

Safe working with meningococci

EMGM, Dublin 2005



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Introduction



- **Small community of ‘specialist’ workers
reference & research labs ca. 1000**

Many local clinical labs

*relatively few cases but many possible clinical &
carrier isolates and Neisseria spp.*

- **Incident in one laboratory or country
may impact further afield
may prompt change organism biohazard category
(eg in UK CL2 to CL3)**
- **All workers have similar concerns**

Aims of presentation



- **To create a forum for ‘real time’ discussion of safety issues within the EMGM / Society**
 - **Identify risk areas**
 - **prioritise areas of concern**
 - **Establish best practice**
- progress towards best practice by**
- Initiating external safety audits**
 - promote openness & communication**

1. Safety questionnaire Aug05



- Initially designed & distributed to National Reference laboratories
- Subsequently to Research laboratories

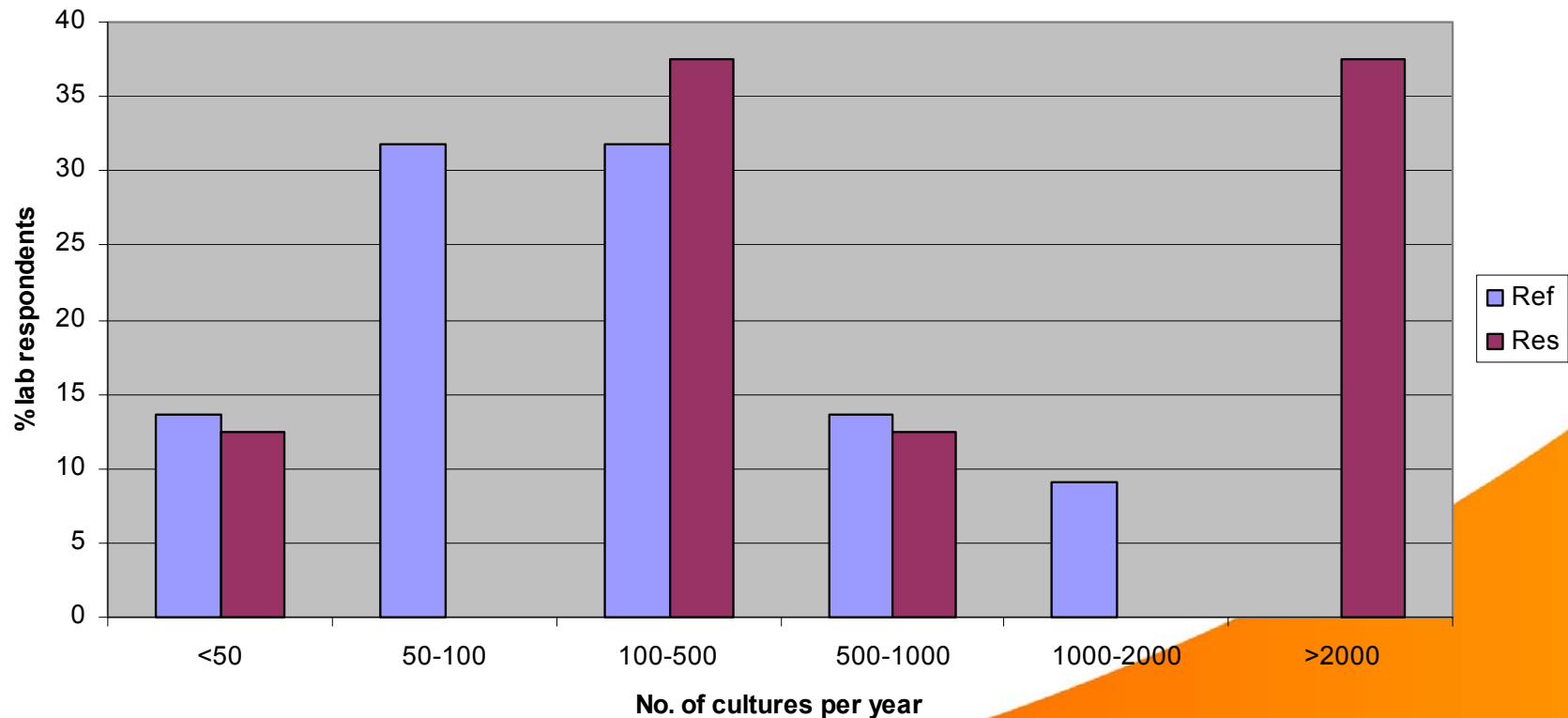
➤ Replies

| Ref | Res | Total |
|-----|-----|-------|
| 22 | 8 | 30 |

2. Safety questionnaire Aug05 Qu.1 Culture workload ranges: % respondents



% labs with culture workload ranges

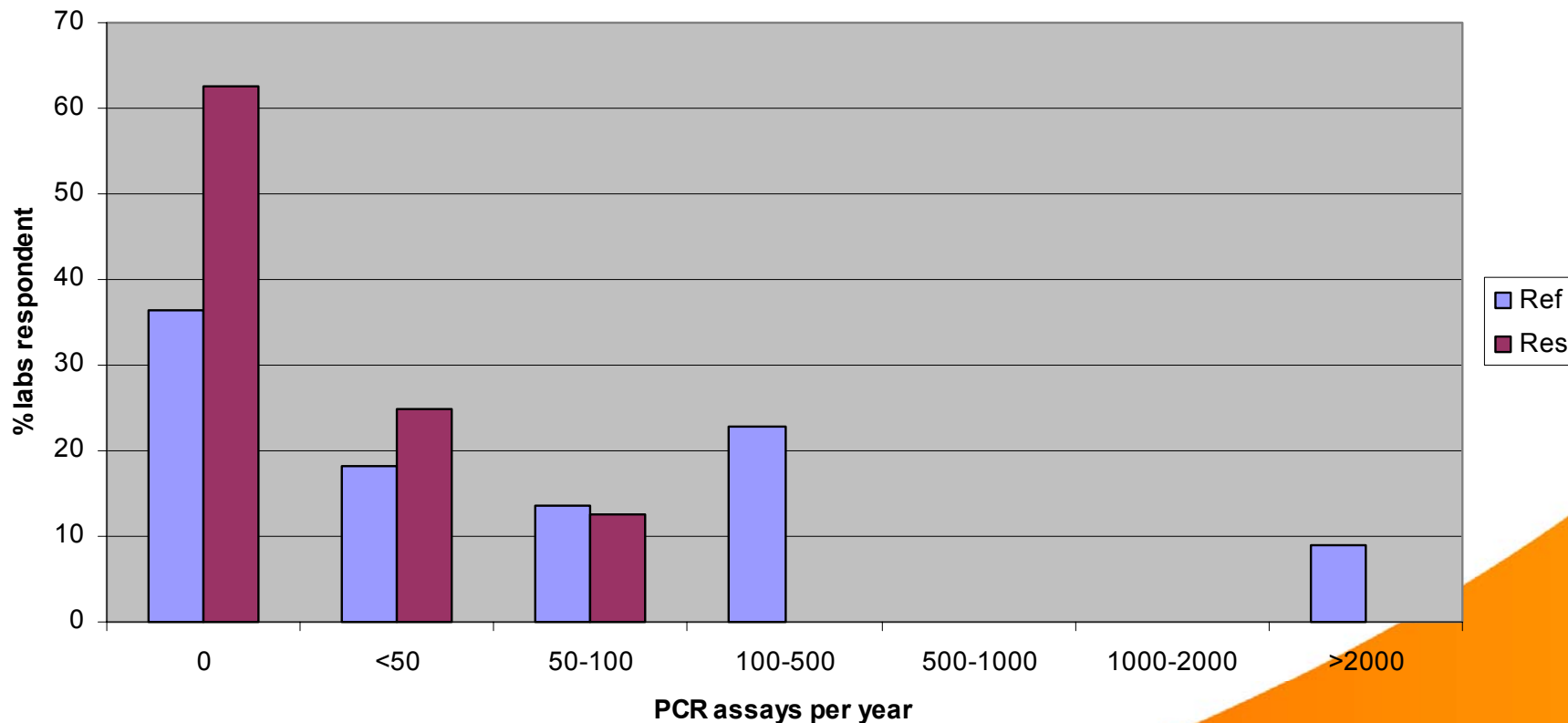


Note: labs with routine SBA activity may have highest workload

3. Safety questionnaire Aug05 Qu.1 PCR Workload - % respondents



Lab PCR workload ranges



Note: patient samples may contain viable meningococci unless tested following negative culture



