Development and use of automation for suicidal inpatients

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2ND LAGE LANDEN SUICIDE RESEARCH MEETING

Amsterdam 5th december 2017

WWW.SUICIDALITEIT.NL

Parnassia Groep

VU UNIVERSITY AMSTERDAM

No Conflict of Interest

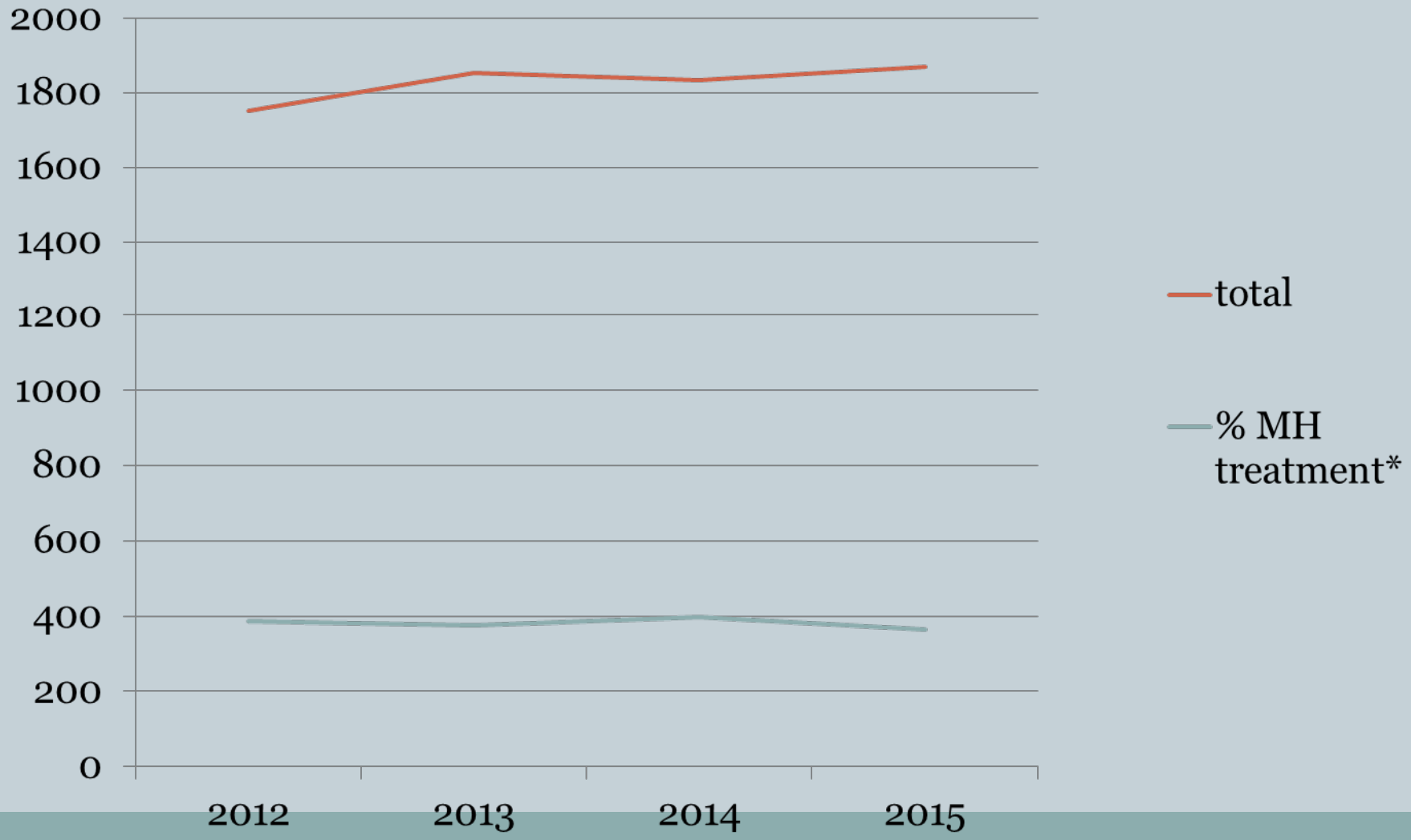
Suicidal behaviour in society & MH

- 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

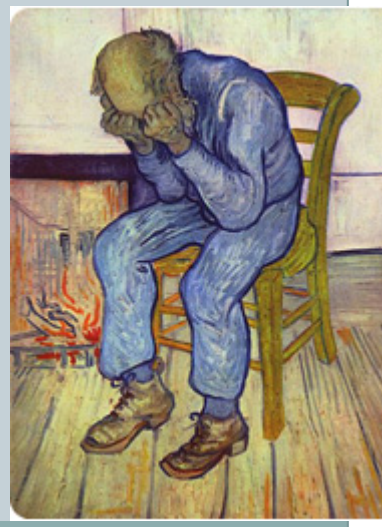
- Outcome suicide!

