

# Project A: (Re)habilitation trajectories, from early to later phases and across social sectors (traumatic brain injuries )

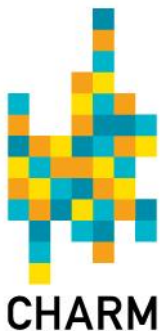
CHARM International Seminar 10/11-2015

Helene L. Sjøberg



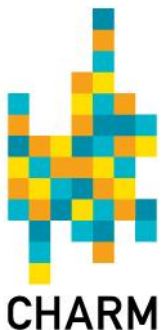
# Background Project A

- The provision of rehabilitation services to people with TBI is a challenge
  - The complexity of the injuries requires specialized continuous rehabilitation chains
  - A model with rehabilitation integrated in the early post-injury phase seems to reduce length of stay in acute hospital, and improve global functioning



# Background cont.

- Rehabilitation processes implementing the users' prioritized areas and goals in all phases of rehabilitation are called for
  - The development of strategies for user involvement/client participation in goal-setting in the presence of cognitive disabilities after TBI is needed
- Knowledge about the interactions among client, rehabilitation professionals, productivity demands and bureaucratic rationality of the welfare system is lacking.



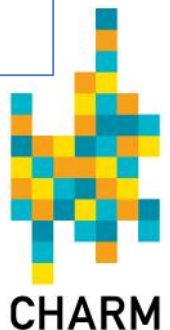
# Aims Project A – project proposal

- Aims

- to evaluate the long term consequences of an early integrated rehabilitation model compared with conventional rehabilitation after TBI
- to evaluate the cost effectiveness of the early integrated rehabilitation model vs. conventional rehabilitation
- to develop and evaluate (either/or):
  - models for facilitating participation of subjects with brain injuries in

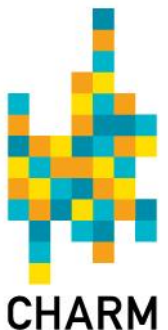
**The aims were adjusted in the post doc project descriptions according to the available data sets**

- models for interaction between the individuals and his/her relationships, social welfare, education and work.



# Project A – research context

- Two post doc positions
  - Financed 50% by CHARM and 50% by the post doc researchers home institutions/ members of the CHARM consortium (Dept. of Phys. Med.&Rehabil. Oslo University Hospital and Sunnaas Rehabilitation Hospital HF)
- Multi-institutional and multi-professional participation
  - UiO, OUH, Sunnaas Rehab. Hospital, Oslo and Akershus University College, The association for the Injured
  - Psychiatrist, OT, PT, Neuro-psychologist, Social worker, Nurse, sociologist, anthropologist



# CHARM post doc researchers



Postdoc neuro-psychologist

**Solrun Sigurdardottir**

Sunnaas Rehabilitation Hospital

Postdoc finished Sept. 2015



Postdoc Md/Physiatrist

**Nada Andelic**

Oslo University Hospital

Postdoc finished Oct. 2014



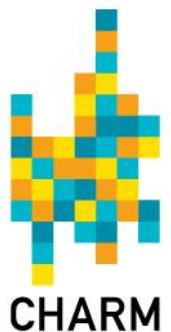
# Postdoc Solrun Sigurdardottir:

## A Norwegian multicentre study of a neuropsychological approach after severe traumatic brain injury

- Main objectives to:
  - Determine the rates of cognitive impairment after severe TBI.
  - To investigate return to work rate 1-year after severe TBI and to identify demographic, injury-related, cognitive, emotional and motor variables related to return to work.
  - To identify the level of cognitive functioning and self-awareness for persons with severe TBI who received a continuous rehabilitation pathway or a broken rehabilitation pathway.



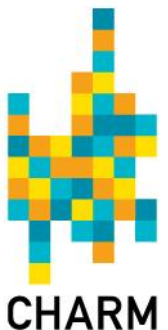
- Patient cohorts
  - National cohort of patients included in a multicenter study on severe TBI (2009-2011). Cohort in the neuropsychological study (n=148)
  - GCS 3-8 (severe TBI)
  - Age  $\geq$  16 years
  - Longitudinal 1 year follow-up
- Methods
  - Neuropsychological test battery
  - Measures to assess executive function, self-awareness, fatigue, disability





# Main results

- 67% of the patients showed residual cognitive impairments at 1Y.
- 55% employed pre-injury had returned to work at 1Y.
- RTW depended on better cognitive functioning and less severe injuries (PTA, LOS, motor functions).
- The patients (60%) who received a continuous pathway to specialized TBI rehabilitation were younger ( $p < 0.001$ ), more often employed pre-injury (81%) and had more severe injuries.
- 12% had no access to rehabilitation following their discharge from ICU and acute care. They had less severe brain injuries and overall trauma.



