

SWL Stroke Study Day

**Saving Patients: Reducing
Adverse Events Post Stroke**

Mayday University Hospital
E Heitz, E Lawrence
April, 2010

Outline

- Drives to improve stroke care
- Adverse events (AE)
 - What is an AE
 - Limitations of routine AE reporting
 - Studies of stroke patient safety
- Study of AE on stroke unit at Mayday Hospital
- Discussion of findings

Current drives to improve stroke care

- Investment in stroke provision and service: extra 20million for acute stroke care and 0.7 million for thrombolysis
 - National Stroke Strategy, Healthcare for London Stroke Project:
 - Stroke units- HASU, Acute stroke services, Stroke specialist nurses, rehabilitation
 - Investment in social care
- Stroke Sentinel Audit
- Evidence based therapies (Royal College Guidelines , NICE guidelines)
- Research Networks

Despite attention to quality of stroke care, there is little information on patient safety.

High risk industries monitor safety using adverse event reports.

What is an adverse event (ae) and why should we be concerned?

- Any event occurring to the patient which has a negative impact on that patient
- In an organisation where safety of patients is paramount adverse event/near miss reporting is essential to continue to drive both improvement in service provision and safety evidence

Limitations of routine AE monitoring

Current system

- Informal: handover between team members
- IRIS

Under reporting: possible reasons

- Fear of being blamed for the adverse event
- Time constraints
 - Do it later
 - Forgotten in the tumult of the working day
- Apathy- nothing happened last time so why bother?
- Someone else will do it

Studies of Stroke Safety

- In 1996, pre-stroke unit era 59% adverse event rate, the commonest AE being falls² .
- A more recent adverse event rate in stroke patients in the USA found 12%¹ but did not include communication events
- A UK London hospital adverse event rate over 4 disciplines was shown to be 10.8%³

Need for studies of AE in Stroke Care

- Routine Hospital adverse event data (e.g. IRIS) under reports and provides insufficient detail in context of improving a specialist unit.
- If types and risks of AE can be identified then interventions can be considered to reduce the risk
 - There are no published data on adverse events in UK stroke units

A prospective study of the incidence, associations & types of adverse events on a stroke unit

Aims

- To Prospectively identify and characterise types & incidence of adverse events that occur in the setting of an acute stroke unit.
- To compare the characteristics of patients with adverse events to controls

Method

- Consecutive patients admitted to the acute stroke and rehabilitation unit between 20th January 2008 to 2nd June 2008 were identified
- Data was collected using an anonymous voluntary adverse event reporting tool, with all members of the multidisciplinary team involved.
- All staff could report any adverse event which they felt impacted on the patient whether or not actual harm occurred. Staff members were reminded of the study daily.
- Before start of study preceding 3 months of IRIS forms were studied: 18 filled in of which 13 were falls

The stroke unit at Mayday University hospital

- Ward consisted of
 - 2 mixed acute bays (12 patients)
 - 2 single sex rehabilitation bays (12 patients)
 - 2 side rooms
- Clinical Staff:
 - 1 Stroke Specialist Nurse
 - 2 SHO(Fy2/ST)
 - 1 SpR
 - 2 Consultants
 - Nursing
- Daily acute ward round, weekly rehabilitation ward rounds

Method continued

- Characteristics of patients with an adverse event (AE) were compared to those with no adverse event (NAE).
- Adverse events were divided into four categories of clinical adverse events including common stroke complications, medication error, administration error and falls

Error types- 4 broad categories

Medication error

- missed dose
- wrong dose
- wrong drug
- wrong patient

Falls

Administration

- Notes lost
- Communication breakdown (between staff/patient/other teams)
- Delay in investigation

Clinical

- GI haemorrhage-upper/lower
- Haemorrhagic transformation
- Other bleeding: eg epistaxis
- PE
- Pressure sores (nb at this time TEDS still recommended)
- Aspiration pneumonia
- Infections- UTI/cellulitis
- Other

