Seminari del Venerdi del Gruppo di Ricerca Geriatrica

Il punto sulle nuove acquisizioni in tema di delirium

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Istituto di Ricerca, Parc Sanitari Pere Vergili (Barcellona)
22 Novembre 2019
What’s the best approach for delirium prevention and management?

The most recent evidence-based guidelines, published in March 2019, and recent consensus statements recommend the prioritization of multicomponent nonpharmacological approach for the prevention and treatment of delirium.

1) Bellelli G, et al. Internal and emergency medicine; 2018
A MULTICOMPONENT INTERVENTION TO PREVENT DELIRIUM IN HOSPITALIZED OLDER PATIENTS

Sharon K. Inouye, M.D., M.P.H., Sidney T. Bogardus, Jr., M.D., Peter A. Charpentier, M.P.H., Linda Leo-Summers, M.P.H., Denise Acampora, M.P.H., Theodore R. Holford, Ph.D., and Leo M. Cooney, Jr., M.D.
### Table 1. Risk Factors for Delirium and Intervention Protocols.

<table>
<thead>
<tr>
<th>Targeted Risk Factor and Eliciting Patients</th>
<th>Standardized Intervention Protocols</th>
<th>Targeted Outcome for Reassessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive impairment*</td>
<td>Orientation protocol: board with names of care-team members and daily schedule. Therapeutic: three times reminder. Nonpharmacologic: herbal tea, sleep-enhancer (e.g., sedating and sleep-promoting medicaments). Early mobilization: exercise (e.g., bladder catheters or physical restraint).</td>
<td>Change in orientation score.</td>
</tr>
<tr>
<td>Sleep deprivation</td>
<td>1. Cognitive impairment</td>
<td></td>
</tr>
<tr>
<td>Immobility</td>
<td>2. Sleep deprivation</td>
<td></td>
</tr>
<tr>
<td>Visual impairment</td>
<td>3. Immobility</td>
<td></td>
</tr>
<tr>
<td>Hearing impairment</td>
<td>4. Visual impairment</td>
<td></td>
</tr>
<tr>
<td>Dehydration</td>
<td>5. Hearing impairment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Dehydration</td>
<td></td>
</tr>
</tbody>
</table>

1. Cognitive impairment:
- Orientation protocol: board with names of care-team members and daily schedule.
- Therapeutic: three times reminder.
- Nonpharmacologic: herbal tea, sleep-enhancer (e.g., sedating and sleep-promoting medicaments).
- Early mobilization: exercise (e.g., bladder catheters or physical restraint).

2. Sleep deprivation:
- Sleep-enhancer (e.g., sedating and sleep-promoting medicaments).

3. Immobility:
- All patients: ambulation whenever possible, and range-of-motion exercises when patients chronically nonambulatory, bed or wheelchair bound, immobile, because of an extremity fracture or deep venous thrombosis, or when prescribed bed rest.

4. Visual impairment:
- Patients with <20/70 visual acuity on binocular near vision testing.

5. Hearing impairment:
- Patients hearing ≤6 of 12 whiskeys on Whisper Test.

6. Dehydration:
- Patients with ratio of blood urea nitrogen to creatinine >18, screened for protocol by geriatric nurse-specialist.

*The orientation score consisted of results on the first 10 items on the Mini-Mental State Examination (MMSE).
†Sedative drugs included standard hypnotic agents, benzodiazepines, and antihistamines, used as needed for sleep.
Who should be involved?

1. Geriatricians
2. Psychiatrists
3. Nurses
4. Occupational therapists
5. Physical therapists
6. Social workers
7. Family members
8. Others
An interdisciplinary statement of scientific societies for the advancement of delirium care across Europe (EDA, EANS, EUGMS, COTEC, IPTOP/WCPT)

Alessandro Morandi, Christian Pozzi, Koen Milisen, Hans Hobbelen, Jennifer M. Bottomley, Alessandro Lanzoni, Verena C. Tatzer, Maria Gracia Carpena, Antonio Cherubini, Anette Ranhoff, Alasdair M. J. MacLullich, Andrew Teodorczuk and Giuseppe Bellelli
• Are we interacting?
• How do we interact?
• Education and knowledge on delirium?
• Interest of scientific societies?
Outline of the paper

