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).

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Consumer consultation

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

- 65.6% (623/950) arrived by ambulance
- 67.3% (639/950) were male
- 37% (354/948) were allocated to the emergency stream
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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

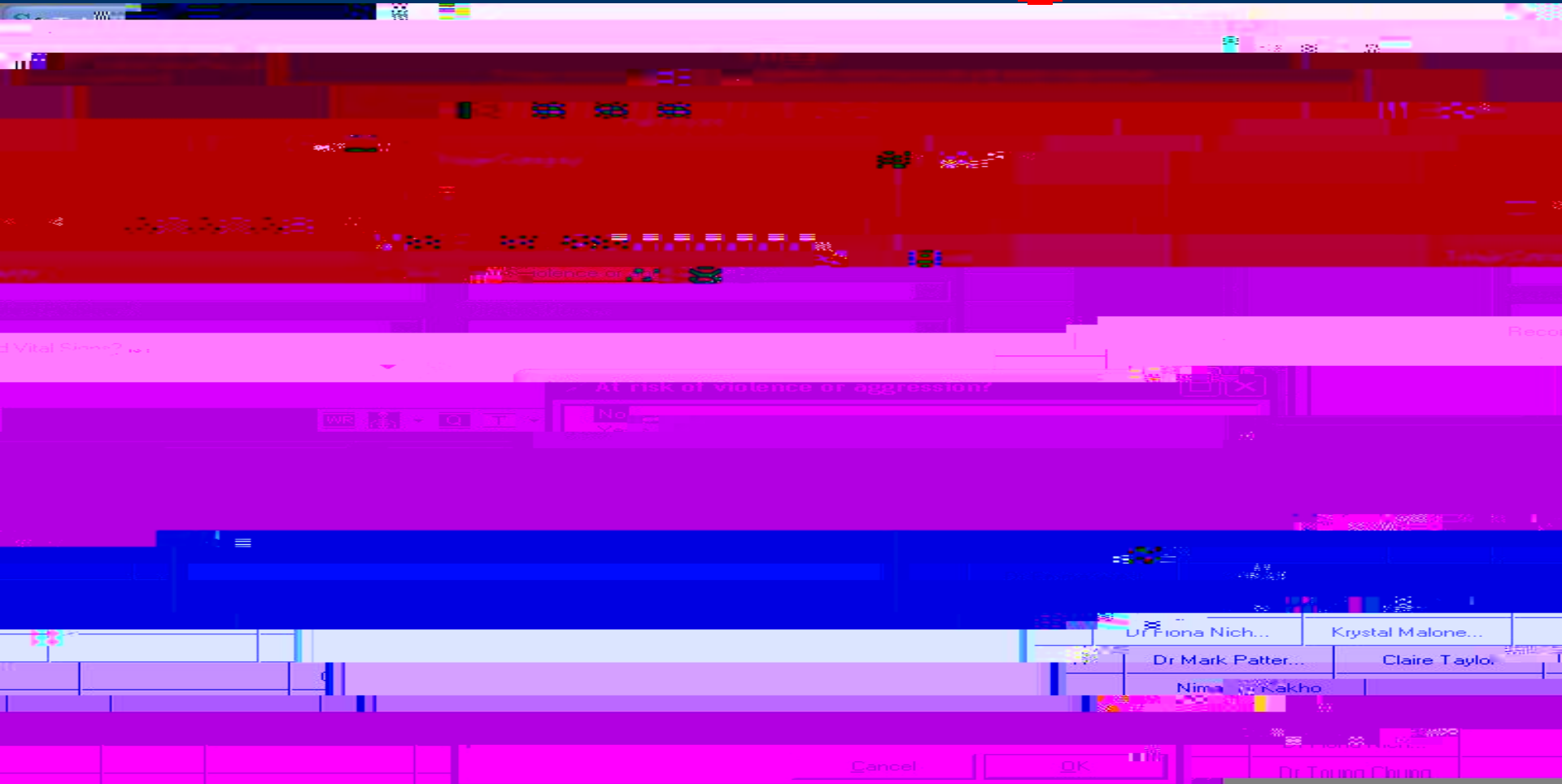
2. A hospital alert is added to a patients file when a risk is identified on previous admission

