

The Center for Rehabilitation Outcomes Research (CROR) Annual Report

Fiscal Year 2025

Sept. 1, 2024 to Aug.31, 2025

Table of Contents

3 FROM THE DIRECTOR

5 LEADERSHIP & STAFF

6 ACTIVE GRANTS

Midwest Regional Spinal Cord Injury Care System

International Exploration of Rehabilitation Length of Stay Following Spinal Cord Injury (SCI)

Knowledge Translation Disability and Rehabilitation Research Project: Promoting Patient-centered Care Through the Use of Standardized Assessments

- The Rehabilitation Measures Database

Rehabilitation Research and Training Center on Employment and People With Physical Disabilities

Promoting the Psychological Health of Persons With SCI

Rehabilitation Research and Training Center on Home and Community-based Services

Enhancing Accessible Air Travel for People with Physical Disabilities

Mobile Rehabilitation for Daily Life Participation Post-stroke

Development and Validation of a Nutrition Knowledge Questionnaire for Individuals With Spinal Cord Injury/Disorder (SCI/D)

Enhancing Rehabilitation Participation in Patients with SCI/D Using Motivational Interviewing

Development of Text Messaging Intervention for Important Health Information for People with SCI

MENTOR: Mindfulness, Exercise and Nutrition to Optimize Resilience

Advanced Rehabilitation Research and Training Grant for Disability Policy

23 KNOWLEDGE TRANSLATION

25 OTHER ACTIVITIES

- Grants Activities
- Presentations
- Publications

31 MENTORSHIP

34 AWARDS & ACCOLADES

36 PROFESSIONAL SERVICE ACTIVITIES

FROM THE DIRECTOR...

Dear Colleagues,

The Center for Rehabilitation Outcomes Research (CROR) remains a cornerstone of Shirley Ryan AbilityLab's research enterprise. In fiscal year 2025 (FY2025) we continued to lead in rigorous rehabilitation science, managing more than \$10 million in grant funding and producing more than 45 peer-reviewed publications. Our work continues to influence clinical care, policy development, and the lives of people with disabilities globally.

In the past year, several of our grant projects either concluded or entered no-cost extensions. Among the highlights from FY2025:

- Our Rehabilitation Research and Training Center on Employment for People with Physical Disabilities has generated numerous valuable insights. Large, national surveys of people with physical disabilities as well as employers allowed us to identify key barriers and facilitators to employment for people with disabilities; show a clear association between using job accommodations and an increased likelihood of job tenure longer than four years; and uncover ways that employers can enhance worker retention and job satisfaction. In collaboration with the University of Washington, we delivered a successful phone-based cognitive behavioral therapy program that helped people manage their pain at work and stay employed. Other findings highlight the benefits of early vocational counseling for people with Parkinson's disease and the long-term impact of low-cost job accommodations. These insights, published across leading journals and shared at national conferences, position CROR as a leader in the employment and disability research space.
- This year also marked the conclusion of our Knowledge Translation Disability and Rehabilitation Research Project, which is now entering a no-cost extension. Through this grant, CROR has expanded and enriched one of the most widely used rehabilitation resources in the world: the Rehabilitation Measures Database (RMD). We connected with RMD users through focus groups and surveys — uncovering barriers to effective patient-provider communication around standardized assessments — and found that survey respondents had a strong desire for visual, accessible educational tools. In response, we developed 23 infographics which have been downloaded more than 500,000 times, and we partnered with occupational and physical therapy graduate programs to revise and create content for the RMD. We also implemented major updates to improve search functionality and user experience. The RMD now hosts more than 590 summarized measures and continues to be trusted resource with nearly 5 million page views annually.
- Our Rehabilitation Research and Training Center on Home and Community-based Services (HCBS), now in its no-cost extension phase, continues to generate important resources that support Medicaid-funded, person-centered services for some of the nation's most vulnerable populations. Our HCBS outcomes measure set is currently in beta testing, and we've identified key provider characteristics linked to high-quality service delivery.
- We're also piloting a microlesson-based training for direct service professionals (DSPs) about using motivational interviewing to enhance person-centered care. Our goal is to create an evergreen version of this training that will remain accessible and useful to DSPs for years to come.
- We made progress on a five-year, \$4.2 million study investigating how inpatient rehabilitation length of stay affects outcomes for people with SCI around the world. This ambitious project will provide insights into how different health system structures, rehabilitation intensity and other factors impact long-term recovery trajectories for people with SCI. The findings will inform clinical guidelines and policy decisions on a global scale.

- CROR was proud to join a national initiative led by Shu Cole, PhD, of the Indiana University School of Public Health – Bloomington, aimed at improving air travel accessibility for people with physical disabilities. As part of this effort, CROR is leading focus groups and a participatory research project to better understand the barriers travelers with disabilities encounter. Findings from this work will be used to develop a training program for airline and airport personnel with the goal of creating a more inclusive and supportive travel experience.
- Finally, we continue to make important contributions through the Midwest Regional Spinal Cord Injury Care System (MRSCICS) at Shirley Ryan AbilityLab, remaining the top contributor of patient data to the National Spinal Cord Injury Model Systems Database. This work helps shape national care standards and improves outcomes for people with SCI.

As we close a dynamic fiscal year, we remain committed to advancing the science of rehabilitation outcomes through rigorous research, interdisciplinary collaboration and meaningful knowledge translation. Thank you for being part of this vital mission.

Allen Heinemann, PhD
Director, Center for Rehabilitation Outcomes Research

CROR LEADERSHIP



Allen Heinemann, PhD
Director, CROR
Professor, Physical Medicine and
Rehabilitation, Northwestern University
Feinberg School of Medicine



Linda Ehrlich-Jones, PhD, RN
Associate Director, CROR
Research Professor, Physical Medicine and
Rehabilitation, Northwestern University
Feinberg School of Medicine



Alex Wong, PhD, DPhil
Assistant Director
Associate Professor Physical
Medicine and Rehabilitation
Northwestern University Feinberg
School of Medicine



Anne Deutsch, RN, PhD
Research Scientist, CROR
Research Associate Professor, Physical
Medicine and Rehabilitation, Northwestern
University Feinberg School of Medicine
Senior Research Public Health Analyst,
RTI International



Deborah Crown, CRC, LCPC
Manager Research Operations



Jacqueline Kish, PhD, OTR/L
Research Scientist



Jenny Burns, BS
Research Project Manager



Amy Zhou, PhD
Biostatistician

CROR STAFF

John Abbate, research assistant
Lorie Cashdollar, project coordinator
Emily Dinelli, L/CPO, graduate research assistant
Kevin Fearn, project coordinator
Nick Formanski, senior project coordinator
Ross Kaine, research assistant
Kelly Keel, research consultant
Angelika Kudla, MS, LCMHCA, senior project coordinator
My Le, project coordinator
Elise Olsen, project coordinator
Sharon Parmet, healthcare communications associate
Erin Walaszek, PT, DPT, research project manager



ACTIVE GRANTS

The Midwest Regional Spinal Cord Injury Care System (MRSCICS) at Shirley Ryan AbilityLab

The [Midwest Regional Spinal Cord Injury Care System](#) (MRSCICS) is a leading center for innovative, integrated, interdisciplinary research and care for people with spinal cord injury (SCI). Funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), MRSCICS is one of 18 SCI Model System centers across the United States. It leads a site-specific project and a project in collaboration with other model systems. MRSCICS also contributes data to the [National Spinal Cord Injury Model Systems Database](#).

Improving Adherence to SCI Exercise Guidelines Using Smartphone-based Technology and E-coaching: A Proof-of-concept SMART Design Study

Site-specific project

Researchers will collaborate with the Pt Pal Health Tech Corporation to design and test an intervention to improve adherence to exercise guidelines for people with SCI. Using smartphone technology, ecological momentary assessment (EMA) and e-coaching, the team aims to deliver personalized, real-time support. The study is led by Alex Wong, PhD, DPhil, assistant director of CROR, and Arun Jayaraman, PhD, PT, executive director, Technology & Innovation Hub at Shirley Ryan AbilityLab.

Key Achievements

- App-based intervention development and usability testing have been completed.
- 18 participants have been enrolled to test the intervention thus far, with an aim of reaching 50 participants.
- The e-coaching training module has been completed.
- Research training was provided to one high school and one undergraduate student who participated in tasks related to data collection and analysis.

Evaluating the Utility of Spasticity and Brain-derived Neurotrophic Factor (BDNF) in Predicting Neurological Outcomes and Motor Functional Recovery After Spinal Cord Injury

Collaborative project

This multi-site study, led by Monica Perez, PhD, PT, scientific chair of the Harris Family Foundation Arms + Hands Lab at Shirley Ryan AbilityLab, investigates spasticity and brain-derived neurotrophic factor (BDNF) as potential biomarkers for predicting neurological and functional recovery in individuals with subacute SCI. Participating sites include the Rocky Mountain Regional Spinal Injury System, the Baylor Scott & White Spinal Cord Injury Model System and the Minnesota Regional Spinal Cord Injury Model System.

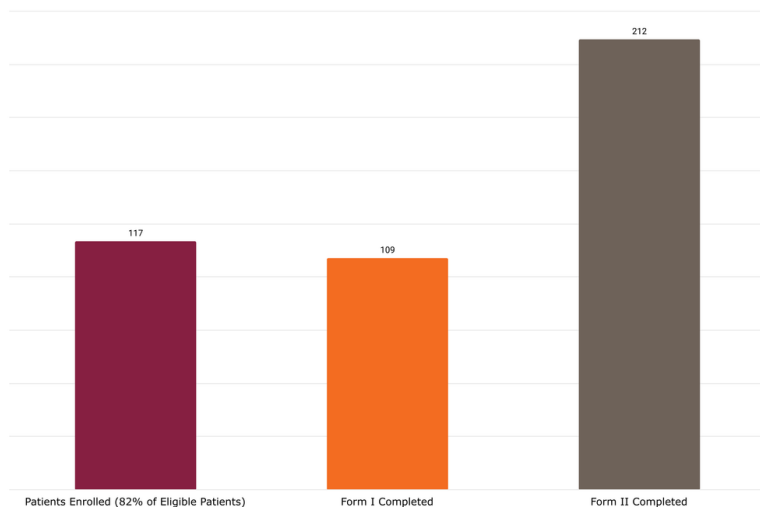
Key Achievements

- 130 people with SCI and 147 control participants have been enrolled thus far, with a goal of enrolling 150 participants for each group.
- Processed blood samples to extract BDNF markers and analysis of markers.

