The Search for Biomarkers of Stress

We recently completed a pilot study measuring biomarkers of stress in 30 people with a spinal cord injury. A pilot study is a small-scale study that may serve as a springboard for a much larger study.

Biomarkers are physical indicators that can be identified using samples of blood, urine, or other physical measurements. Some of the more common markers we used included blood pressure and cholesterol. In addition, bone density was measured using a DEXA Scan machine.

The purpose of this study was to begin to look at biomarkers of stress, which is basically wear and tear on the body from repeated or prolonged exposure to stressful situations. How well someone adjusts to or copes with a stressful situation is also an important consideration.

Is there a relationship between spinal cord injury, stressful situations, and changes in biomarkers? We cannot answer this question based on our pilot study that used self-selected volunteers. However, we learned a great deal about how to collect the biomarker data and were pleased that we were able to collect the needed blood and urine specimens. People participated freely, and it was possible to conduct this study in a clinic. These were the essential aims of the pilot study.

We are planning a grant submission that would allow us to collect enough information to answer the basic question regarding biomarkers, stress, and SCI. Ultimately, our goal is for this study to aid in the treatment of aging related conditions in chronic SCI.
The CAP met at the Shepherd Center on February 16, 2009. We had a lively discussion of topics surrounding employment after SCI. The goal of the CAP was to help us design survey questions related to the steps to working after SCI.

The discussion initially focused on the financial disincentives related to working and the potential loss of benefits. Even when it is explained how your benefits will be affected when you start work, many people truly do not understand until it is too late.

Panel members felt that peer support is crucial to motivate people to work and that it is essential that the Social Security Administration disseminate their work incentive programs more effectively in the community.

The CAP agreed that it is key to get the person involved in the peer support/pre-employment process directly from the acute care discharge through a centralized system - such as the SCI Models Systems. The newly injured person needs to be motivated to become active in the community.

The consensus was that until the SCI population is integrated into the mainstream, public awareness, lack of accessibility, and prejudice will continue.

Concrete suggestions were made as to looking for work. Joining a job club as a means of learning more about work was one example. Another suggestion was for people to do volunteer work in order to see how they can handle the rigors of regular employment.

With the help of the CAP, we have designed a 30-item questionnaire which will help us understand the steps people take to become employed. A total of 200 people will be surveyed. We hope that the results will help direct future studies of employment after SCI.

Websites to Checkout!

* South Carolina Spinal Cord Research Fund: [www.scscirf.org](http://www.scscirf.org)
* GCF Learn Free: [www.gcflearnfree.org](http://www.gcflearnfree.org)
* Disability Information and Resources: [www.makoa.org](http://www.makoa.org)
* DBTAC - Southeast ADA Center: [www.sedbtac.org](http://www.sedbtac.org)

Disclaimer: We list these websites for your information only and do not endorse the information posted on these websites.

Ongoing Research Updates!

Currently are in the data collection phase of Study 1: “Risk of Adverse Outcomes after SCI: A Longitudinal Study,” and Study 2: “A Longitudinal Study of Risk for Hospitalization, Pressure Ulcers, and Subsequent Injuries after Spinal Cord Injury.” These studies will help rehabilitation professionals better understand how SCI impacts everyday life and will provide a basis for the development of more effective programs for participation and quality of life after SCI. To date we have received over 1500 completed surveys from participants.

In addition, we are in the data collection phase of the study, “Participation, Subjective Well-being, Health, and Spinal Cord Injury: A 35-year Longitudinal Study.” This study is the longest running study of its kind and will continue to provide valuable insight into the patterns of what is occurring post-injury in the areas of secondary conditions, health, and quality of life issues. To date we have received over 700 completed surveys from participants.
At 82 years of age, Pat Rooney has had many challenges over the course of his life. I recently spoke with Pat to get his impressions on what it is like to live 45 years with a spinal cord injury (C4-5 incomplete), as well as his secret for living such a long life. In a calm confident voice, Pat expressed that his philosophy of life is to always have a positive attitude and a strong desire to be successful, “Both pre- and post-injury, I have always been the type of person who strived to be successful in whatever I tried, especially if people said it could not be done.”

