

DEPARTMENT FOR AGING AND REHABILITATIVE SERVICES



COMMONWEALTH NEUROTRAUMA INITIATIVE TRUST FUND



TRIENNIAL REPORT for State Fiscal Years 2012, 2013, 2014 (July 1, 2011 through June 30, 2014)

INTRODUCTION

The Commonwealth of Virginia is committed to improving the treatment and care of Virginians with traumatic brain injury and spinal cord injuries. Through the establishment of the Commonwealth Neurotrauma Initiative (CNI) Trust Fund (www.vacni.org), administered by DARS and the governor-appointed CNI Trust Fund Advisory Board, funds are available to Virginia-based organizations, institutions and researchers to address the needs of people with acquired neurotrauma. The Advisory Board disburses CNI funds through a grant application process for research studies and community-based rehabilitation services, as funds allow.

The Code of Virginia §51.5-12.3(C)(4) requires the Commonwealth Neurotrauma Initiative (CNI) Trust Fund to "...report triennially on October 1, to the Governor and the General Assembly, aggregate data on the operations and funding of the . . . [CNI Trust Fund]." The information contained herein constitutes the October 1, 2014 CNI Triennial Report for State Fiscal Years (SFY) 2012, 2013 and 2014.

BACKGROUND

Effective July 1, 1997, Senate Bill 1132 established the Commonwealth Neurotrauma Initiative (CNI) (www.vacni.org) in the Code as a special nonreverting fund, and also established the CNI Advisory Board. In July 1998, Senate Bill 484 provided that moneys in the CNI Trust Fund "shall be used solely to support grants for Virginia-based organizations, institutions, and researchers." The 1998 legislation also created a mechanism for funding the CNI. Moneys are deposited into the Trust Fund pursuant to § 46.2-411(C) of the which provides the revenue through a reinstatement fee that is charged before restoring an operator's license to any person whose driver's license has been revoked or suspended upon conviction for specified dangerous driving offenses (e.g., DUI-related offenses, hit-and-run, reckless driving, habitual offender,

etc.). In these cases, the Virginia Department of Motor Vehicles is authorized to collect an additional fee of \$30 in order to reinstate an operator's license. Of this fee, \$25 goes to the CNI Trust Fund and \$5 goes to the Department of Motor Vehicles; however, if the driving offense is DUI-related, the \$5 goes to the Virginia Alcohol Safety Action Program Commission (§ 46.2-411).

Prior to 2002, funds were to be equally divided between *Option-A* research grants (50%) and *Option-B* community-based rehabilitative services (50%). In July 2002, legislation amending §46.1-422 of the Code changed the allocation of funds to 47.5% to research and 47.5% to community-based rehabilitation, with 5% allocated for administrative costs.

ADMINISTRATION / OVERSIGHT

State Agency Administration / Oversight. The Code originally directed the Virginia Department of Health to serve as administering agency for the CNI Trust Fund, with the Department for Aging and Rehabilitative Services (DARS) as a mandated partner. This changed in 2002 when prevention activities were removed from the Trust Fund's purpose due to duplicative efforts in the state. Administrative oversight was assigned to DARS, the lead agency in the Commonwealth for coordinating services to people with physical and sensory disabilities (e.g., brain injury, spinal cord injury).

Staffing. In Fiscal Years 2012, 2013, and 2014 administrative staff for the Fund consisted of one full-time Program Specialist responsible for the day to day operation of the Trust Fund, as well as staffing the Advisory Board, and coordinating biennial colloquia as funds allow. The Program Specialist reports to the Manager of the DARS Brain Injury Services Coordination Unit (BISC). The BISC Unit manager provides supervisory oversight for all CNI Trust Fund activities. One additional staff person, a fiscal specialist, contributes a small portion of time to the CNI Trust Fund by providing technical assistance / consultation on financial monitoring and analysis of the program. As a strategy to keep the administrative costs at or below the 5% level, a small percentage of staff salary was billed to the agency's Federal Traumatic Brain Injury (TBI) Grant cost code (the Program Specialist was assigned duties related to DARS' federal TBI grant funding source with federal grant officer approval) during FY '12, '13, and part of '14. This reduced overall Fund expenditures, necessitated by the substantial decline in revenue.

