Violence Risk Screening in the Emergency Department: Comparing the Predictive Validity of a Statistical Model to Nurses Clinical Judgment

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Research Questions

- Can an integrated decision support process for violence risk screening at triage be successfully developed and implemented?
- Can a statistical model be developed to identify who is at risk?
- Can triage nurses accurately identify who is at risk of violence on arrival?

Literature

- Alert system identified patients correctly but tool needed refining and prevention was required once at risk patients were identified (Kling et al., 2006).

- Reduction in violence was not sustainable (Kling et al., 2011).

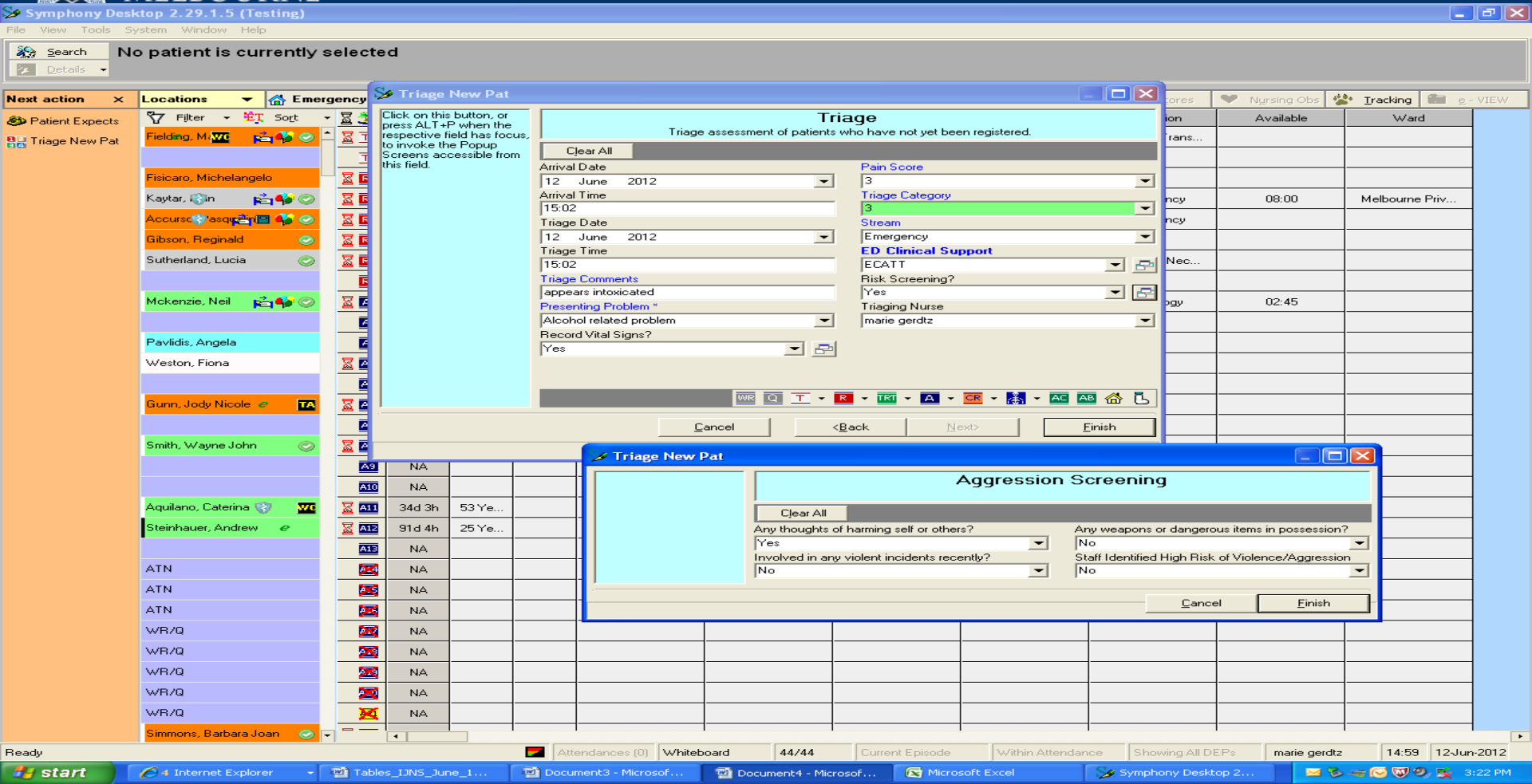
- Repetitively disruptive patients 96.1% reduction in violence- a flag system was used and focus on prevention N=48 (Drummond et al., 1989).

