

# Blood and Body Fluid Exposures in 2020

Results from a survey of RCN members

CORPORATE



May 2021

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## Declaration of conflicting interests

The members of the working group declared no potential conflicts of interest with respect to the authorship, survey, research, content or publication of this report.

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## Grimmond and Associates

Terry Grimmond is a consultant microbiologist and Director of Grimmond and Associates (G&A). The company is an independent consultancy whose chief research interest is to assist healthcare facilities, national associations, companies, and nations reduce blood and body fluid exposures among healthcare personnel. The company conducts a range of partnership research and evaluations and co-publishes the results with healthcare researchers. Since 2011, G&A has undertaken the annual U.S. *Exposure Survey of Trends in Occupational Practice* (EXPO-S.T.O.P.) on behalf of the Association of Occupational Health Professionals in Healthcare.

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# Executive summary

## Background

Sharps injuries (SI) and mucocutaneous exposures (MCE), collectively termed “blood and body fluid exposure” (BBFE), pose a diseases-transmission risk and a psychological stress to health care workers (HCW) and a responsibility on employers to prevent their occurrence. However, little UK national data is published on their incidence.

Apart from Public Health England’s Eye of the Needle Significant Occupational Exposure reports and Health Protection Scotland annual BBFE summaries, no UK national BBFE data is published. In 2020, the Royal College of Nursing (RCN) commissioned Grimmond and Associates to complete a survey similar to their 2008 survey to ascertain members’ current BBFE incidence, experiences and opinions. With Covid19, 2020 was a tumultuous year and the demanding workloads and intensity of respiratory procedures, together with record flu vaccinations and commencement COVID-19 vaccinations in December, would likely have resulted in increased BBFE-risk to members.

## Methodology

The 30-question survey (see Appendix 1), conducted in late 2020, included exposure risk, prevalence of sharps injury (SI) and mucocutaneous exposures (MCE) and incidence per full-time equivalent staff (FTE), post-exposure responses, access to safer devices, education and training, risk-perception, employer policies and support, and demographic details. Exposure questions were cross analysed against demographic questions to determine impact of role, workplace, bank/agency workers, and ethnicity.

## Results highlights

7,571 members responded to the survey (approximately 1.7% of RCN members).

- **Exposure rates** – 96% of members have a BBFE risk; 63% had SI in their career; 15% had SI and 21% had MCE in last year. Incidence of SI and MCE were 20.3 and 56.9/100 FTE respectively.
- **Last SI** – 29% before procedure; 26% during procedure; 21% during disposal; 11% improper disposal; 8% after device activation; 5% during device activation. 49% were with sterile needle. 97% encouraged bleeding, rinsed under running water; 35% were using a safer sharp.
- **Reporting SI** – 71% officially reported SI; 12% reported it to manager/colleague; 17% did not report their SI to anyone. Top 3 reasons: thought injury low risk (39%); told manager/colleague instead (19%); no benefit reporting (15%)
- **Follow-up** – 48% staff attended follow-up meeting. 40% did not receive medical advice. Contributing factors to SI: fatigue 27%; lack of safety equipment 25%; lack of space 21%; poor lighting 12%; staffing levels 12%; lack of training 9%; wearing PPE 9%.
- **Staff opinions** – 82% perceived disease-risk from SI as Nil to Low, 85% have Nil to Little fear of SI. 7% felt poorly supported by employer; 8% felt employer did not offer safe, reliable devices. 15% said access to safer sharps was nil to poor. 23% did not always have nearby sharps bin.
- **Training** – 25% had no training on safe sharps use. 21% had no education on reporting SI. 38% had no training on all the safer sharps they used.

### Comparison of results with 2018 U.S. EXPO-STOP Survey and 2008 RCN survey

- The recalled incidence of SI was 7x that of international incidence.
- The recalled incidence of MCE was 47x that of 2018 U.S. incidence.

Compared to RCN 2008 Survey, members in 2020:

- had significantly more SI in career and in last 12mths (fewer members had >1 SI)
- reported their SI less frequently. Top reason was identical (thought injury low risk)
- attended follow-up meeting and received advice on BBP disease risk less frequently
- thought BBP disease risk lower, feared SI less, and felt less supported by employer
- received more training in safe sharps use and greater access to safer sharps; but some still had nil to poor access to safer sharps and no training in how to use safer sharps.