The National Spinal Cord Injury Model Systems Database

The National Spinal Cord Injury Model Systems (SCIMS) Database, established in 1973, is the world's largest and longest-running repository of traumatic SCI data. It captures approximately 6% of new SCI cases in the United States. The NIDILRR-funded SCI Model System centers submit standardized data on demographic and injury characteristics, functional, medical, psychosocial, employment, and survival outcomes. As of mid-February 2025, the database held records for 54,618 individuals with traumatic SCI.

FY 2025 Enrollment in the National SCIMS Database at Shirley Ryan AbilityLab



Knowledge Translation

"[I Was a Wheelchair Kid](#)" is a podcast produced by MRSCICS in collaboration with [FacingDisability.com](#), an online resource offering information and support for families affected by SCI. It features stories told by adults who were paralyzed as children or teens. The podcast released its first episode in August 2024, and is endorsed and distributed by the Model Systems Knowledge Translation Center (MSKTC). Eight of 10 planned episodes are available.



Allen Heinemann (right), Thea Flaum, Stephanie Lollino, Annie Hambleton. "I Was A Wheelchair Kid New Podcast for Adolescents"



RehabWeek May 12-16, 2025, Chicago, Ill.

Alex Wong. "Evaluating the Usability of a Mobile App for Customized Exercise Prescription in Individuals With Spinal Cord Injury: A Mixed-Methods Approach"

Disability and Health Symposium Feb. 27-28, 2025, Birmingham, Ala.

Alex Wong. "Creating a Telehealth Home-based Program to Improve Exercise Guidelines Adherence in Individuals With Spinal Cord Injury"

Rehabilitation Psychology Mid-Winter Conference Feb. 20-23, 2025, Louisville, Ky.

Allen Heinemann, Stephanie Lollino, Anne Hambleton. "I Was a Wheelchair Kid Podcast: Introducing a New Resource to Facilitate Self-Efficacy in Adolescents With Spinal Cord Injuries"

American Congress of Rehabilitation Medicine 101st Annual Fall Conference & EXPO Oct. 31-Nov. 3, 2024, Dallas, Texas

- Alex Wong, Dan Ding, Zijian Huang. "Smart Technology for Physical Activity and Exercise Research in People With SCI: Measurement, Monitoring and Intervention"
- Anne Deutsch, Yuying Chen, Amanda Botticello. "Non-traumatic SCI Part I: Characteristics and Outcomes of Patients From the Model System Pilot Study and National Data for Older Americans"
- Anne Deutsch, Yuying Chen, Amanda Botticello. "Conducting Research Using the SCI Model Systems Database Part I: Database Overview and How to Access Data"
- Anne Deutsch, Yuying Chen, Amanda Botticello. "Conducting Research Using the Spinal Cord Injury Model Systems Database Part II: Case Studies and Best Practices for Reporting"
- Monica Perez. Special Symposium: "Targeting Neuroplasticity After SCI"

Spasticity X Oct. 24, 2024, Houston, Texas

Monica Perez. "Underlying Pathophysiology of the Different Clinical Presentations of Spasticity"

Society for Neuroscience Satellite Symposium Oct. 4, 2024, Chicago, Ill.

Monica Perez. "Targeted Neuroplasticity to Enhance Rehabilitation"

Academy of Spinal Cord Injury Professionals Annual Conference Sept. 1-4, 2024, Chicago, Ill.

- Allen Heinemann, Thea Flaum. "I Was A Wheelchair Kid Podcast"
- Alex Wong, "Preliminary Evidence of a Patient Engagement Intervention for Optimizing Outcomes in Inpatient SCI Rehabilitation"

Publications

Scheuren PS, Kondiles BR, Filous AR, Bloom OE, Chow DS, Field-Fote EC, Freund P, Guest JD, Kwon BK, Kyritsis N, Leptak C, Perez MA, Szapacs M, West CR, Tansey K, Hsieh JTC, Jones L. Exploring the Landscape of Biomarkers in Spinal Cord Injury. Top Spinal Cord Inj Rehabil. 2025 Spring;31(2):1-12. doi: 10.46292/sci24-00076. Epub 2025 Jun 19. PMID: 40585008; PMCID: PMC12199613.

Chen B, Gaikwad S, Powell RH, Jo HJ, Kessler AB, Chen D, Heckman CJ, Jones L, Guest JD, Wolpaw JR, Oudega M, Blight AR, Perez MA. Combinatorial approaches increasing neuronal activity accelerate recovery after spinal cord injury. Brain. 2025 Jun 3;148(6):1911-1923. doi: 10.1093/brain/awaf099. PMID: 40126943.

Butler CLP, Sangari S, Chen B, Perez MA. Enhanced inhibitory input to triceps brachii in humans with spinal cord injury. J Physiol. 2024 Dec;602(24):6909-6923. doi: 10.1113/JP285510. Epub 2024 Nov 6. PMID: 39504123; PMCID: PMC11652259.

Nataletti S, Banerjee A, Macaluso R, Prokup S, Jayaraman A, Wong AWK. Developing a mobile exercise program for individuals with Spinal Cord Injury: Stakeholder perceptions of app features and implementation determinants. Disabil Health J. 2024 Oct;17(4):101667. doi: 10.1016/j.dhjo.2024.101667. Epub 2024 Jun 28. PMID: 38964938.

International Exploration of Rehabilitation Length of Stay Following Spinal Cord Injury

CROR continues to lead this [international study](#) examining how differences in inpatient rehabilitation intensity and length of stay affect the experiences and outcomes of people with SCI in different countries. Supported by a grant from NIDILRR, the project is now entering its third year. Collaborating researchers are from England, The Netherlands, Canada, Australia and the United States.

Key Achievements

- All sites have completed and coded transcripts from focus groups with people with SCI, care partners and clinicians. Collaborators are harmonizing codebooks across countries.
- The CROR team has:
 - Completed a literature review about how rehabilitation length and intensity relate to patient- and hospital-factors and outcomes.
 - Started to develop an online survey to collect and compare inpatient and post-rehabilitation experiences of people with SCI across countries.
 - Prepared applications to purchase national patient datasets in order to compare rehabilitation lengths of stay and functional outcomes.

Presentations

American Spinal Injury Association Annual Scientific Meeting June 2-4, 2025, Scottsdale, Ariz.

Allen Heinemann, Alex Wong, and Sherri LaVela. Educational module: "Length of Stay Following Spinal Cord Injury: Associations with Predictors, Outcomes, and Stakeholders Experiences in Inpatient Rehabilitation"

Association of Academic Physiatrists 2025 Annual Meeting Feb. 25-March 1, 2025, Phoenix, Ariz.

Taylor Webb, My Le, Jenny Burns, Lorie Cashdollar, Q. Eileen Wafford, Anne Deutsch, Alex Wong, Allen Heinemann. "Associations of Length of Stay with Person- and Hospital-level Factors and Rehabilitation Outcomes After Spinal Cord Injury: Systematic Reviews" (poster)

International Spinal Cord Society Annual Scientific Meeting Sept. 22-25, 2024, Antwerp, Belgium

Allen Heinemann, My Le, Jenny Burns, Lorie Cashdollar, T Webb, Q. Eileen Wafford, Anne Deutsch, Alex Wong. "Associations of Length of Stay With Person- and Hospital-Level Factors and Rehabilitation Outcomes After Spinal Cord Injury: Systematic Reviews"

Marcel Post, Allen Heinemann, Jane Duff (right). "International Variations in Rehabilitation Services and Outcomes Following Spinal Cord Injury: Psychosocial and Policy Implications for Patients, Support Persons, and Clinicians"



Women in Medicine 2024 Conference Oct. 19, 2024, virtual.

Taylor Webb, Allen Heinemann, My Le, Jenny Burns, Lorie Cashdollar, Q Eileen Wafford, Anne Deutsch, Alex Wong. "Associations of Length of Stay with Person- and Hospital-level Factors and Rehabilitation Outcomes After Spinal Cord Injury: Systematic Reviews" (poster)

Knowledge Translation Disability and Rehabilitation Research Project

The goal of this knowledge translation project is to promote patient-centered care by developing a comprehensive and coordinated set of knowledge translation resources for patients and their care partners, students and clinicians, thereby enhancing and sustaining the use of standardized rehabilitation measures. The Shirley Ryan AbilityLab [Rehabilitation Measures Database](#) (RMD) is a key component of the grant.

Funded by a five-year grant from NIDILRR, the project will be carried out under a no-cost extension through August 2026.

Key Achievements

- 20 new measures were added to the RMD, bringing the total to date to 590.
- 17 rehabilitation measure summaries were updated.
- Five Measurement Tools were published in the Archives of Physical Medicine and Rehabilitation.
- 10 rehabilitation measures were translated into [infographics](#).
- Collaborated with more than 15 allied health graduate programs.
- Established strategic partnerships with Concordia University and Western University of Health Sciences.
- Shirley Ryan AbilityLab medical externs updated the summary for the High-level Mobility Assessment Tool and developed a new summary for the Inpatient Rehabilitation Facility Patient Assessment Instrument - Section GG.