Suicidal behaviour and closed admission

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

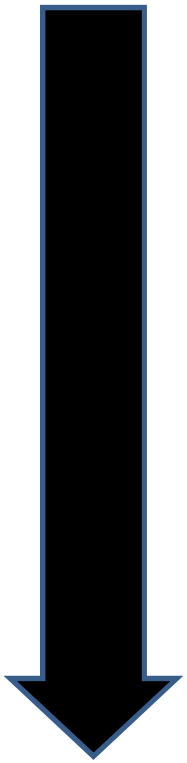
Development Phase plan 2007

- 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 observation** (“evt” seclusion during night)	**Serious suicidal**
Phase 4 (Orange)	**Supervision** (differentation)	
Phase 3 (yellow)	**No freedom outside**	
Phase 2 (Green)	**Freedom**	
Phase 1 (Blue)	**discharge**	**Non-suicidal**



High risk? N =1284

(de Winter e.a 2012)

Fase 5 (very high risk)	3.5%
Fase 4 (high risk)	7.1%
Fase 3 (acceptable risk)	“59.5%”
Fase 2 (acceptable risk)	28.0%
Fase 1 (acceptabel risk)	1.9%)

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

TIJDSCHRIFT VOOR PSYCHIATRIE 58(2016)6, 434-445

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					
			Separatie			Noodmedicatie		
	N	%	Ja	% Ja	χ^2-toets**	Ja	% Ja	χ^2-toets**
Alle opnames	1283	100,0%	260	20,3%		182	14,2%	
Opnamereden*								
Psychotische decompensatie	472	36,8%	127	48,8%	χ^2 = 20,385; df = 1; p < 0,001	94	51,6%	χ^2 = 20,404; df = 1; p < 0,001
Suïcidaliteit	370	28,8%	45	17,3%	χ^2 = 21,127; df = 1; p < 0,001	23	12,6%	χ^2 = 27,003; df = 1; p < 0,001
Agressie	216	16,8%	78	30%	χ^2 = 40,681; df = 1;	68	37,4%	χ^2 = 62,697; df = 1;

