Development and use of automation for suicidal inpatients

2nd LAGE LANDEN SUICIDE RESEARCH MEETING
Amsterdam 5th December 2017

WWW.SUICIDALITEIT.NL
No Conflict of Interest
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 serious > admission...
  - Last resort
  - And then....?
Suicides total, proportion suicides mental health

(IGZ 2017)

* x 0.1 %
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 healthworker 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  Serious suicidal observation ("evt" seclusion during night)
- **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</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 (very high risk)</td>
<td>3.5%</td>
</tr>
<tr>
<td>4 (high risk)</td>
<td>7.1%</td>
</tr>
<tr>
<td>3 (acceptable risk)</td>
<td>“59.5%”</td>
</tr>
<tr>
<td>2 (acceptable risk)</td>
<td>28.0%</td>
</tr>
<tr>
<td>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

<table>
<thead>
<tr>
<th>Klinisch kenmerk</th>
<th>Totaal</th>
<th>Dwangmaatregel</th>
<th>Noodmedicatie</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>Ja</td>
</tr>
<tr>
<td>Alle opnames</td>
<td>1283</td>
<td>100,0%</td>
<td>260</td>
</tr>
<tr>
<td>Opramereden*</td>
<td>472</td>
<td>36,8%</td>
<td>127</td>
</tr>
<tr>
<td>Psychotische decompensatie</td>
<td>370</td>
<td>28,8%</td>
<td>45</td>
</tr>
<tr>
<td>Suïcidaliteit</td>
<td>370</td>
<td>28,8%</td>
<td>45</td>
</tr>
<tr>
<td>Agressie</td>
<td>216</td>
<td>16,8%</td>
<td>78</td>
</tr>
</tbody>
</table>
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)
Mission!

- 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!
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
Questions

- Is there decrease in seclusion for serious suicidal patients in Phase 5?
- Characteristics for suicidal patients and still urgency for seclusion?
Results Automation room

- Experience almost 3 years (end 2014-2017) 3 “rooms”
- All suicidal patients high risk > automation room > (night and hours with less observation)
- 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%)
### Failing usage of automation

<table>
<thead>
<tr>
<th>primary diagnosis</th>
<th>Total, N</th>
<th>Total,%</th>
<th>$\chi^2$-test</th>
<th>%Seclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depression</strong></td>
<td>47</td>
<td>37,9%</td>
<td>$\chi^2=2.570$; $p=0.136$</td>
<td>17.02%</td>
</tr>
<tr>
<td><strong>Axis-II</strong></td>
<td>38</td>
<td>30,6%</td>
<td>$\chi^2=4.098$; $p=0.043$</td>
<td>36.8%</td>
</tr>
<tr>
<td><strong>Psychotic disorder</strong></td>
<td>34</td>
<td>27,4%</td>
<td>$\chi^2=2.647$; $p=0.104$</td>
<td>27.3%</td>
</tr>
<tr>
<td><em>(Psychotic depression)</em></td>
<td>(16)</td>
<td>(12,9 %)</td>
<td>$(\chi^2=3.83; \ p=0.759)$</td>
<td>(18,7%)</td>
</tr>
<tr>
<td><strong>other</strong></td>
<td>5</td>
<td>1,6%</td>
<td>$\chi^2=1.678$; $p=0.439$</td>
<td>20.1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>124</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Factors for failing usage of automation

- No relation with seclusion
  - Gender
  - Age

- Relation with seclusion
  - Duration of admission $t = 2.207; \text{df} = 122; p = 0.029$
  - Unvoluntary admission $\chi^2 = 9.337; \text{df}=1; p=0.003$
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
  - All automation rooms used?
  - Phase 5 <> differentiation of additional seclusion reasons
  - etc
- Etc.........
Good clinical practice?

- No other studies?
  - No Pubmed/Google scholar findings

- Real life.......

- Far away from academic reality
Conclusions I

- Seclusion not anymore last resort for serious suicidality
- Long development over 9 years
- Automation rooms are safe, staff is satisfied & hopeful
- Depressive disorder most common
- **Axis 2: most failing of usage automation**
- Seclusion more often longer admission duration/unvoluntary stay
- *Male using automation > ↑psychotic disorder*
- *Female more often readmitted*
- **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)*

- **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)*

- **2010-** starting finding alternatives for seclusion during high suicide risk *(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)*

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

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

- Always welcome to visit the clinic!
- R.dewinter@parnassia.nl
- info@suicidaliteit.nl

Thanks:
• https://youtu.be/05HrZ6YnM10
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>a</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>a</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>