1. The interdisciplinary approach (geriatrics, nursing, occupational therapy, physical therapy) in advancing delirium care, awareness and knowledge
2. Obstacles in advancing delirium care across Europe
   1. Organizational and cultural barriers
   2. Individual level barriers
3. The future of delirium care in Europe
   1. Multiprofessional under- and postgraduate education process
   2. Collaboration among health care professionals
   3. Improve the daily clinical practice: screening, diagnosis, surveillance, monitoring for recovery
   4. Key points for large-scale implementation of the interdisciplinary collaboration

Morandi et al. BMC Geriatrics 2019
The Delirium Champion concept

European Delirium Association

European Academy of Nursing Science (E·A·N·S)

European Geriatric Medicine Society (EuGMS)

Council of Occupational Therapists for the European Countries (COTEC)

World Confederation for Physical Therapy
The interdisciplinary Delirium Champion

• “The role of each society is not only to endorse delirium knowledge and education among health care providers but also to increase awareness in the community and the healthcare stakeholders”

• “Collect information on the economic costs of such implementations since it has been shown that delirium programs can significantly reduce health care costs in patients with delirium”
## Goals and interventions of the multidisciplinary collaboration (1)

<table>
<thead>
<tr>
<th>Goals</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvement of the autonomy and involvement in everyday activities</td>
<td>1) Creation of a meaningful routine that alternate activities and rest periods, promoting a 24h rehab vision and fighting occupational deprivation;</td>
</tr>
<tr>
<td></td>
<td>2) Promptly set up mobility as changing of posture (supine/seated), changing of sleeping posture and suspend bed-blocking as soon as possible;</td>
</tr>
<tr>
<td></td>
<td>3) Promotion of mobility allowing the patient to interact functionally with the environment: B/ADL activities in bathroom, meals seated at the table, play games (e.g., Sudoku or cards).</td>
</tr>
</tbody>
</table>
### Goals and interventions of the multidisciplinary collaboration (2)

<table>
<thead>
<tr>
<th>Goals</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of assistive devices</td>
<td>Selection of the best devices in order to safeguard an appropriate posture in bed, on the chair and/or in wheelchair.</td>
</tr>
</tbody>
</table>

**Morandi et al. BMC Geriatrics 2019**
OBSTACLES OF DELIRIUM CARE

- Individual level barriers (lack of education and knowledge)
- Organizational and cultural barriers

THE FUTURE OF DELIRIUM CARE ACROSS EUROPE: DELIRIUM A KEY PRIORITY

1. Improve the multiprofessional undergraduate/postgraduate education on delirium

2. Increase collaboration and cross-talk between multiprofessional scientific societies

3. Improve the daily care of delirium: detection and management

Morandi et al. BMC Geriatrics 2019
A multiprofessional approach to reduce undertection of delirium

**Nurses assessment**
1) DOS/RADAR
   Positive on one assessment
2) m-RASS
   If m-RASS score >0 or < 0

**Physical and occupational therapy assessment**
1) m-RASS
   If m-RASS score >0 or < 0
2) Changes in the TCT/HABAM scores

Doctors, nurses, physical and occupational therapists
4AT assessment (Score 4 or above): possible delirium +/- cognitive impairment

**Doctors**
DSM-5 evaluation
Parallel Session E - Invited Symposium: EUGMS-EDA Joint Symposium

Chairs: Dr Lenn Otto Watne, Consultant in Geriatric Medicine, University of Oslo
Dr Alessandro Morandi, Consultant in Geriatric Medicine, Department of Rehabilitation, Fondazione Camplani Casa di Cura, Cremona, Italy

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.30</td>
<td>Establishing and Improving an Interdisciplinary and multidisciplinary care for delirium across Europe</td>
<td>Dr Alessandro Morandi, Consultant in Geriatric Medicine, Department of Rehabilitation, Fondazione Camplani Casa di Cura, Cremona, Italy</td>
</tr>
<tr>
<td></td>
<td>The role of nursing care in the multidisciplinary management of delirium</td>
<td>Dr Elke Detroyer, Research Fellow, Academic Centre for Nursing and Midwifery, KU Leuven, Belgium</td>
</tr>
<tr>
<td></td>
<td>Emerging evidence in occupational therapy in delirium care</td>
<td>Ms Christian Pozzi, Occupational Therapist, University of Applied Sciences and Arts of Southern Switzerland</td>
</tr>
<tr>
<td></td>
<td>Early mobility to improve delirium outcomes: physiotherapy interventions</td>
<td>Dr Neus Gual, Geriatrician, University of Barcelona, Spain</td>
</tr>
<tr>
<td></td>
<td>The future of Interdisciplinary collaboration in delirium care across Europe</td>
<td>Dr Bjorn Erik Neerland, Consultant in Geriatric Medicine, University of Oslo</td>
</tr>
</tbody>
</table>
Early mobilization to improve delirium outcomes: the physical therapy intervention