- Stare, Tone, Anxiety, Mumbling and Pacing (Luck et al., 2007).

- Focus Groups, what do you do once a person is identified as at risk and how ED staff see levels of risk (Daniel & Gerdtz, 2009).

- Wilkes (2010) Violence Risk Assessment Tool for ED, 17 observable items developed by Delphi technique, yet to evaluated. VAT (2014) observational study identified observable cues prior to assault.

Existing Violence Risk Screen



Method

Observation of Triage nurse practice (N=167)

Consumer consultation (N=19)

Retrospective audit of Code grey data (N=1959)

Aims

1.Determine acceptability and useability

2. Integrate VRS into triage nurse practice

3. Compare 6 months matched data (Code Grey + Clinical)


Go here first
Triage Nurse
Administration

Characteristics of patients who require a Code Grey (N=56105) 2010

- 65.6% (623/950) arrived by ambulance
- 67.3% (639/950) were male
- 37% (354/948) were allocated to the emergency stream
- 56.4% (536/950) had a triage category of 3
- 37% (350/950) were referred for a mental health assessment

Frequency of presentation, code grey response, and use of hospital alert

Presentation frequency in 12 months	Patients (N=857)	Code grey[1] (N=1796)[3]	Use of hospital alert[2] (N=25)
One presentation and one code grey	498	498	9
Two or more presentations requiring at least one code grey	105	577	11
One presentation with 2 or more code greys	254	721	5

1. Code Grey is called by staff when they require security staff to attend to manage the potential or actual risk of clinical aggression

