Development of smart inpatient rooms using automation and preventing restraints in suicidal patients

REMCO DE WINTER
WOUTER VAN MAANEN
JACELYN JAKOBA
WILLEM NUGTEREN
ARLETTE VAN AMERONGEN

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AND THE 21ST MALAYSIAN CONFERENCE OF PSYCHOLOGICAL MEDICINE (MCPM)
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BORNEO CONVENTION CENTRE, KUCHING, SARAWAK, MALAYSIA
PREVENTING SUICIDE: A GLOBAL COMMITMENT, FROM COMMUNITIES TO CONTINENTS
WWW.SUICIDALITEIT.NL

Parnassia Groep
VU UNIVERSITY AMSTERDAM
No Conflict of Interest
Content

- Netherland suicidal behaviour and figures
- Suicidal behaviour in mental health
- Serious suicidal behaviour, admission and risk taxation
- Seclusion during high risk
- Development of alternatives
- Automation rooms
- Use of automation rooms
- Results
- Conclusions
Netherlands

- 17.01 million inhabitants
- 7th place happiness population (↓) (WHR)
- High density psychiatrists (1:5600)
- Suicide rate 1:11.1 overall (2016)
  - Since 8 years > 40% increase

KCAP The Hague
Suicidal behaviour in society & MH

- Suicide ........ too late for mental health
- 40% suicides treatment in mental health .... (Huisman et al 2010)

**Mental health:**
- Experts diagnosis & treatment of serious suicidal behaviour!
- Very very very very serious > admission...
  - Last resort
  - And then....?
Admission

- False sense of security?
- Iatrogenic?
- Last resort?

- Possible rapid treatment
- Observation
- Unburden support system
Risk taxation suicidal behaviour & closed wards

- Concentration of serious suicidal behaviour
- Increased risk suicide (>50-80 x)
- No specific guidelines, just general
- Specific Dutch setting?
- ? Open < > closed (Huber et al 2016)
Serious suicidal behaviour and acting "study design"

- Acting of mental health worker changes outcome
- Randomised trial > serious lethal suicidal behaviour
  - Group 1 admission
  - Group 2 no admission
- Outcome suicide!
Suicidal behaviour and closed admission

- Suicidal behaviour 28.7% (368/1324) (Miedema ea 2016)

Development Phase plan 2007
- For every patient multidisciplinary risk taxation!
- Daily registration and taxation
- registration monitored on digiboard
- Clarity of taxation for all!
Acute ward, phase plan (de Winter et al 2011)

Phase 5 (Red) Continuous observation ("evt" seclusion during night)
Serious suicidal

Phase 4 (Orange) Supervision (differentiation)

Phase 3 (Yellow) No freedom outside

Phase 2 (Green) Freedom

Phase 1 (Blue) discharge Non-suicidal
<table>
<thead>
<tr>
<th>Fase 5 (very high risk)</th>
<th>3.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fase 4 (high risk)</td>
<td>7.1%</td>
</tr>
<tr>
<td>Fase 3 (acceptable risk)</td>
<td>“59.5%”</td>
</tr>
<tr>
<td>Fase 2 (acceptable risk)</td>
<td>28.0%</td>
</tr>
<tr>
<td>Fase 1 (acceptable risk)</td>
<td>1.9%</td>
</tr>
</tbody>
</table>
A study of the connection between coercive measures used in a closed acute psychiatric ward and the socio-demographic and clinical characteristics of the patients involved

N. MIEDEMA, M.C. HAZEWINKEL, D. VAN HOEKEN, A.S VAN AMERONGEN, R.F.P. DE WINTER

| TABEL 2 | Klinische kenmerken in relatie tot dwangmaatregelen |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Klinisch kenmerk | Totaal | Dwangmaatregel | Noodmedicatie |
|                 | N     | %            | Ja | % | Ja | % | χ²-toets** | Ja | % | Ja | % | χ²-toets** |
| Alle opnames     | 1283  | 100,0%      | 260 | 20,3% | 182 | 14,2% | χ² = 20,385; df = 1; p < 0,001 |
| Opnamereden*     |        |              | 472 | 36,8% | 94  | 71,6% | χ² = 20,404; df = 1; p < 0,001 |
| Psychotische decompensatie | 370 | 28,8%      | 45  | 17,3% | 23  | 12,6% | χ² = 27,003; df = 1; p < 0,001 |
| Suïcidaliteit     | 216   | 16,8%      | 70  | 32,6% | 68  | 32,4% | χ² = 42,697; df = 1; p < 0,001 |
Alternatives

- Phase 5 permanent observation
  - For 52 patients 4 nurses (23.00 - 7.30)
  - During nights seclusion ...........

- Seclusion and suicidal behaviour!