Neus Gual
Geriatrician
Parc Sanitari Pere Vergili, Barcelona
Delirium is a neurocognitive disorder.....

.........and a motor disorder

....physical therapy
Relationship between physical activity and delirium

**Before delirium**
- Impaired physical function
- Low physical activity

**Delirium**
- Motor symptoms of delirium
- Falls

**After delirium**
- Functional decline
- Disability

**Predisposing factors**
- Immobility
- Physical restraints

**Precipitating factors**
Disorders in physical function as risk factors for delirium

- Disability or prior functional impairment:
  - 4-fold increased risk of delirium
  - as disability increases, the greater the risk

- Poor usual physical activity: independent risk factor for delirium

Disorders in physical function as risk factors for delirium

**Immobility:**

- Older patients: time in bed = 83%, time standing or walking = 3%.
- Many adverse outcomes (pressure ulcers, venous stasis, hospital-associated pneumonia).
- Reductions in muscle mass and strength, functional decline, longer hospital length of stay, institutionalization, and death.
- Immobility + its direct consequences have also been associated to delirium.

**Inouye SK et al.** Precipitating factors for delirium in hospitalized elderly persons. Predictive model and interrelationship with baseline vulnerability. JAMA. 1996


**Padula CA et al.** Impact of a nurse-driven mobility protocol on functional decline in hospitalized older adults. J Nurs Care Qual.

**Magny E et al.** Predisposing and precipitating factors for delirium in community-dwelling older adults admitted to hospital with this condition. PLoS One. 2018
Disorders in physical function as risk factors for delirium

**Physical restraints:**

- Increases 4.4 times the risk of delirium
- Other complications: pressure ulcers, infections or urinary incontinence.
- Use of restraints only as a last resource, promotion of restraint reduction initiatives.
- The prevalence of physical restraint can reach 53%.


Relationship between physical activity and delirium

Before delirium:
- Impaired physical function
- Low physical activity

Delirium:
- Motor symptoms of delirium
- Falls

After delirium:
- Functional decline
- Disability

Precipitating factors:
- Immobility
- Physical restraints

Predisposing factors:
Motor disorders as symptoms of delirium

- Fluctuating motor performance occurring in parallel to cognitive disorders
- Motor disorders = clinical sign of delirium (not only consequence)
- Patients with delirium have worse motor function compared to those without delirium
- Diagnosing delirium using motor tools (TCT, Tinetti, HABAM).

Motor disorders as symptoms of delirium

- Delirium: persistent risk factor for falls (RR=1.4 to 12.6)
- Delirium: frequent (24-96%) in patients that have fallen
- Motor disturbances + impaired attention contribute to falls
- Preventing delirium prevents falls

Relationship between physical activity and delirium

Before delirium
- Impaired physical function
- Low physical activity

Precipitating factors
- Immobility
- Physical restraints

Delirium
- Motor symptoms of delirium
- Falls

After delirium
- Functional decline
- Disability
Functional impairment and disability as consequences of delirium.

- Although functional decline can improve at the same time that delirium does, lead to poor functional and recovery outcomes.
- The longer the delirium lasts, the greater the functional loss.

Rudolph JL et al. Delirium: an independent predictor of functional decline after cardiac surgery. JAGS 2010
Han JH et al. Delirium in the Emergency Department and Its Extension into Hospitalization (DELINEATE) Study. JAGS 2017
Functional impairment and disability as consequences of delirium.