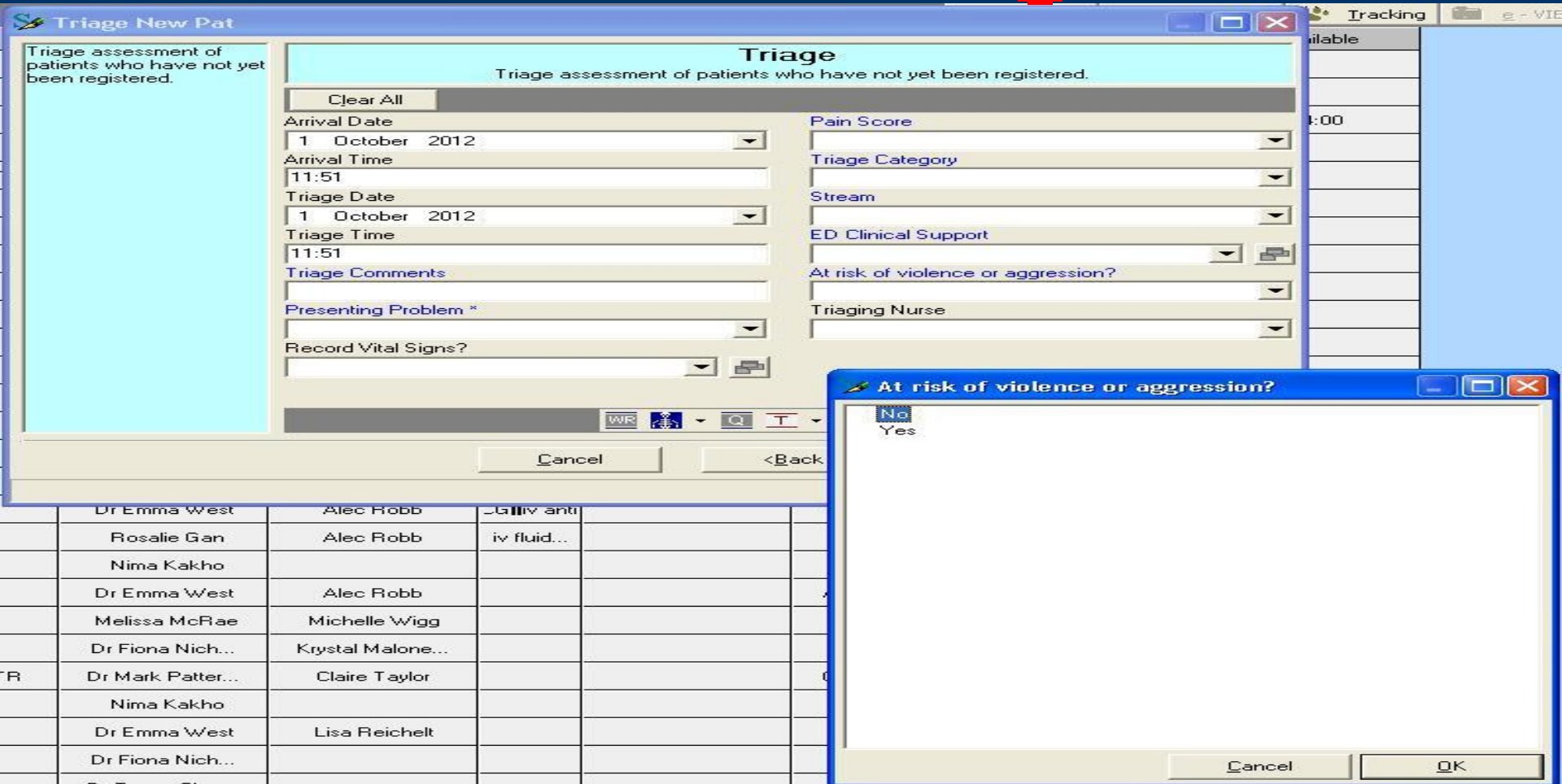
2. A hospital alert is added to a patients file when a risk is identified on previous admission

3. There were an additional 163 code greys