- Seclusion = detrimental  (de Winter et al 2011)
No more use of seclusion rooms for suicidal patients!
Finding alternatives

- Since 2010, development of alternatives!

- Patients and staff prefer modern detection systems above separation (Hazewinkel et al 2014).

- Searching for alternatives with detection?

- Learning detection systems/smart wrist application/smartphone application/rooming in etc.
Alternative for seclusion during nights

- finally

- Development of Automation rooms!
Collaberation AVICS

Wij kunnen u de volgende diensten leveren

*De vraag naar nieuwe domotica oplossingen in de zorg wordt steeds groter en de wensen steeds uitgebreider en complexer.*

De vraag naar nieuwe domotica oplossingen in de zorg wordt steeds groter en de wensen steeds uitgebreider en complexer. Benieuwd naar de mogelijkheden? Wij denken graag met u mee, maak een afspraak: 0899110911

- ConnectCare
- Slimme Optische Sensor (SOS)
- Zorgalarmering over wifi
- Zorgalarmering over GSM

De Avics Cloud oplossing biedt
De slimme optische sensor, tot 90% minder
Een zorgoproepsysteem op basis van WiFi met
Uw huidige zorgoproepsysteem
1. Smart sensor
2. Movement sensor
3. Movement sensor
4. Acoustic sensor
5. Door sensor
6. Smartglass
Acting after signal

- Signal:
  - 1. Sensor detection movement or otherwise in room.
  - 2. Signal notification on handsensor
  - 3. Watching Video fragment on pc
  - 4. Face to face contact patient
Results Automation room

- Experience almost 3 years (end 2014-2017) 3 “rooms”
- All suicidal patients high risk > automation room > (night and hours with less observaion)
- Depressive disorder most common
- 124 times usage automation room (96 individuals)
  - 7 patients 3 admissions, 14 patients 2 admission

- Total 1071 nights usage automation room
  - 255 nights > finally seclusion
- 1 suicide
- Several times bugs in system (no figures)
Light in the darkness
Decrease in seclusions

- 76.2% in using seclusion rooms for suicidal patients.

- All seclusions < 4% primary suicidal behaviour (was 17.3%)!
<table>
<thead>
<tr>
<th></th>
<th>Total (n = 67)</th>
<th>♂ (n = 37)</th>
<th>♀ (n = 30)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (SD)</td>
<td>39.5 (15.05)</td>
<td>36.4 (14.6)</td>
<td>43.4 (14.9)</td>
<td>ns</td>
</tr>
<tr>
<td>Major diagnoses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comorbidity (%)</td>
<td>20 (29.9%)</td>
<td>13 (35.1%)</td>
<td>7 (23.3%)</td>
<td>ns</td>
</tr>
<tr>
<td>Depressive disorder (psychotic depression)</td>
<td>24 (35.8%)</td>
<td>14 (37.8%)</td>
<td>10 (33.3%)</td>
<td>ns</td>
</tr>
<tr>
<td>Primary psychotic</td>
<td>18 (26.9%)</td>
<td>6 (16.2%)</td>
<td>12 (33.3%)</td>
<td>0.029</td>
</tr>
<tr>
<td>Personality disorder</td>
<td>18 (26.8%)</td>
<td>10 (27%)</td>
<td>8 (26.7%)</td>
<td>ns</td>
</tr>
<tr>
<td>Substance/alcohol</td>
<td>8 (11.9%)</td>
<td>4 (10.1%)</td>
<td>4 (13.3%)</td>
<td>ns</td>
</tr>
<tr>
<td>PTSD</td>
<td>7 (10.4%)</td>
<td>5 (13.5%)</td>
<td>2 (6.7%)</td>
<td>ns</td>
</tr>
<tr>
<td>Anxious disorder</td>
<td>5 (7.5%)</td>
<td>3 (8.1%)</td>
<td>2 (6.7%)</td>
<td>ns</td>
</tr>
<tr>
<td>Autism</td>
<td>1 (1.5%)</td>
<td>2 (5.4%)</td>
<td>0 (0%)</td>
<td>ns</td>
</tr>
<tr>
<td>rest</td>
<td>3 (4.5%)</td>
<td>2 (5.4%)</td>
<td>1 (3.3%)</td>
<td>ns</td>
</tr>
<tr>
<td>Unknown</td>
<td>4 (6.0%)</td>
<td>3 (8.1%)</td>
<td>1 (3.3%)</td>
<td>ns</td>
</tr>
<tr>
<td>Automation usage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>repeated</td>
<td>15</td>
<td>13</td>
<td>2</td>
<td>0.024</td>
</tr>
<tr>
<td>average nights (range)</td>
<td>8.7 (1-138)</td>
<td>10.2 (1-138)</td>
<td>6.4 (1-29)</td>
<td>ns</td>
</tr>
</tbody>
</table>
Experiences of staff
Survey nursing staff N = 24