Advisory Board. §32.1-73.1 *et seq.* of the Code authorizes establishment of the CNI Advisory Board, a permanent collegial body affiliated with the State Board of Health pursuant to §2.1-1.6. The first CNI Advisory Board members were sworn in on October 6, 1997. The Advisory Board adopted bylaws outlining the powers and duties of the Board on April 9, 1998.

As specified in the Code of Virginia, the CNI Advisory Board is responsible for administering the CNI Fund, in cooperation with the DARS Commissioner. The Advisory Board consists of seven members:

1. One person licensed to practice medicine in Virginia experienced with brain or spinal cord injury

2. One person licensed by a health regulatory board within the Department of Health Professions with experience in brain or spinal cord injury rehabilitative programs or services
3. One Virginian with traumatic spinal cord injury or a caretaker thereof
4. One Virginian with traumatic brain injury or a caretaker thereof
5. One citizen-at-large who shall not be an elected or appointed public official
6. The Commissioner for Aging and Rehabilitative Services (serves ex officio)
7. The State Health Commissioner

During SFYs 2012 and 2013, no new members were appointed to the Advisory Board. Two board members' terms technically expired June 30, 2012; however, since legislation was proposed by the Department for Aging and Rehabilitative Services changing the status of the CNI Trust Fund Advisory Board members from governor-appointed to commissioner-appointed, board members agreed to serve until a decision was reached. The proposed legislation, which supported the Governor's initiative for reform and reorganization within state government, would have been effective as of July 1, 2013; however, the legislative change was not approved.

In SFY 2014, the Advisory Board welcomed two new members at its September 2013 meeting: Rosemary Rawlins of Glen Allen and Laurie Lindblom, M.D. of the Veterans Administration Medical Center in Hampton. Ms. Rawlins was appointed to fill the position of a "Virginian with a traumatic brain injury or caretaker thereof" (replacing Paige Melton who moved out of state). Ms. Rawlins is a caregiver for her husband who sustained a brain injury and also works for Brainline.org as an editor and a blogger focusing on caregiving issues. Laurie Lindblom, M.D., a physiatrist, was appointed to replace Gregory Helm, M.D. as a "person licensed to practice medicine in Virginia experienced with brain or spinal cord injury." Both Dr. Lindblom and Ms. Rawlins are serving initial four-year terms July 1, 2013 to June 30, 2016.

In SY 2014, three Board members terms were scheduled to expire June 30, 2013, with no eligibility for reappointment. In January, two new board members were appointed: David X. Cifu, M.D. of Richmond is the National Director of the Physical Medicine and Rehabilitation Program for the Veterans Health Administration and Chairman / Herman J. Flax, M.D. Professor in the Department of Physical Medicine and Rehabilitation at Virginia Commonwealth University. Dr. Cifu serves as a "person licensed by a health regulatory board within the Department of Health Professions with experience in brain or spinal cord injury rehabilitative programs or services" (replacing David Reid). Patrik Sandas, Ph.D. of Charlottesville is an economics professor at the University of Virginia who sustained a brain injury during a bicycle accident. Dr. Sandas serves as a "citizen-at-large who shall not be an elected or appointed public official" (replacing Theresa Poole). Finally, at the close of June of 2014, the final current vacancy, an "individual with a spinal cord injury or caretaker thereof" on the CNI Board was filled by Scott Dickens, President and CEO of RocketPop Media in Richmond (replacing incumbent Terry Glenn).

Advisory Board Chair. The only officer of the Advisory Board is the chair. In SFY 2012, David B. Reid, Psy.D., was re-elected as Chair of the Advisory Board for an additional two-year term (per revised bylaws, the chair is eligible for re-election to a second two-year

term). Dr. Reid's appointment to the board was set to expire June 30, 2013; however, given that no new appointments had been made by the Governor's office, Dr. Reid agreed to continue to serve on the advisory board and as chair until such time that the governor appointed someone to replace him.

At the March 2014 Advisory Board meeting, the Board opted to delay the appointment of a new chair until all members were present. At the June 2014 meeting, Dr. Cifu was elected as the new chair for a term of two years (through June 2016).