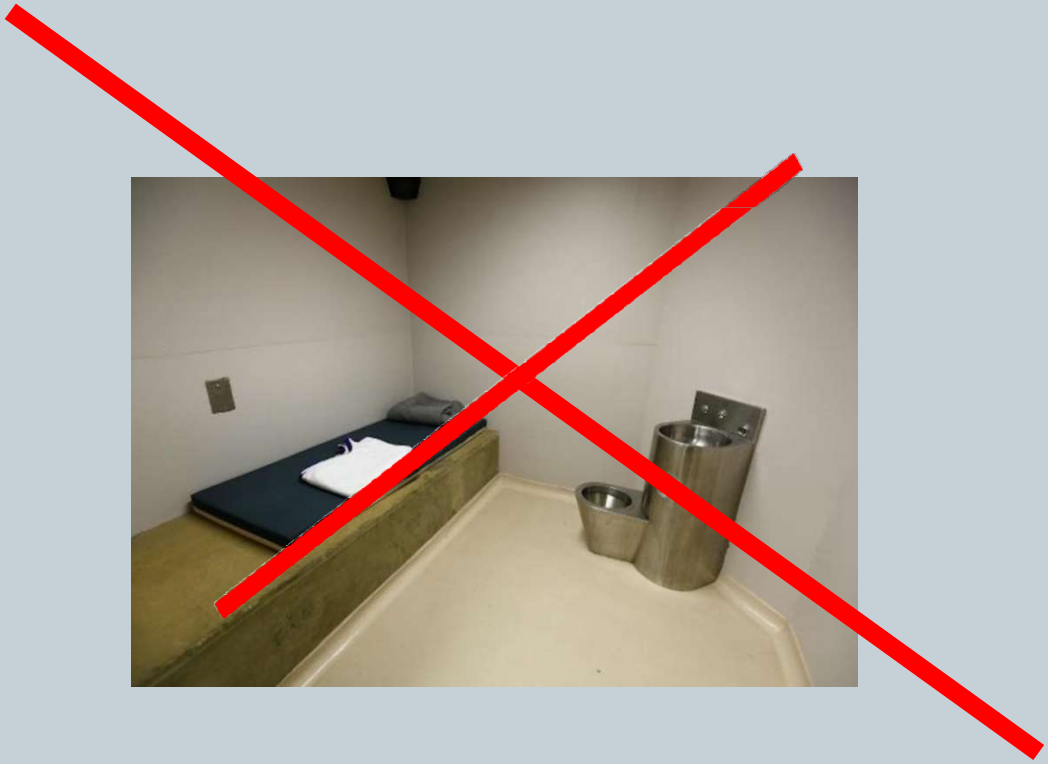
NA MEAFDELING

Alternatives

- Phase 5 permanent observation
  - For 52 patiens 4 nurses (23.00 - 7.30)
  - During nights seclusion.....
- Seclusion and suicidal behaviour!
- Seclusion = detrimental (de Winter et al 2011)

Mission!

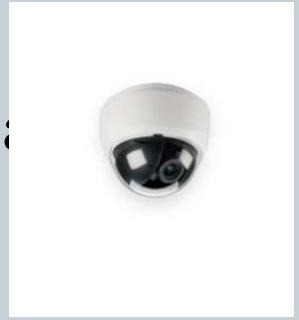
- **No more use of seclusion rooms for suicidal patients!**



Finding alternatives

- Since 2010, development of alternatives!

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



- Searching for alternatives with detection?

- Learning detection systems/smart wrist application/smartphone application/ rooming in etc..

