



# NICoE: An Overview

## National Intrepid Center of Excellence

Thomas J. DeGraba, MD, FAHA, Deputy Director, Chief of Medical Operations  
Robin A. Harvan, EdD, Acting Deputy Director of Education



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# Agenda

## NICoE AT A GLANCE

History of NICoE

NICoE Mission and Vision

NICoE Facility

Discussion

## NICoE DIRECTORATES

Concierge Services & Continuity Management

Clinical Operations & Research

Virtual Reality & Physical Rehabilitation

Education & Training

Discussion



# NICoE Leadership



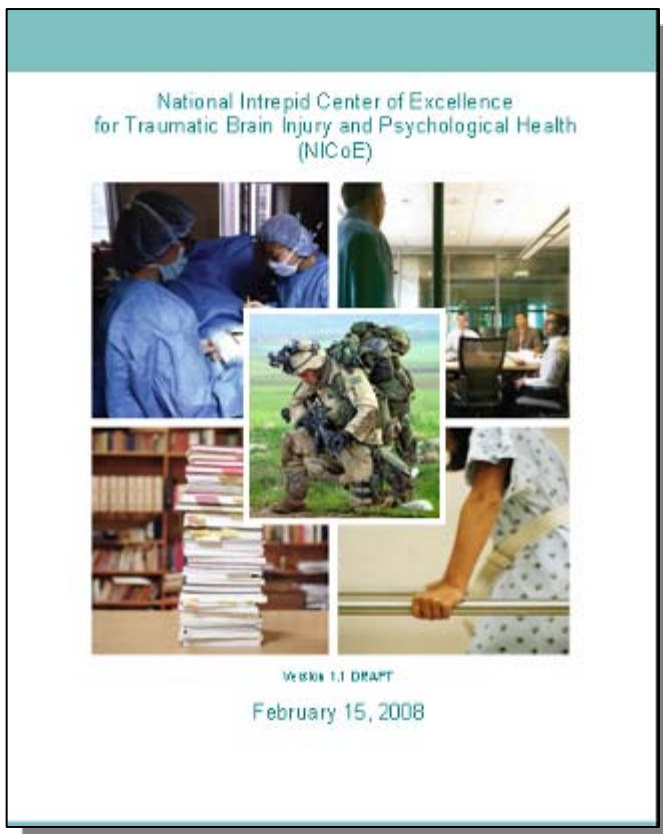
**James P. Kelly, MA, MD, FAAN**  
**Director**  
**Professor**  
**Neurosurgery and Physical Medicine & Rehabilitation**  
**School of Medicine**  
**University of Colorado Denver**



**Thomas J. DeGraba, MD, FAHA**  
**Deputy Director, Chief of Medical Operations**  
**Associate Professor of Neurology**  
**Uniformed Services University of the Health Sciences**



# History of NICoE



*“Our nation is truly blessed that so many talented and patriotic young people have stepped forward to serve. They deserve the very best facilities and care to recuperate from their injuries and ample assistance to navigate the next step in their lives, and that is what we intend to give them. Apart from the war itself, this department and I have no higher priority.”*

– Robert Gates, U.S. Secretary of Defense



# Intrepid Fallen Heroes Fund



- The NICoE has been built and equipped through the philanthropic contributions and fundraising efforts of the Intrepid Fallen Heroes Fund (IFHF).
- The NICoE will endure as a tribute to all who serve and as a lasting legacy of the patriotic citizens who have made its existence possible.
- The IFHF continues an effort begun in 1982 by Intrepid Founders Zachary and Elizabeth Fisher. Zachary and Elizabeth are also the founders of the Fisher House Foundation and the Intrepid Sea–Air–Space Museum.
- “Intrepid” is by definition to be bold, fearless, and brave. In the context of the NICoE it also signifies strength, resilience, and courageousness.
- The NICoE is a way for the American people to express their gratitude towards our Warriors and their families: the “ultimate yellow ribbon,” and an instrument of hope, healing, discovery, and learning.





# NICoE Mission and Vision



**Vision:** The NICoE is an instrument of Hope, Healing, Discovery, and Learning.

**Mission:** To be the leader in advancing world-class psychological health and traumatic brain injury treatment, research, and education.

## Guiding Principles:

- A *hub* for psychological health and traumatic brain injury *best practices and consultation*
- A *referral center* primarily for service members and their families with complex care needs
- An *exemplar of hospitality* in support of *physical, mental, and spiritual healing*
- A *model of interdisciplinary diagnostic and treatment planning* in a *family focused, collaborative environment*
- A *research hub* to leverage the unique patient base, the most current technical and clinical resources in order to initiate innovative pilot studies designed to advance medical science in TBI and PH
- A knowledge source that *applies evidence-based medicine* and approaches which elevate the highest level of care on a global scale
- An *education and training platform* for the dissemination of next generation standards of care and resilience to providers as well as service members and families
- A *repository* for neuro-cognitive military and civilian academic and industry *research*
- An innovative platform committed to *long-term follow-up and family contact*
- An *arena* for the DCoE Component Centers and external organizations to come together