FISCAL STATUS

The CNI Trust Fund consists of grants, donations, and bequests from public or private sources and funds collected as noted in § 46.2-411 of the Code. The funding mechanism for CNI (a reinstatement fee charged to restore an operator's license that has been revoked or suspended for specified dangerous driving offenses) was established by legislation in 1998, a year after the Trust Fund and the Advisory Board were established. Moneys have been collected and deposited into the CNI Trust Fund since 1998, when a citizen donated \$25 to the Fund. The CNI Trust Fund is a special nonreverting fund in the state treasury, meaning that fund that are unexpended by June 30th do not revert to the State treasury, but remain in the Fund.

The Fund is supported by a statutory funding mechanism through a license reinstatement fee that is charged before restoring an operator's license to any person whose driver's license has been revoked or suspended upon conviction for certain specified dangerous driving offenses (e.g., driving under the influence, reckless drive, etc.). In these cases, the Virginia Department of Motor Vehicles (DMV) is authorized to collect an additional license restoration fee of \$30 in order to reinstate an operator's license. Of this \$30 fee, \$25 goes into the CNI Trust Fund and \$5 goes to DMV; however, if the driving offense is DUI-related, then \$5 goes to the Virginia Alcohol Safety Action Program Commission (§ 46.2-411).

Historically, revenue into the Fund has been relatively stable since it was established. However, the Fund began to see a slow, but steady monthly decline in revenue in SFY 2011 which has continued through SFYs 2012 and 2013. SFY 2014 has been the lowest total revenue the Fund has seen in years. Revenue into the Fund over the past three years is reported as follows:

- 2012: averaged \$87,792 / month or approximately \$1.053 million / year;
- 2013: averaged \$83,908 / month or approximately \$1.006 million / year; and
- 2014: averaged \$81,377 / month or approximately \$976,925 / year.

During this three-year reporting period, revenue into the Fund averaged \$84,359 per month (versus \$95,000 to \$110,000 per month which the Fund had received consistently for more than a decade). DARS staff informed the Advisory Board that, due to the sharp decline in monthly revenue, the cash balance of the Fund was being depleted, thus affecting the Fund's ability to pay ongoing grantee expenditures. The Board decided to approve carryover requests on a case by case basis only, reviewing each request thoroughly to assure that a no-cost

extension and carryover of funds was feasible for that grantee's success (typically DARS staff are authorized to review and approve carryover requests).

Additionally, in SFY 2011, the Advisory Board instituted an 11% reduction across all current grantees (with the reductions effective July 1, 2011). This allowed all grantees to complete grant deliverables and avoided having to cancel any grant awards. Most reductions were administrative in nature and did not affect the outcome of the grant activities.

Staff and other administrative costs over the past three years are reported as follows: SFY 2012: \$59,536; SFY 2013: \$43,788; and SFY 2014: \$62,613. Administrative costs cannot exceed more than 5% of the total Fund balance in any year. Looking at the three-year total revenue into the Fund during this reporting period, 5% for administrative costs would be approximately \$50,600. As a strategy to keep the administrative costs at or below the 5% level, a small percentage of staff salary was billed to the agency's Federal TBI Grant cost code (with federal grant officer approval) during 2012, 2013, and 2014.

Due to decreased revenue into the Fund since SFY 2011, and projections from the Virginia Department of Taxation that the revenue for the Fund would likely continue to decline through SFY 2012 and possibly beyond, the Advisory Board opted to defer release of a Request For Proposals (RFP). The premature release of a new RFP would obligate funds for grant awards that may not be available when expenditures are made, depending upon how revenue is trending. With the revenue fluctuating and currently trending lower over the past three years, the Board has been cautious and voted to defer the issuance of a new RFP until SFY 2015.

GRANT FUNDING / ACTIVITY

Note: Requests to carryover unexpended funds from one grant year to the next are common and acceptable practices. Due to inevitable delays and changes in start-up (e.g., hiring staff, ordering and equipping an office or laboratory, and similar challenges), it is often necessary for grantees to request carryover / no cost extensions to allow additional time for data analysis, preparation of final reports, etc. at the conclusion of their active funding period.

A summary of active grants during this three-year reporting period follows (descriptive and contact information for all grantees is available on the CNI website at www.vacni.org):

- 2012: seven (7) active community grants totaling about \$1.6 million;
- 2013: five (5) active community grantees totaling just under \$931,000; and
- 2014: two (2) active grants totaling \$214,657.

SFY 2011: The Board instituted an 11% reduction of all active grantee budgets as a cost savings measure based on continuing decline of revenue. The Board also determined that funding tied to carryover requests, if approved, could not be used for expenditures during SFY 2012, but that grantees could request no-cost extensions to carry over the funds and use the grant dollars in SFY 2013.

