

laboratory errors

Can we stop them?

How do we stop them?

John Stevens





laboratory errors

- laboratory errors may be defined as "any defect from ordering tests to reporting results and appropriately interpreting and reacting on these",

	Lapworth & Teal Clin Chem 1 year	Stohl et al Whole Lab 3 years	McClelland and Phillips 1994 BMJ
Tests	997000	676564	3200000 (units)
Patients	249000		
Errors	120	4135	111 6 in laboratory
Frequency	0.05%	0.61%	0.0000001875/unit
Pre	31.6%	75%	
Analytical	31.6%	16%	
Post	30.8%	9%	

Error rates in clinical laboratories

Bonini et al Clinical Chemistry 2002

One identified error every
33–50 events

50–100 events

330 events

1000 events

8300 laboratory results or 2000 patients

900 patients

214 laboratory results

164 laboratory reports

283 laboratory results

McSwiney and Woodrow (45)

Souverijn et al. (46)

Chambers et al. (47)

Boone (48)

Lapworth and Teal (10)

Nutting et al. (36)

Plebani and Carraro (8)

Stahl et al. (37)

Hofgartner and Tait (9)

SHOT and Laboratory Errors

Report year	No of analysed IBCT cases	No and % of cases with laboratory as site of primary error
2000 - 01	190	55 29%
2001 - 02	346	120 35%
2003	348	155 45%
2004	439	180 41%
2005	485	179 37%

SHOT and Laboratory Errors

	Total Errors	Wrong Sample	Transcription	Interpretation	Component Selection Errors	Labelling	Procedural Errors	Incorrect Protocol	Testing	Not known
'Wrong Blood' –ABO group	22	9	10	2						1
'Wrong Blood' - Others	15	3	1		9	1				1
ABO mismatched transplant	1						1			
Special Requirements Not Met	72				72					
Inappropriate Transfusion	4				4					
Anti-D Errors	23	1	3				13	1	5	
Unsafe Tx	20						20			
Other Pre-tx Testing Errors	22						15		7	
Total errors	179	13	14	2	85	1	49	1	12	2

SHOT and Laboratory Errors

	Total Errors	Wrong Sample	Transcription Errors	Interpretation Errors	Component Selection Errors
Wrong Blood - ABO Group	22	9	10	2	
Wrong Blood - Others	15	3	1		9

SHOT and Laboratory Errors

	Total Errors	Wrong Sample	Trans -cription Errors	Proc - edural Errors	In - correct Protocol	Testing
Pre-Tx Testing Errors	22			15		7
Anti-D Errors	23	1	3	13	1	5

SHOT and Laboratory Errors

Laboratory Activity Survey 2003:

262/386 (68%) returned data

- **210 (80%) provided workload data**
- **Ratio of workload done in:**
 - ‘core’ v ‘non core’ hours is 80:20
- **Ratio of lab errors made in:**
 - ‘core’ v ‘non core’ hours is 60:40

SHOT and Laboratory Errors

- 72 cases: Special requirements not met
- 30 cases: Failure to provide irradiated components
- 28 cases: transfusion BMS staff during normal working hours

laboratory errors

- Laboratory procedures such as multiple samples crossmatched at the same time or a crossmatch being started before the order was received.
- Staff-related factors such as insufficient orientation and training or insufficient staffing levels.

laboratory errors

- Special requirements not met
- Units wrongly labelled in Blood Bank
- Documentation errors
- Sample errors; booking in, transposition etc
- Grouping errors

laboratory errors (NEQAS)

- Human failure to follow procedure – seniority no guarantee of no mistakes
- Unable to get 2 people to check as not always available
- sample mix-up in emergency exercise –no subsequent check
- Manual edit – didn't follow routine procedure which is safe

laboratory errors (NEQAS)

- Severe staffing problems – policy not followed
- Lack of resources – no enzyme panel
- Lack of knowledge about antibody reactivity and guidelines
- Inadequate policy
- Result transcription not checked as CPA inspection in progress

laboratory errors (NEQAS)

- Policy in place but BMS didn't follow it
- More in-house training and competency assessment required
- Insufficient staff
- Reliance on agency staff
- Poor skill mix want all BMS staff to participate in recognised BT training scheme

laboratory errors

- Can we reduce or eliminate laboratory errors?
- Blame, Fair blame or no blame?
- Broken window theory - where failures are tolerated, failures will accumulate

laboratory errors

- More resource? Staff ? Automation?
- More education
- More competency checks
- New ways of working
- Skillmix
- More error logging

- Poka-yoke ($f | f J$) - pronounced “POH-kah YOH-keh“
Shigeo Shingo () error proofing