<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Delirium Events</th>
<th>Delirium Total</th>
<th>No delirium Events</th>
<th>No delirium Total</th>
<th>Weight</th>
<th>Risk Ratio M-H, Fixed, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chen 2010</td>
<td>6</td>
<td>10</td>
<td>57</td>
<td>107</td>
<td>7.2%</td>
<td>1.13 [0.66, 1.93]</td>
</tr>
<tr>
<td>Francis 1992</td>
<td>8</td>
<td>20</td>
<td>21</td>
<td>115</td>
<td>4.6%</td>
<td>2.19 [1.13, 4.24]</td>
</tr>
<tr>
<td>Friedman 2008</td>
<td>15</td>
<td>35</td>
<td>30</td>
<td>113</td>
<td>10.6%</td>
<td>1.61 [0.99, 2.64]</td>
</tr>
<tr>
<td>Hansen 1999</td>
<td>3</td>
<td>5</td>
<td>40</td>
<td>68</td>
<td>4.1%</td>
<td>1.02 [0.49, 2.14]</td>
</tr>
<tr>
<td>Inouye 1993</td>
<td>18</td>
<td>43</td>
<td>33</td>
<td>145</td>
<td>11.2%</td>
<td>1.84 [1.16, 2.92]</td>
</tr>
<tr>
<td>McCusker 2001</td>
<td>32</td>
<td>179</td>
<td>16</td>
<td>87</td>
<td>16.0%</td>
<td>0.97 [0.56, 1.67]</td>
</tr>
<tr>
<td>Murray 1993</td>
<td>38</td>
<td>91</td>
<td>51</td>
<td>200</td>
<td>23.7%</td>
<td>1.64 [1.17, 2.30]</td>
</tr>
<tr>
<td>Noriega 2015</td>
<td>10</td>
<td>35</td>
<td>21</td>
<td>168</td>
<td>5.4%</td>
<td>2.29 [1.18, 4.42]</td>
</tr>
<tr>
<td>O’Keefe 1997</td>
<td>12</td>
<td>47</td>
<td>15</td>
<td>124</td>
<td>6.1%</td>
<td>2.11 [1.07, 4.17]</td>
</tr>
<tr>
<td>Velilla 2012</td>
<td>40</td>
<td>63</td>
<td>10</td>
<td>22</td>
<td>11.0%</td>
<td>1.40 [0.85, 2.29]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td>528</td>
<td><strong>1149</strong></td>
<td>100.0%</td>
<td></td>
<td></td>
<td>1.55 [1.31, 1.83]</td>
</tr>
</tbody>
</table>

Test for overall effect: Z = 5.20 (P < 0.000001)
Long term functional consequences of delirium

• Functional decline after delirium has been observed despite of the different settings
• Functional consequences of delirium beyond 12 months are less known and even sometimes contradictory
Physical therapy is fundamental in delirium prevention and treatment

✓ Physical therapy, included in multicomponent interventions to prevent delirium.

✓ Physical therapy in frailty older adults. Prehabilitation.
Physical therapy, one of the main strategies to prevent delirium inside multicomponent interventions.

• Since delirium has a multifactorial etiology, a single component approach is not recommended.
• Effective interventions: multicomponent strategies acting on different risk factors of delirium
## Different rehabilitation strategies according to each setting

<table>
<thead>
<tr>
<th>Setting</th>
<th>Physical therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Surgery</strong></td>
<td>• Mobilization within the first 24h after surgery, including ambulation or active range-of-motion exercise 3 times daily (including exercise in bed, riding a stationary bike by hand/foot, sitting out of bed, standing).</td>
</tr>
<tr>
<td></td>
<td>• Training every day assisted by a PT, OT, and caring staff</td>
</tr>
<tr>
<td></td>
<td>• Training based on functional retraining, with special focus on fall risk factors</td>
</tr>
<tr>
<td></td>
<td>• Encourage patients to do as much as they could by themselves and to</td>
</tr>
</tbody>
</table>
### Different rehabilitation strategies according to each setting

<table>
<thead>
<tr>
<th>Setting</th>
<th>Physical therapy</th>
</tr>
</thead>
</table>
| General Medicine and Geriatrics  | • **Early mobilization**, including ambulation or active range-of-motion exercises three times daily, in room and ward corridor. Remind the patient to do so each day.  
• Individual active mobilization strongly **encouraged** by clinical staff  
• **Daily mobilized out of bed** by nurses. Change position in bed every 3h if mobilization is not possible  
• **Assisted walking** for frail patients routinely performed by PT  
• **Minimizing use of immobilizing equipment**: avoid continuous fluid therapy and physical restraints, remove urinary catheter |
### Different rehabilitation strategies according to each setting

<table>
<thead>
<tr>
<th>Setting</th>
<th>Physical therapy</th>
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</thead>
</table>
| **Intensive Care Unit**  | • Early exercise and mobilization (with physical and occupational therapy assessment) during periods of **daily interruption of sedation**  
                          | • Progress through range of motion, sitting, standing, walking, ADLs              |
→ Does it work??

