



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

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# Acknowledgements

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A/Prof Jonathan Knott.

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- refine and implement violence risk screening

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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

# 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

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

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

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

Ø



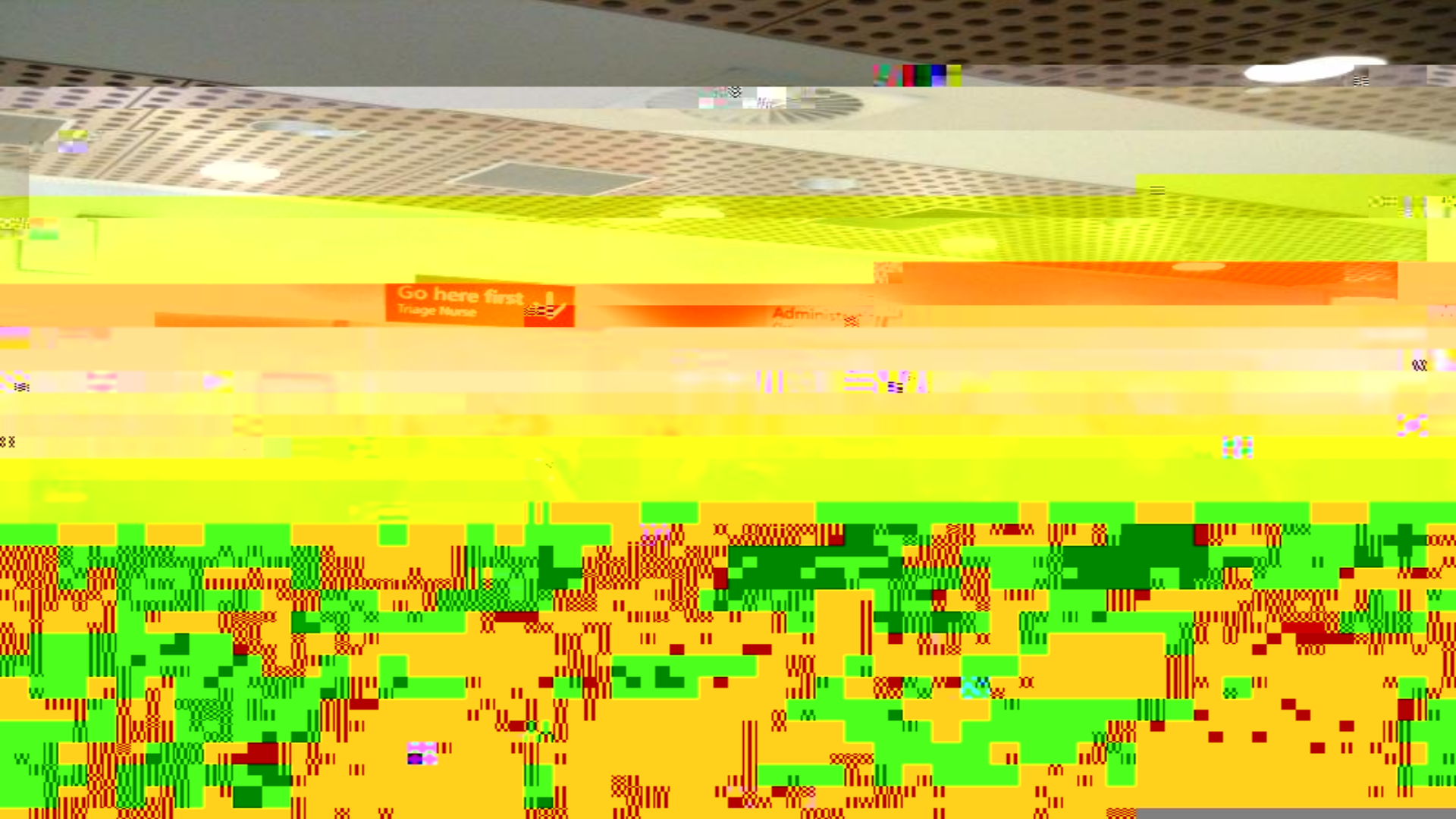
Consumer  
consultation



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graph TD; A[Consumer consultation] --> B(Aims); B --- C["1. Determine acceptability and useability<br/>2. Integrate VRS into triage nurse practice<br/>3. Compare 6 months matched data (Code Grey + Clinical)"]; style A fill:#ADD8E6,stroke:#ADD8E6,stroke-width:1px; style B fill:#ADD8E6,stroke:#ADD8E6,stroke-width:1px; style C fill:#ADD8E6,stroke:#ADD8E6,stroke-width:1px;
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## 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