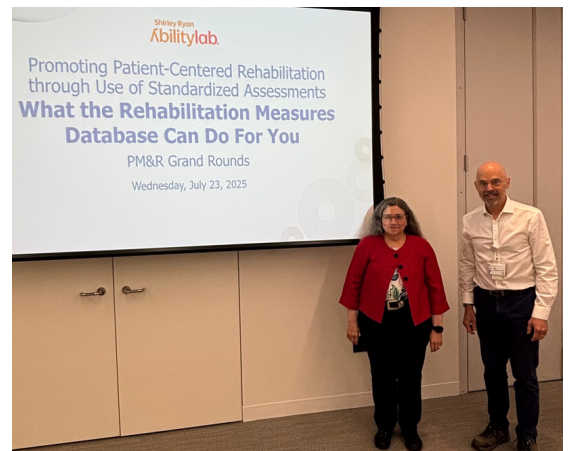
Presentations

[Shirley Ryan AbilityLab Grand Rounds](#) July 23, 2025, Chicago, Ill.

At right: Linda Ehrlich-Jones, Allen Heinemann. "Promoting Patient-centered Rehabilitation through Use of Standardized Assessments: What the Rehabilitation Measures Database Can Do For You"

[American Congress of Rehabilitation Medicine 101st Annual Fall Conference & EXPO](#) Oct. 31-Nov. 3, 2024, Dallas, Texas

Allen Heinemann, Linda Ehrlich-Jones, Namrata Grampurohit. "Rehabilitation Outcomes Collaboration Opportunity for Rehabilitation Educators and Students: The Rehabilitation Measures Database"



Linda Ehrlich-Jones and Allen Heinemann

[Center on Knowledge Translation for Disability and Rehabilitation Research Annual KT Conference](#)

Oct. 11, 2024, Virtual

Sharon Parmet. "Making a Rehabilitation Research Podcast"

[Learning and Health Systems Rehabilitation Research Network: The Power of Patient Centered Outcomes in Rehabilitation Learning Health Systems](#) Nov. 25, 2024, Washington DC

Linda Ehrlich-Jones, participant, author of paper from workshop about selecting patient outcome measures

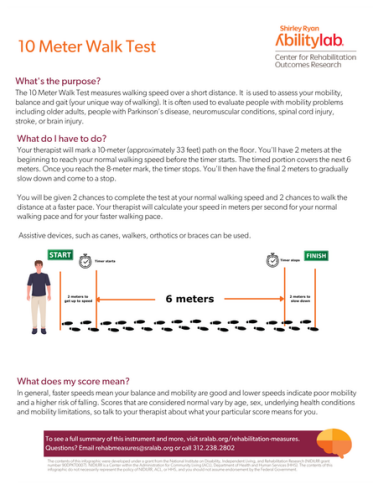
Relevant Episodes of "INSide the OUTcomes: A Rehabilitation Research Podcast"

[Episode 28: Student Contributions to the Rehabilitation Measures Database](#)

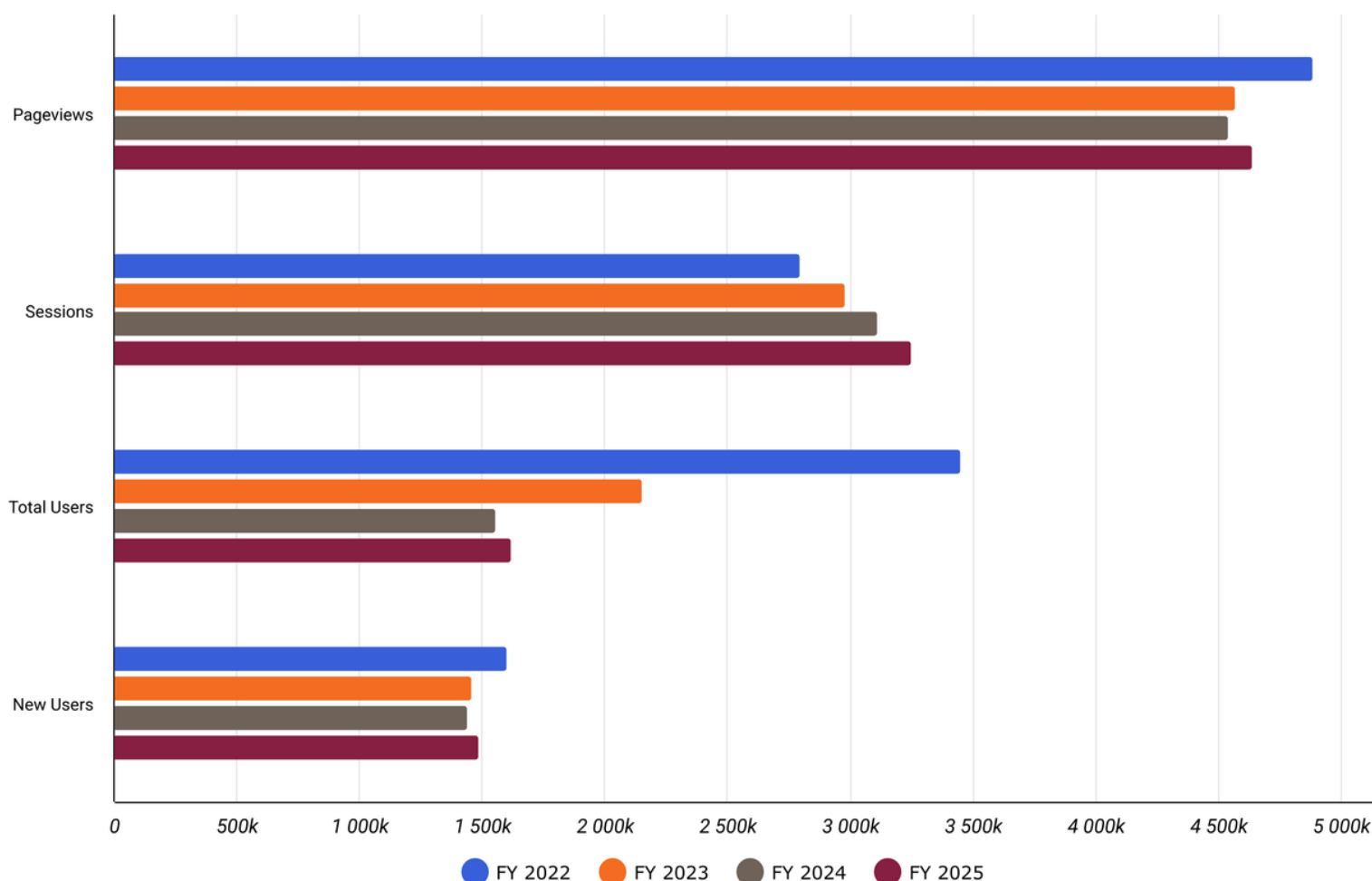
Released June 10, 2025

The Rehabilitation Measures Database

Managed by CROR in partnership with Shirley Ryan AbilityLab, the RMD is a leading resource for benchmarking and outcome measurement in physical medicine and rehabilitation. It gets approximately 5 million pageviews annually from users from over 145 countries. The RMD includes summaries of more than 590 standardized measures that include psychometric data, normative values, cut-off scores, recommended uses and population-specific considerations, plus links to original tools, translations and common data elements. It also offers educational resources and more than 20 infographics of the most commonly-used measures designed to be shared with patients and their care partners. To date, these infographics have been downloaded more than 500,000 times. Through partnerships with allied health graduate programs worldwide, students help update summaries and create infographics while developing skills in evidence-based assessment and outcome evaluation.



Rehabilitation Measures Database Pageviews, Sessions, Total Users, New Users FY 2022 - FY 2025



The Rehabilitation Research and Training Center on Employment for People With Physical Disabilities

CROR's Rehabilitation Research and Training Center (RRTC) on Employment for People with Physical Disabilities is a multi-institutional initiative aimed at promoting positive employment outcomes for individuals with physical disabilities. Key activities of the center include delivering and evaluating a phone-based self-management intervention to address chronic pain to support job retention; identifying barriers and facilitators to continued employment; developing targeted strategies to help individuals with progressive neurological disorders stay employed; and creating a decision aid to help individuals navigate the process of requesting workplace accommodations.

The RRTC brings together collaborators from Northwestern University; the University of Washington, Seattle; the University of Illinois Chicago; and two regional Americans with Disabilities Act (ADA) Centers. The project was supported by a five-year grant from NIDILRR, which concluded in September 2024.

Key Achievements

- Demonstrated that phone-based cognitive behavioral therapy significantly reduces work-related chronic pain.
- Identified personal, occupational and environmental factors that impact long-term job retention for individuals with physical disabilities.
- Found that employment challenges in people with Parkinson's disease are linked to financial hardship and lower quality of life.
- Identified common, unmet and most impactful job accommodations related to job satisfaction.
- Identified common job accommodations and which unmet needs for job accommodations have the greatest impact on job satisfaction.
- Demonstrated that both employer- and self-provided accommodations are linked to longer job tenure and greater job satisfaction.
- Developed an online decision aid to support individuals in requesting reasonable workplace accommodations.

Presentations

Shirley Ryan AbilityLab Henry B. Betts, MD, LIFE Center Oct. 11, 2024, Chicago, Ill.

Linda Ehrlich-Jones, Deborah Crown, Angelika Kudla. "Disclosing a Disability and Requesting Reasonable Job Accommodations and Employment Resources and Training for Peer Mentors"

DisabilityIN: Chicagoland 2024 Disability Inclusion Summit Oct. 24, 2024, Chicago, Ill.

Deborah Crown (right), Angelika Kudla, Emily Dinelli. "Job Accommodations, Disclosing a Disability and Requesting Reasonable Accommodations"



Northwestern University Feinberg School of Medicine Research Day Sept. 12, 2024, Chicago, Ill.