# NICoE State-of-the-Art Technology



MEG



Fluoroscopy



Virtual Reality



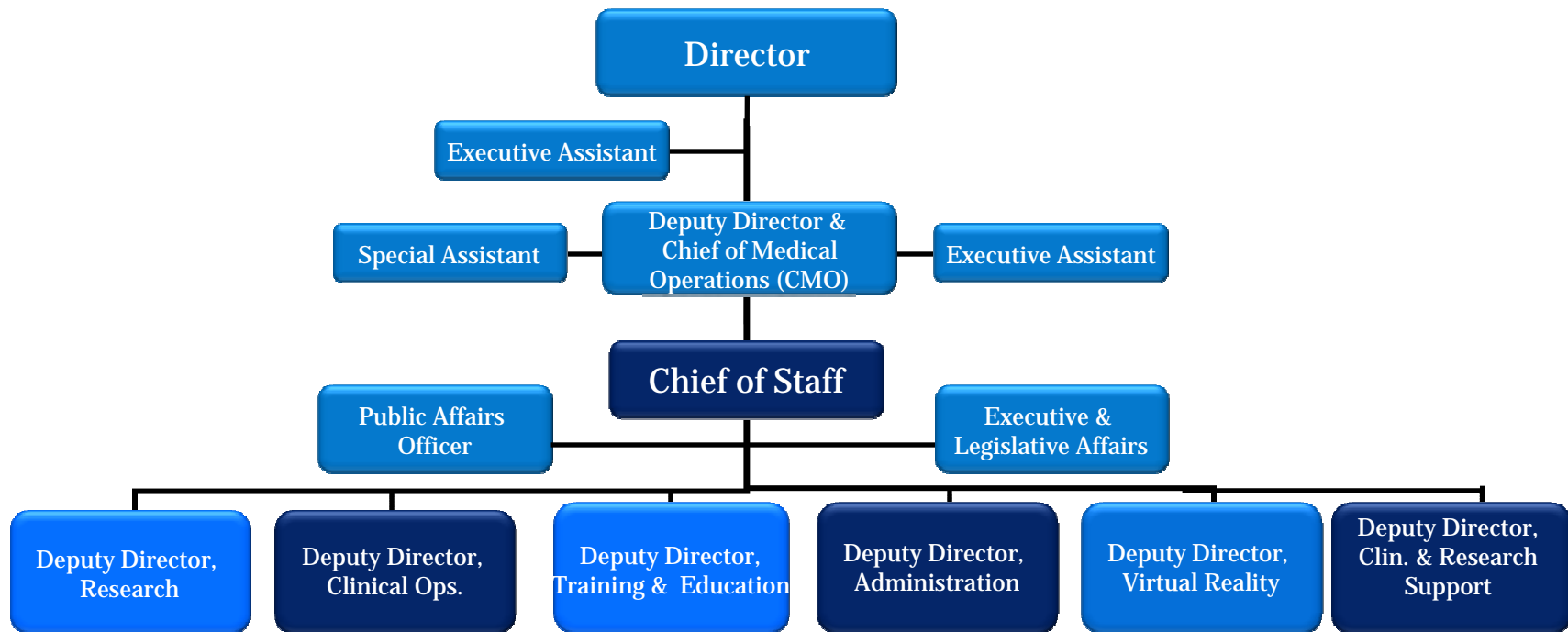
CAREN



Dive Room



# NICoE Organization





# The Facility



**Location:** campus of the Naval Support Activity – Bethesda, MD (home of the National Naval Medical Center)

**Lot Size:** ~3 AC

**Building Size:** ~72,000 SF

**Number of Stories:** 2

**Major Diagnostic / Rehabilitation Equipment:**

- Magnetic Resonance Imaging (3-T) / Functional MRI / Diffusion Tensor Imaging
- Positron Emission Tomography with Computed Tomography (PET/CT)
- Magnetoencephalography (MEG) Scanner
- Trans-Cranial Doppler Ultrasound
- Fluoroscopy
- CAREN (Computer Assisted Rehabilitation Environment) system





# Ribbon Cutting Ceremony

- 24 June 2010 Ribbon Cutting Ceremony to dedicate the NICoE
- Following the Ribbon Cutting and incorporation into NNMC, the NICoE will further be developed to include:
  - Patient Safety, Joint Commission, and Quality Health Indicators programs initiated
  - Authorities defined
  - Clinical protocols and procedures developed
  - Continuity processes developed
  - Provider credentialing/privileging as clinical staff on-boards
  - Staff on-boarding, training, and integration coordinated
  - All equipment and software installed/calibrated
  - Preliminary research projects initiated
  - Strategic Communications efforts implemented and enhanced
  - Initial patient selection criteria coordinated and executed



# NICoE Overview

## PATIENT & FAMILY CENTERED CARE

- Evaluate ~ 20 warriors and families every two weeks
- Provide individualized treatment planning
- Provide specialized therapy
- Leverage novel approaches for diagnosis and treatment
- Provide long term follow up

