sclerosis, Dr. Victorson explained.

The project is in its fourth year and researchers have begun to test some of the measures, he said. Neuro-QOL is another project on which CORE collaborates with RIC.

“Neuro-QOL is similar to PROMIS, but it is specific to neurology,” Dr. Cella said. “RIC has been involved in looking at stroke survivors using their stroke database, and their involvement in that aspect of the project has been central.”

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Acknowledgements

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Comments?

Your opinions are important to us. If you have a comment or suggestion regarding our research or the *CROR Outcomes* newsletter, please email your comments to hdemark@ric.org.



Community Participation (Continued From Page Two)

paper or a web-based version of the survey. The assessments are not yet computer adaptive and patients must complete all of the items. Approximately half of the patients approached agree to complete the instrument, he explained. Researchers are in the second half of the two-year data collection phase of the study, and once the instrument is validated, patients will have the option of completing a CAT-based instrument.

“That’s exciting because we’ll be able to administer only a few questions and still accurately measure the level of community participation,” said Heinemann. “Still, it will be limited only to those patients that have Internet access.”

After the CAT version of the participation instrument is available, the researchers will also configure the survey for integrated voice response (IVR) administration, and this will enable even greater numbers of patients to take the shorter version.

“Using integrative voice response means that patients who don’t have internet access can still follow-up with adaptive testing,” said Gershon. “They can press numbers on their telephone keypad for their answers and the computer will narrow their questions in

the same way.”

During a one-year period of assessment, researchers will collect data from RIC centers of care as well as Craig Hospital, Alexian Brothers Medical Center, St. Margaret Mercy Hospital, Herrin Hospital, Southern Illinois Healthcare, Ohio State University, Illinois Masonic Medical Center, Blessing Hospital, and St. Joseph Regional Medical Center in South Bend, Ind. Some of the respondents will be assigned to the CAT version of the instrument, some will take the IVR CAT version, and the rest will complete the long survey, Heinemann said.

Then respondents will also answer questions aimed at determining their level of satisfaction with the version of the interview. Participating centers are only committed to using the CAT instruments until the end of the study in 2009, and they can then decide whether to continue to utilize them at their sites. At that time, the assessment will also be made available to other rehabilitation programs.

Three advantages of CAT

There are three specific issues that inspired the data collection project,

according to Heinemann. First, researchers wanted to find a way to reduce the burden that a long survey places on respondents.

“Rehabilitation facilities always want feedback, of course, but it can be very expensive in terms of the time it takes patients to complete these instruments,” Heinemann said. “We wanted patients to finish in a few minutes, if not less.”

Computer adaptive tests can also help centers save time and money they might otherwise have to spend on telephone interviews and analysis. Accrediting entities mandate the collection of outcomes data, added Heinemann, and this option can make that process much easier.

Finally, patient feedback allows rehabilitation centers to improve their services and identify those interventions that have proved effective.

“If community participation is the ultimate, long-term goal of rehabilitation care, it is exceedingly important to have a valid, reliable, and convenient tool to measure it,” Heinemann said. “Such an instrument would allow clinicians and researchers to assess and attend to needs that patients have, which would help them achieve better outcomes.”

Symposium On Measuring Participation

The Rehabilitation Research and Training Center on Measuring Outcomes and Effectiveness is hosting an “International Symposium on Measurement of Participation in Rehabilitation Research” on Tuesday, 14 October and Wednesday, 15 October 2008. This is a pre-meeting symposium to the 2008 American Congress of Rehabilitation Medicine and American Society of Neurorehabilitation Joint Educational Conference in Toronto, Ontario, Canada at the Delta Chelsea Hotel, October 15-19, 2008.

What is the symposium about?

This symposium will examine the construct of participation and its measurement, and nurture the development of an international consortium on the measurement of this important outcome by bringing together leaders in the field and establishing working groups on the key issues of participation measurement: conceptualization, operationalization, environmental influences, and personal characteristics.

Who should attend?

Researchers and clinicians interested in exploring the development and application of participation measures should attend this symposium.