- Revealed that automation was used mainly at night.
- Automation is seen as an alternative for restraint methods during admission.
- Patients and staff trust the new technology. There is a strong desire for continuing the supplementary method.
limitations

- Naturalistic design
- No control
- Unknown missing data
- Etc........
Conclusions

- Seclusion not anymore last resort for serious suicidality
- Automation rooms are save, staff is satisfied & hopeful
- Depressive disorder most common
- Male using automation > ↑psychotic disorder
- Female more often readmitted and using automation
- Automation rooms > 76.2% decrease of seclusion!!
Time

9 years.....
Personal involvement: development automation rooms (suicidaliteit.nl)

- **2007**: development phasing plan for suicide risk ([intern publication](2007, national paper 2011, book chapter 2016, several oral national/international presentations)

- **2010-2014**: adoption phasing plan different Dutch mental health institutes ([different national oral presentations](different national oral presentations)

- **2009-2010**: cohort of 1314 admissions on a closed ward and phasing plan ([publication 2016, 2 international poster presentations (ESSSB14 IASP), 1 national poster presentation, several oral national/international presentations, publication in preparation](publication 2016, 2 international poster presentations (ESSSB14 IASP), 1 national poster presentation, several oral national/international presentations, publication in preparation)

- **2010-** starting finding alternatives for seclusion during high suicide risk ([Leonardo grant, several oral presentations, collaboration Technical university Delft/ University Leiden/IPT telemedicine/AVICS](Leonardo grant, several oral presentations, collaboration Technical university Delft/ University Leiden/IPT telemedicine/AVICS)

- **2011-2013** study: opinion staff and patients for alternatives for seclusion ([several oral national presentations, manuscript in review](several oral national presentations, manuscript in review)

- **2015** pilot automation rooms n = 13 ([national poster NVvP 2015](national poster NVvP 2015)

- **2016-2017** extension pilot n = 67 ([presentation ESSSB 2016, manuscript.....? Dutch Psychiatric association](presentation ESSSB 2016, manuscript.....? Dutch Psychiatric association))
Thank you audience........

- **Always welcome to visit the clinic!**
- [R.dewinter@parnassia.nl](mailto:R.dewinter@parnassia.nl)
- [info@suicidaliteit.nl](mailto:info@suicidaliteit.nl)

**Thanks:**
Questions
Suicidal behaviour 2009-2010

<table>
<thead>
<tr>
<th></th>
<th>All (n = 1284)</th>
<th>High risk (n = 137)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicide</td>
<td>n = 4 (0.3%)</td>
<td>n = 1 (0.7%)</td>
</tr>
<tr>
<td>Suicide attempt</td>
<td>n = 41 (3.2%)</td>
<td>n = 25 (18.2%)</td>
</tr>
<tr>
<td>(lethal intent)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suicide attempt</td>
<td>n = 78 (6.1%)</td>
<td>n = 33 (24.1%)</td>
</tr>
<tr>
<td>(non-lethal intent)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suicidal tendencies</td>
<td>n = 82 (6.4%)</td>
<td>n = 21 (15.3%)</td>
</tr>
<tr>
<td>Suicidal thoughts</td>
<td>n = 213 (16.6%)</td>
<td>n = 28 (20.4%)</td>
</tr>
<tr>
<td></td>
<td>Acceptable N =1147</td>
<td>High risk N =137</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>CGI</td>
<td>5.2</td>
<td>5.7</td>
</tr>
<tr>
<td>GAF (categorised)</td>
<td>23.4</td>
<td>30.2</td>
</tr>
<tr>
<td>Female</td>
<td>42.6%</td>
<td>60.6%</td>
</tr>
<tr>
<td>Age</td>
<td>39.8</td>
<td>34.8</td>
</tr>
<tr>
<td>Married/living together</td>
<td>30%</td>
<td>39%</td>
</tr>
<tr>
<td>Having children</td>
<td>34.6%</td>
<td>36.5%</td>
</tr>
<tr>
<td>Voluntary</td>
<td>63.2%</td>
<td>49.6%</td>
</tr>
<tr>
<td>First admission (&lt;5 yrs)</td>
<td>42%</td>
<td>68%</td>
</tr>
<tr>
<td>Seclusion</td>
<td>25.3%</td>
<td>17.3%</td>
</tr>
<tr>
<td>jobless</td>
<td>70.5%</td>
<td>56%</td>
</tr>
<tr>
<td>ECT treatment</td>
<td>0.7%</td>
<td>8.7%</td>
</tr>
</tbody>
</table>