4. Safety questionnaire Aug05 Qu.2

Culture activities - % respondents

| Activity | Ref (22) Yes + | Res (8) Yes + |
|--------------------|---------------------------|--------------------------|
| Commercial kits | 68% | 25% |
| Tubes/bottles | 32% | 38% |
| Sero-agglutination | 95% | 50% |
| Whole-cell ELISA | 59% | 50% |
| Dot-blot ELISA | 23% | 38% |
| MIC | 77% | 13% |
| SBA | 32% | 100% |

5. Safety questionnaire Aug05 Qu2

Other activities involving cultures

Sub-culture

DNA extraction

OMV preparations

Storage freezing (eg. -80C)

Freeze drying

Growth conditions

Antibiotic screening

Immunodiffusion

Halo plates

Transformations – (*genetic modifications – GMOs*)

LPS extractions

Cell adsorption of sera

Cell infection experiments

Riboprinter

Animal (Mice experiments, infant rat challenge)

Cell lysis

Colony PCR

6. Safety questionnaire Aug05 Qu3

Use of microbiological safety cabinets



| | Ref (22) | | | Res (8) | | |
|-----------------------------|----------|------------|------------|---------|----|------------|
| | Yes | No | ? | Yes | No | ? |
| Routine (in own lab) | 82% | 16% | - | 100% | - | - |
| In clinical (hospital) labs | 41% | 36% | 23% | 12% | - | 88% |

Note: UK and other reports of incidents in local clinical laboratories associated with manipulation of heavy suspensions of meningococci

7. Safety questionnaire Aug05 Qu4

Internal safety audits



| | Ref (22) | | Res (8) | |
|------------------------|----------|-----|---------|-----|
| | Yes | No | Yes | No |
| Internal safety audits | 55% | 45% | 87% | 13% |

Frequency

| | 0 | day | 1/12 | 3/12 | 2/12 | 12/12 |
|-----|-----|-----|------|------|------|-------|
| Ref | 45% | - | - | 9% | 23% | 23% |
| Res | 13% | 13% | 13% | 13% | 25% | 25% |

8. Safety questionnaire Aug05 Qu4

External safety audits



| | Ref (22) | | | Res (8) | | |
|-------------------------------------|------------|-----|----|------------|-----|-----|
| | Yes | No | ? | Yes | No | ? |
| Current external safety audits | 45% | 45% | 9% | 75% | 25% | - |
| Agree to have external safety audit | 82% | 9% | 9% | 75% | 13% | 13% |

9. Safety questionnaire Aug05 Qu.5

Routine staff anti-meningococcal immunisations



| | Ref (22) | | Res (8) | |
|-------------------------------|------------|-----|-------------|-------------|
| | Yes | No | Yes | No |
| Staff vaccinated | 68% | 32% | 100% | - |
| ACYW135 | 45% | 55% | 75% | 25% |
| A & C | 23% | 77% | 13% | 87% |
| C conjugate | 41% | 59% | 25% | 75% |
| Developmental B (OMV) vaccine | *9% | 91% | *- | 100% |

*Some staff vaccinated in studies

10. Safety questionnaire Aug05 Qu.5

Routine staff re-vaccination frequency



| | 0 | <3yrs | 3-5yrs | >5yrs |
|-----------------|----------|-----------------|---------------|-----------------|
| Ref (22) | 27% | 9% | 32% | - |
| Res (8) | 36% | - | 63% | - |



11. Safety questionnaire Aug05 Qu.5

Routine staff anti-meningococcal immunisations

| | Ref (22) | | | Res (8) | | |
|---|------------|------------|------------|------------|------------|----------|
| | Yes | No | ? | Yes | No | ? |
| Plan to offer new conjugate ACYW135? | 59% | 9% | 13% | 50% | 50% | - |
| Functional Ab Check? | 23% | 77% | - | 13% | 87% | - |

12. Safety questionnaire Aug05 Qu.5

Staff immunisation compliance



| | Ref (22) | | | Res (8) | | |
|--|------------|------------|------------|------------|------------|----------|
| | Yes | No | ? | Yes | No | ? |
| Exclude staff not received or refused vaccine? | 32% | 50% | 18% | 25% | 75% | - |
| Exclude staff with non-protective levels of Ab? | 5% | 68% | 27% | 13% | 87% | - |

Note: Legality of staff exclusion?