SFY 2012: Two active research grants, both awarded to Virginia Commonwealth University, "Alterations of Sodium Channel Sequestration in Traumatic Axonal Injury following

Experimental Diffuse Traumatic Brain Injury”- Christina Marmarou, Ph.D. and “*Human Neuronal Progenitor Cells Isolated from Neurosurgical Resection Tissue as a Cell Source for Brain Repair Following Trauma*”- Dong Sun, Ph.D., finished no-cost grant extensions.

CNI Grant #10-174/Crossroads to Brain Injury Recovery was approved for a six month no-cost extension (July 1, 2012-December 31, 2012) and use of approximately \$13,000 which was unused at the close of year three due to the project coordinator resigning two weeks before the end of the grant period. This resulted in additional savings and a total of \$26,777 (original \$13,777 approved in September 2011) for the no-cost extension.

CNI Grant #10-178/Virginia Assistive Technology System (VATS) requested to use \$38,493 during a twelve month (July 1, 2012-June 30, 2013) no-cost extension at the close of year three: \$18,000 towards a new HUBSCRUB offered at a discounted rate and \$20,000 in operational fees. VATS had already been approved for \$15,000 in carryover funds in the fall of 2011 so the total available was \$53,493. The Board approved the request with a revision to allow for only the \$20,000 in direct operational costs during a twelve month no-cost extension (July 1, 2012-June 30, 2013) for a total available of \$35,000 (the originally approved \$15,000 as well as the \$20,000) during a no-cost extension.

CNI Grant #10-168/Virginia Commonwealth University: Principal Investigator Dr. Jeffrey Kreutzer requested to use \$18,993.34 for presentation and dissemination of findings at three major conferences (inclusion of a 2% effort). Carryover funding for travel to conferences was not approved by the Board; the remaining balance was returned to the Fund.

CNI Grant #10-175/University of Virginia: Principal Investigator Dr. Ritterband was approved carryover in the amount of \$77,732.62 to use during a twelvemonth no-cost extension of the original grant timeline for continuation of the study and completion of the trial.

CNI Grant #10-176/Virginia Commonwealth University: Principal Investigator Elizabeth Getzel was approved for the use of \$5,626.95 during a twelve month no-cost extension to support the hiring of a part-time student veteran for the VETS in College program.

CNI Grant #10-177/Virginia Commonwealth University: Principal Investigator Dr. Tera Yoder requested to use \$67,727 during a twelve month no-cost extension to work with the Virginia Wounded Warrior Program to continue developing and providing internal and in-service capability through online training and opportunities for in-depth clinical training.

SFY 2013: Monthly revenue into the Fund continued to remain at a lower level than previous years. The Board reviewed all requests for unexpended funds at the close of current grantees’ final contract year, on a case by case basis. Though the Board typically authorizes DARS staff to review and approve carryover requests / no-cost extensions, in light of the tenuous financial situation, the Board requested that staff present all requests for review on a case by case basis.

The Board did not approve a no-cost extension request from Brain Injury Services of Southwest Virginia (BISSWVA) to use \$38,820 in unspent funds from year three to continue

grant activities. Due to an available balance on their books, DARS did not release their June allotment and instructed BISSWVA to return any remaining balance after all obligated funds were expended (but no new expenditures approved).

The Board approved a new carryover request from Crossroads to Brain Injury Recovery (CBIR). This request was in addition to a previously approved no-cost extension to use unspent funds (\$3,667.62) due to staff turnover three months before the end of the grant period. The Board approved the request for CBIR to use additional unspent funds to continue grant activities/initiatives already in play through the original no-cost extension. Not that no new funds were approved; the grantee was required to track the expenditures for funds already received towards the no-cost extension carryover items.

SFY 2014: The Board awarded a one-year grant in the amount of \$150,000 to Brain Injury Services, Inc. (BIS INC) which began November 1, 2013 (and which served as cash match to the TBI Federal grant allowing drawdown of \$270,000 in federal dollars to the Commonwealth of Virginia to implement “*CONCEPT: Commonwealth Neurobehavioral Project Team.*” CONCEPT is a collaborative project that uses an interdisciplinary team / services designed to increase access to critical supports for persons with brain injury who exhibit neurobehavioral challenges. The grant outcomes will maximize independence and productivity in the community and it is hoped that this project will be replicable in other areas of the Commonwealth.