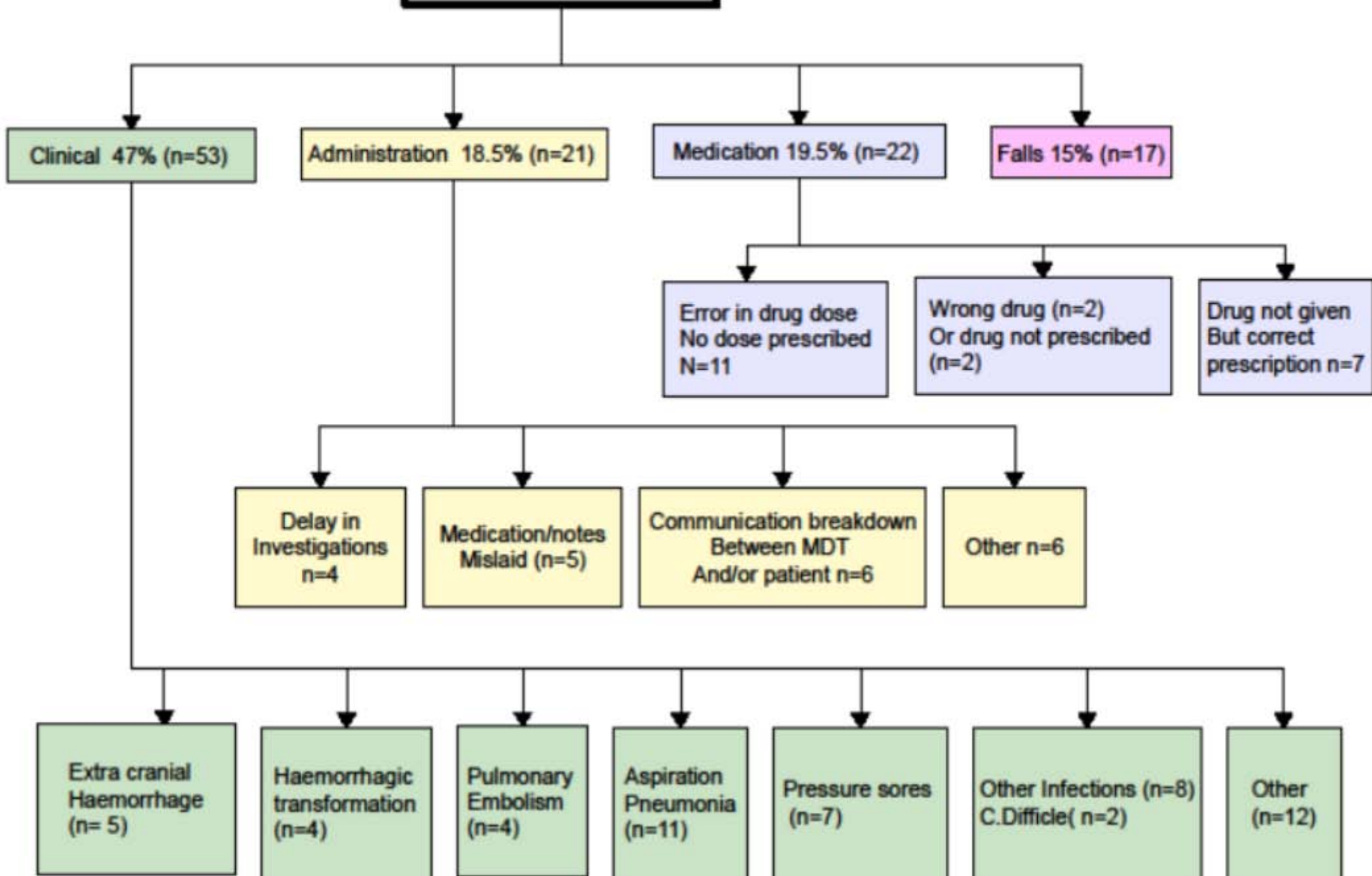
Results

Results

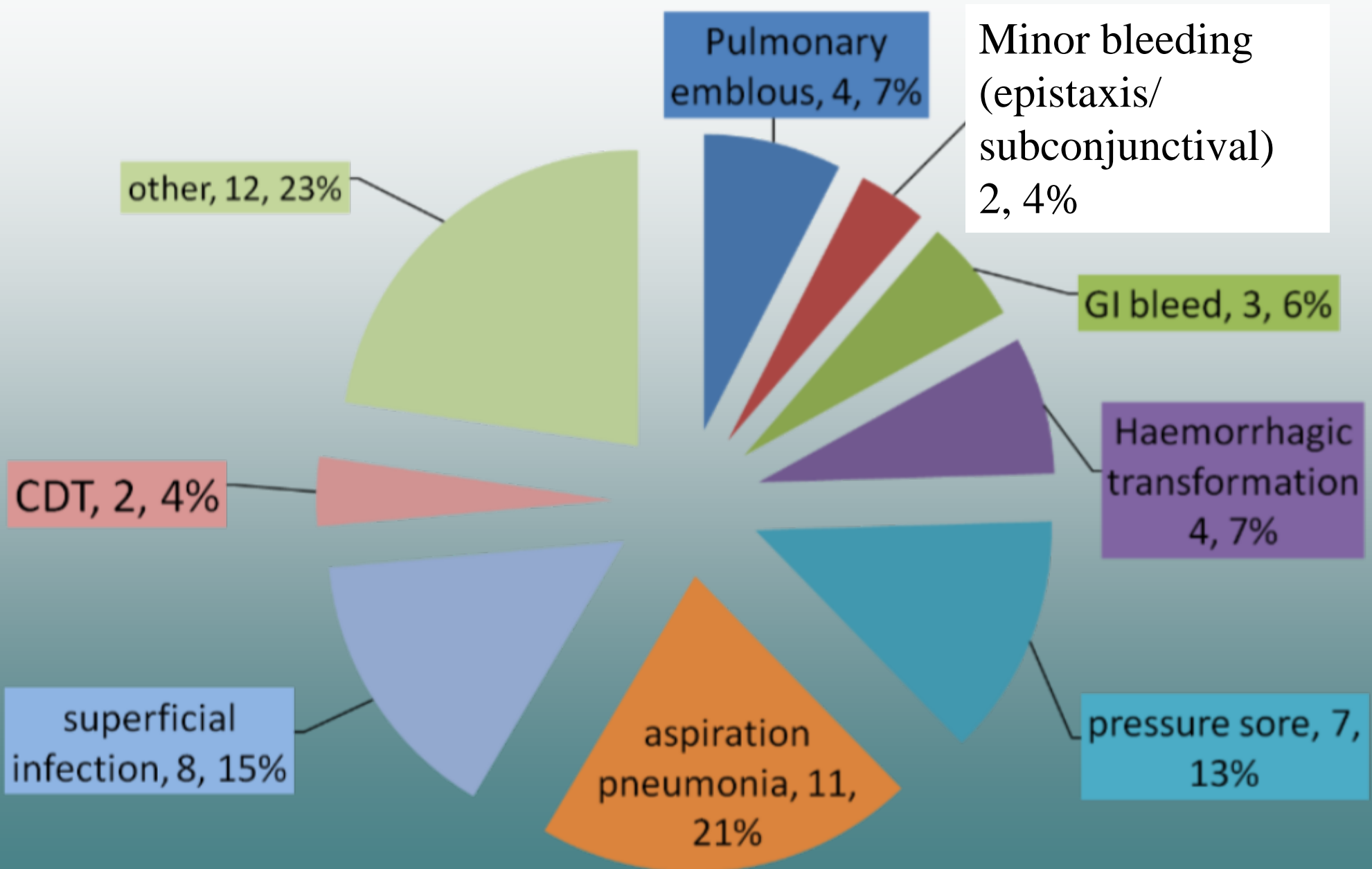
- 113 adverse events occurred
- Of 143 patients admitted 56 suffered an event.
An incidence rate of 39%
- 98% TACS suffered an adverse event