Administ

Ø65.6% (623/950) arrived by ambulance

Ø67.3% (639/950) were male

Ø37% (354/948) were allocated to the emergency stream

Ø



# 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

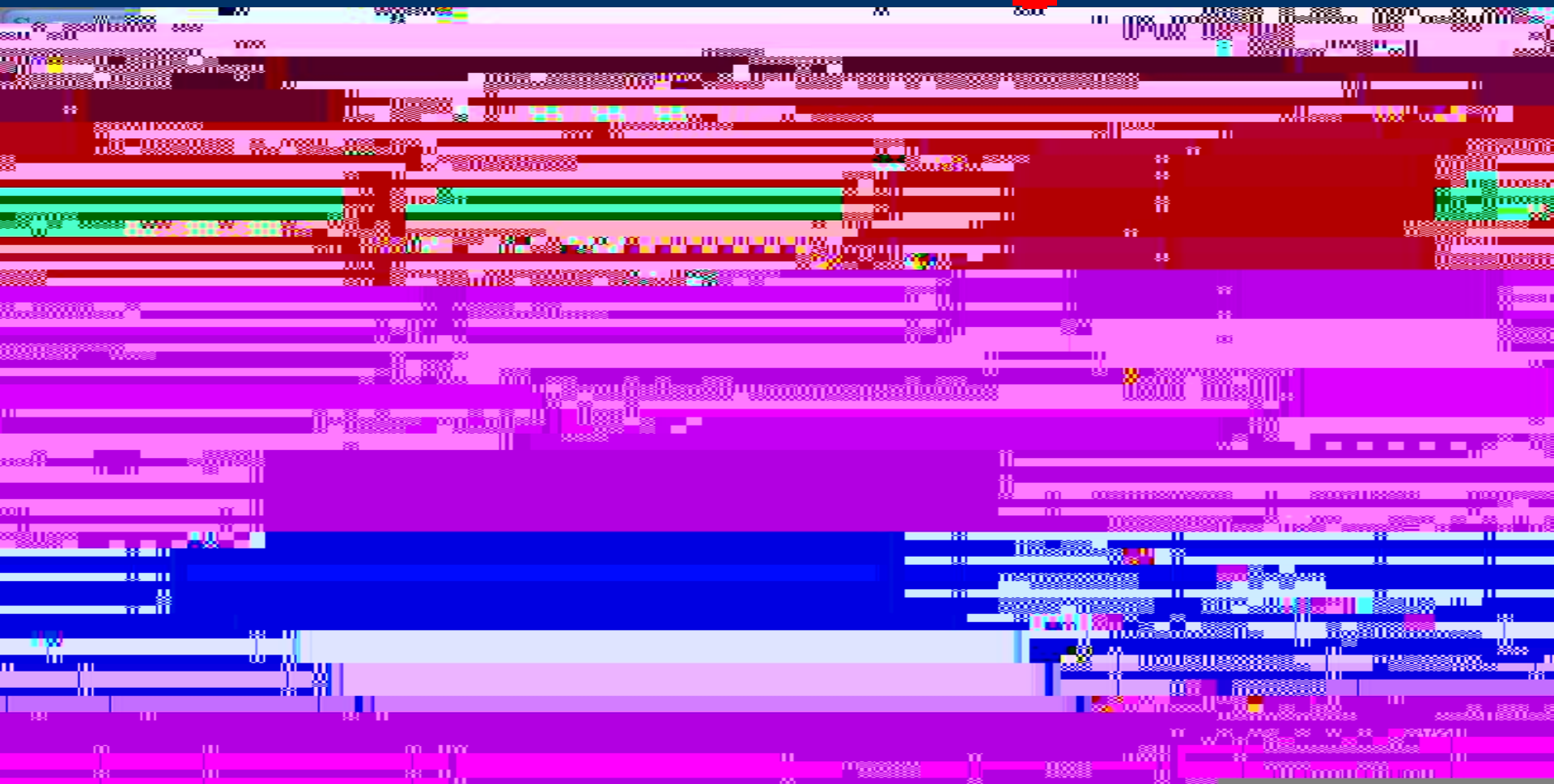
2. A hospital alert is added to a patients file when a risk is identified on previous admission

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

# 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	<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



## Actuarial Risk Factors

Static factors (7%)

Eg. Mental health assessment or arriving with police.

## Clinical Judgement

Dynamic factors 56%  
(Observable warning signs)

Lack of cooperation

Verbal abuse or threats of violence

Intrusion into personal space

## 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





## 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





# Limitations

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

# Conclusion

- Ø VRS is one strategy in an organisational approach for prevention
- Ø Risk factors for a Code Grey response have been identified
- Ø There are a small proportion of patients that account for several code greys
- Ø Screening must be integrated into clinical practice-setting/population
- Ø

