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Sharps injuries among radiographers: Dangers associated with opening bottles of contrast agent

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Research Objectives:

- To understand and examine the extent to which bottle related injuries occur within radiology departments
- Measure the frequency and number of bottle related injuries
- Evaluate the extent and seriousness of the injuries that occur
- Assess perceptions of how serious the threat of bottle related injuries are and the level of concern
- Understand the extent to which bottle related injuries are reported
- To identify the extent to which the issue of injuries should be considered for further development of alternatives to glass

Research Methodology & Sample:

○ Telephone survey in 6 European countries

- 10 minutes in length
- In the native language of respondent

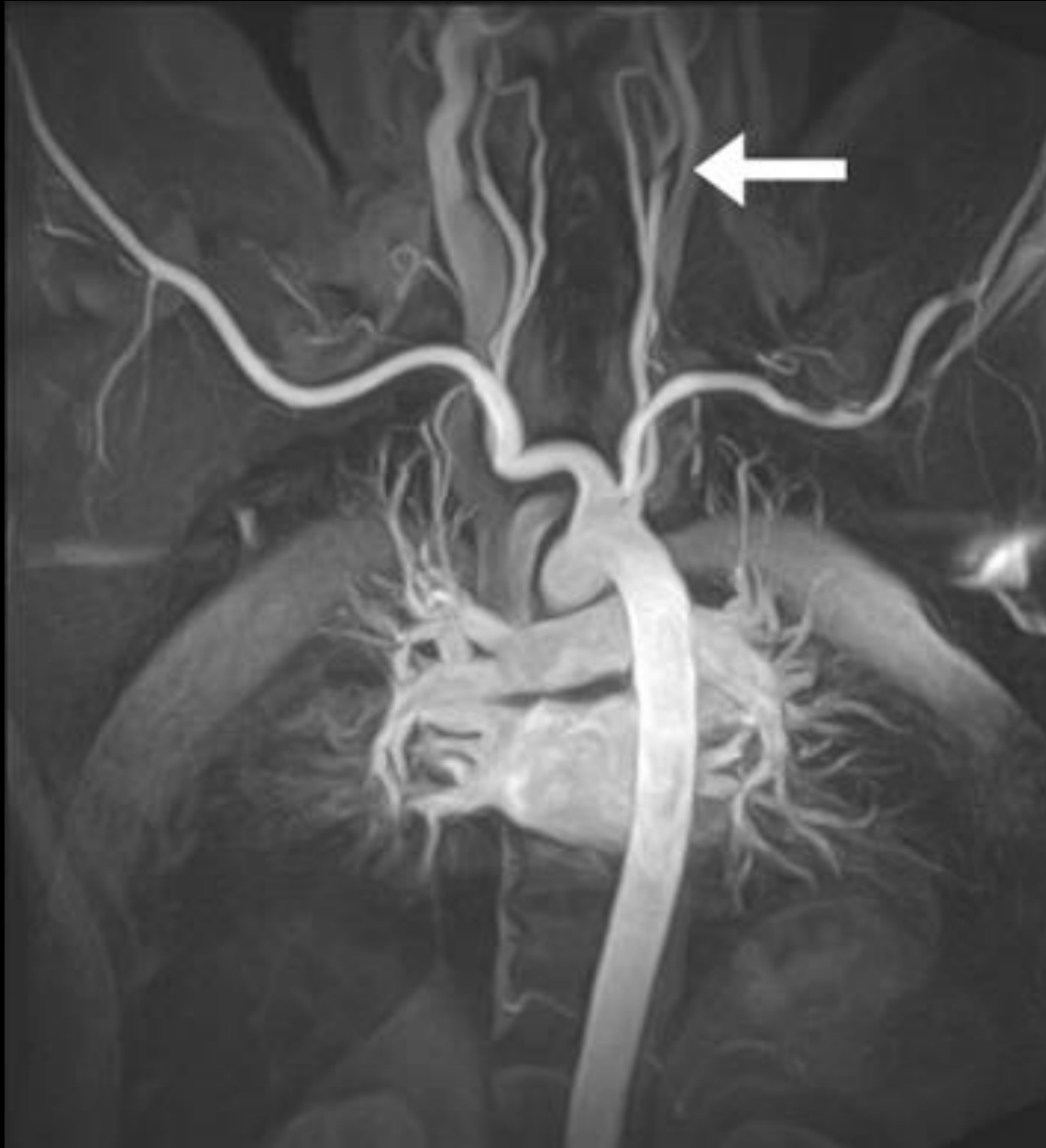
○ Inclusion criteria:

- work in the radiology department
- have been working in their current position for a minimum of 3 months and a maximum of 30 years
- be regular users of glass bottle packaging

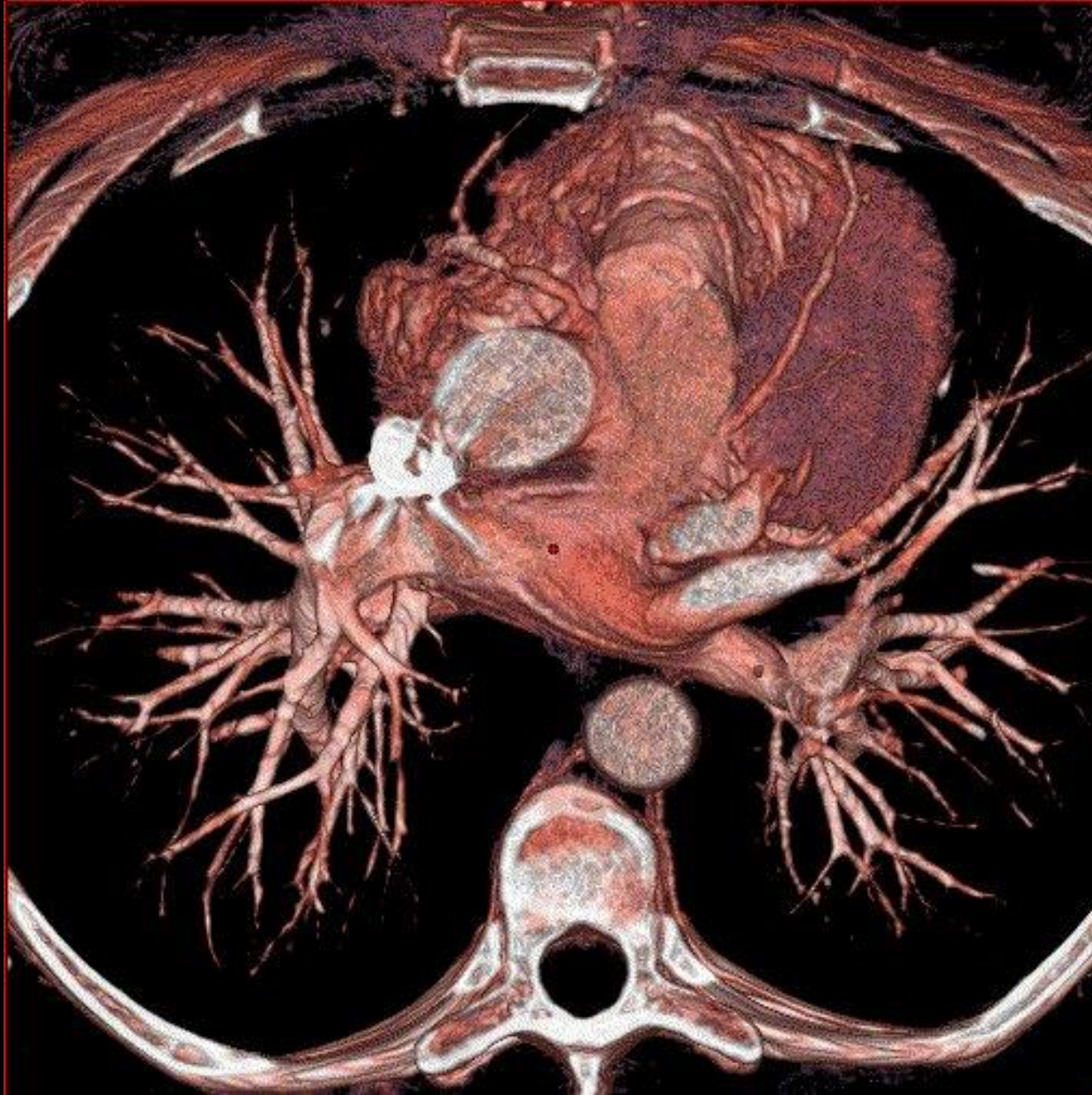
Summary:

Average number of opening injuries per month per radiographer	2.03 injuries
Average number of breakage injuries per year per radiographer	1.9 injuries
Average number of breakage injuries per month per radiographer	0.16 injuries
Total average number of injuries per month per radiographer	2.19 injuries
Percentage of injuries that draw blood	47%
Average time spent dealing with one injury	4.04 minutes
Average time spent dealing with injuries per month	8.84 minutes
Number of radiographers per department	24.4
Time lost dealing with injuries per department per month	3.59 hours

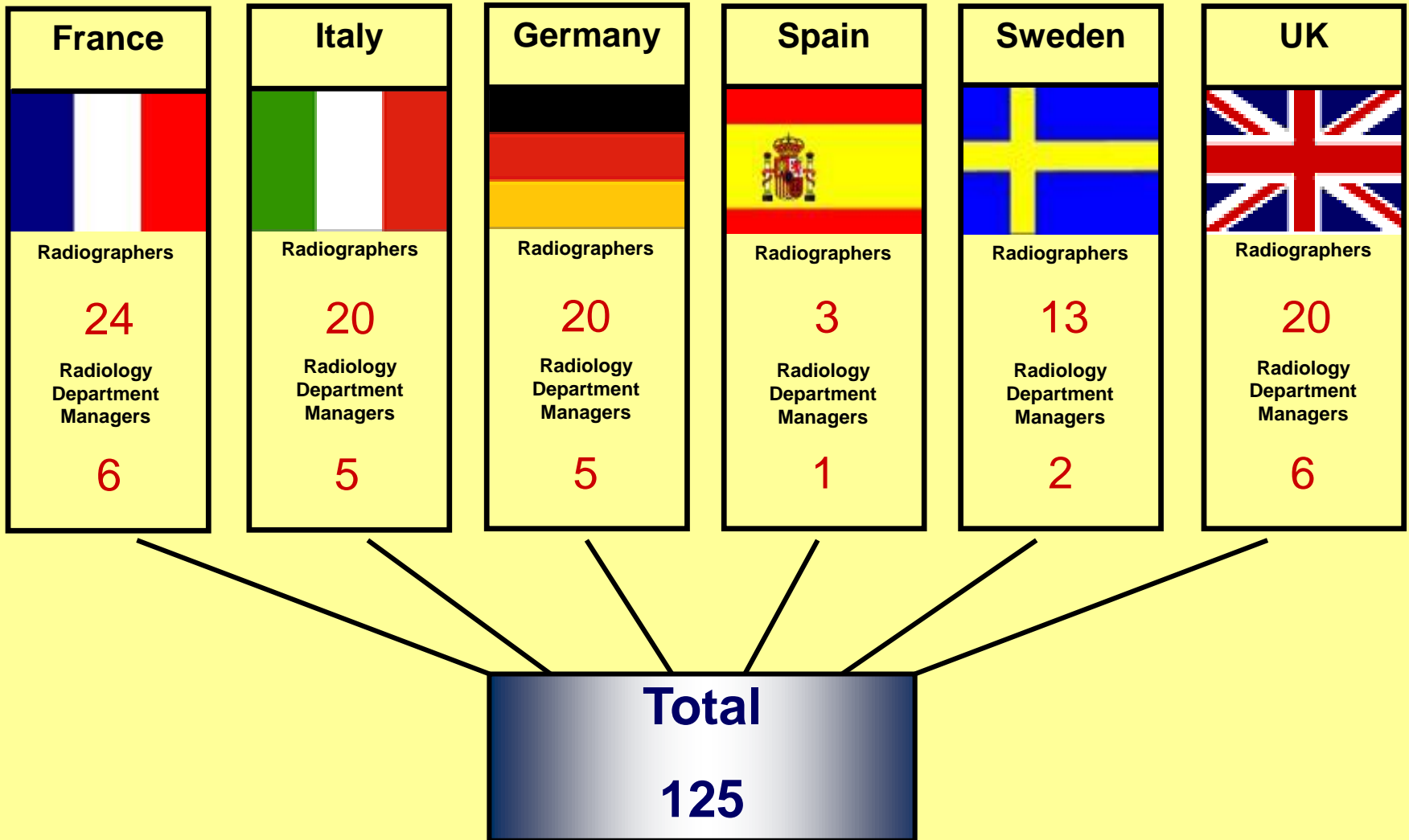
Magnetic Resonance Scan :