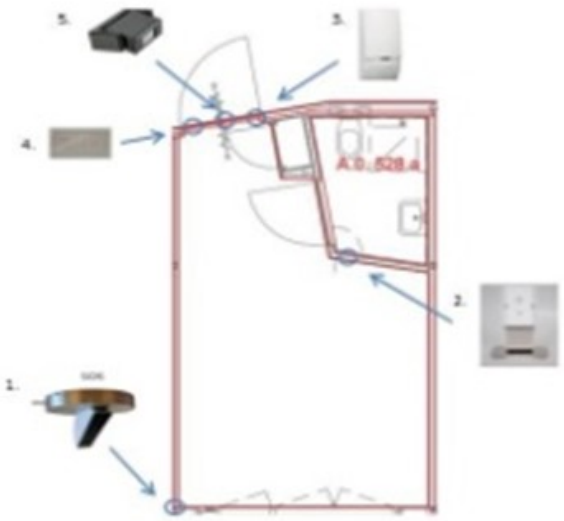
Alternative for seclusion during nights

- finally
- Development of **Automation rooms!**

Universiteit Leiden

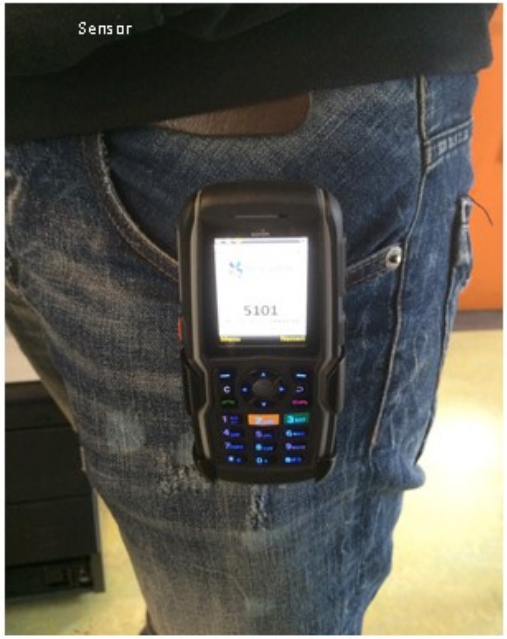
Avics

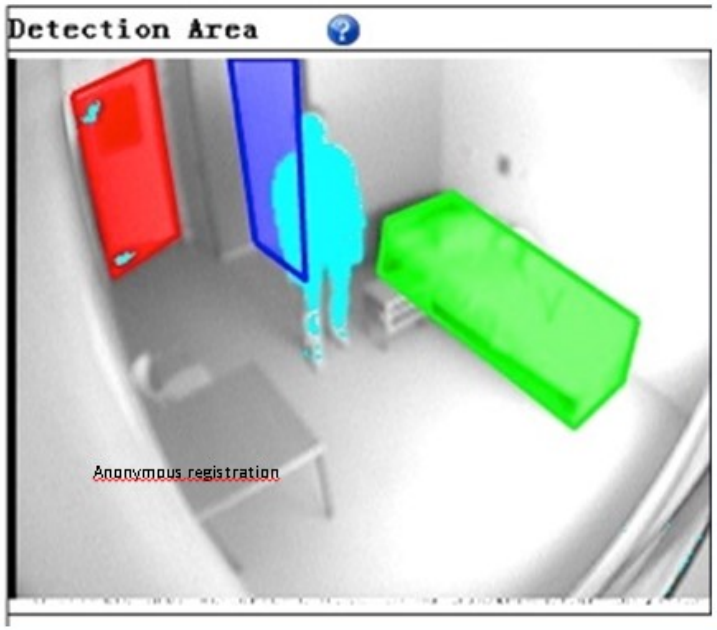
TU Delft



Automati

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?
- Characterics for suicidal patients and still urgence 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 obeservation*)
- 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.....

primary diagnosis	Total, N	Total,%	χ2-test	%Seclusion
Depression	*47*	*37,9 %*	*χ2=2,570; p=0,136*	*17,02%*
Axis-II	*38*	*30, 6%*	*χ2 =4,098;* ***p=0,043***	*36,8%*
Psychotic disorder	*34*	*27,4 %*	*χ2=2,647; p=0,104*	*27,3%*
(Psychotic depression)	*(16)*	*(12,9 %)*	*(χ2=,383; p=0,759)*	*(18,7%)*
other	*5*	*1,6 %*	*χ2 =1,678; p=0,439*	*20,1 %*
	124			

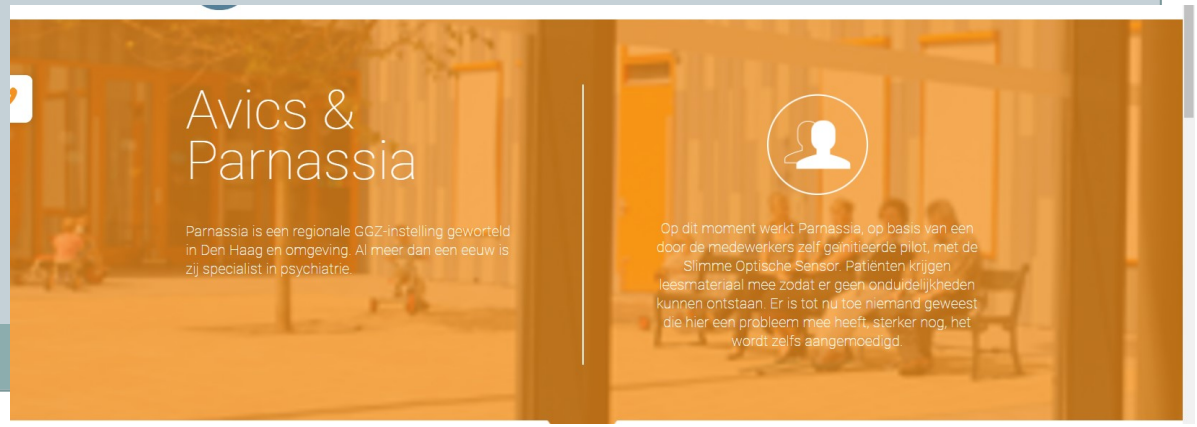
Factors for failing usage of automation

- No relation with seclusion
  - Gender
  - Age
- Relation with seclusion
  - Duration of admission $t = 2{,}207$; $df = 122$; $p = 0, 029$
  - Unvolantary admission $\chi 2 = 9{,}337$; $df=1$; $p= ,003$

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?