## RESEARCH

- Cohort study of patients with TBI and PH conditions
- Leverage advanced technical and clinical resources via a collaborative research hub
- Design and implement innovative pilot studies promoting advancement of diagnostic and treatment paradigms in mTBI and PH issues

## TRAINING & EDUCATION

- Serve as a center of learning for clinicians, researchers, service members, their families, and the public
- Develop and host collaborative training and education programs
- Serve as a platform for novel diagnostic and treatment approaches
- Create programs to conceptualize and launch pilot studies



# Clinical Care

- NICO Clinical Small-Working Groups (SWGs) are comprised of expert panels and were developed to provide recommendations on NICO's clinical evaluation processes
- Clinical SWGs include:
  - Family/Wellness/Spirituality
  - Neurocognitive Rehabilitation
  - Neuroimaging
  - Neuropsychology
  - Psychiatry
  - OT/PT
  - Support Services
  - Virtual Reality
- SWGs are meeting to identify clinical requirements and NICO-specific:
  - Patient Inclusion Criteria
  - Clinical Practice Guidelines / Standard Operating Procedures
  - Personnel / Equipment Requirements
  - Follow-up Metrics



# Research



- NNMC will be supplying Institutional Review Board (IRB) support and oversight through the office for Responsible Conduct of Research Service
- NICOE is engaged in collaborative efforts and has established two initial research protocols:
  - National Capital Consortium TBI Neuro-imaging Core Project
  - HBO2 research protocol
- NICOE will serve as a research hub, contributing significantly through the development of a Common Data Elements Database (CDE dB) for PH and TBI



# Learn More about the NICoE



- The NICoE is currently recruiting experienced personnel of various disciplines; vacancies available at
  - <https://chart.donhr.navy.mil/>
  - <http://www.usajobs.opm.gov/>
- For more information about the NICoE and to keep up to date, please visit
  - <http://www.dcoe.health.mil/ComponentCenters/NICoE.aspx>
  - [www.facebook.com/nationalintrepidcenterofexcellence](http://www.facebook.com/nationalintrepidcenterofexcellence)
  - [www.twitter.com/NICoEPage](http://www.twitter.com/NICoEPage)



# QUESTIONS



# NICoE Directorates

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- Research and Clinical Operations Support
- Clinical Operations
- Physical Rehabilitation & Virtual Reality
- Research
- Training & Education
- Administration



# Research & Clinical Operations Support



## *NICoE Heart and Spirit of Hospitality*

### **Concierge Services Clinical Trial Coordination Continuity Management**

- The embodiment of compassion
- The inspiration of hope, healing, discovery and learning for warriors, family members, staff, research participants, researchers, educators, and visitors
- Perpetual socialization of the mission and vision of hope, healing, discovery and learning throughout the Center beginning with staff recruitment and interview



# Research & Clinical Operations Support

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## Concierge Services

- Family Agenda Coordinators
- Clinical Trial Coordinators

## Research Support Services

- Clinical Trial Coordinator

## Continuity Support Services

- Continuity Manager



# Clinical Operations

## Interdisciplinary Care includes:

- Psychiatry/Neurology/Neuropsychology
- Internal Medicine
- OT/PT/Rehab
- Family Therapy/Spirituality/Wellness
- Neurocognitive Rehabilitation
- Virtual Reality/CAREN/FATS/Driving Simulator
- Neuroimaging/MRI/PET/MEG/TCD
- Electrophysiology/Sleep Lab
- Substance use assessment
- Continuity Management



# Clinical Operations & Research



## Magnetic Resonance Imaging (MRI)

Uses a strong magnet and radio waves to image the brain



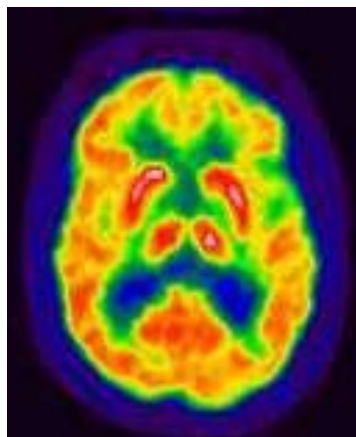
- Non-invasive extremely versatile imaging instrument
- Imaging of brain structure
- Imaging of brain wiring (axons)
- Imaging of brain function
- Examination of brain chemistry
- Imaging of brain blood flow



# Clinical Operations & Research

## Positron emission tomography (PET)

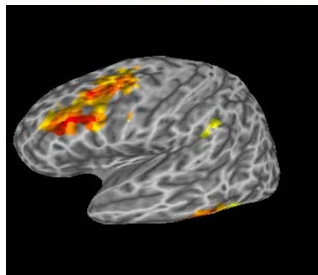
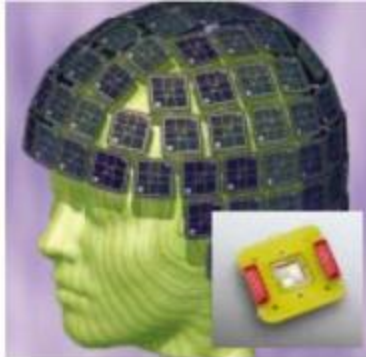
Uses injected radiopharmaceuticals to image various properties of brain activity and function