How do I register?

Space is limited to 100 attendees. For registration information, please visit http://www.acrm.org/annual_conference. For additional information, contact Allen Heinemann at (312) 238-2802, or email a-heinemann@northwestern.edu.

Computer Adaptive Testing (Continued From Page One)

collecting outcomes data. Although it has become standard use for many achievement and certification tests, CAT has only recently begun to be employed in health and rehabilitation services. CAT electronically adapts tests to each individual, introducing new questions based on answers to previous ones, and tailoring the test accordingly.

The end result, said Dr. Richard Gershon, director of psychometrics and informatics at the Center on Outcomes, Research and Education (CORE), ENH Research Institute, and a faculty member of the department of psychology at Northwestern University, is surveys that are far shorter than those currently in use. This means less of a burden for both clinicians administering surveys, and patients taking them. More importantly, he added, accuracy is not sacrificed in the process.

No two tests are the same

“Everyone gets a test that is custom-tailored to them,” Gershon explained. “The goal in the past was to measure things like community participation with a survey that contained 100 items. Now, in many instances, we’re able to cut that number of items down to five or six. A survey that once took more than 20 minutes can now be completed in less than five minutes.”

With CAT, a patient who seldom leaves his home except for medical visits is asked a different set of questions than someone who is actively involved in the community, Mallinson explained. Even though both patients are asked about different types of activities and respond to a different number of items, each of their surveys is drawn from the same pool of items. Because the tests are tailored specifically to each patient, they aren’t burdened with answering questions about functions or tasks that don’t apply to them, she added.

How CAT works

In order to develop a CAT, the entire item pool must first be calibrated. This is done by administering all of the possible questions to a large enough sample to obtain stable item statistics. Researchers at CROR are in the process of administering a fixed-length community participation instrument to a sample of 1,000 people with disabilities. When data collection is complete, the entire item bank will be mapped on a common scale.

An example of an “item map” on Page 7 illustrates a handful of the community participation items currently being tested at CROR. On the right side of the scale, items used to gauge differing levels of community participation are ranked in hierarchical order. Items that indicate high-levels of community participation, which are usually the most difficult to endorse, appear at the top of the scale. Items that are indicative of low levels of community participation – and are the easiest to endorse – appear at the bottom of the scale.

The vertical line in “item map” is analogous to a ruler. After the “ruler” has been developed and all of the items on it have been validated, researchers can administer a handful of items from the pool, targeted to each respondent. Based on their responses, researchers can be fairly certain they have a good idea about the level of participation for the person being measured.

In other words, they must be sure of exactly what each item is measuring, and where each item would be relative to one another. For that, RIC depends on psychometric experts like Dr. Rita Bode, senior research scientist, to analyze each item.

A computer program is being developed using this information so that after placing all of the items in an order from more to less, the computer algorithm can be used to focus on items close to the respondent’s level of participation. The program is able to identify the right area on the “ruler” immediately after the respondent completes the first question, said Gershon.

The computer program uses data from each subsequent response to choose the next item, and then continues to select items until the respondents’ level of participation is measured with the desired amount of precision.

“The computer is assessing which question will give the most information about this person, based on evaluations of those previous questions,” Gershon said.

How certain do you need to be?

“Developing a computer adaptive test requires quite a bit of analytic work, Heinemann said. “Yet, the benefits of a computer-adaptive test are well worth the effort. In the long run, it becomes much easier to see where a patient would be on that scale using just a few items that are targeted to a person’s level of participation.”

The information gathered from patients will be used to examine outcomes of rehabilitation services. However, that information might also be useful in determining whether community services are needed. When measuring outcomes, accuracy is important, but precision becomes even more critical if the survey is used to decide health care services eligibility. Before administering a CAT, researchers or clinicians must decide what level of precision they need, added Heinemann, and that will dictate the minimum number of items respondents need to answer.

Tailored testing benefits patients and providers

First and foremost, CAT is a much less time consuming way to gather information from patients, said Dr. Jin-Shei Lai, a psychometrician at ENH-CORE, and a licensed occupational therapist and research associate professor at Northwestern University Feinberg School of Medicine.

