



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

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A/Prof Jonathan Knott**

# Acknowledgements

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- A/Prof Jonathan Knott.
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- “Jane Bell Award” 2011- refine and implement violence risk screening
- Nurses Memorial Centre “Australian Legion of Returned Servicemen and Women ” 2011 and 2012 PhD Scholarship
- APA Scholarship 2013
- RMH Triage nurses who participated in observations
- ED Nurse Manager Liz Virtue
- Violence in ED Action Group
- Rebecca Waite - ED Nurse Educator
- Di Frew- Community Representative

- 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?

- 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

Symphony Desktop 2.29.1.5 (Testing)

File View Tools System Window Help

Search No patient is currently selected

Details

Next action x Locations Emergency Triage New Pat

Patient Expects

Triage New Pat

Filter Sort

Fielding, M... WC

Fisicaro, Michelangelo

Kaytar, Lin

Accurs... asq...

Gibson, Reginald

Sutherland, Lucia

Mckenzie, Neil

Pavlidis, Angela

Weston, Fiona

Gunn, Jody Nicole TA

Smith, Wayne John

A9 NA

A10 NA

A11 34d 3h 53 Ye...

A12 91d 4h 25 Ye...

A13 NA

ATN NA

ATN NA

ATN NA

WR/Q NA

WR/Q NA

WR/Q NA

WR/Q NA

WR/Q NA

WR/Q NA

Simmons, Barbara Joan

Attendances (0) Whiteboard 44/44 Current Episode Within Attendance Showing All DEPs marie gerdtz 14:59 12-Jun-2012

start 4 Internet Explorer Tables\_DNS\_June\_1... Document3 - Microsof... Document4 - Microsof... Microsoft Excel Symphony Desktop 2... 3:22 PM

### Triage

Triage assessment of patients who have not yet been registered.

Clear All

Arrival Date: 12 June 2012  
Arrival Time: 15:02  
Triage Date: 12 June 2012  
Triage Time: 15:02

Pain Score: 3  
Triage Category: 3  
Stream: Emergency  
ED Clinical Support: ECATT

Risk Screening?: Yes  
Triage Nurse: marie gerdtz

appears intoxicated: Yes  
Presenting Problem \*: Alcohol related problem  
Record Vital Signs?: Yes

Cancel <Back Next> Finish

### Aggression Screening

Clear All

Any thoughts of harming self or others?: Yes  
Any weapons or dangerous items in possession?: No  
Involved in any violent incidents recently?: No  
Staff Identified High Risk of Violence/Aggression: No

Cancel Finish

# 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  
Serv.

- 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 <sup>1</sup> (N=1796) <sup>3</sup>	Use of hospital alert <sup>2</sup> (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

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	<b>6.88</b>	5.421	8.732
	Police	2.944	0.197	222.36	1	.000	<b>18.997</b>	12.901	27.973
Gender	Male	0.701	0.1	49.16	1	.000	<b>2.016</b>	1.657	2.452
ECATT	Seen by ECATT	2.458	0.126	382.71	1	.000	<b>11.683</b>	9.133	14.946
Presenting Complaint	Other			37.356	3	.000		Reference	
	Mental Health Related	0.263	0.178	2.174	1	.140	<b>1.3</b>	0.917	1.843
	Drug/Alcohol	1.021	0.18	32.258	1	.000	<b>2.776</b>	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



### Triage New Pat

Triage assessment of patients who have not yet been registered.

**Triage**  
Triage assessment of patients who have not yet been registered.

Arrival Date: 1 October 2012  
 Arrival Time: 11:51  
 Triage Date: 1 October 2012  
 Triage Time: 11:51  
 Triage Comments:  
 Presenting Problem \*  
 Record Vital Signs?