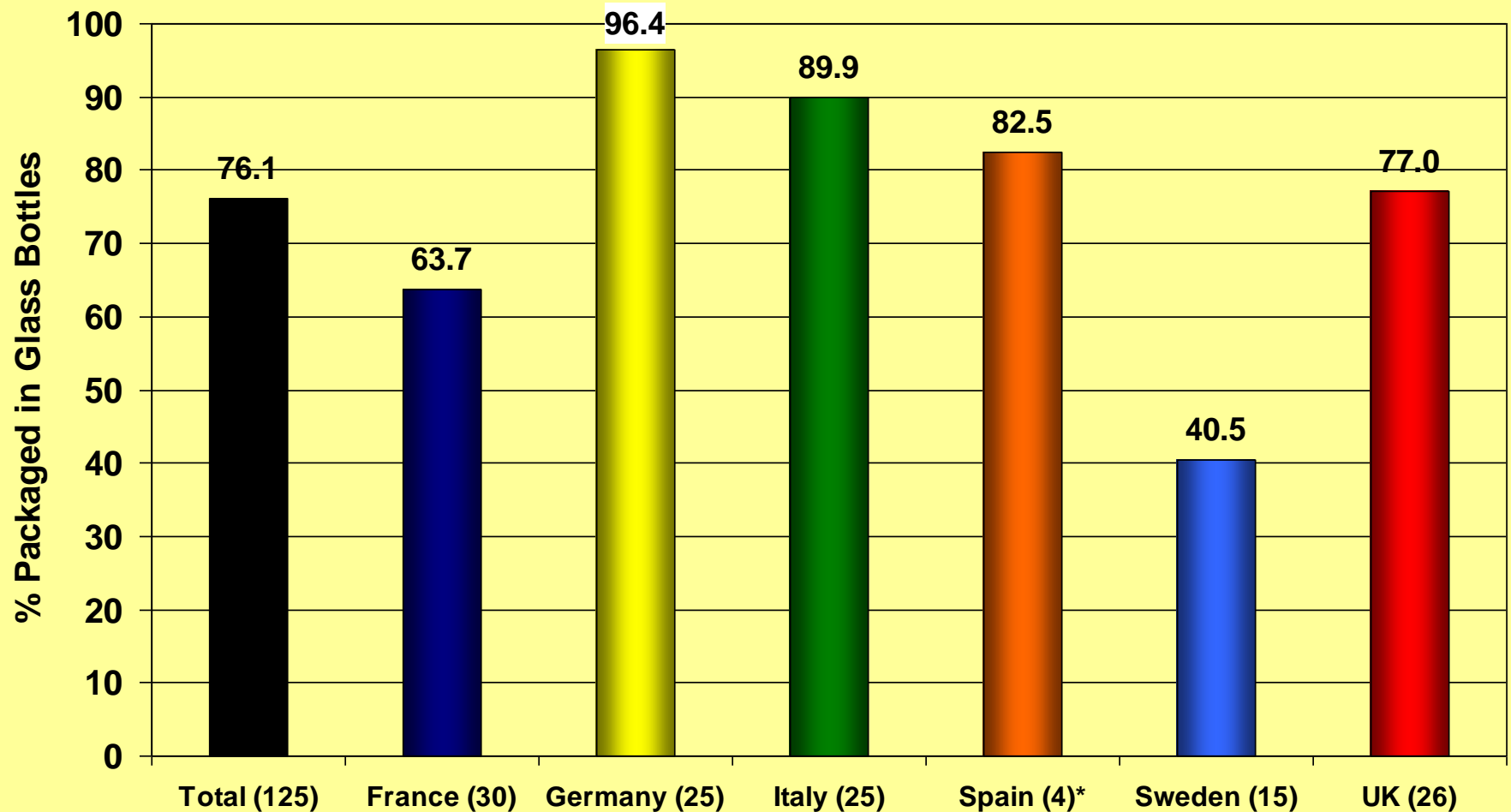
3 D Computed Tomography Reconstruction :