At the time of his injury in 1963, doctors predicted that Pat would not live more than 3-5 days. After another year, the prediction of the health professionals was that he would not live more than 10 years. Pat outlived this prediction more than four times over and still counting.

Pat’s employment history is an excellent example of his motivation to succeed. Using his advertising and merchandising background, he found his way back to his pre-injury employer, 3M, where he developed and ultimately managed their telemarketing sales program. He travelled at least every second or third week with the assistance of an attendant. After working for 32 years at 3M, Pat established his own sales consulting business where he worked for another 15 years. When asked what his key to success was in the workplace, Pat thought for a moment and responded that he never, ever gave up.

Pat has been married for 52 years and has 2 daughters and 4 grand children. He reflected that he also had a son who passed away as a result of cancer.

When asked how services for people with disabilities have changed over the years, Pat expressed that, until very recently, he has found it more and more difficult to find good quality attendant care. At times, he finds it difficult to interact with health professionals, as he continues to hear the words “that is the way it is” from doctors who attribute any medical condition to his age and/or spinal cord injury. Fortunately, Pat continues to exhibit the unwavering desire to live and succeed that has served him so well over the years.

It was a pleasure speaking with Pat. I believe that he is an inspiration to whoever he meets. I know that I was impressed as I hung up the phone.

~ Richard Aust

Our research has identified several health factors that are important for maintaining longevity. It would probably not come as a great surprise to most people that frequent infections are related to a lower life expectancy. That is indeed what we found. We also found a history of fractures and amputations to be associated with decreased longevity.

While we typically think of emotional health as related only to quality of life, depressive symptoms are linked to lower life expectancy as well. Perhaps the most evident health factor related to decreased longevity is a history of skin sores (pressure ulcers). Skin sores requiring surgical repair may be particularly damaging, resulting in lower life expectancy.

Because skin sores can lead to infection, depression, and even amputation, it is very important to be vigilant in avoiding skin sores and infection.

When skin sores and infections do occur, it is imperative to take immediate steps to treat them before they lead to even more complications.

Our results have a clear message: If you want to maintain your longevity, you need to stay as healthy as possible, both physically and emotionally.

Staying healthy will add years to your life. We wish you a long, healthy life.
CHORCUP Update!

The Center on Health Outcomes Research and Capacity for Underserved Populations with SCI and TBI (CHORCUP) is funded by the National Institute on Disability and Rehabilitation Research for a five-year period (2008-2013).

The data collection phase has begun for Study 1. We have completed 10 telephone interviews. A total of 500 African-Americans will be interviewed from the population-based surveillance systems with SCI or TBI. Their health behaviors, access to services, and prevalence of chronic diseases will be compared to those of African-Americans in the general population. Researchers will then identify the extent to which disparities observed in the general population are magnified after injury. Capacity building efforts will include workshops and technical assistance. In addition, South Carolina State University collaborators, Dr. Staten and Dr. Sligh-DeWalt are providing assistance to develop the mentorship of minority undergraduate and graduate students, which is scheduled to begin this summer.

Checkout our website: www.musc.edu/chp/chorcup and blog: sciandtbiresearch.blogspot.com

Upcoming Conference Presentations:

May 4-5, 2009, NARRTC, Arlington, VA
Oral presentation:
Changes in Somatic and Non-Somatic Depressive Symptoms Between Inpatient Rehabilitation and Follow-Up.

September 23-26, 2009, Congress on SCI Medicine, Dallas, TX
Oral presentation:
Self-report Measurement of Depressive Disorders after Spinal Cord Injury: Comparison of the Patient Health Questionnaire and the Older Adult Health and Mood Questionnaire.
Poster presentation:

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