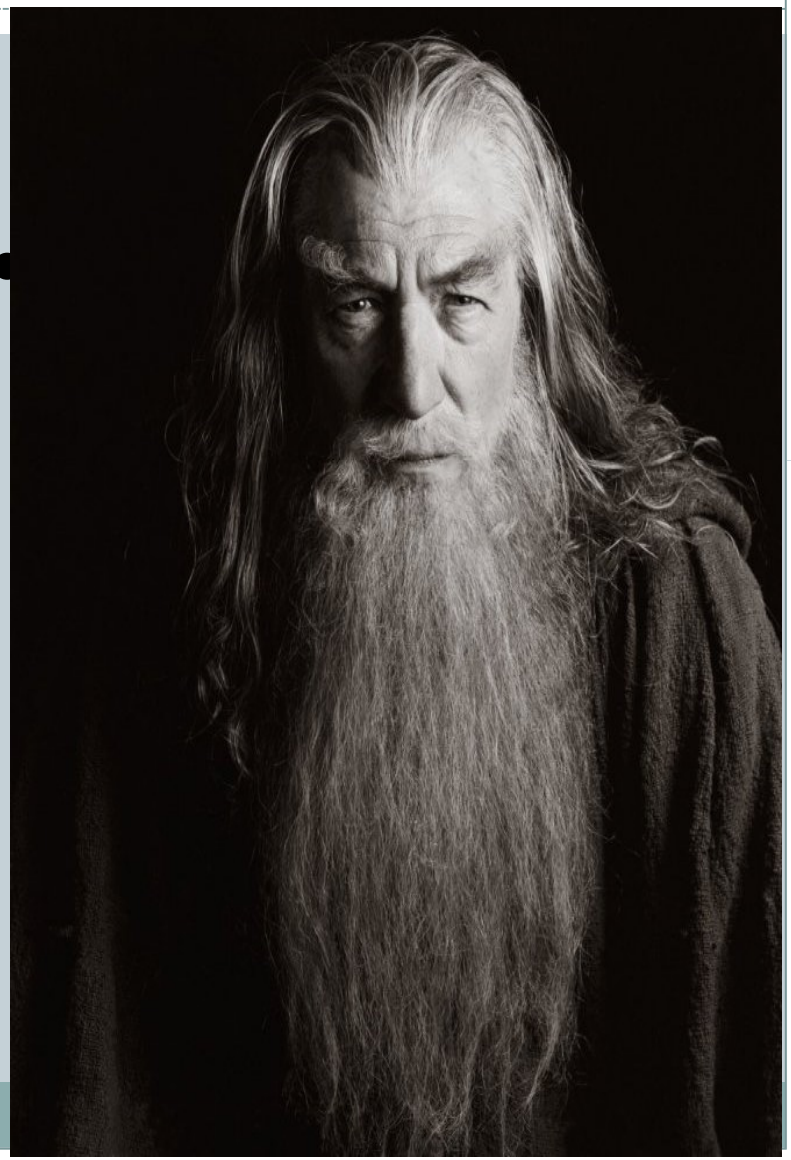
- No other studies?
  - No Pubmed/Google scholar findings
- Real life…….
- Far away from academic reality

Conclusions I

- Seclusion not anymore last resort for serious suicidality
- Long development over 9 years
- Automation rooms are save, staff is satisfied & hopefull
- Depressive disorder most common
- **Axis 2: most failing of usage automation** countertransferance
- Seclusion more ofte 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:** adoptation 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!**
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- info@suicidaliteit.nl

- Thanks:
  - Mirjam Hazewinkel, Narna Miedema, Wouter van Maanen, Stephanie Bohnen, Erik Hoencamp,Willem van Nugteren, Manix Asscheman, Monique Roggeveen, Jacomien Krijger, Arlette van Amerongen, Koos Maquelin, Jorijn Deenen, Petra Moonen, Youssef Aouaj , Bart van den Aakster, Pieter Jonker, Ellen van Hummel, Nolly vd Zeijden, Jacelyn Jacoba, Huib de Ridder, Suzanne Stuurman, Erik Hoencamp, Eddo Velders, Dave Gasper, Alan Zenderink, Joop Wallenburg, Waïl Saadani.

Questions

- https://youtu.be/05HrZ6YnM10

CAT

Suicidal behaviour 2009-2010

	All (n = 1284)	High risk (n =137)
Suicide	n = 4 (0,3%)	*n = 1 (0.7%)*
Suicide attempt (lethal intent)	n = 41 (3.2%)	*n = 25 (18.2%)* [a]
Suicide attempt (non-lethal intent)	n = 78(6,1%)	*n = 33 (24.1%)* [a]
Suicidal tendencies	n= 82 (6,4%)	*n = 21 (15.3%)* [a]
Suicidal thoughts	n= 213 (16.6%)	*n = 28 (20.4%)*

	Acceptable N =1147	High risk N =137	**Sign.**
CGI	5.2	5.7	p <.001
GAF (categorised)	23.4	30.2	p <.001
Female	42.6%	60.6%	p <.001
Age	39.8	34.8	p <.001
Married/living together	30%	39%	ns
Having children	34.6%	36.5%	ns
Voluntary	63.2%	49.6%	P = .007
First admission (<5 yrs)	42%	68%	p < .001
Seclusion	25.3%	17.3%	p < .001
jobless	70.5%	56%	p < .001
ECT treatment	0.7%	8.7%	p < .001