### Incidence of Delirium

<table>
<thead>
<tr>
<th>Study</th>
<th>Odds Ratio (95% CI)</th>
<th>Weight, %</th>
<th>Decreased delirium incidence, favors intervention</th>
<th>Increased delirium incidence, favors control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andro 2011</td>
<td>0.36 (0.15-0.89)</td>
<td>7.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bo 2009</td>
<td>0.39 (0.17-0.93)</td>
<td>7.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caplan 2007</td>
<td>0.11 (0.01-0.99)</td>
<td>2.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chen 2011</td>
<td>0.03 (0.00-0.44)</td>
<td>5.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holt 2012</td>
<td>0.31 (0.13-0.74)</td>
<td>0.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Falls

<table>
<thead>
<tr>
<th>Study</th>
<th>Odds Ratio (95% CI)</th>
<th>Weight, %</th>
<th>Decreased falls, favors intervention</th>
<th>Increased falls, favors control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babine 2013</td>
<td>0.49 (0.19-1.27)</td>
<td>10.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caplan 2007</td>
<td>0.33 (0.04-2.93)</td>
<td>2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Martinez 2012</td>
<td>0.11 (0.01-2.05)</td>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stenvall 2007</td>
<td>0.38 (0.23-0.65)</td>
<td>38.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed-effects model:</td>
<td><strong>0.38 (0.25-0.60)</strong></td>
<td><strong>100.0</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* CI = confidence interval

Effects seemed to be stable among different hospital settings.

Rehabilitation strategies in post-acute care

• Restoration of function in delirious patients by nurses.

• Two interventions daily (rather than 3, because patients were participating in regular rehabilitation therapy as part of usual care on the rehabilitation unit).

• The early mobility protocol was limited due to the restrictive weight bearing status of most patients

• More leg activities to be performed while sitting in a wheelchair.

- Reduction in delirium prevalence
- Reduction in hospital LOS
- Improvement on cognitive and functional outcomes

Marcantonio ER et al. Randomized Trial of a Delirium Abatement Program for Post-acute Skilled Nursing Facilities. JAGS 2010.
Rehabilitation strategies in Long term care

- Limited evidence on interventions for preventing delirium in older people in LTC (only 3 RCT; only 1 multicomponent)

- Physical activity: by trained nurses + physical therapist. Daily: “Head-to-toe” physical activity at resident’s max ability, including active range of motion, walking, chair stands.
  - Reduction in readmission rate
  - Reduction in 3 month mortality
  - No reduction in delirium incidence (18%)

Boockvar K. et al. Preliminary Data: an Adapted Hospital Elder Life Program to Prevent Delirium and Reduce Complications of Acute Illness in Long Term Care (HELP-LTC) delivered by Certified Nursing Assistants. JAGS 2016.
Frailty and delirium

Effect of the Multifactorial Intervention on physical function capacity

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
<th>Difference (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPPB a, mean (SD)</td>
<td>7.48 (2.12)</td>
<td>8.94 (2.03)</td>
<td>1.47 (1.16 – 1.78)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Gait speed (m/sec), mean (SD)</td>
<td>0.71 (0.20)</td>
<td>0.79 (0.18)</td>
<td>0.08 (0.05 – 0.10)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Balance impairment, % (n)</td>
<td>43.8 (49)</td>
<td>20.5 (23)</td>
<td>53.1 (26)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Chair stand test (sec), mean (SD)</td>
<td>22.40 (13.63)</td>
<td>17.00 (10.62)</td>
<td>-5.50 (-7.78 – -3.22)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

• Potentially reversible.