that were not matched to a clinical presentation due to lack of information

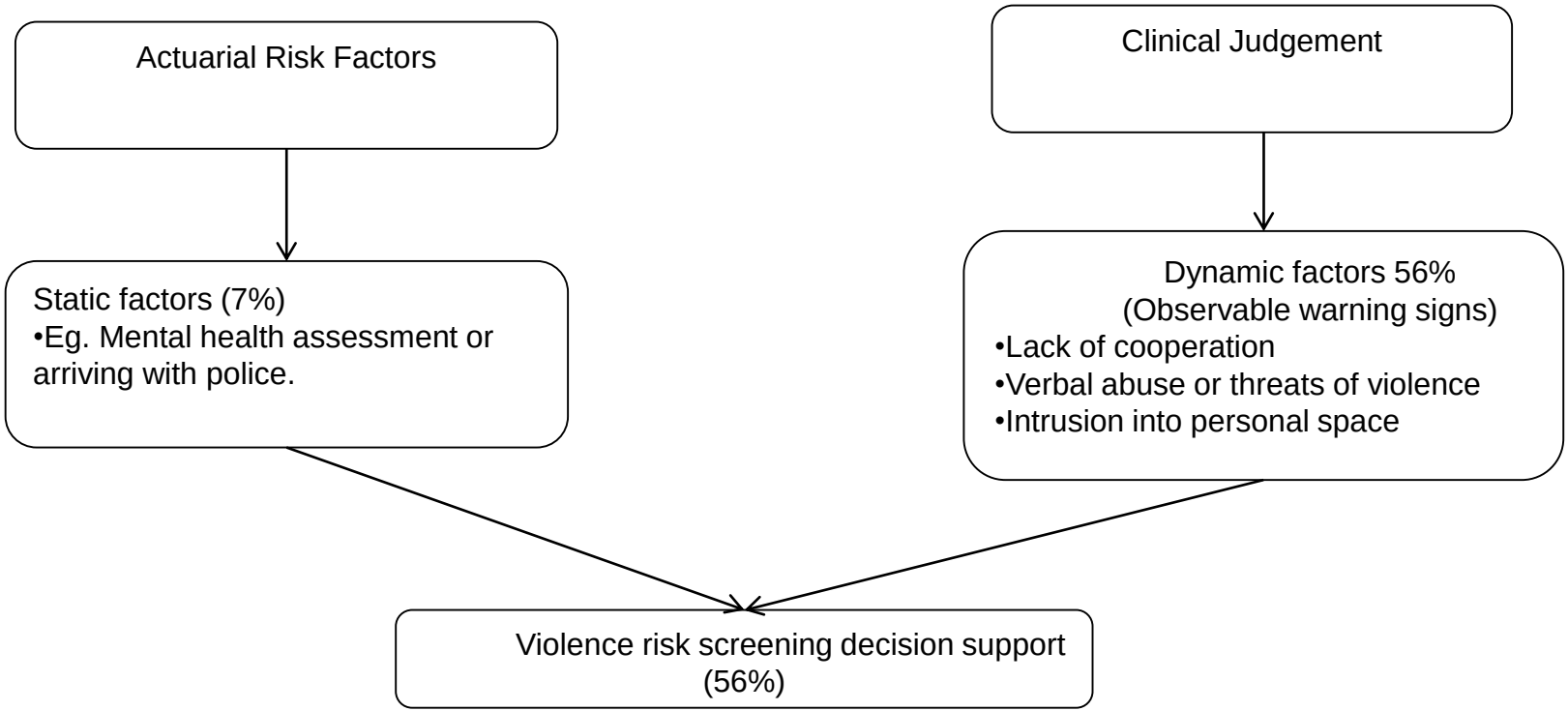
Significant Factors and Odds Ratio for a Code Grey Response