Patient Characteristics	AE n=58	NAE n=87	Odds Ratio /Confidence Interval	p value
<i>Age</i>	Mean 75 (SD 10.6)	Mean 70 (SD14.9)	CI 1.03-9.98	0.016
<i>Ethnicity (white/non white)</i>	89% (51/58) white	69% (59/85)wh ite	OR 3.2 (1.2- 8.0)	0.017
<i>Sex (male/female)</i>	41% (24/58) male	54% (46/85) male	OR 1.28 (0.93- 1.7)	0.173
<i>TACI/non TACI</i>	31% (18/58)	4%(3/85)	OR 8.7 (2.7-28)	<0.001
<i>Cognitive impairment + dysphasia</i>	63% (27/42)	32% (20/57)	OR 3.9 (1.7- 9.1)	0.001
<i>Pre-stroke Barthel Index>15</i>	89.5% (51/57)	93% (69/74)	OR1.5 (0.5- 4.9)	0.53
<i>Post stroke Barthel Index>15</i>	27% (16/58)	87% (64/73)	OR 5.9 (3-11)	<0.001

Adverse Event



Clinical AE-47% (n= 53)



	Event at day	Stroke type	Outcome
PE	1	TACI	died
	8	TACI	died
	13	TACI	home
	36	TACI	home
Haemorrhagic transformation	1	TACI	died
	11	POCI	died
	4	POCI	home
	3	POCI	home
UGI bleed	5	PACI	died
	6	PACI	home
PR bleed	6	LACS	home
Epistaxis	56	TACI	home
subconjunctival haemorrhage	39	PACS	home

Outcome	AE	NAE	Odds Ratio /Confidence Interval	P value
<i>Average Length of Stay in mean days (SD)</i>	32 (25.4)	11.4(11.0)	CI 14.3 to 26.7	<0.001
<i>Mortality (home or died)</i>	36%(21/58)	5% (4/85)	OR 7.70	<0.001
<i>Place of discharge (home or full time care)</i>	8% (3/37)	5% (4/77)	OR 1.64 CI(0.387-6.97)	0.676

Adjusted Odds ratio for AE	Odds Ratio	95% Confidence Ratio	P value
<i>Length Of Stay</i>	0.96	0.94-0.99	0.02
<i>Post stroke Barthel Index</i>	0.10	0.036-0.25	<0.001

Logistic Regression Analysis: Stroke subtype, ethnicity, age, cognition, mortality were non-significant

Summary of results

- Univariate analysis showed cognition/dysphasia, stroke severity (TACI/non-TACI), Pre-stroke Barthel Index, ethnicity and age were significantly associated with AE.
- Logistic regression analysis showed independent associations with AE are Barthel Index <15 & presence of cognitive impairment &/or dysphasia
- Logistic regression including outcome measures showed length of stay also to be an independent association with AE.

Advantages

- Prospective
 - no selection bias; all stroke unit patients included
- Some errors would be difficult to identify retrospectively e.g. communication error

Limitations

- Project driven by Stroke specialist nurse/Registrar/consultants
 - less reports were generated at weekends/overnight

Conclusion

- The frequency of AE in stroke patients is high & the risk of an AE increases with increasing disability
- AE are associated with increased mortality and longer length of stay and are therefore valid indicators of quality of care

Conclusion continued

- Identifying the types of AE & associated risk factors identifies those patients who are at risk of an AE and raises the opportunity to target interventions to reduce this risk

These findings support:

- Adjustment of staffing levels and skill mix on stroke units depending on stroke severity, speech and cognitive impairments of patients.
- The urgent need for research to identify interventions that reduce rates of common clinical complications
- Implementation of designated key workers to improve communication with patients and carers
- Dedicated pharmacist and dieticians for stroke units currently not funded by the London Stroke Tariff.

Continued

- AE monitoring is a valid method to measure quality of care and it is possible to implement reporting by all members of the MDT in the stroke unit setting
- Any comments or questions?

Any Questions?



References

1. Holloway et al, *The safety of Hospital stroke care*, Neurology, 68(8) 550:555
2. Davenport RJ et al, *Complications After Acute Stroke*, Stroke 1996(27), 415:120
3. Vincent et al, *Adverse events in British hospitals: preliminary retrospective record review*, BMJ 322 517:519
4. Progress in improving stroke care, house of commons committee of public accounts, 30/3/2010