- Imaging of brain sugar (glucose) use
- Imaging Beta-Amyloid protein
- Imaging of brain neurotransmitter function
- Imaging of brain inflammation
- Imaging of brain blood flow



# Clinical Operations & Research



## Magnetoencephalography (MEG)

Detects the tiny magnetic fields generated by brain cell activity

- Non-invasive imaging of dynamic brain activity in a comfortable position
- Investigates how well different brain areas are communicating to each other
- Studies how the ongoing rhythms of the brain may be altered in TBI and PTSD
- New methods of assessing and understanding how the brain has been affected by trauma



# Clinical Operations & Research



## Fire Arms Training Simulator (FATS)

Used to recreate simulations in over 200 combat scenarios and for clinical assessments and skills based training.

- Training of occupationally relevant skills
- Research to characterize the impact of PH and TBI issues skills related to safe and effective small arms use





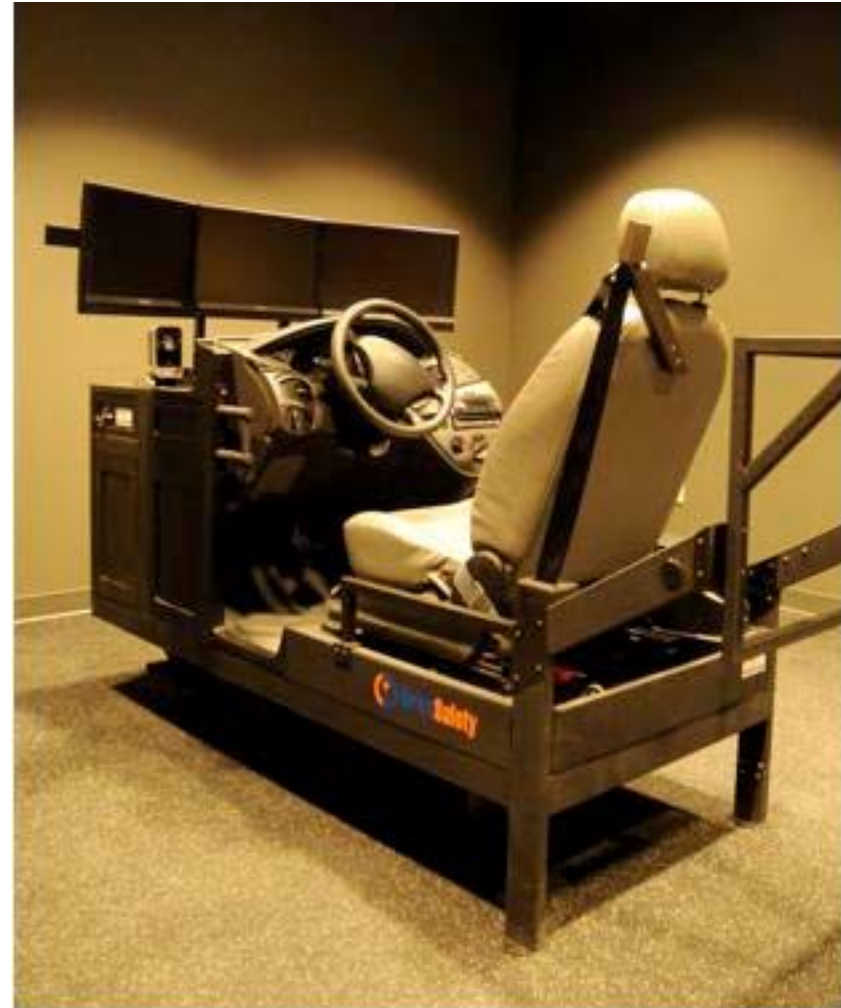
# Clinical Operations & Research



## Driving Simulator

Designed to detect cognitive, visual and motor skill impairments and is used for assessment, rehabilitation, research and training.

- Safe assessment of readiness to drive
- Training and education in a safe and realistic environment





# Clinical Operations & Research



## Virtual Reality Suites

The virtual reality suites at the NICoE include a sensory suite, physiological suite (EEG, EKG, EMG), computer, Head Mounted Device (HMD) and sensory-motor platform using the following softwares.

- **Virtual Iraq** – a set of virtual reality environments created to treat PTSD in OIF/OEF combat service men and women and is used in conjunction with the sensory suite, physiological suite, HMD and vibro-tactile platform.
- **Caring Technologies** – provides a platform which allows the NICoE to organize, analyze, and share videos and other documents.
- **In World Solutions** – a virtual environment designed for behavioral health care. It allows therapists a virtual world with clinical functions such as session notes, appointment calendar, clinical illustrations, a clinical manual and management of avatars. Interactions use speech therefore keyboard skills are not required. Sessions are recorded and can be saved for review and playback from different viewing perspectives.



# Clinical Operations & Research



## Computer Assisted Rehabilitation Environment (CAREN)

The Computer Assisted Rehabilitation Environment (CAREN) is a system that allows virtual reality to be integrated into the assessment and rehabilitation planning of injured warriors. It is a large motion platform with an embedded treadmill that moves in sync with virtual environments projected onto a large curved screen.