Emily Dinelli, Angelika Kudla, Pamela Capraro, Deborah Crown, Manasi Sheth, Robert Trierweiler, Elizabeth Munsell, Jasmin Wong, Allen Heinemann. "National Survey of Employment and Long-term Job Retention of People With Physical Disabilities"

Publications

Choi H, Wong J, Kudla A, Crown DS, Yang B, Dinelli EJ, Capraro P, Trierweiler R, Heinemann AW. [Employer Retention Profiles of Workers with Physical Disabilities](#). J Occup Rehabil. 2025 Aug 16. doi: 10.1007/s10926-025-10321-3. Epub ahead of print. PMID: 40819115.

Crown DS, Dinelli EJ, Kudla A, Capraro P, Wong J, Trierweiler R, Sheth M, Heinemann AW. [Job Accommodations for People with Physical Disabilities: Findings of a United States National Survey](#). J Occup Rehabil. 2025 Jul 18. doi: 10.1007/s10926-025-10314-2. Epub ahead of print. PMID: 40679577.

Dinelli EJ, Crown D, Kudla A, Capraro P, Sheth M, Trierweiler R, Munsell E, Heinemann AW. [Facilitators and barriers to employment for people with adult-onset physical disabilities: results from a U.S.A. survey](#). Work. 2024;79(3):1433-1450. doi: 10.3233/WOR-240087. PMID: 39213121; PMCID: PMC11612936. Nov. 8, 2024

Ehrlich-Jones LS, Crown DS, Tomazin SE, Wong J, Kallish N, Wafford QE, Heinemann AW. [Use and benefits of peer mentoring in support of employment for persons with physical disabilities: a systematic review](#). Disabil Rehabil. 2025 Apr 23:1-8. doi: 10.1080/09638288.2025.2463616. Epub ahead of print. PMID: 40265265.

Kudla A, Dinelli EJ, Capraro P, Crown, D., Sheth M, Trierweiler R, Munsell E, Wong J, Heinemann AW. [Person-, Job-, and Environment-Related Factors Associated with Long-Term Job Retention of People with Physical Disabilities](#). J Occup Rehabil. Nov 3 2024;doi:10.1007/s10926-024-10245-4

Relevant Episodes of "INside the OUTcomes: A Rehabilitation Research Podcast

Episode 20: [A Vocational Rehabilitation Success Story](#)

Released Oct.8, 2024

Episode 24: [Facilitators and Barriers to Employment for People With Physical Disabilities: Results of a National Survey](#)

Released Feb. 11, 2025

Promoting the Psychological Health of Persons with Spinal Cord Injury

This three-year project, funded by the Craig H. Neilsen Foundation, concluded in April 2025. It focused on supporting the mental health of people with traumatic SCI. Through focus groups and systematic reviews, researchers gained valuable insight into the mental health needs and priorities of individuals with SCI, identified effective interventions and uncovered important gaps in existing knowledge.

Key Achievements

- Updated fact sheets on [Exercise After Spinal Cord Injury](#), [Depression and Spinal Cord Injury](#), and [Post-Traumatic Stress Disorder and Spinal Cord Injury](#) and created a new fact sheet about anxiety and SCI (under review) in collaboration with the Model Systems Knowledge Translation Center.
- Conducted three [focus groups](#) with people with SCI about their mental health needs.
- Conducted two focus groups with healthcare providers about experiences with mental health and psychological care for people with SCI.
- Conducted systematic reviews of mental health interventions for depression, chronic pain, anxiety and post-traumatic stress disorder for people with SCI.
- Submitted six manuscripts for publication, including three systematic reviews and three qualitative research papers. Four papers have been published to date, with two under review

Presentations

[Academy of Spinal Cord Injury Professionals Annual Conference & Expo](#) Sept. 1-4, 2024, Chicago, Ill.

Linda Ehrlich-Jones, Sherri LaVela, Allen Heinemann, Jenny Burns. "Evaluating Interventions Targeting the Mental Health of Persons Living with SCI"

Publications

Ehrlich-Jones L, Olsen E, Kudla A, Burns J, Sharf N, Wafford Q, Heinemann A. [Behavioral/Physical and Stimulation Interventions for Chronic Pain Following Spinal Cord Injury: A Systematic Review](#). Top in Spinal Cord Inj Rehabil. 2025 March 1. doi: 10.46292/sci24-00053

Ehrlich-Jones L, Burns J, Kaufman K, Kudla A, Heinemann A. [Psychosocial adaptation following spinal cord injury: Perspectives of people with lived experience](#). Rehabil Psychol. 2025 May 12. doi: 10.1037/rep0000616. Epub ahead of print. PMID: 40354249.

Sharf N, Kudla A, Burns J, Ehrlich-Jones L, Heinemann AW. [Psychosexual well-being following spinal cord injury: Perspectives of adults with spinal cord injury and rehabilitation clinicians](#). Rehabil Psychol. 2024 Nov 11. doi:10.1037/rep0000591 PMID: 39531686.

Cotter R, Burns J, Kaufman K, Kudla A, Ehrlich-Jones L, Wafford QE, Heinemann AW. [Effectiveness of Behavioral and Pharmacologic Interventions for Depressive Symptoms After Spinal Cord Injury: Findings From a Systematic Review](#). Arch Phys Med Rehabil. 2024 Sep;105(9):1733-1755. doi: 10.1016/j.apmr.2024.01.004. Epub 2024 Jan 22. PMID: 38266762.

Relevant Episodes of "INside the OUTcomes: A Rehabilitation Research Podcast"

[Episode 26: Loneliness and Spinal Cord Injury](#)

Released April 8, 2025

[Episode 22: Sexuality and Spinal Cord Injury](#)

Released Dec. 10, 2024

Rehabilitation Research and Training Center on Home and Community-based Services

CROR's five-year, NIDILRR-funded Rehabilitation Research and Training Center on Home and Community-based Services (RRTC on HCBS) supports the development, implementation, and continuous improvement of federal and state HCBS programs and policies. Key activities include creating person-centered outcome measures, identifying best practices among high-performing HCBS providers and designing a microlesson-based training for direct service professionals about using motivational interviewing to deliver person-centered care.

Key Achievements

- 176 participants have enrolled in beta testing of the direct service provider training.
- Identified key attributes of organizations that provide exceptional person-centered services.
- Published four policy briefs, produced in collaboration with ADvancing States and HCBS Strategies.

Presentations

ADvancing States Home and Community-based Services

Conference Aug. 24-28, 2025, Baltimore, Md.

Jacqueline Kish. "Advancing Person-centeredness in HCBS: Insights from Organizations Doing It Well"

Northwestern University Feinberg School of Medicine Research Day

Sept. 12, 2024, Chicago, Ill.

Elise Olsen (left), Jacqueline Kish (right), Bridgette Schram, Ross Kaine, Allen Heinemann. "Our Job is to Support People to Have Great Lives: Person-centered Practices in Home and Community-based Services From Provider Organizations"



Elise Olsen and Jacqueline Kish

Publications

Karon SL, Tenny N, Schram BM, Lutzky S, Heinemann A, Deutsch A. Measuring nonmedical, person-centered outcomes for home and community-based service participants: Selecting and defining concepts. Disabil Health J. 2025 May 2:101847. doi: 10.1016/j.dhjo.2025.101847. Epub ahead of print. PMID: 40368724.

Policy Briefs

Deutsch A, Lutzky S. (2025). Risk Adjustment for Home and Community-based Services Quality Measurement. RTI Press.

Callahan C. (2025). Supporting America's 53 Million Family Caregivers. ADvancing States, Shirley Ryan AbilityLab. Includes plain-language version.

Priebe C, Dobson C, Plasencia R. (2025). The Value of Rebalancing Long-Term Services and Supports. ADvancing States, Shirley Ryan AbilityLab. Includes plain-language version.

Priebe C, Dobson C, Plasencia R. (2025). The HCBS Quality Measure Set: An Introduction. ADvancing States, Shirley Ryan AbilityLab.

Relevant Episodes of “INside the OUTcomes: A Rehabilitation Research Podcast”

Episode 29: [Supporting America’s 53 Million Family Caregivers](#)

Released July 8, 2025

Episode 27: [Microlessons for Direct Service Professionals to Enhance Person-centered Services](#)

Released May 13, 2025

Enhancing Accessible Air Travel for People With Physical Disabilities

This NIDILRR-funded [project](#) aims to advance accessible and inclusive air travel for individuals with physical disabilities from diverse racial and ethnic backgrounds. CROR researchers are partnering with principal investigator, Shu Cole, PhD, of the Indiana University School of Public Health – Bloomington. The study will examine the air travel experiences of people with physical disabilities (including those aging into disability); develop enhanced training programs for airline personnel; and implement knowledge translation strategies to promote industry-wide improvements. Jacqueline Kish, PhD, OTR/L, a CROR research scientist, leads a participatory research project for this grant and will conduct focus groups to gather in-depth insights into the travel experiences and needs of people with disabilities.

Key Achievements

- Designed a participant recruitment plan and started recruiting in August 2025.
- Created a REDCap participant eligibility screener.
- Developed Photovoice and focus group protocols, guides, and training materials for IRB submission.
- Adapted recruitment plans and screening materials to address issues related to bots and scams in research.

Presentations

[Travel and Tourism Research Association Annual Conference](#) June 24-26, 2025, Galway, Ireland

Shu Cole, PhD, Indiana University School of Public Health – Bloomington. “Enhancing the Air Travel Experience of People with Disabilities and Older Adults”

Relevant Episodes of “INSide the OUTcomes: A Rehabilitation Research Podcast”

[Episode 21: Improving Air Travel for People with Physical Disabilities](#)

Released Nov. 12, 2024

Mobile Rehabilitation for Daily Life Participation Post Stroke

This study, funded by a National Institutes of Health Mentored Research Scientist Development Award (K01), used ecological momentary assessment (EMA) to prospectively track daily activities and behavioral factors in stroke survivors. Led by Alex Wong, the research focused on describing fluctuations in depressed mood and quality of life and examined how social support may influence mood and daily functioning. The project concluded in April 2025.