• Physical exercise is essential in preventing and treating frailty

Persico I, et al. Frailty and Delirium in Older Adults: A Systematic Review and Meta-Analysis of the Literature. JAGS 2018
Prehabilitation in frailty older adults

• Inclusion of **physical exercise in prehabilitation programs** for older frail adults undergoing **scheduled surgery**
• Regarding delirium, we are beginning to observe **positive effects of prehabilitation programs** with a **reduction** in delirium incidence \(^{110}\), although more studies are needed


Emerging evidence in occupational therapy in delirium care

September 6th 2019, Edinburgh

Pozzi Christian OT, MSc
Occupational Therapist
University of Applied Sciences and Arts of Southern Switzerland
Outline

• Occupational Therapy and Delirium: What is the current evidence?

• Occupational Therapy and Delirium: specificity
• Occupational Therapy and Delirium: What is the current evidence?

• Occupational Therapy and Delirium: specificity
What is the current evidence?

How many studies on Occupational Therapy and Delirium?

4
What is the current evidence?

Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomised controlled trial

William D Schweickert, Mark C Pohlman, Anne S Pohlman, Celerina Nigos, Amy J Pawlik, Cheryl L Esbrook, Linda Spears, Megan Miller, Mietka Franczyk, Deonna Deprizio, Gregory A Schmidt, Amy Bowman, Rhonda Barr, Kathryn E McCallister, Jesse B Hall, John P Kress

Occupational therapy for delirium management in elderly patients without mechanical ventilation in an intensive care unit: A pilot randomized clinical trial

Evelyn A. Álvarez, MS a,b,#, Maricel A. Garrido, MS c,1, Eduardo A. Tobar, MD d,2, Stephanie A. Prieto, MS a,c,3, Sebastian O. Vergara, MS c,4, Constanza D. Briceño, MS b,c,5, Francisco J. González, MD c,6
What is the current evidence?

Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomised controlled trial

William D Schweickert, Mark C Pohlman, Anne-Marie de Bono, Mietka Franczyk, Deanna Deprizio, Gregory A Smith...

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention (n=55)</th>
<th>Usual Care (n=49)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICU/Hosp Delirium Days</td>
<td>2.9 (2.2-3.7)</td>
<td>3.1 (2.3-3.9)</td>
<td>0.048</td>
</tr>
<tr>
<td>Time in ICU with Delirium</td>
<td>2.7 (2.1-3.2)</td>
<td>3.2 (2.5-4.1)</td>
<td></td>
</tr>
<tr>
<td>Time in Hosp. with Delirium</td>
<td>2.5 (2.0-3.0)</td>
<td>3.0 (2.4-3.6)</td>
<td></td>
</tr>
</tbody>
</table>

Proportion of patients with functional independence at hospital discharge (%)

- Early PT+OT (n=55)
- Usual Care (n=49)

Schweickert, Lancet 2009; 373: 1874-82
What is the current evidence?
Letter to the Editor

Preliminary Evidence of a Positive Effect of Occupational Therapy in Patients With Delirium Superimposed on Dementia

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Outline

• Occupational Therapy and Delirium: What is the current evidence?

• Occupational Therapy and Delirium: specificity
Activity based Occupational Therapy intervention for delirium superimposed on dementia in nursing home settings: a feasibility study

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The occupational therapist (OT) was activated in a interdisciplinary geriatric team
- Geriatrician
- Nurse
- Physioterapy

The occupational therapist can be activated with speech therapist and psychologist

The sessions of OT were performed twice daily, for a total of 40 minutes.

**THE GOALS:**

- functional recovery
- participation to the activities of daily living (A.D.L.).
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- functional recovery
- participation to the activities of daily living (A.D.L.).
THE PROCEDURES to reach this goal were:

1) A caregiver interview (Ethnographic Interview)

2) Modify the environment and early mobilitation

3) An external multi-sensory and cognitive stimulation by personal and significant occupations

3) A family education and involvement
### OT and Delirium: specificity

#### Screening of patients undergoing treatment at every session
- m-RASS and 4 AT
- If positive send to the doctor / geriatrician

#### Person with delirium
- m-RASS (individualised procedures)
- Interview caregiver
- Individualisation of occupations and start of treatment
- Immediate mobilization, aids (agreements with FT/nurse)
- Training with nurse and assistent staff (more is better than less)