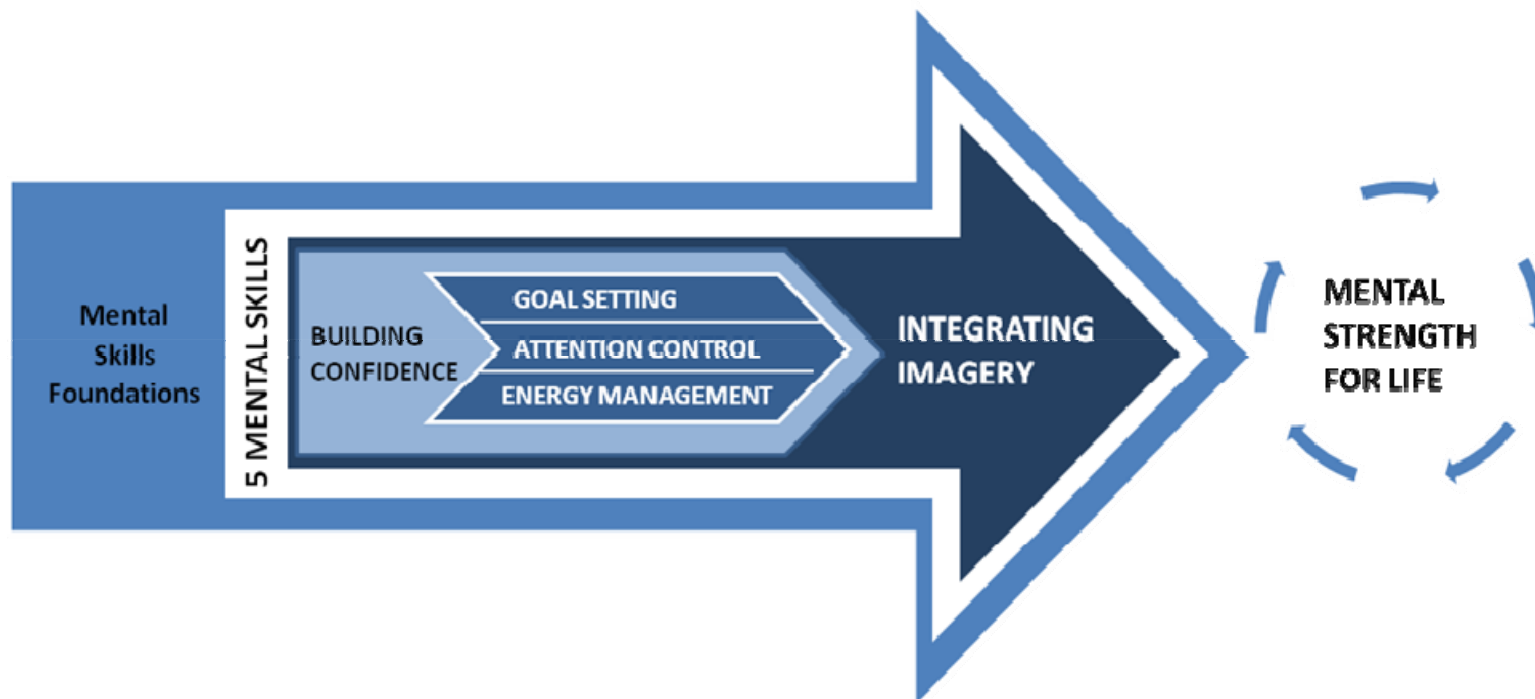




# NICoE Holistic Goals

## Army Center for Enhanced Performance

Program Overview

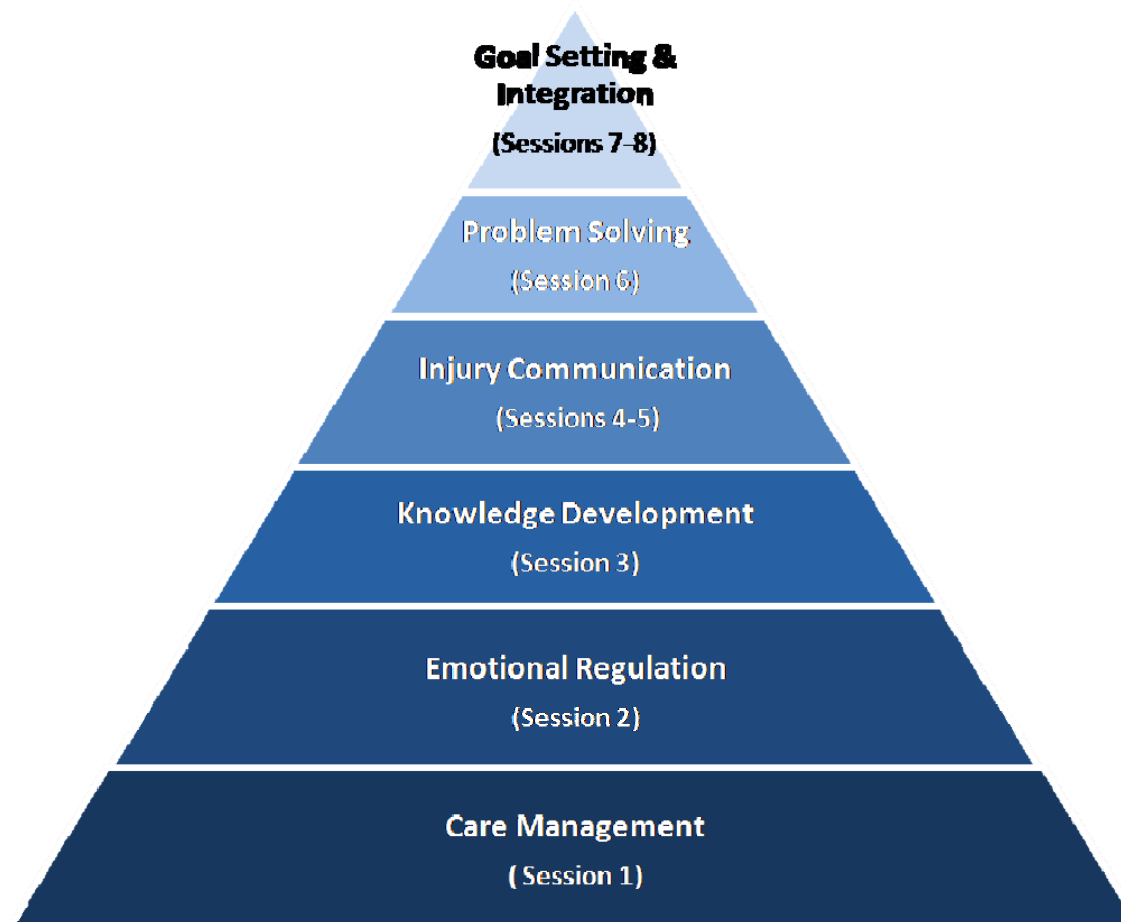




# NICoE Family Based Goals

## Families OverComing Under Stress-Combat Injury (FOCUS-CI)

Program Overview:





# NICoE Spirituality Goals

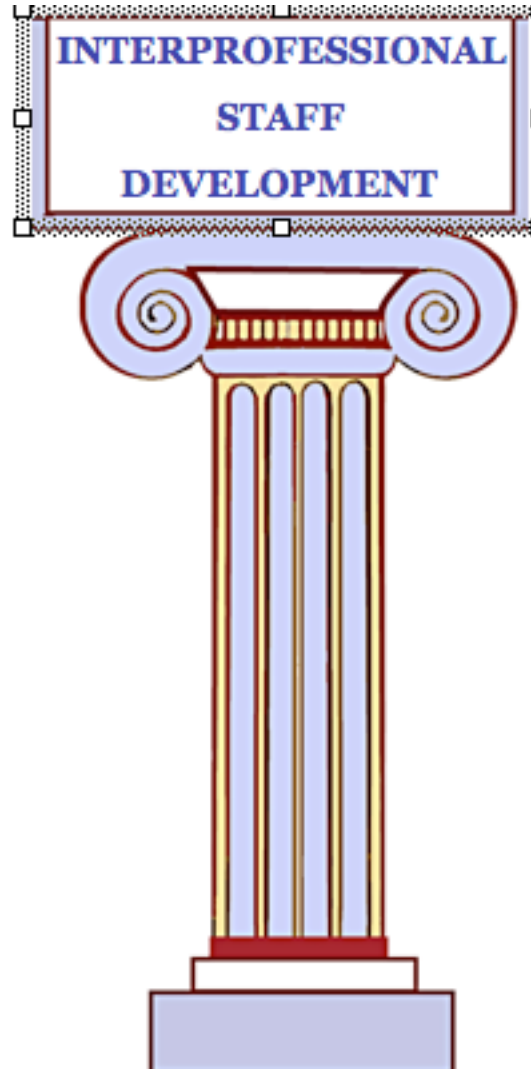
## Chaplains Religious Enrichment Development Operation (CREDO)

Program Overview for Couples:

Session Title	Session Purpose:
5 Languages of Love	Learn effective forms of communicating with one another.
Myers-Briggs personality discussion/PREP	Understand one another's personality strengths and weaknesses, learn to build off of strengths and develop weaknesses.
Dramatic Role-Play of Couple Interactions	Learn how to solve real conflicts within couples.
Ceremonial Recommitment	(Optional) Provide the opportunity for couples to agree to continue the healing journey in a spirit of unity.