Study Sample:



Glass bottles dominate all markets except Sweden:



Base: All (n=125)







Q2 Thinking of the different individual contrast agents products that you stock in your lab, what proportion are packaged in glass bottles?

**Small Base*

Glass bottle of contrast agents / polymer bottles:



Opening is only slightly more problematic than storing, unpacking and disposal:

	Ease of unpacking and storage		Ease of opening		Ease of disposal	
	Means	% 6 & 7	Means	% 6 & 7	Means	% 6 & 7
France (30) 	5.4	53%	4.5	20%	5.9	67%
Germany (25) 	5.6	52%	3.4	12%	6.3	80%
Italy (25) 	5.8	72%	4.9	40%	5.8	72%
Spain (4)* 	5.3	75%	5.5	75%	6.0	75%
Sweden (15) 	4.8	34%	3.5	14%	4.1	34%
UK (26) 	5.0	46%	3.6	8%	4.4	34%
Total (125)	5.4	53%	4.1	21%	5.4	60%

Base: All (n=125)

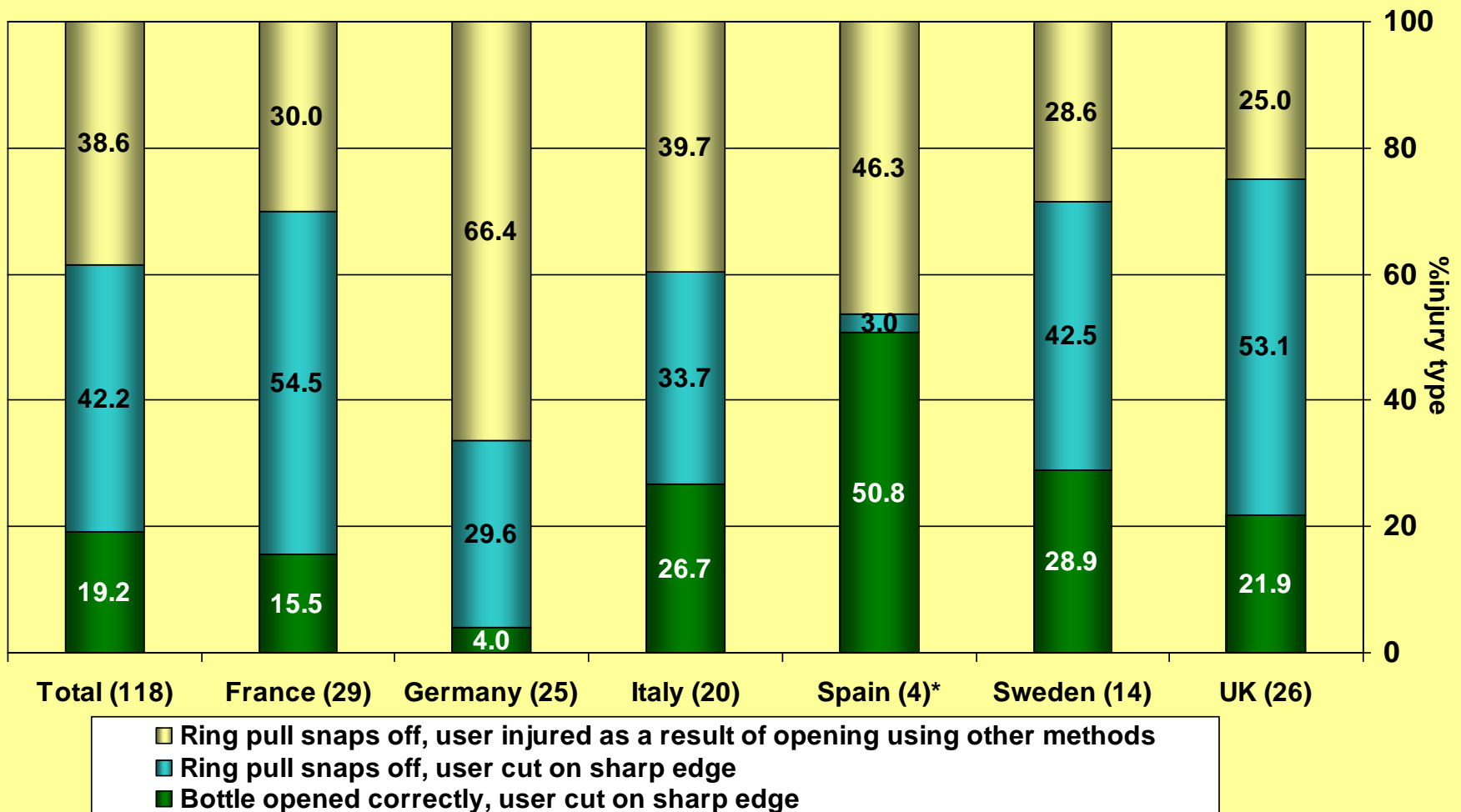