#### Family education
- Implementation of basic activities
- Explanations of phenomenology of delirium and your impact in ADL
- Planning Discharge (immediately)
Clinical characteristics and demographics of 22 patients with moderate dementia

<table>
<thead>
<tr>
<th>Variable</th>
<th>Before delirium</th>
<th>Delirium onset</th>
<th>Delirium resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-</td>
<td>86.45 ± 6.46</td>
<td>-</td>
</tr>
<tr>
<td>Gender, female (N, %)</td>
<td>-</td>
<td>16 (72%)</td>
<td>-</td>
</tr>
<tr>
<td>s-MMSE</td>
<td>13.32 ± 3.29</td>
<td>3.27 ± 3.67</td>
<td>9.60 ± 6.34</td>
</tr>
<tr>
<td>D-O-M</td>
<td>-</td>
<td>20.86 ± 3.68</td>
<td>-</td>
</tr>
<tr>
<td>Barthel Index</td>
<td>20.91 ± 17.44</td>
<td>12.59 ± 12.35</td>
<td>17.80 ± 16.67</td>
</tr>
<tr>
<td>Number of drugs</td>
<td>-</td>
<td>8.95 ± 2.95</td>
<td>-</td>
</tr>
<tr>
<td>CIRS Severity index</td>
<td>-</td>
<td>2.22 ± 0.32</td>
<td>-</td>
</tr>
<tr>
<td>Tinetti score</td>
<td>-</td>
<td>2.27 ± 4.27</td>
<td>5.15 ± 5.32</td>
</tr>
<tr>
<td>COPM proxy Performance</td>
<td>-</td>
<td>0.86 ± 1.25</td>
<td>5.2 ± 2.78</td>
</tr>
<tr>
<td>COPM proxy Satisfaction</td>
<td>-</td>
<td>0.68 ± 1.46</td>
<td>4.85 ± 2.94</td>
</tr>
</tbody>
</table>
### Description of proportion of intervention delivered per each day

<table>
<thead>
<tr>
<th>Day of delirium and acute hospital transfer</th>
<th>N</th>
<th>First daily treatment</th>
<th>Second daily treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>N= 22</td>
<td>22 (100%)</td>
<td>14 (63.64%)</td>
</tr>
<tr>
<td>Transfer to acute hospital</td>
<td>N= 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 2</td>
<td>N= 11</td>
<td>11 (100%)</td>
<td>8 (72.72%)</td>
</tr>
<tr>
<td>Transfer to acute hospital</td>
<td>N=1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 3</td>
<td>N= 4</td>
<td>4 (100%)</td>
<td>1 (25%)</td>
</tr>
<tr>
<td>Transfer to acute hospital</td>
<td>N=1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 4</td>
<td>N=3</td>
<td>3 (100%)</td>
<td>2 (66.67%)</td>
</tr>
<tr>
<td>Transfer to acute hospital</td>
<td>N= 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 5</td>
<td>N=1</td>
<td>1 (100%)</td>
<td>1 (100%)</td>
</tr>
<tr>
<td>Transfer to acute hospital</td>
<td>N= 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 6</td>
<td>N=1</td>
<td>1 (100%)</td>
<td>1 (100%)</td>
</tr>
<tr>
<td>Transfer to acute hospital</td>
<td>N= 0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Distribution of m-RASS values on the first day of delirium

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Mean treatment time (minutes) of OT according to delirium resolution and number of treatments for each day of delirium.

The bar chart shows the mean treatment time (minutes) for OT on different days of delirium, with separate bars for the first and second treatments. The data points for each day are as follows:

- Day 1 (n=22): First treatment = 14.8 minutes, Second treatment = 3.9 minutes
- Day 2 (n=11): First treatment = 15.1 minutes, Second treatment = 9.6 minutes
- Day 3 (n=4): First treatment = 15.1 minutes, Second treatment = 2.5 minutes
- Day 4 (n=3): First treatment = 13.3 minutes, Second treatment = 8.3 minutes
- Day 5 (n=1): First treatment = 5.1 minutes, Second treatment = 10.1 minutes
- Day 6 (n=1): First treatment = 20.1 minutes, Second treatment = 20.1 minutes

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An interdisciplinary statement of scientific societies for the advancement of delirium care across Europe (EDA, EANS, EUGMS, COTEC, IPTOP/WCPT)

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