Key Achievements

- Demonstrated that EMA can accurately track daily functioning in stroke survivors, making it a useful tool for monitoring recovery, guiding home-based care and supporting long-term research.
- Showed that EMA can reveal how changes in daily functioning and mood are related over time, suggesting that scheduling meaningful daily activities may help reduce feelings of depression after stroke.
- Found that digital monitoring of day-to-day changes in thinking and memory may help identify stroke survivors at risk for cognitive challenges that affect daily life, pointing to opportunities for personalized rehabilitation.
- Identified links between social isolation, secondary health issues and reduced daily functioning, underscoring the importance of social and engaging activities in improving emotional well-being and recovery after stroke.

Presentations

Invited presentation, Mental Health Research Center, Hong Kong Polytechnic University Sept. 25, 2024, Hong Kong
Alex Wong. "Ecological Momentary Assessment as Precision Measurement for Psychosocial Interventions"

American Congress of Rehabilitation Medicine 101st Annual Fall Conference & EXPO Oct. 31-Nov. 3, 2024, Dallas, Texas

Yejie Shi, Quoc Bui, Chris Metts, Stephanie Tomazin, Katherine Kaufman, Alex Wong. "Feasibility and Validity of the Mobile Measurement of Spatial Attention and Working Memory in Individuals with Stroke" (poster)

Association for Rehabilitation, Research, Policy and Education Conference
Feb. 24-25, 2025, Savannah, Ga

Alex Wong (right). "Real-world Outcomes in Neurobehavioral Disorders: Unlocking the Power of Ecological Momentary Assessment"



Publications

Lei Y, Li Z, Bui Q, DePaul O, Nicol GE, Mohr DC, Fong MWM, Metts CL, Lee SI, Tomazin SE, Wong AWK. Satisfaction, user experiences, and initial efficacy of a technology-supported self-management intervention (iSMART) to improve post-stroke functioning: a remoted randomized controlled trial. Top Stroke Rehabil. 2025 Jan 10:1-15. doi: 10.1080/10749357.2025.2450950. Epub ahead of print. PMID: 39792597.

He, J., LaVela, S.L., Bombardier, C.H., Fong, M.W.M., Lee, S.I., Metts, C.L., Shi, Y., Tsang, H.W.H., & Wong, A.W.K. (2025). Evaluation and treatment of social isolation and loneliness: Evidence-based recommendations for stroke and neurological rehabilitation. Current Physical Medicine and Rehabilitation Reports, 13(6). 1-21. doi: 10.1007/s40141-025-00477-7

Development and Validation of a Nutrition Knowledge Questionnaire for Individuals With Spinal Cord Injuries and Disorders

This three-year project, funded by the U.S. Department of Defense, will develop and validate a questionnaire that measures nutrition knowledge among people with spinal cord injury or disorder (SCI/D). The tool will address SCI/D-related considerations that impact nutrition, supporting tailored dietary education and interventions. Alex Wong and Allen Heinemann are co-investigators on the grant.

The project is led by Sherri LaVela, Center of Innovation for Complex Chronic Healthcare, Department of Veterans Affairs. The project is in a no-cost extension.

Key Achievements

- Developed an initial set of items based on input from an expert focus group and findings from literature reviews.
- More than 350 participants with SCI/D completed the initial questionnaire as part of the first phase of validation.
- Conducted Rasch analysis of the data to identify misfitting items and developed a revised set of questionnaire items.
- The updated questionnaire will be distributed to a new sample of individuals with SCI/D for the second phase of validation.

Presentations

Paralyzed Veterans of America Healthcare Summit and Expo Aug. 24-27, 2025, New Orleans, La.

Rena Steiger-Chadwick, Gary Farkas, Lorena Reyes, Alex Wong, Cara Ray, Allen Heinemann, Dan Eisenberg, Jenny Burns, Sherri LaVela. "Content Validity of a New Nutrition Knowledge Questionnaire for Individuals with Spinal Cord Injuries/Disorders"

American Spinal Injury Association Annual Scientific Meeting June 2-4, 2025, Scottsdale, Ariz.

Rena Steiger-Chadwick, Gary Farkas, Lorena Reyes, Alex Wong, Cara Ray, Allen Heinemann, Dan Eisenberg, Jenny Burns, Sherri LaVela. "Content Validity of a New Nutrition Knowledge Questionnaire for Individuals With Spinal Cord Injuries/Disorders"

Publications

Ray C, Farkas GJ, Reyes L, W K Wong A, Heinemann AW, Eisenberg D, Burns J, LaVela SL. [A Literature Review of Nutrition Knowledge Measurement Items Used in Persons Living with Spinal Cord Injuries and Disorders](#). Top Spinal Cord Inj Rehabil. 2024 Fall;30(4):66-79. doi: 10.46292/sci23-00066. Epub 2024 Nov 28. PMID: 39619820; PMCID: PMC11603109.

Enhancing Rehabilitation Participation in Patients With SCI/D Using Motivational Interviewing

Linda Ehrlich-Jones is the principal investigator on this three-year project, which is funded by the Craig H. Neilsen Foundation. The project will examine the effects of motivational interviewing training with physical and occupational therapists on rehabilitation outcomes for people with SCI. This grant was awarded in April 2023.

Presentations

Academy of Neurological Physical Therapy Annual Conference Sept. 19-21, 2024, Columbus, Ohio

Linda Ehrlich-Jones. "Using Motivational Interviewing to Enhance Patient Participation in Therapy: An Interactive Session"

Development of a Text Messaging Intervention for Important Health Information to People With Spinal Cord Injury

This two-year project, funded by the Craig H. Neilsen Foundation, will identify secondary health conditions associated with SCI and develop a text message (SMS-based) content library to help people manage these conditions. The project will adapt this intervention for delivery through a digital platform and evaluate its feasibility and effectiveness in improving the psychosocial health of individuals with SCI. Alex Wong, is an investigator on this grant. and it isled by principal investigator Kerri Morgan at Washington University.

Key Achievements

- Completed three focus groups with healthcare professionals and five focus groups with people with SCI.
- Identified four key secondary health condition topics — including pain, mental health, bladder and bowel management and skin management — and developed SMS content libraries for each of the topics.
- Identified two key themes to guide the development of the intervention.

MENTOR: Mindfulness, Exercise and Nutrition to Optimize Resilience

In March 2023, CROR partnered with the National Center on Health, Physical Activity and Disability (NCHPAD) to enroll participants in MENTOR, an eight-week virtual program that focuses on improving physical and psychological health for individuals with mobility limitations.

In addition to enrolling participants in MENTOR, CROR researchers will investigate the impact and implementation process of the program utilizing the RE-AIM (Reach, Effectiveness, Adoption, Implementation, Maintenance) framework. Results will help identify factors that promote or hinder the successful implementation of the MENTOR program.

Key Achievements

- CROR has enrolled more than 100 people in the MENTOR program.
- REDCap data systems from Shirley Ryan AbilityLab and NCHPAD were integrated to facilitate enrollment.
- Recruitment has steadily increased during each eight-week "wave."

Relevant Episodes of "INSide the OUTcomes: A Rehabilitation Research Podcast"

[MENTOR: A Free, Online Exercise and Wellness Program](#)

Released Jan. 14, 2025

Advanced Rehabilitation Research and Training Grant for Disability Policy

This three-year, NIDILRR-funded training grant supports fellows at Northwestern University in the Integrated Fellowship Program in Health Services and Outcomes Research. It is led by Anne Deutsch and Megan McHugh, PhD, a health services research at Northwestern University. In collaboration with the Health and Aging Policy Fellows Program at Columbia University, the grant supports selected fellows in gaining policy research experience and policy-related experiences on Capitol Hill. The grant was awarded in July 2025 and postdoctoral candidates for the program are being interviewed for the program.

KNOWLEDGE TRANSLATION

Knowledge translation (KT) is a core component of CROR's research mission. Our KT efforts include a range of products such as newsletters, social media content, podcasts, videos and infographics. CROR also shares its work by presenting at national and international conferences, helping to bridge the gap between research and real-world application.

Newsletters



CROR Outcomes is a quarterly newsletter featuring articles on CROR research and news, interviews with leading experts on disability and rehabilitation research, profiles of CROR staff and collaborators and updates related to the Rehabilitation Measures Database. It has 5,000 subscribers.



HCBS Quality Matters is a quarterly newsletter that shares news related to CROR's Rehabilitation Research and Training Center on Home and Community-based Services. It has 4,500 subscribers.



MRSCICS Matters is a biannual newsletter reaching 1,500 subscribers, including individuals with SCI enrolled in the National Spinal Cord Injury Model Systems Database, researchers and clinicians. This plain-language newsletter features research opportunities, profiles, SCI-related news and links to fact sheets on SCI from the Model Systems Knowledge Translation.