“CAT is easy and convenient for patients because it is so short,” said Lai. “We needed a half hour or more for some surveys and now we can get similar precision levels with much fewer items and less time.”

Tailored testing also ensures the questions administered actually apply to the examinee. With the long form survey of community participation, for instance, a person who has a high level of participation has to answer many items intended for those with low participation, said Gershon.

“It’s a waste of time and in some instances, it can actually offend people, especially when you’re asking question after question about physical activity to someone who has just said they have difficulty getting around,” he explained.

“We have always given community participation surveys to everyone that walks in the door, and that took a half hour,” Gershon said. “Now, in that amount of time, I can ask questions about depression and pain, and these results will show up right away when the patient is being treated.”

CAT in use

Computer adaptive testing within health and rehabilitation care is still in its infancy, said Gershon, but several research projects are examining the method. Researchers on one of CROR’s primary research projects will utilize CAT to administer a community participation instrument. CAT is also being used by both RIC and ENH-CORE in the Patient-Reported Outcomes Measurement Information System (PROMIS), which measures health outcomes for patients with chronic diseases. CAT is also being used at ENH-CORE for determining patients’ health literacy.

Cleveland Clinic recently chose to imbed the computer adaptive tests from PROMIS in several of their clinics, which is one of the first implementations of CAT in a non-research setting, said Gershon.

“When a place like Cleveland Clinic decides to use this, it says a lot,” he said. “We’re hoping to see it in more hospitals and clinics soon.”

Dr. Rita Bode (Continued From Page One)



Bode's work alongside clinicians bears mentioning, she said, because she actually spent much of her career working outside of health services research. In fact, after completing a bachelor's degree in psychology at DePaul University, the life-long Chicago resident went on to spend more than 20 years developing educational achievement tests and affective measures.

Then, while completing a PhD in education with a specialization in measurement and statistics at the University of Illinois at Chicago, Bode became involved with a group utilizing Rasch analysis – an approach that converts scores into equal interval measures in order to provide more accurate data. She applied and was accepted for a post-doctoral fellowship at RIC, and two years later, Bode was offered a position as a research scientist.

"That was really my first foray into rehabilitation" she explained.

A great deal of Bode's work at RIC has focused on projects related to the stroke population. For instance, she served as principal investigator on several projects that were part of a Rehabilitation Research and Training Center on Technology Promoting Integration for Stroke Survivors, which seeks to develop appropriate electronic systems – such as robotic devices – that will promote function and increase access to the community. In a project

under the current RRTC grant, Bode has utilized qualitative methods to develop therapist and stroke survivor surveys.

In addition, her work has also extended into many other research areas and projects including measuring manual ability, expanding analysis conducted on existing instruments, and identifying the most effective items to measure constructs like activity limitations and disease-specific impairment among different populations.

"Basically, I take these items and analyze the bejesus out of them," Bode said. "I look at them from every angle

During the past eight years, Bode has also worked on several item banking projects in collaboration with the Center for Outcomes, Research and Education (CORE) at Evanston Northwestern Healthcare (ENH). Some of these collaborative projects include the Patient-Reported Outcomes Measurement Information System (PROMIS), an effort aimed at developing item banks and questionnaires to measure health outcomes for a range of chronic diseases; CaPS, a PROMIS supplement specific to a cancer population; and Neuro-QOL, a project to develop a quality of life assessment tool for

"Part of the analysis is ensuring the items function the same way regardless of respondents' race, gender or other demographic group membership."

Dr. Rita Bode, Research Scientist

because what we want to see is how we can present these items so as to produce a meaningful result. Part of the analysis is ensuring the items function the same way regardless of respondents' race, gender or other demographic group membership. If the items do function differently, we omit them because we want measures that won't be affected by outside factors."

For example, some of the items administered to measure depression, such as crying, might be more prevalent among women than men. In that case, an item that asks about frequency of crying wouldn't be a good measure, said Bode, because it was affected by gender and not simply related to overall distress.

individuals with common neurological disorders.