Variable		B	S.E.	Wald	df	p value	OR	95% CI. OR	
								Lower	Upper
Mode of Arrival	Other			317.754	2	.000		Reference	
	Ambulance	1.929	0.122	251.495	1	.000	**6.88**	5.421	8.732
	Police	2.944	0.197	222.36	1	.000	**18.997**	12.901	27.973
Gender	Male	0.701	0.1	49.16	1	.000	**2.016**	1.657	2.452
ECATT	Seen by ECATT	2.458	0.126	382.71	1	.000	**11.683**	9.133	14.946
Presenting Complaint	Other			37.356	3	.000		Reference	
	Mental Health Related	0.263	0.178	2.174	1	.140	**1.3**	0.917	1.843
	Drug/Alcohol	1.021	0.18	32.258	1	.000	**2.776**	1.951	3.948
	CNS disturbance	0.413	0.148	7.738	1	.005	1.511	1.13	2.02
ED Length of Stay	Minutes	0.001	0	59.83	1	.000	1.001	1.001	1.002
Age	Years	-0.025	0.003	93.907	1	.000	0.976	0.971	0.981
	Constant	-5.727	0.162	1257.244	1	.000	0.003		

Intervention

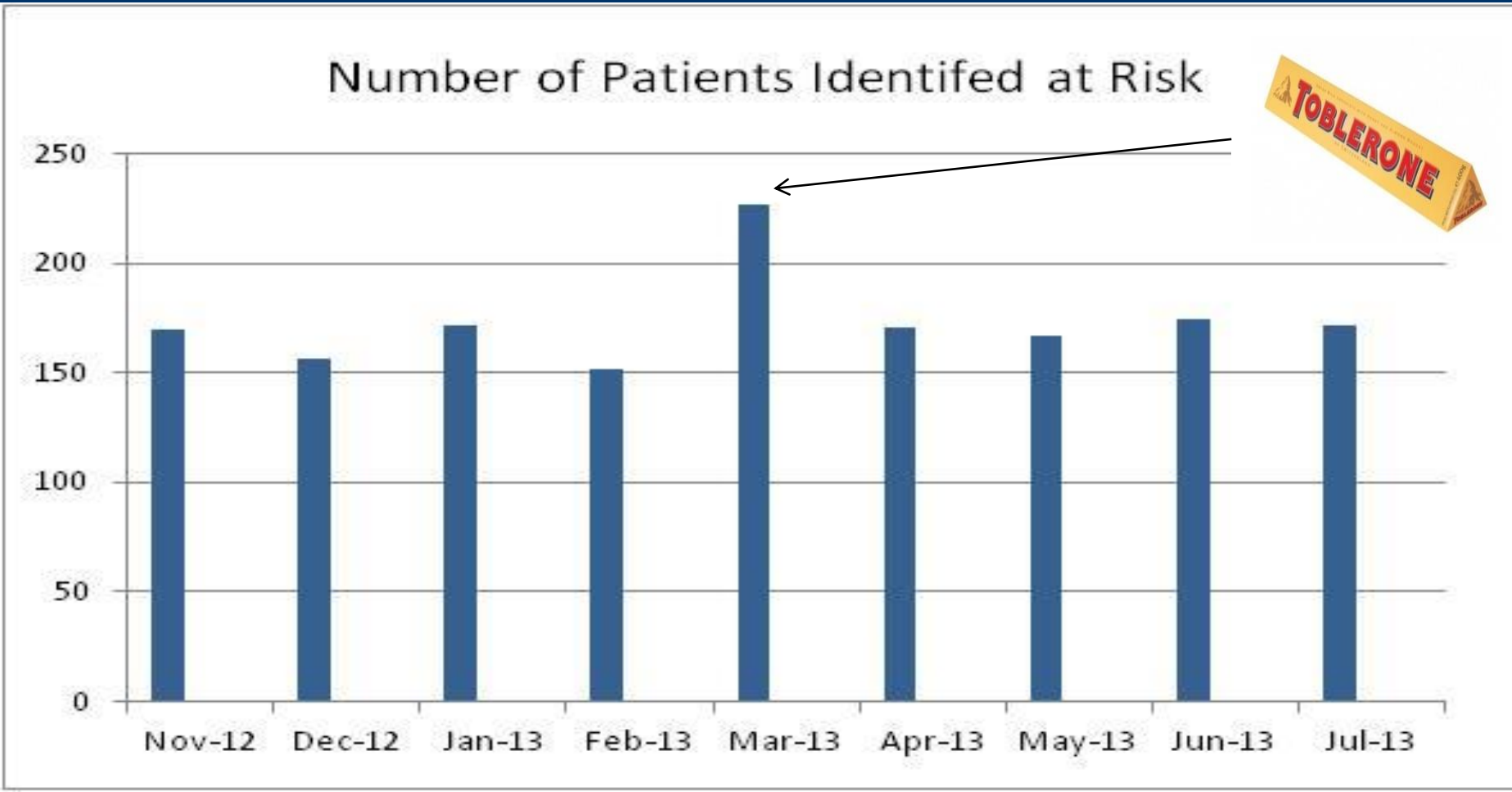


Violence Risk Screening Decision Support Process

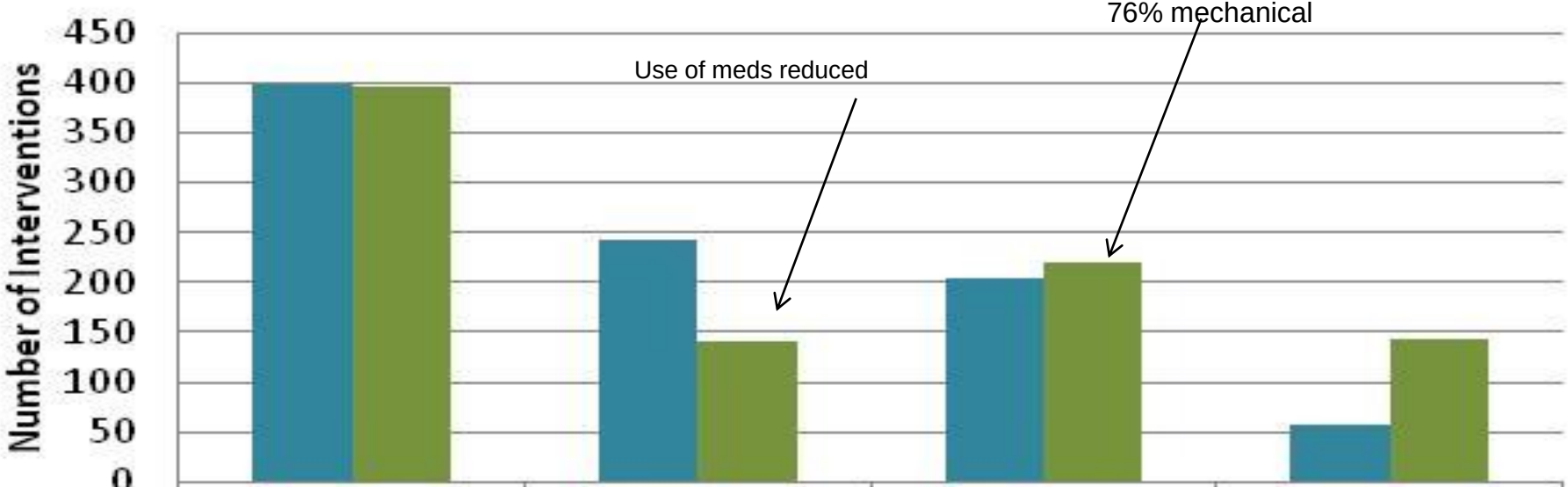


Predictive analysis (N=30122)

	Value	95% CI	
		Lower Limit	Upper Limit
Sensitivity	56.36%	51.66	60.95
Specificity	97.28%	97.08	97.46
Positive predictive value	24.13%	21.61	26.84
Negative predictive value	99.32%	99.21	99.41
Positive likelihood ratio	20.69	18.62	23.00
Negative likelihood ratio	0.45	0.40	0.50


Number of Patients Identifed at Risk
TOBLERONE
250
200
150
100
50
0
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Jul-13

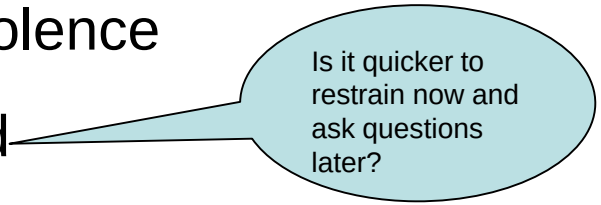
Total Number of Coercive Interventions used at each Code Grey Response



	None	One	Two	Three
Pre	399	243	205	57
Post	395	140	219	143

Key Findings of this Thesis – Evaluation

- Triage nurses identify 56% of patients who will require a Code Grey on arrival and staff were forewarned of the risk of violence prior to 61% of Code Greys