# Conclusion - implications

- The majority had reduced cognitive functioning after the TBI.
- The RTW process is complicated with more cognitive disability and reduced physical functioning being negative factors.
- Older patients, the less severely injured and those unemployed pre-injury to a lesser extent received a continuous rehabilitation chain.
- Identifying cognitive impairment can assist in planning and designing rehabilitation programs.
- TBI patients could benefit from long-term interventions regarding cognitive and behavioral difficulties or work-related support beyond the first year after injury.
- The relationship between regional trauma centers and specialized TBI rehabilitation hospitals should be strengthened.



## Postdoc Nada Andelic:

# A prospective study of long-term outcome after traumatic brain injury (TBI) and health economic assessment of rehabilitation trajectories from early to later phases

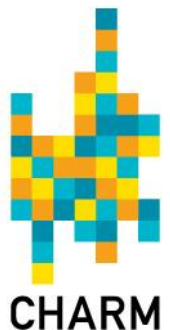
- Main purpose to obtain better knowledge of:
  - The long term outcomes and the rehabilitation trajectories
  - Health service utilisation after moderate to severe TBI
  - Methods of economic analyses in TBI research
  - Economical assessment of an early onset continuous rehabilitation chain



- Patient cohort 1:
  - 105 patients aged 16-55 years
  - Admitted to Oslo University Hospital (2005-2007)
  - GCS 3-12 (moderat-severe TBI)
  - Longitudinal design with 5 Y follow-up (6w, 3m and 1,2 and 5Y)
- Patient cohort 2:
  - 59 patients
  - Admitted to Oslo University Hospital (2005-2007)
  - GCS 3-8 (severe TBI) and in need of at least 5 days neuro-intensive treatment
  - Quasi-experimental design with continous (n=30) and broken (n=29) rehabilitation chain
- Litterature review: examine whether economic evaluations in traumatic brain injury (TBI) research have been compliant with existing guidelines.
  - Medline search 1995 – 2012
  - 28 articles included

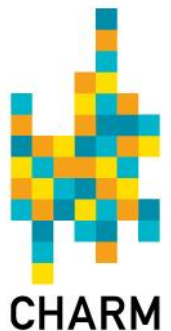


- Methods/Assessments at 1, 2 and 5 Y follow-up
  - Glasgow Outcome Scale Extended (GOSE)
  - Disability Rating Scale (DRS)
  - Community Integration Questionnaire (CIQ)
  - Health Related Quality of Life (HRQL) – SF-36
  - Employment status
  - ADL dependency
  - Health care needs (self-report), use of health care services
  - Cost-effectiveness of rehabilitation (incremental cost-effectiveness ratio, ICER)



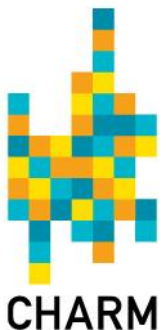
# Main results

- The TBI patients had lower HRQL in all SF-36 domains compared with the general population.
- The employment status remained stable across the 5Y follow-up (~ 0.4 for severe TBI; ~ 0.7 for moderate TBI).
- Community integration improved significantly from 1 to 5 Y post-injury. The CIQ indicate that community integration was not well-accomplished.
- Gaps between self-perceived health care needs and the service provision (i.e., unmet needs) were found in emotional, vocational and cognitive domains. Patients with unmet needs had less severe disability at 1-year.
- The early introduced and continuous chain of rehabilitation after severe TBI reduced hospital costs and improved functional outcomes in a 5Y perspective.



# Conclusion - implications

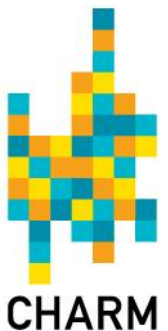
- The project has provided evidence-based knowledge of the functional recovery and long-term consequences of TBI, the patients' needs and the provision of services, and the effectiveness of rehabilitation after TBI.
- The results can be used in decision-making related to resource allocation and development of rehabilitation services after TBI.