The Board also awarded a one year grant award, “*Access to Neurobehavioral Services in Virginia*” in the amount of \$134,657 to James Madison University (JMU) to update the Virginia Brain Injury Council’s (<http://www.vadars.org/vbic.asp>) 2010 white paper on neurobehavioral services. The CNI grant to JMU began June 1, 2014 and will result in a comprehensive document that provides a common definition of neurobehavioral treatment and services for use in Virginia; identifies prevalence of individuals with brain injury in Virginia who have neurobehavioral needs; describes where and how Virginians with neurobehavioral treatment needs are currently served; identifies neurobehavioral treatment and services currently available in Virginia; and contains a literature review of promising models and interventions to address neurobehavioral issues, as well as a review of promising practices / approaches in other states.

REQUESTS FOR PROPOSALS (RFPs)

SFY 2012: With funding levels continuing to decrease, the Board delayed indefinitely the issuance of an RFP to allow the cash balance to build. The Board monitored the fiscal status closely and continued to discuss when it would be feasible to fund additional grants.

SFY 2013: Revenue continued to decline and the cash within the Fund was not adequate for funding new grants. Therefore, the Board delayed the release of another RFP until SFY 2014. The Board took this strategic measure to allow the Fund to continue carrying out its mission while being sound stewards of the Fund’s state dollars.

SFY 2014: At the close of SFY 2013, the Board learned that DARS received a fifth year of full funding from the TBI Federal Grant. A cash match is required for the Federal TBI Grant

and Commissioner Rothrock asked for the Board's support to approve the use of Commissioner's authority for a one-year contract to provide up to \$150,000 for a grant to research an innovative approach to working with Virginians with brain injury who have neurobehavioral issues. The Board issued a Sole Source contract beginning November 2013 in the amount of \$150,000 to Brain Injury Services, Inc. (BIS INC) to implement "CONCEPT: Commonwealth Neurobehavioral Project Team." (See additional information under Grant Funding section, above.)

The Board also awarded a one-year contract "*Access to Neurobehavioral Services in Virginia*" to James Madison University for \$150,000 to update the Virginia Brain Injury Council's 2010 Neurobehavioral White Paper. This grant award serves as cash match for the first year of DARS' newly awarded four-year federal TBI grant from the Department of Health and Human Services, Health Resources and Services Administration (HRSA), for the period June 2014 through April 2018.

The Board discussed releasing an *Option-A, Research on the Mechanisms and Treatment of Neurotrauma* RFP with the intention of funding up to four proposals. The Board narrowed down priorities and a timeline for the RFP and staff worked diligently with DARS Purchasing and Procurement to release a RFP in late spring. However, the full-time staff person to the Fund announced her resignation from the agency - at the same time that several new board members were appointed - so the Board determined it would be best to wait until the new Board members were up and running and new staff hired before releasing the research RFP. The research RFP is a more complicated grant funding cycle, as external experts / researchers must be hired to review the grant applications. Delaying the RFP allows revenue in the Fund to continue increasing the available cash balance. It also gives the Board more options to award a larger number of *Option-A* research grants or perhaps release an *Option-B* community-based grant RFP at the same time or immediately following the research RFP.

PROGRAM OPERATIONS

SFY 2012: The Advisory Board of the held four quarterly meetings, per bylaws.

Two active grantees, "*Putting Our Heads Together for Brain Injury*" - Michelle Witt and Elizabeth Lincoln of Crossroads to Brain Injury Recovery in Harrisonburg and "*Development and Feasibility of an Internet Intervention for Adults with Spinal Cord Injury to Prevent Pressure Ulcers*" - Michelle Hilgart and Lee Ritterband, Ph.D. of the University of Virginia in Charlottesville provided updates on their grant status at Board meetings.. Additionally, two research grantees, "*Alterations of Sodium Channel Sequestration in Traumatic Axonal Injury following Experimental Diffuse Traumatic Brain Injury*" - Christina Marmarou, Ph.D. of Virginia Commonwealth University (VCU) and "*Human Neuronal Progenitor Cells Isolated from Neurosurgical Resection Tissue as a Cell Source for Brain Repair Following Trauma*" - Dong Sun, Ph.D. of VCU presented final reports to the Board.