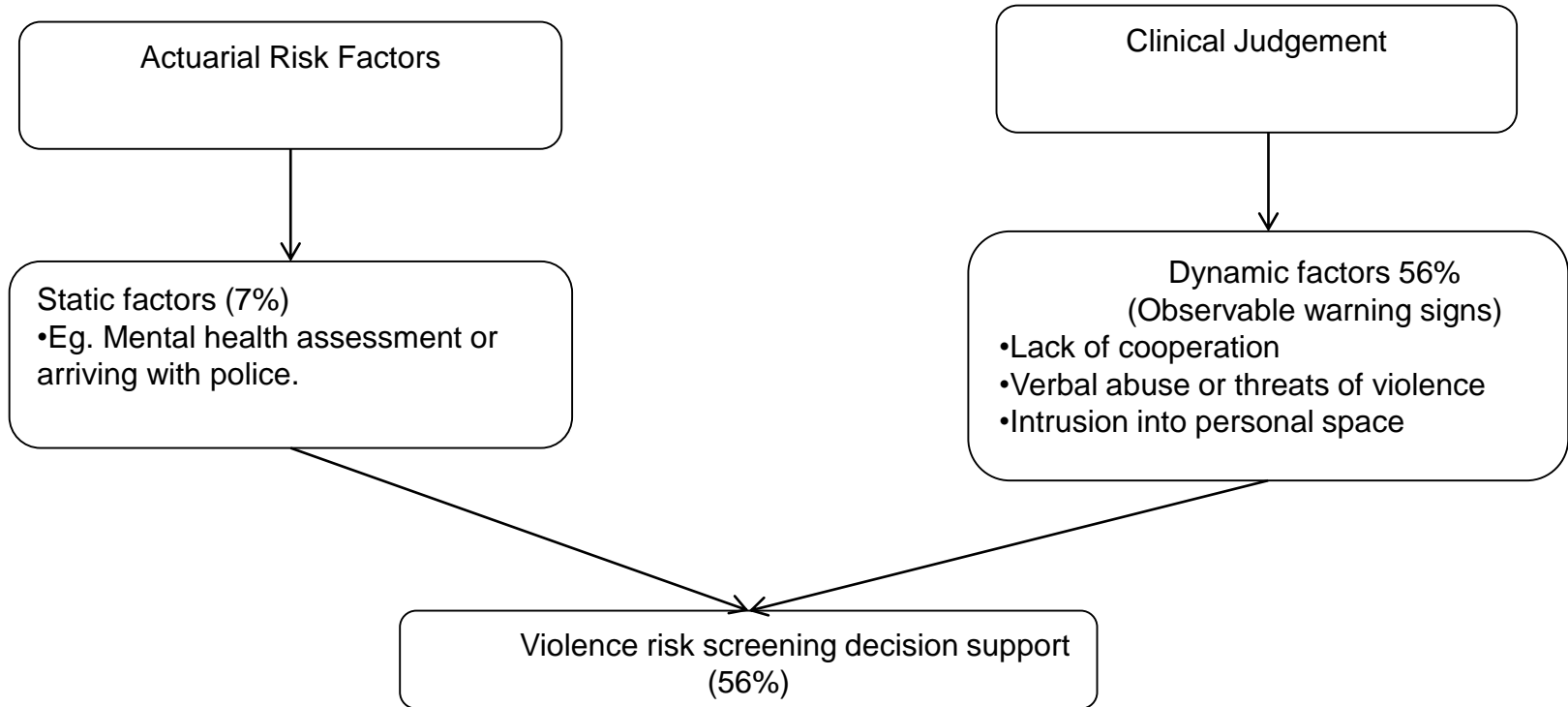
Pain Score  
 Triage Category  
 Stream  
 ED Clinical Support  
 At risk of violence or aggression?  
 Triage Nurse

### At risk of violence or aggression?

No  
 Yes

	Dr Emma West	Alec Robb	iv anti	
	Rosalie Gan	Alec Robb	iv fluid...	
	Nima Kakho			
	Dr Emma West	Alec Robb		
	Melissa McRae	Michelle Wigg		
	Dr Fiona Nich...	Krystal Malone...		
R	Dr Mark Patter...	Claire Taylor		
	Nima Kakho			
	Dr Emma West	Lisa Reichelt		
	Dr Fiona Nich...			