Subscribe to our newsletters

Social Media



@rehaboutcomes
3,300 followers



Center for Rehabilitation Outcomes Research
1,750 followers



@centerforrehabilitationout390
125 subscribers, 45 videos

INside the OUTcomes: A Rehabilitation Research Podcast

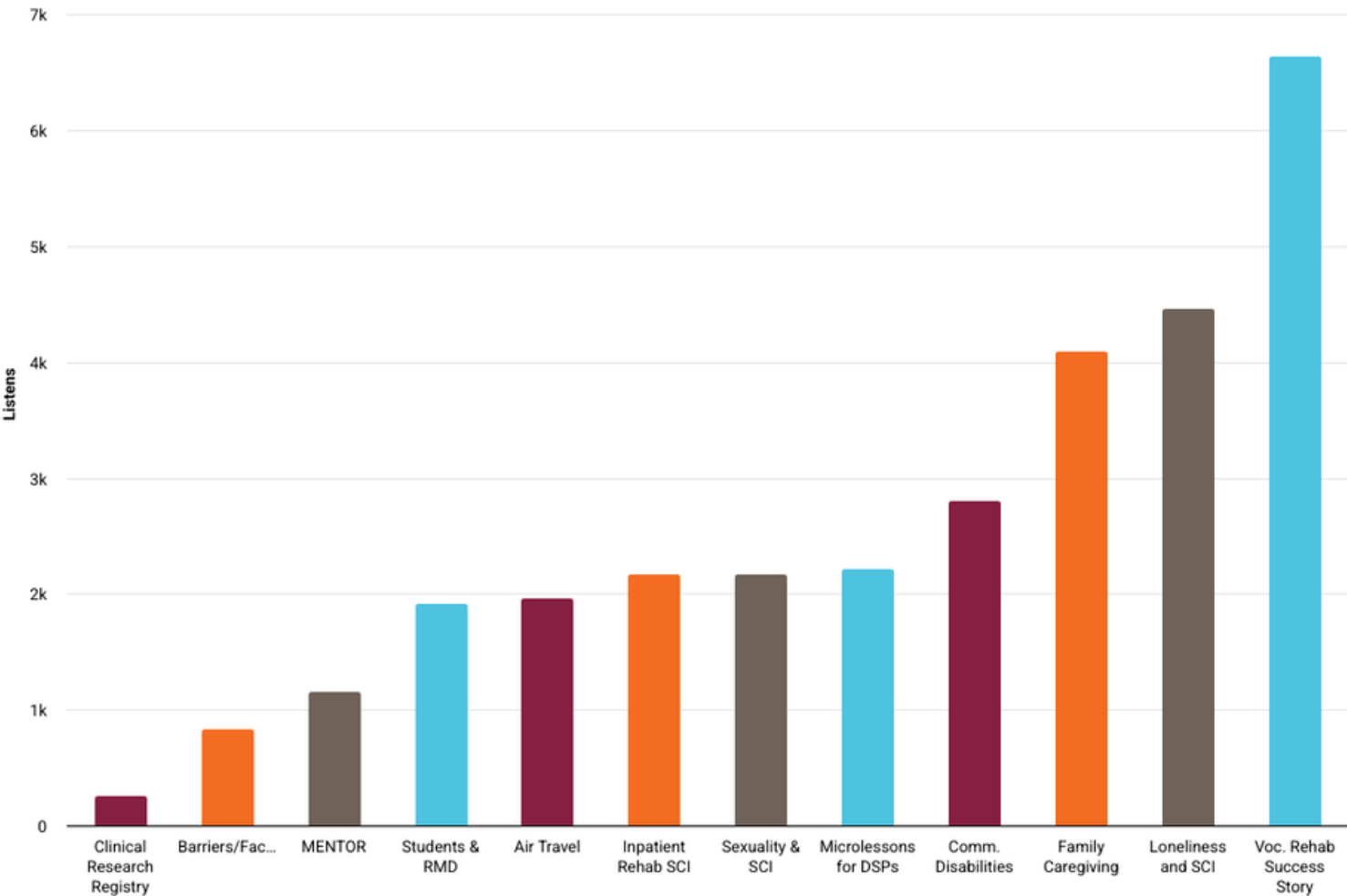
INside the OUTcomes is a monthly podcast that features in-depth conversations with CROR scientists and other leading experts in rehabilitation research. The podcast also includes interviews with people with lived experience of disability and chronic illness. The podcast is available on: [Spotify](#), [Apple Podcasts](#) and [YouTube](#).



Listen to the podcast



Listens for 2025 Episodes



GRANT ACTIVITIES

Grants Funded

Reaching Persons with Spinal Cord Injury With Important Health Information Through a Text-Messaging Intervention: Adaptation and Pilot Study

Craig H. Neilsen Foundation

Principal Investigator: Kerri Morgan, PhD, OTR/L, Washington University

CROR Co-investigator: Alex Wong

The Feasibility of Including People Living With Non-Traumatic Spinal Cord Injury (ntSCI) in the SCIMS National Database: Follow Up and Dissemination

National Institute on Disability, Independent Living, and Rehabilitation Research

CROR Site Principal Investigator: Anne Deutsch

Language Assessment in Context Using Ecological Momentary Assessments (LACE)

New Faculty Seed Grant, Washington State University

Principal Investigator: Amy Kemp, PhD, CCC-SLP, Washington State University

CROR Co-investigator: Alex Wong

Engaging Veterans With Spinal Cord Injury in Robust Cognitive Testing: Accommodating Solutions and Implementation Determinants to Using NIH Toolbox Cognition Battery During Inpatient Rehabilitation

Paralyzed Veterans of America

Principal Investigator: Manrui Zhang, PhD, Northwestern University

CROR Co-investigator: Alex Wong

Grant Submissions Under Review

Building and Testing a Mobile Real-Time Caring Message Intervention for Loneliness and Social Isolation in People with SCI/D.

Craig H. Neilsen Foundation

Principal Investigator: Alex Wong

OTHER PRESENTATIONS

Paralyzed Veterans of America Healthcare Summit and Expo Aug. 24-27, 2025, New Orleans, La.

Alex Wong, Sherri LaVela, Allen Heinemann. "Oral Health Problems in Individuals Living With Spinal Cord Injuries and Disorders"

2025 ARN Rehabilitation Nursing Conference July 23-25, 2025, virtual

Anne Deutsch. "From Practice to Publication: Sharing Clinical Knowledge, Quality Improvement and Evidence-based Innovations"

Duke University Division of Geriatrics Grand Rounds May 5, 2025, virtual

Anne Deutsch. "Making an Impact: Tips on Conducting and Disseminating Policy-relevant Research"

National Academies of Sciences, Engineering and Medicine April 17, Washington, DC

Allen Heinemann (chair). Workshop: "Exploring the Treatment and Management of Chronic Pain and Implications for Disability Determinants"

American Occupational Therapy Association (AOTA) INSPIRE Annual Conference April 3, 2025, Philadelphia, Pa.

Danbi Lee, Laura VanPuymbrouck, Alissa Sheth, Jacqueline Kish. "Building Disability Cultural Humility in Occupational Therapy Education: Introduction to Educational Modules and Resources" (poster)

Association for Rehabilitation, Research, Policy and Education Conference Feb. 24-25, 2025, Savannah, Ga.

Alex Wong. "Real-world Outcomes in Neurobehavioral Disorders: Unlocking the Power of Ecological Momentary Assessment"

Northwestern University Feinberg School of Medicine, Department of Physical Medicine and Rehabilitation meeting Feb. 18, 2025, Chicago, Ill.

Anne Deutsch. "Predicting Self-Care and Mobility Outcomes for Medicare Inpatient Rehabilitation Patients for Quality Measurement"

Spaulding-Harvard Traumatic Brain Injury Model System Summit Nov. 22, 2024, virtual

Anne Deutsch. "Improving Access to Post-acute Care for People with Severe Brain Injury: A Call to Action"

American Congress of Rehabilitation Medicine 101st Annual Fall Conference & EXPO Oct. 31-Nov. 3, 2024, Dallas, Texas

- Allen Heinemann, moderating. NIDILRR ARRT Fellows Symposium and Publishing in High Impact Journals
- Anne Deutsch. Special symposium. "Making an Impact: Tips on Conducting and Disseminating Policy-relevant Research"
- Jacqueline Kish. "Exploring the Complexity of Fixed-Route Transportation Accessibility: Insights from Experiences of People with Disabilities" (poster)

Brain Injury Association of Illinois 2024 Annual Educational Conference Oct. 17-18, 2024, virtual

Alex Wong. "Smartphone-based Approaches for Measuring Cognition, Mood, and Daily Function After Acquired Brain Injury"

International Spinal Cord Society Annual Scientific Meeting Sept. 22-25, 2024, Antwerp, Belgium

- Kim Monden, Allen Heinemann. "What is Quality of Life and How Do We Measure It" (instructional seminar)
- Allen Heinemann. "Review of the SCI-QOL and Its Relationship With Established Quality of Life Metrics" (webinar)

Academy of Spinal Cord Injury Professionals Annual Conference & Expo Sept. 1-4, 2024, Chicago, Ill.

Alex Wong, Allen Heinemann. "Preliminary Evidence of a Patient Engagement Intervention for Optimizing Outcomes in Inpatient SCI Rehabilitation"

OTHER PUBLICATIONS

1. Deutsch A. From Practice to Publication: Sharing Clinical Knowledge, Quality Improvement, and Evidence-Based Innovations. Rehabil Nurs. 2025 Aug 1;50(3):89-90. doi: 10.1097/RNJ.0000000000000510. Epub 2025 May 28. PMID: 40739599.
2. Wang S, Schwirtlich T, McLaughlin D, Beestrum M, Heinemann AW. Clinical Applications and Measurement Properties of the Digitized Archimedes Spiral Drawing Test: A Scoping Review. Mov Disord Clin Pract. 2025 Aug 7. doi: 10.1002/mdc3.70278. Epub ahead of print. PMID: 40776580.
3. Deutsch A, Palmer L, McMullen T, Luke J, Kwon S, Ingber MJ. Do Medicare Inpatient Rehabilitation Facility Patients' Self-care and Mobility Outcomes Vary by Dual Eligibility Status, Race and Ethnicity, Rural Residence, Socioeconomic Status, and Living Alone? Am J Phys Med Rehabil. 2025 Feb 1;104(2):138-145. doi: 10.1097/PHM.0000000000002568. Epub 2024 Jul 3. PMID: 38958576.
4. Wirth M, Motl RW, Bombardier CH, Bartle B, Wong AWK, Aguina K, LaVela SL. Factors associated with perceived social isolation among veterans with spinal cord injury and disorders: Cross sectional survey. J Spinal Cord Med. 2025 Jul;48(4):640-649. doi: 10.1080/10790268.2023.2299500. Epub 2024 Feb 5. PMID: 38315055.
5. Choi H, Heinemann AW, Sung C. Self-stigma profiles among transition-age individuals with disabilities. Rehabil Psychol. 2025 Jul 3. doi: 10.1037/rep0000629. Epub ahead of print. PMID: 40608435.
6. Jesus TS, Lee D, Stern BZ, Zhang M, Struhar J, Heinemann AW, Deutsch A, Jordan N. The Value of Interventions Aimed at Improving the Patient Experience: Systematic Review of Economic Impacts and Provider Well-Being Outcomes. Healthcare. 2025; 13(13):1622. <https://doi.org/10.3390/healthcare13131622>
7. Therikildsen ER, Lorentzen J, Perez MA, Nielsen JB. Evaluation of spasticity: IFCN Handbook Chapter. Clin Neurophysiol. 2025 May;173:1-23. doi: 10.1016/j.clinph.2025.02.258. Epub 2025 Feb 21. PMID: 40068367.
8. Mental Health Matters: Raising Awareness and Providing Resources This May. Deutsch, Anne PhD, MS, RN, CRRN, FACRM, FARN Rehabilitation Nursing Journal 50(2):p 33-34, May 2025. | DOI: 10.1097/RNJ.0000000000000496
9. Jesus TS, Zhang M, Lee D, Stern BZ, Struhar J, Heinemann AW, Jordan N, Deutsch A. Improving Patient Experience With Provider Communication: Systematic Review of Interventions, Implementation Strategies, and Their Effectiveness. Med Care. 2025 Apr 29. doi: 10.1097/MLR.0000000000002158. Epub ahead of print. PMID: 40307673.
10. Jesus TS, Lee D, Zhang M, Stern BZ, Struhar J, Heinemann AW, Jordan N, Deutsch A. Organizational and Service Management Interventions for Improving the Patient Experience With Care: Systematic Review of the Effectiveness. Int J Health Plann Manage. 2025 Jul;40(4):883-895. doi: 10.1002/hpm.3916. Epub 2025 Mar 21. PMID: 40114643; PMCID: PMC12215600.