- iPM alert use ↑ increased and resulted in staff being forewarned prior to 24% of Code Greys (↑ from 7%)
- Not all patients will have warning signs of violence
- Use of ↑ coercive interventions has increased



- Significant reduction in the duration of Code Grey responses
- No↑ in the number of Code Greys or presentations who required a Code Grey

Access to Clinical Care

- No change in time from triage to review by mental health (p<.118).

•Patients who have a Code Grey are seen more quickly by medical staff (p<.002).

•LOS for patients who have a Code Grey has increased (p<.001).

•Reduced frequency of Code Greys at triage following the introduction of violence risk screening (p<.001).

•There was an significant increase in the median time from triage to the first Code Grey following the introduction of violence risk screening (p<.001).

Limitations

- Not all violence/aggression will require emergency response =incomplete data, no severity measure
- Success depend on technology and usability
- Focus on ED only, yet there are other ward areas
- Identifying prevention strategies remains unknown

Conclusion

- VRS is one strategy in an organisational approach for prevention
- Risk factors for a Code Grey response have been identified
- There are a small proportion of patients that account for several code greys
- Screening must be integrated into clinical practice-setting/population
- Confirms the problem of violence in complex, and research and testing of interventions specific to ED is warranted
- Potential to focus on cultural change and interventions such as Safewards

Thank you