# Publications from CHARM project A



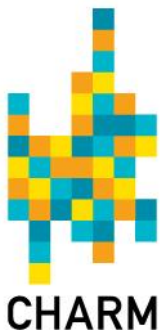
- 12 articles in peer reviewed journals from the post doc projects
- 10 articles in peer reviewed journals associated with CHARM and the post doc reserachers
- 2 articles in public press





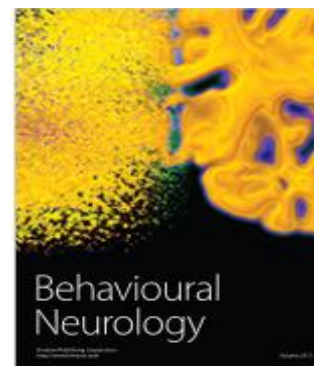
# Through the Project A (TBI) post doc research CHARM has developed:

- Methodology for longitudinal studies in TBI research
- Methodology of health economic studies in TBI rehabilitation research
- Internationalization of Norwegian /Scandinavian TBI research



# Developed through the post doc projects cont.

- International TBI research; two special issues in TBI research
  - **Journal of Rehabilitation Medicine** Vol. 45, No 8 - Special issue: Traumatic Brain Injury in Scandinavian Countries: Recent research and new frontiers. Sept. 2013. Guest editors: N. Andelic, J.C. Arango-Asprilla, C. Røe
  - **Behavioural Neurology**: Special issue: "Long-Term Functional and Psychosocial Consequences and Health Care Provision after Traumatic Brain Injury: An International Multidisciplinary Approach" In press. (Publ. ultimo Nov. 2015). Guest editors: N. Andelic, S. Sigurdardottir, J.C. Arango-Lasprilla, A. Godbolt

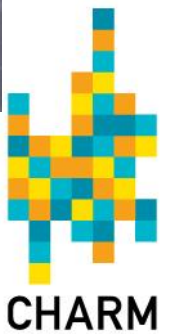
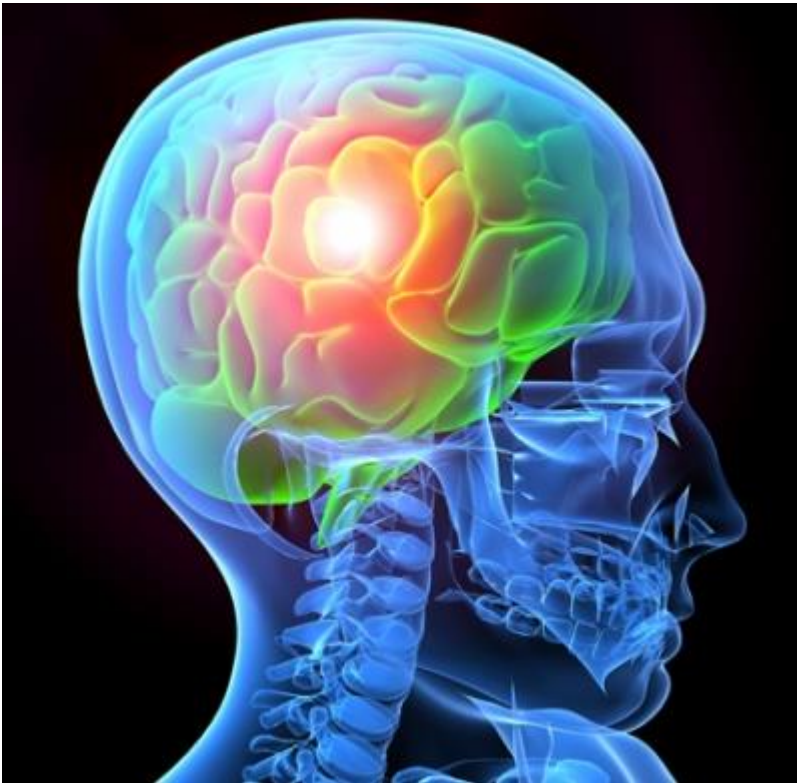


# Future directions and opportunities?

- One overall CHARM proposal for the continuation of CHARM rehabilitation services research
- Three new project proposals associated with CHARM
- Two ongoing research project associated to CHARM through consort collaborating institutions/ persons



# Thank you!





CHARM

# What have we achieved in Project A - TBI?

## Aims in proposal

## Achieved?

- To evaluate the long term consequences of the early integrated rehabilitation model on physical and cognitive functioning and participation after integrated and conventional rehabilitation chains after TBI
- To evaluate the costs, cost effectiveness of the early integrated rehabilitation model vs. conventional rehabilitation after TBI

✓

✓



## Aims in proposal

- To develop and evaluate models for facilitating participation of subjects with brain injuries in the early phases of rehabilitation – goal setting processes
- or
- To develop and evaluate models focused on psycho-education and coping strategies for those experiencing problems in the later phases
- or
- To develop and evaluate models for interaction between the individuals and his/her relationships, social welfare, education and work

## Changes

- Aims changed related to post doc projects with other available data sets
  - Research on models for goal setting and improving coping/ self-efficacy are still relevant
- Further research on interaction between health and rehabilitation services and labor and welfare sector necessary