A third grantee, "*Best Practices Model for Incarcerated Youth with Brain Injury*" - Jeff Kreutzer, Ph.D., Stephanie Lichiello, and Nancy Hsu, Ph.D. (VCU) reported on their grant

findings (this grant served as a cash match to DARS' Federal Traumatic Brain Injury Grant). This particular grant provided funding to VCU Principal Investigator Dr. Kreutzer to work with the Virginia Department of Juvenile Justice (DJJ) to improve that agency's ability to identify and meet the needs of incarcerated juveniles with TBI by developing and implementing an effective screening tool/protocol for all juveniles entering their system. The grant also developed education and training materials for DJJ personnel on screening, evaluating, and treating juvenile detainees with TBI. A total of 867 subjects were screened initially as a result of the grant and the screening tool is still being used today. The advisory committee for the VCU / DJJ grant created cross-agency and Commonwealth partnerships which included the Department for Aging and Rehabilitative Services, the Brain Injury Association of Virginia, DJJ, Virginia Commonwealth TBI Model System, Virginia Department of Correctional Education, Virginia Department of Education, and the Virginia House of Delegates (J.M. Scott). This grant's work also supported a DARS-sponsored National Policy Summit in Richmond attended by other states working in the area of TBI and juvenile justice (Minnesota, Nebraska, Texas, and Utah).

SFY 2013: The Advisory Board held three quarterly business meetings (the December 2012 meeting was canceled due to unforeseen circumstances; the chair and members receive updates from staff on important information via email and phone). There were three grantee presentations to the Advisory Board:

- *“Development & Feasibility of an Internet Intervention to Prevent Pressure Ulcers in Adults with Spinal Cord Injury”* - Lee Ritterband, Ph.D. and Michelle Hilgart, M.Ed. (University of Virginia).
- *“Common Ground: Linking Wounded Warriors and Community Support Providers”* - Eileen Hammar (Virginia Commonwealth University).
- *“Widening the Net: Increasing Capacity of Virginia's Assistive Technology Re-use Program”* - Barclay Shepard (Virginia Assistive Technology System), Sonja Schaible (Foundation for Rehabilitation Equipment and Endowment), and Sharron Russo (Woodrow Wilson Rehabilitation Center). Note that, as an outcome of the CNI funding to VATS, Virginia is the only state that has more than two or three HUBSCRUBS (the only other area close to the US with as many or more is Canada).

SFY 2014: The Advisory Board held four business meetings. Given the smaller number of grantees in the last three years and the decline in revenue available to the Fund, the Board opted not to hold a biennial colloquium (not enough active grantees, plus it would require additional administrative expenditures from the Fund). Michelle Witt of Crossroads to Brain Injury Recovery (CBIR) presented to the Board at the December and June meetings. CBIR is a partner in the grant awarded to Brain Injury Services, Inc. entitled *“CONcEPT: Commonwealth Neurobehavioral Project Team.”* CONcEPT is a collaborative project that uses an interdisciplinary team to increase access to critical supports for persons with brain injury who exhibit neurobehavioral challenges.

DARS participated in a required periodic regulatory review process seeking public comment and proposing needed changes to the state regulations governing the CNI Trust Fund. Minor revisions were made, most involving language changes for further clarity and understanding by grant applicants and the public. The process involves a public comment period;

no public comments were received. Vanessa Rakestraw, Regulatory Coordinator, presented on the state regulations review process at the Board's June 2014 meeting.

CNI GRANT-SUPPORTED PUBLICATIONS / ACTIVITIES

CNI staff regularly contact current and past grantees requesting information on publications, subsequent funding received, and scholarly activities directly related to CNI grant funding.

Current Reporting Period

Abstracts

O'Donoghue C, Meixner C, Witt M, Heygi S, & Bowman E. Community-based crisis intervention in acquired brain injury: A Virginia Commonwealth Neurotrauma initiative [Abstract]. *Journal of Head Trauma Rehabilitation*, 2010; 25(5): 394-395.

O'Donoghue, C, Meixner, C, Witt, M, & Bowman, E. Community-based crisis intervention in acquired brain injury: Developing a model for response [Abstract]. *Brain Injury*, 2010; 24(3): 114-115.