11. Worobey LA, Canter D, Fyffe D, Slocum C, Bryce TN, Swank C, Monden K, Tefertiller C, Heinemann A, Cowan R, Berner T, Boninger ML. Wheelchair Repairs: Delays, Causes, and Associated Outcomes. Arch Phys Med Rehabil. 2025 Mar;106(3):379-386. doi: 10.1016/j.apmr.2024.10.001. Epub 2024 Oct 18. PMID: 39427781
12. Carpenter J, Deom C, Bodine A, Heinemann AW, Lieber RL, Sliwa J. Development of a Multidimensional, Multigroup Measure of Cognitive-Communication for Inpatient Rehabilitation. Arch Phys Med Rehabil. 2025 Mar 3:S0003-9993(25)00529-5. doi: 10.1016/j.apmr.2025.02.007. Epub ahead of print. PMID: 40043927.
13. Jesus TS, Lee D, Zhang M, Stern BZ, Struhar J, Heinemann AW, Jordan N, Deutsch A. Organizational and Service Management Interventions for Improving the Patient Experience With Care: Systematic Review of the Effectiveness. Int J Health Plann Manage. 2025 Jul;40(4):883-895. doi: 10.1002/hpm.3916. Epub 2025 Mar 21. PMID: 40114643; PMCID: PMC12215600.
14. Carlozzi NE, Mendoza-Puccini MC, Marden S, Backus D, Bambrick L, Baum C, Bean JF, Brenner LA, Cramer SC, Cruz TH, Deutsch A, Frey K, Gay K, Graham JE, Heaton RK, Juengst S, Kalpakjian CZ, Kozlowski AJ, Lang CE, Pearlman J, Politis A, Ramey S, Rasch E, Sander AM, Schambra H, Scherer MJ, Slomine BS, Twamley EW, Wolf SL, Heinemann AW. Common Data Elements for Rehabilitation Research in Neurologic Disorders (NeuroRehab CDEs). Arch Phys Med Rehabil. 2025 Mar 26:S0003-9993(25)00619-7. doi: 10.1016/j.apmr.2025.03.039. Epub ahead of print. PMID: 40154859.
15. Noonan VK, Humphreys S, Biering-Sørensen F, Charlifue S, Chen Y, Guest JD, Jones LAT, French J, Widerström-Noga E, Lemmon VP, Heinemann AW, Schwab JM, Phillips AA, Rizi MM, Kramer JLK, Jutzeler CR, Torres-Espin A. Enhancing data standards to advance translation in spinal cord injury. Exp Neurol. 2025 Feb;384:115048. doi: 10.1016/j.expneurol.2024.115048. PMID: 39522801.
16. Deutsch A. Rehabilitation Nursing Journal: Reflecting on the Past and Looking to the Future. Rehabil Nurs. 2025 Feb 1;50(1):1-2. doi: 10.1097/RNJ.0000000000000488. PMID: 39930580.
17. Heinemann AW, Fatone S, LaVela SL, Deutsch A, Peterson M, Slater BCS, Kale IO, Soltys NT, McPherson V, McCombs N. Performance-based and patient-reported outcome measures for custom ankle-foot orthosis users: reliability, validity, and sensitivity evidence. Disabil Rehabil. 2025 Jan 20:1-12. doi: 10.1080/09638288.2025.2453100. Epub ahead of print. PMID: 39831518.
18. Coomer N, Akiyama J, Morley M, Silver B, Deutsch A. Methods for Estimating Costs for Stays at Inpatient Rehabilitation Facilities and Long-Term Care Hospitals. Archives of Physical Medicine and Rehabilitation. Dec. 2024. <https://doi.org/10.1016/j.apmr.2024.07.018>
19. Heinemann AW, Deutsch A, Brewington D, Foster L, Cook KF, Miskovic A, Cella D. Nonresponse Bias on Inpatient Rehabilitation Hospitals' Experience of Care Quality Measure Scores. Arch Rehabil Res Clin Transl. Dec 2024;6(4):100363. doi:10.1016/j.arrct.2024.100363
20. Cherney LR, Kozlowski AJ, Domenighetti AA, Baliki MN, Kwasny MJ, Heinemann AW. Defining Trajectories of Linguistic, Cognitive-Communicative, and Quality of Life Outcomes in Aphasia: Longitudinal Observational Study Protocol. Arch Rehabil Res Clin Transl. Jun 2024;6(2):100339. doi:10.1016/j.arrct.2024.100339
21. Chrzastowski S, Salley E, Jeppson T, DeGroot J, Armour M, Goodman C, Heinemann A, Cherney L. Overcoming Barriers to Recruitment and Retention of Research Participants with Aphasia. Archives of physical medicine and rehabilitation. 2024;105(4):e39-e40. doi:10.1016/j.apmr.2024.02.108

22. Chen Y, Wen H, Deutsch A, Botticello A, Lo JG, Richards JS. Substance use during the COVID-19 pandemic among persons with traumatic spinal cord injury: A cross-sectional perspective. J Spinal Cord Med. 2024 Oct 11:1-10. doi: 10.1080/10790268.2024.2400748. Epub ahead of print. PMID: 39392454.
23. Chen Y, Wen H, Deutsch A, Botticello A, Lo JG, Richards JS. Substance use during the COVID-19 pandemic among persons with traumatic spinal cord injury: A cross-sectional perspective. J Spinal Cord Med. 2024 Oct 11:1-10. doi: 10.1080/10790268.2024.2400748. Epub ahead of print. PMID: 39392454.
24. Heinemann AW, Deutsch A, Brewington D, Foster L, Cook KF, Miskovic A, Cella D. Nonresponse Bias on Inpatient Rehabilitation Hospitals' Experience of Care Quality Measure Scores. Arch Rehabil Res Clin Transl. 2024 Aug 11;6(4):100363. doi: 10.1016/j.arrct.2024.100363. PMID: 39822198; PMCID: PMC11734007.
25. Deutsch A, Burns J, Potelle J, Kessler A. Trends in the Characteristics and Outcomes of Older Patients with Non-Traumatic Spinal Cord Injury Treated in Inpatient Rehabilitation Facilities: 2013 to 2018. Journal of Spinal Cord Medicine. 2024: 1-11 <https://doi.org/10.1080/10790268.2024.2335414>
26. Deutsch A, Palmer L, McMullen T, Luke J, Kwon S, Ingber M. Do Medicare Inpatient Rehabilitation Facility Patients' Self-Care and Mobility Outcomes Vary by Dual Eligibility Status, Race and Ethnicity, Rural Residence, Socioeconomic Status, and Living Alone? American Journal of Physical Medicine & Rehabilitation. July 3, 2024. <https://doi.org/10.1097/PHM.0000000000002568>

MENTORSHIP



[Heerak Choi](#), PhD, is a postdoctoral fellow in Northwestern University's Center for Education and Health Sciences. Her research focuses on self-stigma in people with disabilities. Her poster on the topic won three American Psychology Association Division 22 awards in 2025. She also works on a CROR project exploring employment barriers for people with physical disabilities under the mentorship of Dr. Allen Heinemann, Dr. Ehrlich-Jones, Dr. Deutsch, and CROR research manager, Deborah Crown, MS, CRC, LCPC.



[Emily Dinelli](#), L/CPO, is a PhD candidate in the Health Services & Outcomes Research program at Northwestern University. She has contributed to CROR research related to employment for people with disabilities and development of an outcome measure for home and community-based services. Emily is mentored by Dr. Deutsch. Dr. Heinemann serves as her dissertation committee chair. She received a Mobility is Freedom Fund scholarship to support her research.



[Tiago S. Jesus](#), PhD, OT, is a former Advanced Rehabilitation Research and Training fellow at Northwestern University Feinberg School of Medicine. He is a research assistant professor of occupational therapy at Ohio State University and a health services researcher and occupational therapist with a focus on addressing geographic and systemic imbalances in access to rehabilitation services, both within the United States and globally. He continues to be mentored by Dr. Deutsch and Dr. Heinemann.