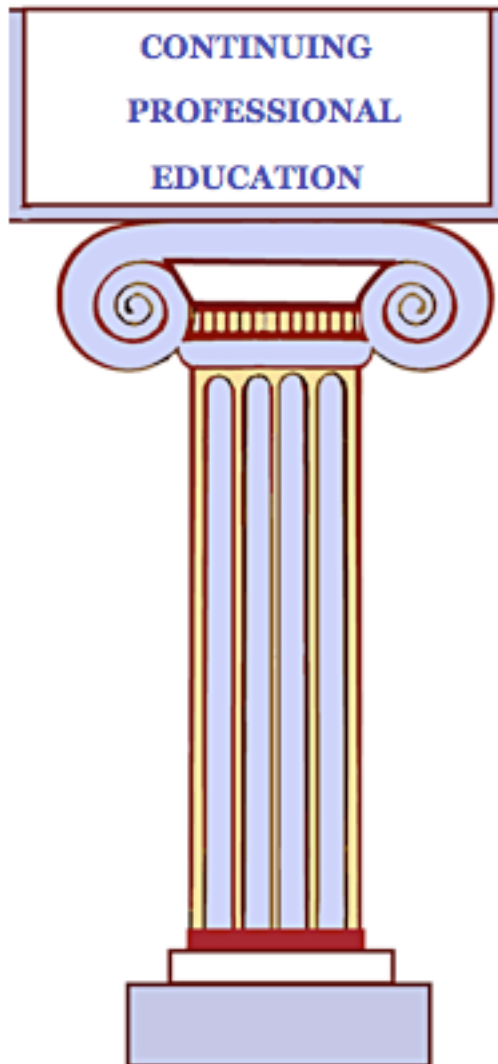
# Education & Training



- Staff will operate as an interprofessional care team in a collaborative environment
- Designed to promote the active participation of several health care disciplines and professions
- Enhances patient, family, and community-centered goals and values
- Provides mechanisms for continuous communication among health care providers
- Optimizes staff participation in clinical decision making (within and across disciplines)
- Fosters respect for the contributions of all providers



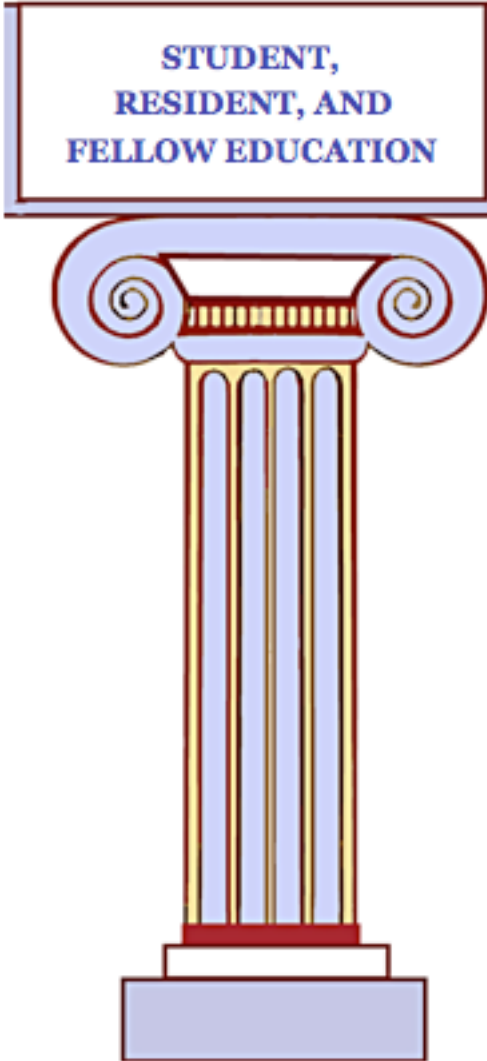
# Education & Training



- Base continuing education on the strongest available evidence for practice
- Emphasize flexibility and easy accessibility for clinicians
- Stress innovation and evaluation of new educational methods
- Address needs of clinicians across a wide spectrum, from specialists in academic health centers to rural solo practitioners
- Support inter-professional collaboration
- Align education efforts with quality improvement initiatives at the level of health systems



# Education & Training

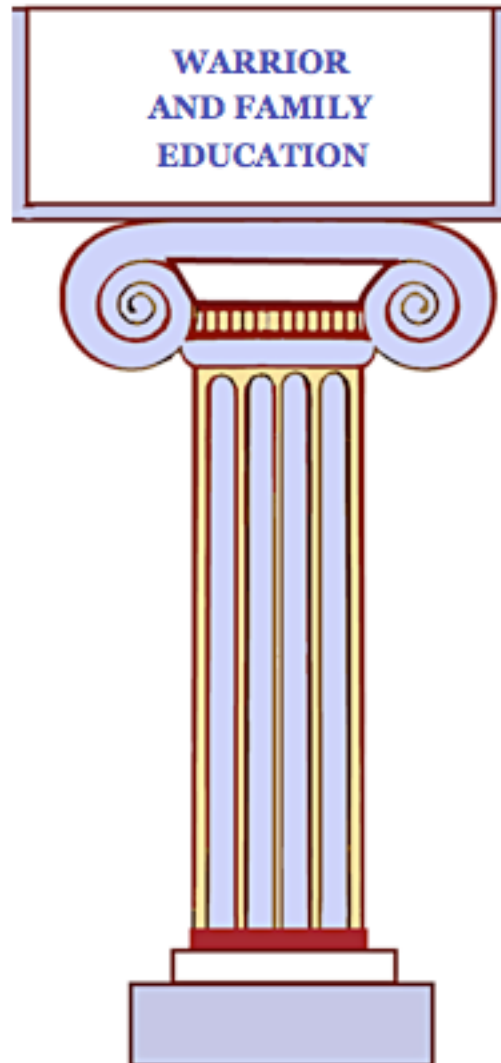
A stylized illustration of a classical column with a sign on top. The sign is a white rectangle with a blue border containing the text "STUDENT, RESIDENT, AND FELLOW EDUCATION". The column is light blue with a yellow outline and a red base.