A question **NOT** asked about immunisations

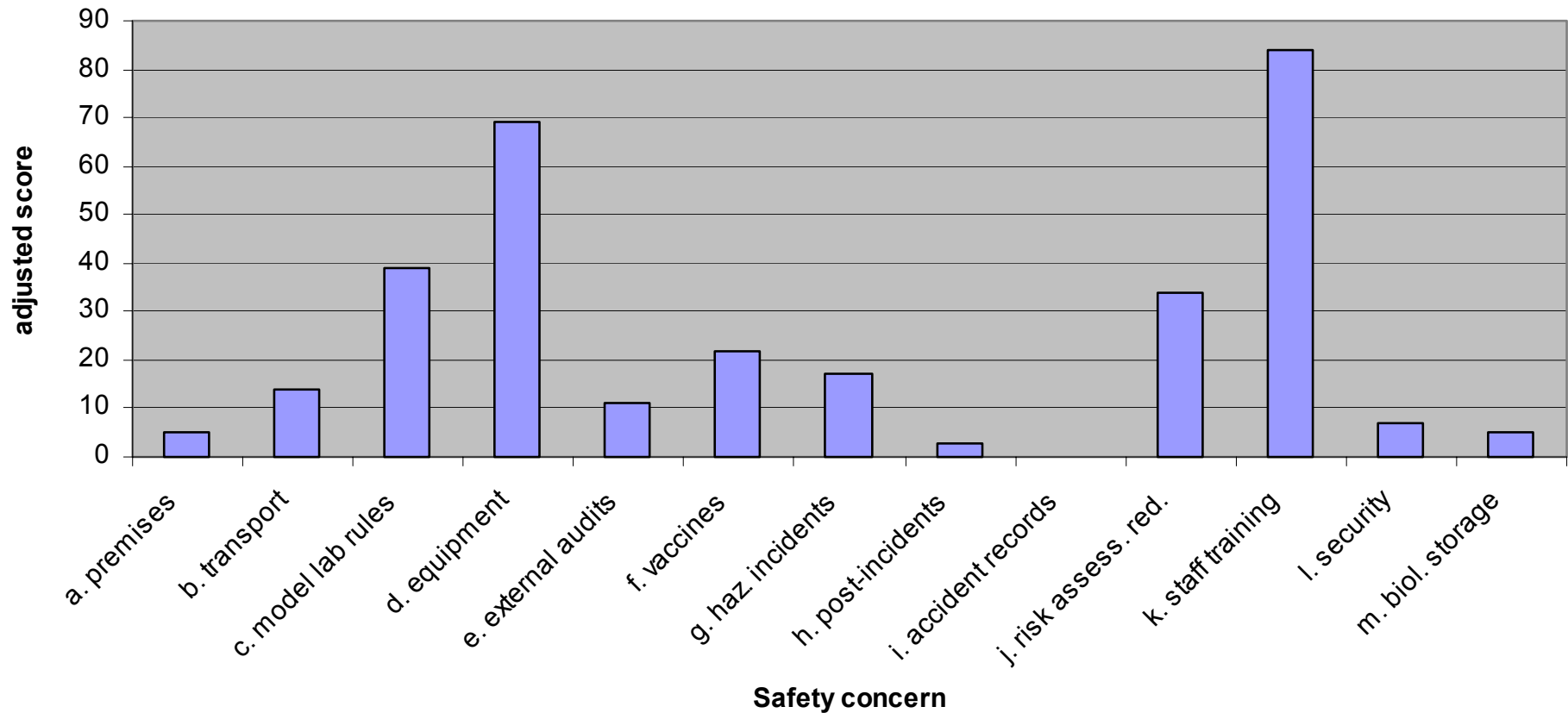
- **Who should be immunised?**
- **All laboratory staff?**
 - ancillary staff?**
 - autoclaving, waste collection & disposal staff?**
- **Guest workers?**
- **Visitors?**

13. Safety questionnaire Aug05 Qu.6

Areas of concern - summary



Safety concern by adjusted score (21/30 labs)



14. Safety questionnaire Aug05 Qu.6

Areas of concern – Ranked summary



- 1 k. **Staff training**
- 2 d. **Equipment – eg. cabinets**

- 3 c. **Model laboratory rules**
- 4 d. **Risk assessment - reduction**

- 5 f. **Staff immunisations**

- 6 g. Hazardous incident procedures

- 7 b. Transport of samples
- 8 e. External safety audits

Proposals / actions

- **A work package within the EMGM**

Promote discussion

- **Draw up model rules & guidelines**

- **Promote internal & external safety audits**

➤ It may be obvious but let's do something and record we've done it