[Jacqueline Kish](#), PhD, OTR/L, is a CROR research scientist and a former CROR postdoctoral fellow. Her research focuses on transportation accessibility for individuals with disabilities. She currently serves as a co-investigator on a project to improve air travel for people with disabilities. During her fellowship, she was mentored by Dr. Ehrlich-Jones and Dr. Heinemann. In June, Dr. Kish transitioned into her current role as a CROR research scientist.



[Roberto Lopez-Rosado](#), PT, DPT, is a doctoral candidate in the Health Services & Outcomes Research program at Northwestern University Feinberg School of Medicine. He supports CROR research on mobility outcomes among older adults who with spinal cord injury who are Medicare beneficiaries. He is mentored by Dr. Heinemann and Dr. Deutsch. He received an NIDILRR Mary Switzer dissertation fellowship in 2025 to support his studies.



[Amy McArthur](#), PhD, OTR/L, is a postdoctoral fellow who works with the Rehabilitation and Research Training Center on Home and Community-based Services at Shirley Ryan AbilityLab. She contributes to a case study project to identify best practices for providing person-centered HCBS. She is mentored by Dr. Heinemann.



[Nicole Sharf](#), MA, is a clinical psychology doctoral candidate at The Chicago School. As a volunteer, she supported CROR research to promote the psychological health of people with spinal cord injury. Her focus was on sexuality and spinal cord injury. She continues to be mentored by Dr. Heinemann.



[Melody Yang](#), PhD, OT, is a postdoctoral fellow at Northwestern University. Yang contributes to a CROR study of employers' experience and perspectives in hiring people with physical disabilities as well as a second study comparing rehabilitation lengths of stay across the United States, Canada, the United Kingdom, the Netherlands, and Australia.

[Amy Balas](#), RN, and [Isaac Smith](#), RN, at Shirley Ryan AbilityLab have been mentored by Dr. Deutsch and director of nursing research, Katie Earnest, MSN, RN, CRRN, CNML. Their mentorship is supported by a Catalyst Grant for staff nurse development in scholarly writing. Amy is creating an online guide to help nurses empower patients with spinal cord injury, while Isaac is developing a protocol for a scoping review on the experiences of children with functional neurological disorders.

[Damyan Farion](#) is a medical student at Midwestern University in Glendale, Ariz. He wrote a summary of the IRF-PAI (Section GG) rehabilitation instrument under the mentorship of Dr. Ehrlich-Jones. He is also mentored by Dr. Deutsch.

[Jonathan Ripic](#), PT, DPT, is a senior physical therapist who works in the Renee Crown Center for Spinal Cord Innovation at Shirley Ryan AbilityLab. He is the recipient of a Mentored Catalyst Grant focused on prediction of acute and long-term functional and neurologic recovery following SCI. He is mentored by Dr. Heinemann.

[Yun \(Debbie\) Shi](#), PhD, OTR/L, is a postdoctoral fellow in the Department of Population Health and the Center for Healthful Behavior Change in the New York University Grossman School of Medicine. Dr. Wong is one of her mentors, providing guidance on digital health research.

[Manrui Zhang](#), PD, MPH, MSW, is a postdoctoral fellow in the Northwestern University Center for Health Services & Outcomes Research. She is interested in understanding, developing, and implementing outcome measures, especially assessments of cognitive functioning in medical rehabilitation settings. She is mentored by Dr. Wong.

2025 CROR Medical Externs

Each summer, Shirley Ryan AbilityLab offers students entering their second year of medical school an opportunity to participate in clinical and research activities for six weeks. CROR hosted three medical externs this year.



Left to Right: Marianne Kanaris, Jakobi Johnson, Hattie Meehan.

Marianne Kanaris is a second-year medical student at Northwestern University Feinberg School of Medicine. As a medical extern at Shirley Ryan AbilityLab, she rotated on the brain injury service and recruited participants to evaluate outcome measures developed by CROR researchers assessing the effectiveness of home and community-based services (HCBS) in achieving person-centered goals.

Jakobi Johnson is entering his second year at the Geisel School of Medicine at Dartmouth College. At Shirley Ryan AbilityLab, he split his time between clinical exposure to pediatric and spinal cord injury patients and contributed to CROR's Rehabilitation Measures Database by updating the summary for the High-Level Mobility Assessment Tool (HiMAT).

Hattie Meehan is a second-year medical student at the University of Houston. Her externship at Shirley Ryan AbilityLab included working with patients with stroke, multiple sclerosis and rare neuromuscular disorders. She also helped recruit participants for a CROR HCBS project.

AWARDS & ACCOLADES



Dr. Heinemann (center, holding flowers) received the 2025 Mentor of the Year Award from the Northwestern University Feinberg School of Medicine Medical Faculty Council. He has mentored dozens of fellows, medical students, residents and early career scientists over the course of his career, many of whom have gone on to become leaders in rehabilitation psychology, rehabilitation measurement and health services research.

Dr. Heinemann was also nominated for membership in Sigma Xi, an international scientific and engineering research honor society. Membership honors individuals for outstanding contributions to science. His impactful work in rehabilitation research, psychology, and health services continues to advance the field and improve lives.



Finally, he received the Gold Key Award at the American Congress of Rehabilitation Medicine 101st Annual Fall Conference & EXPO. The Gold Key is the highest honor given by ACRM and recognizes members of the medical and allied health professions who have rendered extraordinary service to the cause of rehabilitation.



Dr. Ehrlich-Jones received the Outstanding Mentor Award from the Career Development Networking Group of the American Congress of Rehabilitation Medicine at the 2024 American Congress of Rehabilitation Medicine 101st Annual Fall Conference & EXPO. The award honors those who have made significant contributions to the development of early career rehabilitation professionals through mentorship. The Early Career Development Course and the Career Development Networking Group's Mentoring Task Force.

CONGRATULATIONS



FELLOW OF ACRM 2025

ALEX WONG, PhD, DPhil,
Assistant Director in the Center for Rehabilitation
Outcomes Research
Shirley Ryan AbilityLab
Research Associate Professor of Physical Medicine
& Rehabilitation and Medical Social Sciences
Northwestern University Feinberg School of
Medicine



ACRM AMERICAN CONGRESS OF
REHABILITATION MEDICINE



Dr. Wong was named a fellow of the American Congress of Rehabilitation Medicine. The designation recognizes members with an outstanding record of professional service to ACRM who have also made significant contributions to the field of physical medicine and rehabilitation at the national level. He will be recognized at ACRM's annual conference in 2025.



From left to right: Randi Davis, publisher, Wolters Kluwer, Elayne DeSimone, PhD, International Academy of Nursing Editors, Anne Deutsch, RN, PhD

Dr. Deutsch accepted the International Academy of Nursing Editors Nursing Journal Hall of Fame award on behalf of the Rehabilitation Nursing Journal, where she serves as editor.

Dr. Deutsch also was named a fellow of the American Academy of Nursing. Fellows are inducted into the organization for their extraordinary efforts to improve health locally and globally. With more than 3,000 fellows, the Academy represents nursing's most accomplished leaders in policy, research, administration, practice, and academia.



Angelika Kudla, MS, LCMHCA, a CROR senior project coordinator, earned a Sarah Baskin Manuscript Award, Nursing and Allied Health, for her manuscript, "Person-, Job-, and Environment-Related Factors Associated with Long-term Job Retention of People with Physical Disabilities." The award is given by Northwestern University Feinberg School of Medicine.

PROFESSIONAL SERVICE ACTIVITIES

ALLEN HEINEMANN

- Member, Outcomes Following SCI Clinical Practice Guidelines Panel, Paralyzed Veterans of America
- Co-chair, NINDS Oversight Committee for the NeuroRehab Common Data Elements
- Re-appointed to the National Academy of Medicine's Standing Committee of Medical and Vocational Experts for the Social Security Administration's Disability Programs
- Chaired a planning committee on Exploring the Treatment and Management of Chronic Pain and Implications for Disability Determinations for the National Academy of Medicine
- Co-editor-in-chief, Archives of Physical Medicine and Rehabilitation

LINDA EHRLICH-JONES

- Chair, Awards Committee of the American Congress of Rehabilitation Medicine
- Immediate past chair, ACRM Measurement Interdisciplinary Special Interest Group
- Program committee, American Congress of Rehabilitation Medicine
- Membership and awards committee, American College of Rheumatology
- Board of directors, American Spinal Cord Injury Professionals SCI Nurses
- Liaison to the Eunice Kennedy Shriver National Institute of Child Health and Human Development Advisory Council from the National Advisory Board of Medical Rehabilitation Research

ALEX WONG

- Program committee, American Congress of Rehabilitation Medicine 2025 Conference
- Chair of the Measurement Interdisciplinary Interest Group of the American Congress of Rehabilitation Medicine
- Member, Community Group Oversight Committee of the American Congress of Rehabilitation Medicine
- Membership committee, American Congress of Rehabilitation Medicine.
- Associate editor of the Rehabilitation Research, Policy and Education Journal

ANNE DEUTSCH

- Editor of the Rehabilitation Nursing Journal.
- Chair, American Congress of Rehabilitation Medicine 2025 Conference Program Committee
- Co-chair, CMS/Mathematica HCBS Quality Measures Technical Expert Panel
- Member, TBI National Data and Statistical Center National Advisory Board
- Member, Other Chronic Health, Mental Health, and Potentially Disabling Conditions (OTCC) Flags Project Technical Expert Panel, Index Analysis Project Team/Centers for Medicare & Medicaid Services
- Co-chair, Home and Community-based Services Measures Maintenance and Development Technical Expert Panel project, Mathematica/Centers for Medicare & Medicaid Services
- Member, Endorsement and Maintenance Cost and Efficiency Committee, partnership for Quality Measurement by Battelle
- Member, Policy and Legislation Committee, American Congress of Rehabilitation Medicine

JACQUELINE KISH

- Community member, CE-SCORE Community of Practice at Feinberg School of Medicine, Northwestern
- Member, Illinois Occupational Therapy Association taskforce on home and community-based services
- Member, Shirley Ryan AbilityLab IDEA council, health equity subcommittee