## STUDENT, RESIDENT, AND FELLOW EDUCATION

- The state-of-the-art NICoE facility and exemplary models of disciplinary and interdisciplinary care serve as ideal conditions for preparing the next generation of health care providers
- Given the location of the NICoE facility, there are several potential partners that could contribute to providing clinical education experiences for health professions students, residents and fellows
- This program would strengthen the NICoE's capacities to be a world-class learning organization dedicated to advancement of PH and TBI



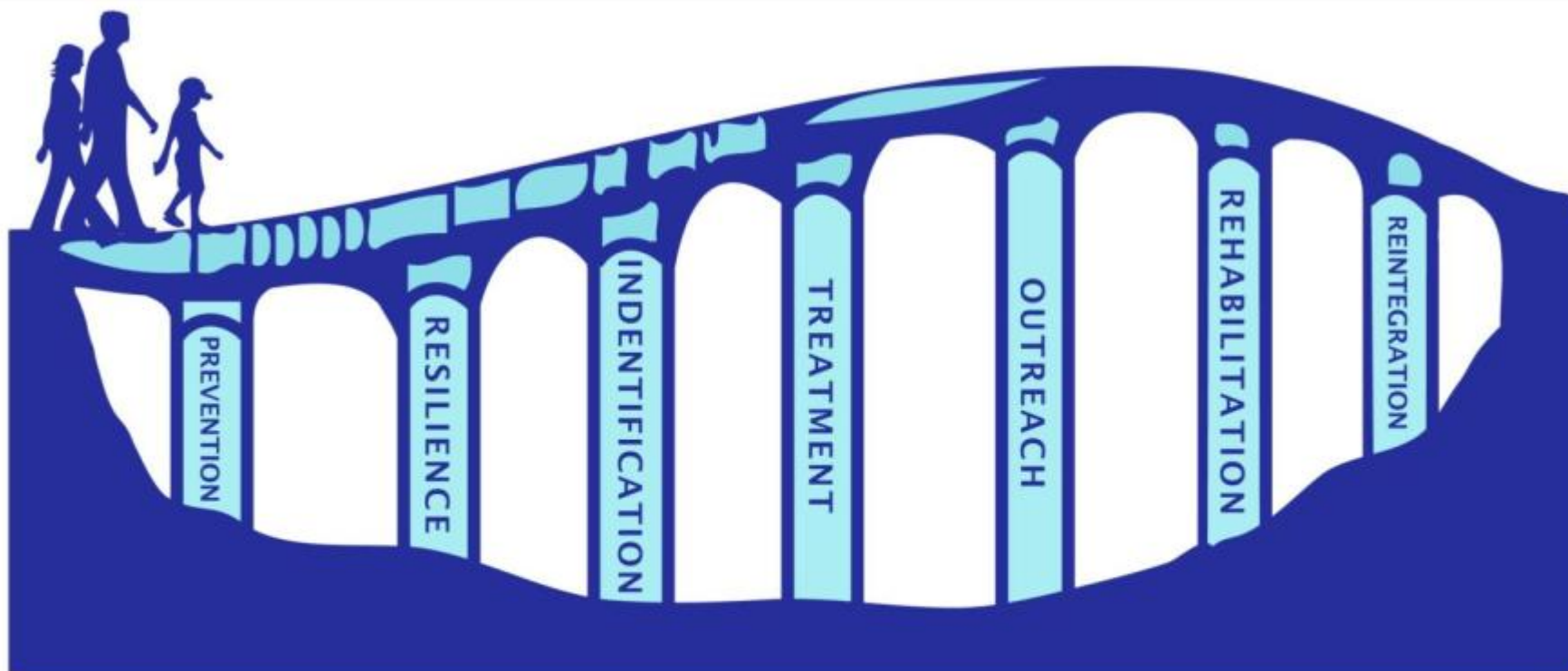
# Education & Training



- Long-term patient and family education is integrated with clinical care and research
- Library, links and resources for public and community education are offered
- Focused on Supporting TBI and PH needs



# DCoE Building Bridges Collaboration



**SUPPORTING PH AND TBI NEEDS**



# DCoE Building Bridges Collaboration



"Building Bridges" is a multi-agency, multi-disciplinary collaborative group whose purpose is to support the PH and TBI needs of military and veteran families by:

- Building community partnerships and networks (e.g. meetings, listservs, multimedia tools)
- Enhancing community capacity
- Developing tools and resources designed to support families

[http://www.dcoe.health.mil/Building\\_Bridges\\_Form.aspx](http://www.dcoe.health.mil/Building_Bridges_Form.aspx)



# QUESTIONS