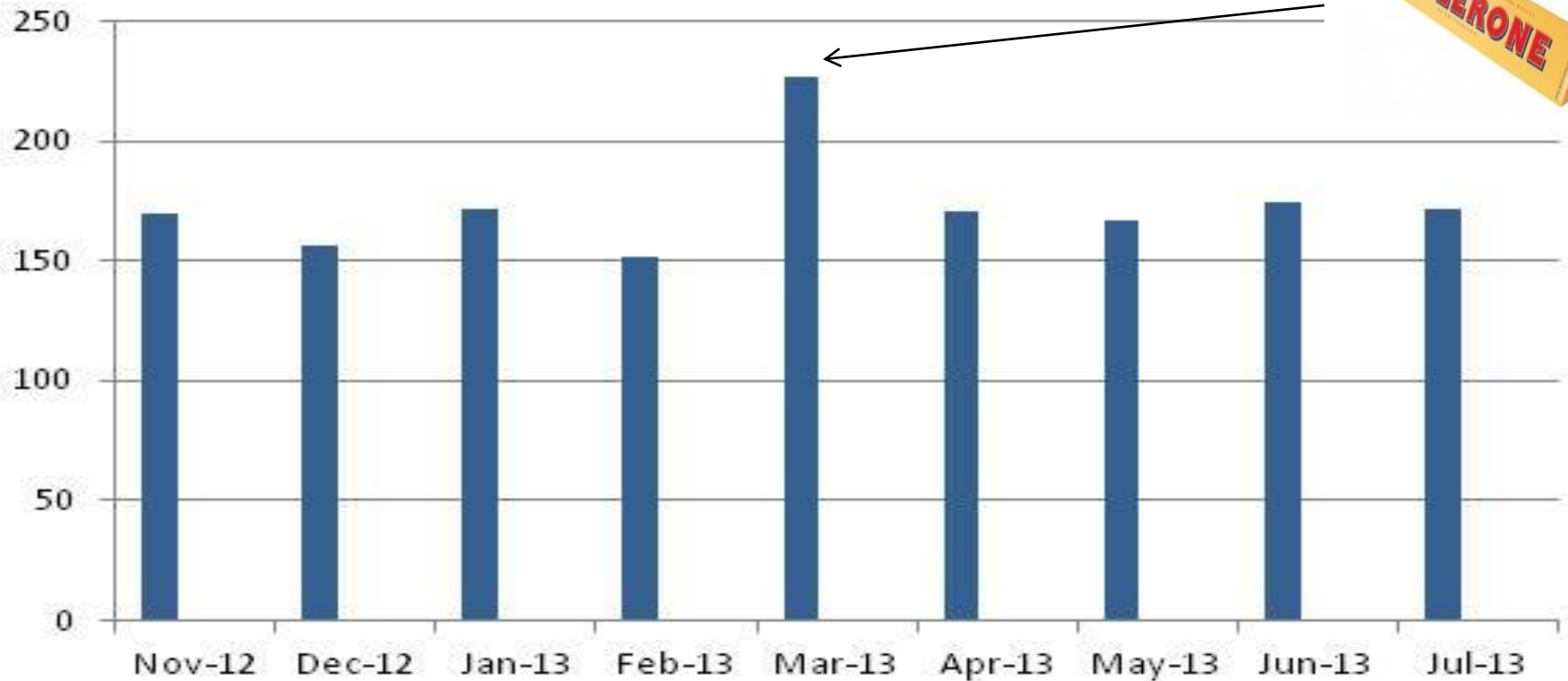
# Violence Risk Screening Decision Support Process