Articles

Low B, Campbell JN, Kurz JE, Patel S, Register DL, & Churn SB. A cellular mechanism for dendritic spine loss following traumatic brain injury in rat. *J Neurotrauma* (submitted).

Meixner, C, O'Donoghue, C, & Witt, M. Accessing crisis intervention following acquired brain injury: A mixed methods study. *Rehabilitation Psychology*, 2013; 158(4): 377-385.

Sun D, Gugliotta M, Rolfe A, Reid W, McQuiston AR, Hu W, & Young H. Sustained survival and maturation of adult neural stem/progenitor cells following transplantation into the injured brain. *J Neurotrauma*, 2011; 28: 961-972.

Abidi N, Liang X, Parry MR, Williamson J, Gardiner D, Young HF, & Marmarou CR. Temporal course of traumatic axonal injury following diffuse traumatic brain injury in rodent over 90 days post-insult. *J Neurotrauma*, 2010; 27 (5) A-17.

Marmarou CR, Dupree J, Liang X, Abidi N, Zhao Y, Alam U, Parry MR, & Maxwell WL. TBI and post-traumatic disruption of the glial axonal junction. *J Neurotrauma*, 2010; 27(5): A-17.

Patrick P, Buck M, Wamstad J, Blackman J, Rogol A, Kuperminc M, Gurka M, Deboer M, & Norwood K. Traumatic brain injury in children and adolescents: Surveillance for pituitary dysfunction. *Clinical Pediatrics*, 2010; XX(X): 1-6.

Reid, WM, Rolfe A, Register D, Levasseur JE, Churn SB, & Sun D. Strain-related differences after experimental traumatic brain injury in rats. *J Neurotrauma*, 2010; 27(7): 1243-53.

Books/Chapters

Churn, SB. Cellular Mechanisms of Epileptogenesis. In Epilepsy. Intech Publishing, 2011, (ISBN 978-953-307-226-5).

Marmarou, CR. Cortical motor pathway. In Encyclopedia of Clinical Neuropsychology. Caplan B, Deluca J, Kreutzer J, Eds. Springer, New York, NY, 2010.

Marmarou, CR. Periventricular white matter. In Encyclopedia of Clinical Neuropsychology. Caplan B, Deluca J, Kreutzer J, Eds. Springer, New York, NY, 2010.

Marmarou, CR. Pyramidal system. In Encyclopedia of Clinical Neuropsychology. Caplan B, Deluca J, & Kreutzer J, Eds. Springer, New York, NY, 2010.

Marmarou, CR & Parry, M. Basal ganglia. In Encyclopedia of Clinical Neuropsychology. Caplan, B, Deluca, J, & Kreutzer, J, Eds. Springer, New York, NY, 2010.

Marmarou CR, Prieto R, Keisuke T, Young HF, & Marmarou A. Marmarou weight drop model. In Animal Models of Acute Neurological Injuries. Chen J, Xu X-M, & Zao C, Eds. Humana Press, Totawa, NJ, 2010; 393-407.

Taya K, Marmarou CR, Okuno K, Prieto R, & Marmarou A. Effect of secondary insults upon Aquaporin-4 water channels following experimental cortical contusion in rats. *J Neurotrauma*, 2010; 27(1): 229-39.

Videos

Virginia Commonwealth University (VCU) collaborated with the Brain Injury Association of Virginia (BIAV) to create educational / training videos on brain injury for direct services staff working at the Virginia Department of Juvenile Justice (DJJ). The videos are currently available at <http://www.youtube.com/user/biavirginia> and include the following:

- *Introduction to Brain Injury*: Gregory O'Shanick, M.D.
- *Overview of Research Project to Identify Brain Injury among Incarcerated Youth*: Jeffrey Kreutzer, Ph.D.
- *Behavioral Implications and Strategies for Adolescents with Brain Injury*: Harvey Jacobs, Ph.D.

Additional Funding Received as Result of CNI Funding

Altered Excitatory Neurotransmission after Brain Trauma. 12/01/06 – 11/30/11.

R01NS049519. Principal Investigator: Satin, LS. Funding Agency: NINDS. TDC: \$1,250,000.

Biomechanics of Brain Edema and Intracranial Pressure. Applied for in 2014.

5R01NS019235-26-30. Principal Investigator: Marmarou, C R. Funding Agency: NINDS.

Total Direct - \$1,550,000/5 years. National Institutes of Health.