Q3 How easy are glass bottles to unpack and store? Using a scale of 1 to 7, where 1 is not at all easy and 7 is extremely easy

Q4 How easy are glass bottles to open? Using a scale of 1 to 7, where 1 is not at all easy and 7 is extremely easy

Q5 How easy are glass to dispose of? Using a scale of 1 to 7, where 1 is not at all easy and 7 is extremely easy

*Small Base

Wide variability in cause of injury across countries:



Base: All respondents who report injuries in their department as a result of opening glass bottles (n=118)

Q8. Please can you allocate 100% between the following options indicating what opening injuries most commonly occur in your department?

*Small Base

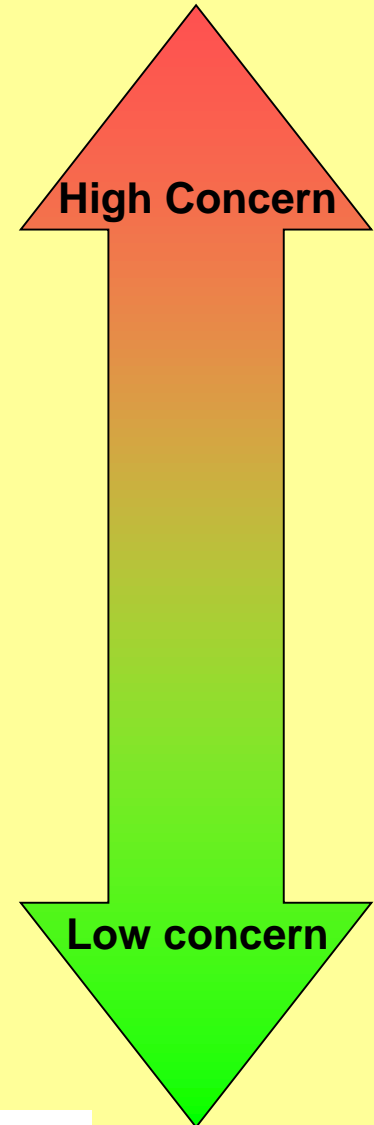
Rarity of injury and minimal risk reduce concern regarding opening injuries:

Reasons for high concern:

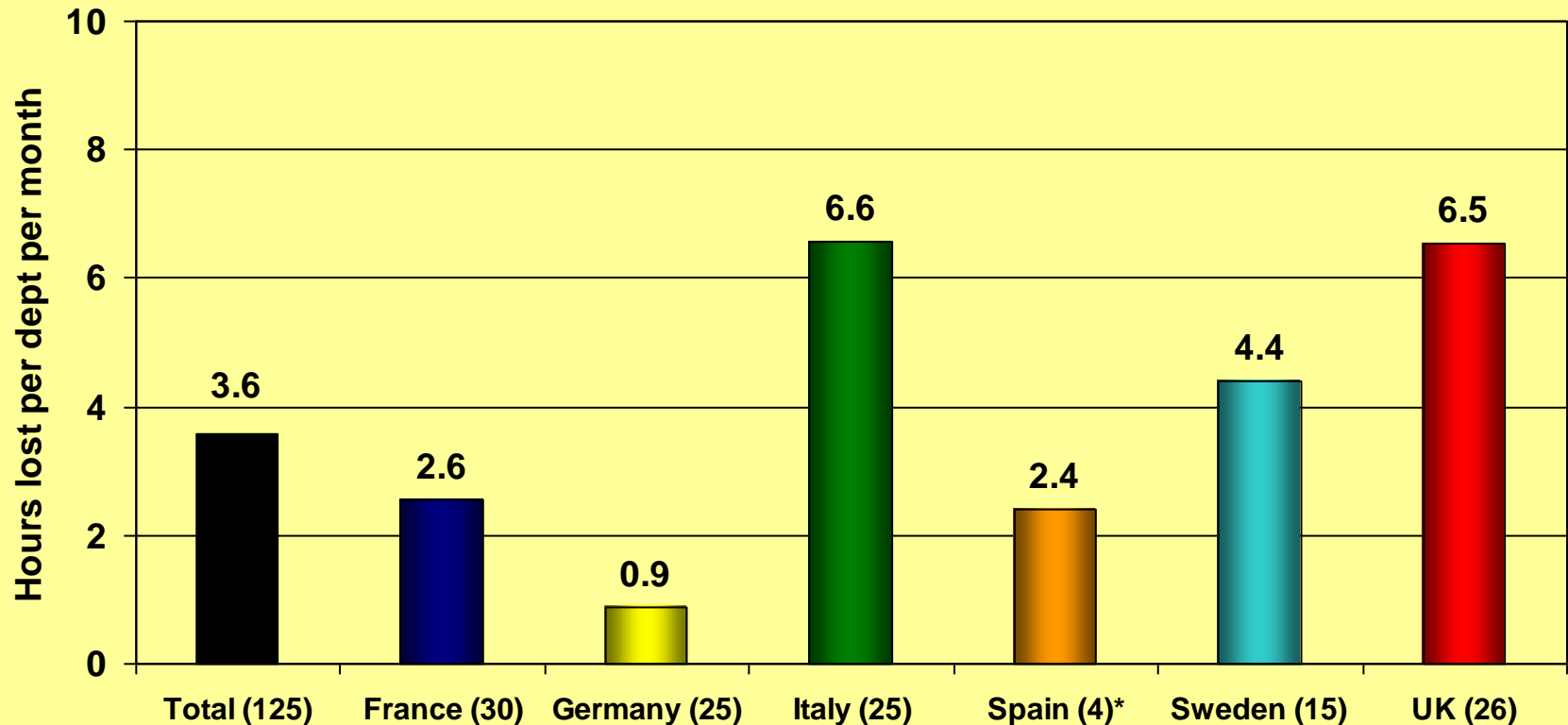
- Risk of infection 11%
- Alternative methods to open are dangerous 3%
- Concerned – glass bottles cause accidents/ Afraid of injuries (single mentions)

Reasons for low concern:

- Minor risk/not serious 18%
- Injuries are a rare occurrence 16%
- Careful handling 10%
- No contact with patient 5%
- Injuries not a problem 3%



Almost 4 working hours are lost per month per department dealing with injuries:



Base: All (n=125)







Q1 Firstly, please could you tell me how many radiographers and/or technologists work in your department?