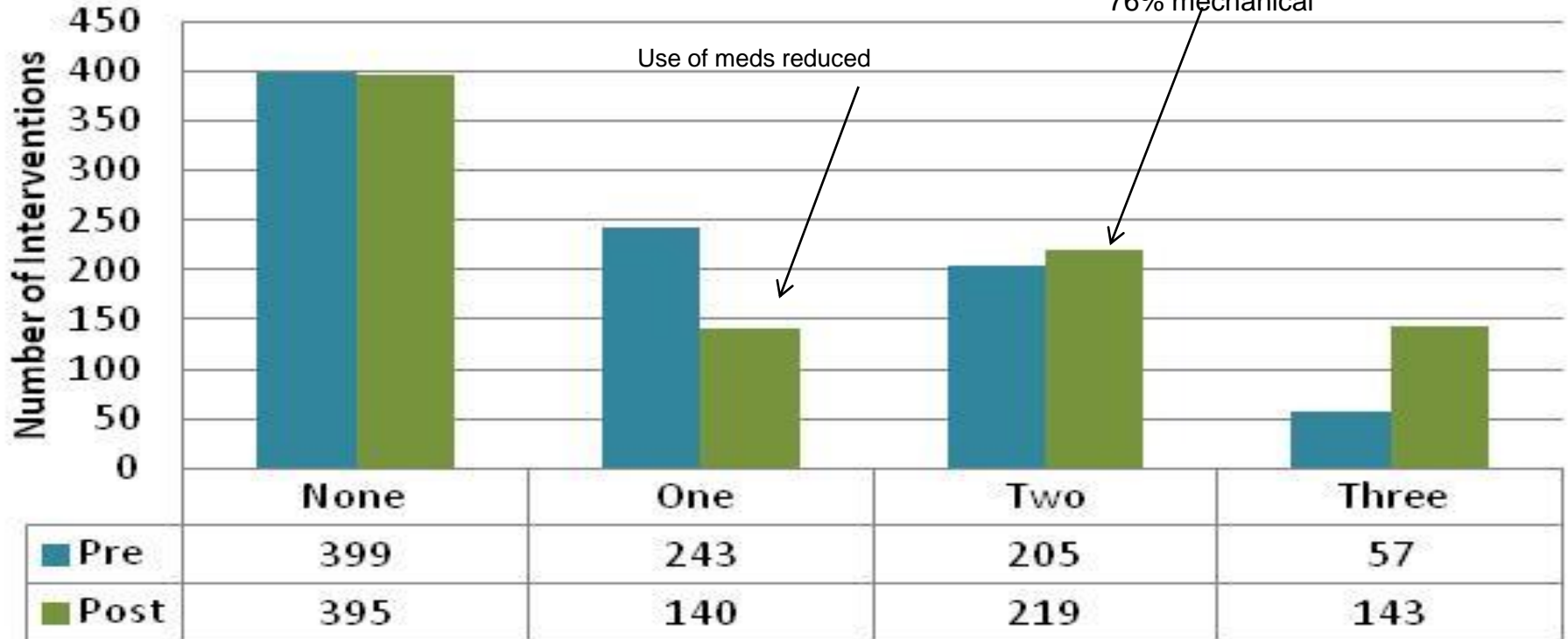
## Predictive analysis (N=30122)

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

## Number of Patients Identified at Risk

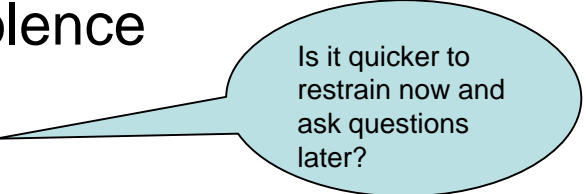


## Total Number of Coercive Interventions used at each Code Grey Response



## 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



Is it quicker to restrain now and ask questions later?



# 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 a 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



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