"I'm always impressed at how curious she is about the data, how reliable she is, and how her analysis helps us focus our research," said Dr. David Cella, CORE's executive director. "She never takes the approach of 'been there, done that,' and she's always looking for new ways to evaluate data. We've all learned a lot from her."

After retiring from RIC, Bode plans to continue consulting with RIC, ENH-CORE and other groups, but looks forward to a lighter workload.

"I hope to do a little less work, but still keep my hands in things," Bode said.

CROR Quarterly Highlights (Partial List)

Manuscripts

1. **Ehrlich-Jones L**, O'Dwyer L, Stevens K, **Deutsch A**. Searching the Literature for Evidence. *Rehabilitation Nursing Journal* 2008; 33(4) 163-169.
2. **Mallinson T**, Manheim L, Almagor O, **Heinemann AW**. Trends in the Supply of IRF Services: 1996 to 2004. *Archives of Physical Medicine and Rehabilitation (In Press)*.
3. **Mallinson T**, Fischer H, Rogers JC, **Ehrlich-Jones L**, Chang R. The Issue Is: Human occupation for public health promotion - New directions for occupational therapy practice with persons with arthritis. *American Journal of Occupational Therapy (In Press)*.

ENH-CORE (Continued From Page Three)

CORE's primary role in the project has been developing the instrument, explained Dr. Richard Gershon, director of psychometrics and informatics at CORE, and a faculty member of the department of psychology at Northwestern University. That involved leveraging the work done in PROMIS and altering it to be more specific.



Photo: Dr. Richard Gershon

"There is a lot of synergy among these projects," agreed Dr. Victorson. "In Neuro-QOL, we didn't recreate the wheel and we were able to use a lot of the work we had done on PROMIS. Whenever we can, we try to use what has been done properly already."

Work with RIC

PROMIS and Neuro-QOL are only two of many projects on which CORE and CROR work together. For instance, Jin-Shei Lai, PhD, OTR/L, a psychometrician at CORE, and a licensed occupational therapist and research associate professor at Northwestern University Feinberg School of Medicine, works on one of CROR's primary research projects. On the project, which uses computer adaptive testing to facilitate patient outcomes measurement, Dr. Lai conducts data analysis and evaluates items.

"I'm helping with the technical aspects of the project and coordinating between RIC and our staff here at CORE," said Dr. Lai. "It's been a great opportunity."

"We share a lot of the same goals to improve care and put patients first, so it's not surprising that CORE and RIC are able to collaborate successfully", concluded Dr. Victorson. "There's a common focus on outcome research so it's a natural progression for us to collaborate so we can meet each other's needs."

Illustration: Item Map For Community Participation Item Bank

Items that indicate high levels of participation are more difficult to endorse

3	<i>I have a say in community decisions</i>
	<i>I do things that improve my community</i>
2	<i>I am able to actively pursue my dreams and desires</i>
	<i>I feel part of my community</i>
1	<i>I spend time helping others</i>
	<i>My community respects me/I feel valued</i>
0	<i>I get out and about whenever I want</i>
	<i>I can go out and have fun</i>
-1	<i>I am treated equally</i>
	<i>Others count on me</i>
-2	<i>I have the freedom to make my own decisions</i>
-3	<i>I take responsibility for my own life</i>

Items indicative of lower levels of participation are easiest to endorse

*The item map above contains only a small fraction of the participation item bank currently being developed at CROR, the psychometric properties of which are still being tested. This is not a validated measurement tool. It is a simplified diagram provided for illustration purposes only.

CROR staff represents RIC at Access Chicago

Staff members administer participation surveys for CROR research projects and represent the Rehabilitation Institute of Chicago at Access Chicago -- a job fair sponsored by the Mayor's Office for People With Disabilities on July 17, 2008. Pictured (from left to right) are Evelyn Rodriguez from RIC's Women with Disabilities Center, and CROR staff Kendall Stagg, Holly DeMark, Morgan Rowe, and Justine Roach.



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