Q6 In an average **month** how often do you injure yourself (however minor) when opening a glass bottle?







Q9a, Q9b, Q9c, Q18.

Q16 In an average **year** how often do you injure yourself (however minor) on broken glass?

Minor injuries are not usually reported :

Method of reporting	Total (125)	France (30) 	Germany (25) 	Italy (25) 	Spain (4)* 	Sweden (15) 	UK (26) 
Not reported	68%	60%	92%	48%	75%	80%	65%
Within the department – verbal report	18%	33%	4%	36%	-	7%	8%
Within the department – written report / log	7%	7%	4%	8%	-	13%	8%
External – verbal report	2%	-	-	4%	-	-	4%
External – written report / log	2%	-	-	4%	25%	-	4%
Within the department and externally – written report / log	2%	-	-	-	-	-	12%
Within the department and externally – verbal report	-	-	-	-	-	-	-

Majority of serious injuries are reported except in Germany where serious injuries rarely occur:

Method of reporting	Total (125)	France (30) 	Germany (25) 	Italy (25) 	Spain (4)* 	Sweden (15) 	UK (26) 
Within the department and externally – written report / log	34%	40%	4%	20%	-	27%	81%
Not reported	32%	47%	88%	12%	25%	-	-
Within the department – written report / log	15%	-	4%	24%	-	60%	12%
External – written report / log	12%	-	-	32%	75%	13%	8%
Within the department – verbal report	4%	10%	4%	4%	-	-	-
Within the department and externally – verbal report	2%	3%	-	4%	-	-	-
External – verbal report	1%	-	-	4%	-	-	-

Base: All (n=125)

Q23 How are more serious bottle related injuries reported? (eg. Deeper cuts that require stitches)

*Small Base

Conclusions:

- A radiographer can expect to be injured either through opening a glass bottle or through glass bottle breakages 2.2 times per month
- Most injuries are minor (no requirement for a plaster).
- 48% of injuries however draw blood and require further treatment
- Opening injuries are predominately caused by sharp edges or the ring pull snapping off
- On average, injuries caused by opening are more frequent (24.4 per year) per respondent than injuries caused by broken glass (1.9 per year)

Conclusions:

- Approximately 3 and a half hours are lost per month per department. This varies within countries, based on their estimation of time taken
- The vast majority of respondents are not too concerned with the risk of injuries when either unpacking, opening and disposing of glass bottles
- Generally, minor injuries are not reported at all (55%), however, the more serious injuries are usually reported (59%)
- Respondents indicate that injuries are more of a nuisance rather than a serious concern
- Any improvements to reduce the risk of injuries and time lost would be efficacious

References:

- Pruss-Ustun A, Rapiti E, Hutin Y(2003) Sharps injuries: global burden of disease from sharps injuries to health-care workers. In. Geneva : World Health Organisation
- Baffoy – Fayard N et al (2003) Potential exposure to hepatitis C virus through accidental blood contact in interventional radiology. *J Vasc Interven Radiol* 14: 173-179
- Jagger J, Hunt EH, Person RD (1990) Sharp objects injuries in the hospital: cause and strategies for prevention. *AM J infect control* 18: 227-231
- Marshall G (2008) Sharps injuries among radiographers: dangers associated with opening bottles of contrast agent *Radiography* 14 2 128 – 134
- Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work (a.k.a Framework Directive) available at <http://eupropa.eu>