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

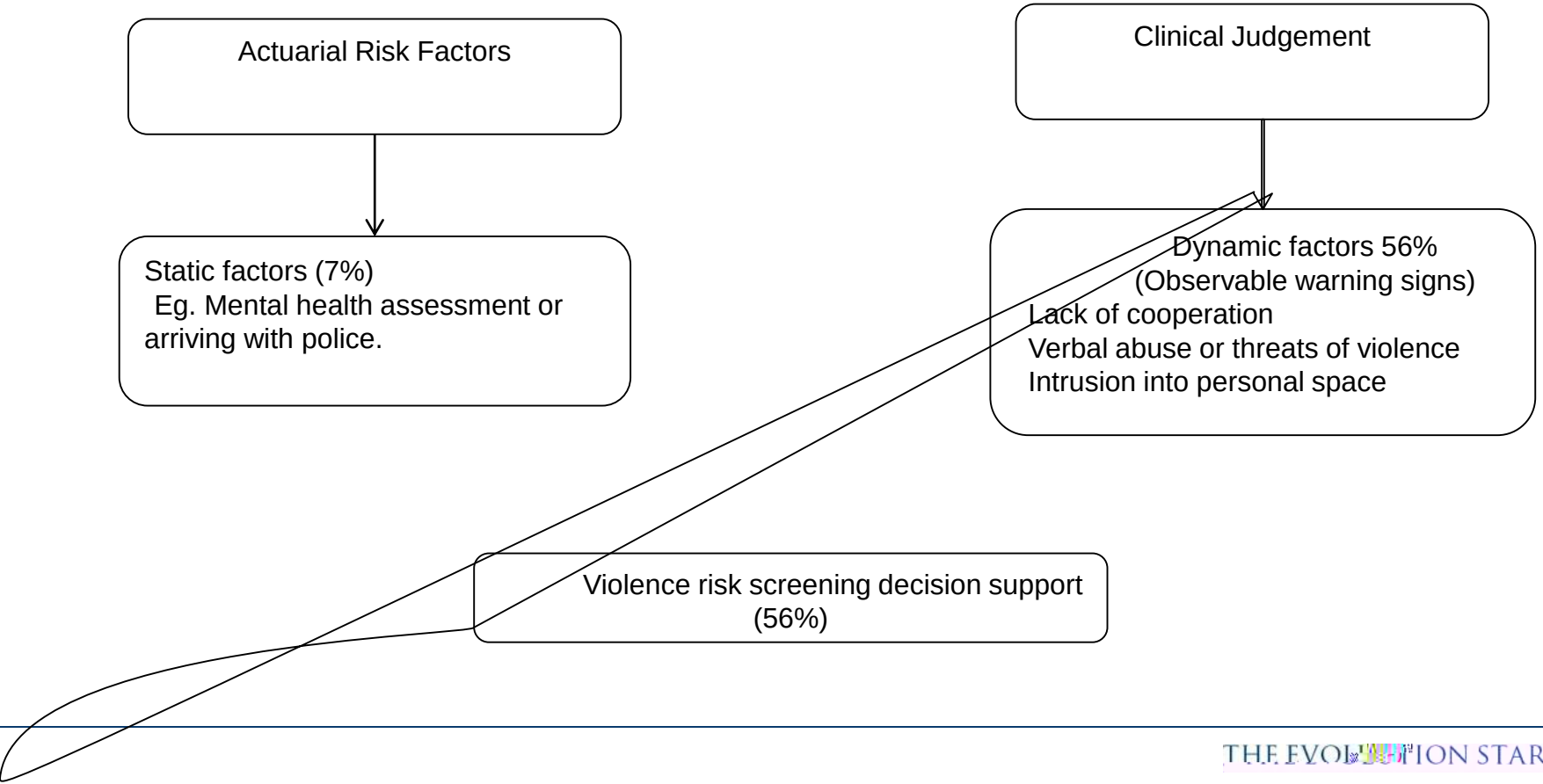
Significant Factors and Odds Ratio for a Code Grey Response

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 Identified as Pat

Nov-12 Dec Feb-13

Mar-13 Apr-13 May-

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

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

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