Track 8: Clinical Geriatrics

Randomized Controlled Trial of a Prehospital Decision System by Emergency Medical Services to Ensure Optimal Treatment for Older Adults in Sweden
Randomized Controlled Trial of a Prehospital Decision System by Emergency Medical Services to Ensure Optimal Treatment for Older Adults in Sweden

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- Sweden ~ 9 million habitants
- Stockholm ~ 2 million habitants
- Old residents (≥ 65 years or older) are ~ 300 000
  → 2060 estimated that the elderly population (≥65 years or older) will increase by 56%

**Central Bureau of Statistics. Population statistics of different age groups in Sweden, 2012.**
Health services in Stockholm

- 650,000 visits to emergency departments (ED) (year 2012)
  - Approximately 30% patients were admitted acute inpatient
  - 20% of acute visits were patients ≥ 65 years or older

- Year 2006 almost 70% of the elderly population had been treated and hospitalized for at least 1 time
Emergency Medical Services (EMS) in Stockholm

- Today we have 70 ambulances to serve 2 million inhabitants
- 186,000 ambulance assignments (year 2013)
  → 52% of these assignments were patients from aged 65 years or older

Ambulanssjukvården i Stockholm (AISAB) - Kvalitetsmål 2009.
How does the ambulance work

Before the Prehospital ambulance study almost all (98%) ambulance patients were transported directly to the ED
Consequences

- Low priority of geriatric patients
- Increased suffering for the patient
- Overcrowded ED is correlated to higher mortality

Problem

- When they don't get specific medical care adjust to their needs
Our solution

- Prehospital steering of elderly patient to optimal level of healthcare
Prehospital steering of elderly patient

- Limited ability to predict the patients medical need
- Unable to determine patients need of transport
- Poor agreement between predicted triage and actual disposition or diagnosis

Schumacher. American Journal Emergency Medicine, 2005
Prehospital steering to optimal level of health care

- Higher education
- Guidelines (Decision system)
- Protocol (Decision support tool)

Schumacher. American Journal Emergency Medicine, 2005
Prehospital Study

Aim
The aim of this study was to evaluate the feasibility and appropriateness of a pre-hospital decision system and an associated decision support tool that ambulance nurses use to triage older adults to optimal level of Healthcare.

Method
Randomized controlled trial
Appropriate patient categories to triage to alternative level of healthcare

- Urinary and/or with catheter disorders,
- Dizziness,
- Respiratory Disorders/Chronic Obstructive Pulmonary Disease COPD,
- Respiratory Disorders/Pneumonia,
- Diabetes (excluding hypoglycaemia),
- Fever,
- Hypotension,
- Frailty,
- Back pain/back contusion,
- Fall/injury and accident,
- Hip Trauma (without suspicion of femur fracture).

Prehospital decision support tool (triage tool)

Urinary and/or with catheter disorder

Abdominal pain
Total stop in the urinary catheter
Hematuria

No

Reference frame for vital parameters

Temperature \( \geq 36,0^{\circ}C \leq 38,5^{\circ}C \)
Respiratory rate \( \geq 10 \quad 25 \)
Glasgow Coma Scale \( = 15 \)
Systolic blood pressure \( \geq 100 \)
Saturation \( \geq 90\% \)
Heart rate \( \geq 50 \quad 110 \)

Yes

Outside the reference frame
Inside the reference frame

Seriousness degree

5-7
3-4
0-2

Emergency department
Geriatric ward
Community healthcare

Results

Dispatch centre
Randomized

Intervention group

Control group

Alternative level of healthcare

Emergency department

20%

Emergency department

Subsequent transfer 6.7%
Ambulance nurse adherence to the system

- Good compliance to the system
  - Correctly identified patients' medical conditions in all patient cases
  - Decisions system was followed in 93.3% (419 of 449)
The overall benefits of ambulance steering

- More adequate care for elderly patients
- Proper allocation of health care resources
- To better use the higher competence within the ambulance

Vicente et al. Journal of the American geriatric society 2014
Conclusion

- Ambulance nurses are able to triage older adults to an alternative healthcare with the help of a pre-hospital decision support system.

- This system optimize resources and improve emergency care of elderly adults.

Vicente et al. Journal of the American geriatric society 2014
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<table>
<thead>
<tr>
<th></th>
<th>Intervention (N=359)</th>
<th>Control (N=198)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulance assignment time to Primary care</td>
<td>55 (16-98)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambulance assignment time to Secondary care</td>
<td>57 (29-125)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambulance assignment time to Tertiary care</td>
<td>54 (17-131)</td>
<td>55 (24-147)</td>
<td>0.692</td>
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<tr>
<td>Patient time in ED: Arrival - Doctor</td>
<td>68 (0-621)</td>
<td>89 (0-624)</td>
<td>0.024</td>
</tr>
<tr>
<td>Patient time in ED: Arrival- Discharge</td>
<td>262 (8-765)</td>
<td>288 (65-1394)</td>
<td>0.021</td>
</tr>
</tbody>
</table>

The values presented are median minutes (min-max). P-values are from the Mann-Whitney U test.
Older adults

- Multi- and/or chronic disease
- Reduction of there spare capacity
- Multi users of healthcare services