## Conclusions

- a. The reason for the high incidence of SI and MCE in 2020 is difficult to ascertain as UK has little BBFE data available, however, it is likely related to COVID-19 workloads, fatigue, and stress.
- b. That not all members have access to safer sharps, device training and BBFE education, may be a contributing factor to the high incidence, and also needs investigation to ascertain if reduced access is due to “not available from employer” or “not taken up by employee”.
- c. Results indicate preventative measures by employers are not protecting HCW against BBFE.
- d. The high level of “disposal-related” SI may be related to sub-optimal access to safer sharps, and/or non-activation of the devices, and/or sub-optimal sharps bins or access to them.
- e. Safer, more automated sharps with regular competency training for each is indicated.
- f. The high “before procedure” and “disposal-related” SI rates require investigation.
- g. National public health bodies “% Ambitions” for safer sharps usage/activation and training/education are needed.
- h. Publication of national public health bodies annual SI and MCE incidence data from all trusts and boards are needed to monitor the impact of BBFE preventative measures nationally.
- i. Regular RCN surveys would ascertain and monitor progress in BBFE prevention measures. A larger survey sample is needed to decrease risk of participant bias.

## Recommendations

- a) In addition to requirements of the 2013 regulations, employers to assess other factors which increase sharps injury risk including fatigue, poorly lit environment, staff shortages, wearing of additional PPE, and lack of space – and put measures in place to reduce the risk of harm, including:
  - i. annually review their SI data and prevention policies and evaluate with users, the safest sharps devices commercially available for all procedures
  - ii. adopt semi-auto or auto safety-mechanism devices where available and clinically acceptable after evaluation by users
  - iii. remove all standard devices from the organisation once they are replaced by safer devices
  - iv. ensure all sharps bins are British Standards-compliant and are always positioned close to where sharps are used prior to any sharps procedure commencing
  - v. ensure all users of safety sharps are competency-trained on all safer sharps they will use – at orientation, regular intervals, whenever a device-related SI occurs, and whenever a new device is introduced to their procedures. Specific attention to be paid to staff groups with significantly higher BBFE incidence as shown in the survey
  - vi. ensure all staff are educated on risks of BBFE exposure and importance of SI prevention and SI reporting. Specific attention to be paid to staff groups with significantly higher BBFE incidence as shown in the survey
  - vii. at regular intervals, conduct sharps bins audits to ascertain the % of sharps that are safer sharps, and the % of safer sharps activated correctly.
- b) Urgent RCN lobbying is needed for employers, staff, trainers, educators, and regulators to ensure effective policies and a just and trust culture permeates all workplaces to enable the above recommendations to be carried out and ensure staff can work in a safe environment.
- c) National public health bodies to collate and publish annual summary of SI and MCE incidence data from all NHS trusts and boards. Relevant associations are encouraged to conduct and publish BBFE surveys nationally or regionally of members and their staff eg, Royal College of General Practitioners.
- d) RCN to repeat BBFE survey regularly (perhaps every three years), with additional questions where indicated, and examine mechanisms to increase member-response (to try achieve a >5% response).

# 1. Introduction

Blood and body fluid exposures (BBFE) may occur via sharps injuries (SI) (when a needle, blade (such as a scalpel) or other medical instruments penetrate the skin) or mucocutaneous exposures (MCE) (BBFE to a mucous membrane (eg, eye, mouth) or visibly damaged skin). Such exposures have the potential to transmit 60 pathogens<sup>1</sup> and pose physical risks and psychological stress to health care workers (HCW) and a responsibility on employers to prevent their occurrence. However, little UK national data is published on their incidence.

In 2008, the RCN commissioned a survey of its members to ascertain SI prevalence and member responses and opinions on issues pertaining to safety device access, access to education and training, and employer culture and support.<sup>2</sup> In response to the 2008 report's results, the RCN called for all health care facilities: to move towards safer sharps; to adopt comprehensive needlestick prevention policies; to offer more effective training of staff in needle safety, use and disposal, and actions and access to support post incident; and to ensure all staff, particularly those outside the NHS and in the community, have 24/7 access to competent advice and counselling following a needlestick injury.

Although for many years Public Health England has published *Eye of the Needle Reports* on significant occupational BBFE to HCV, HBV and HIV in UK HCW,<sup>3</sup> and Health Protection Scotland has published annual summaries of BBFE,<sup>4</sup> and all trusts are required by the 2013 Sharps regulations to record all sharps injuries,<sup>5</sup> no UK national data on BBFE incidence has been published since the RCN 2008 survey.

In August 2020, the RCN retained Grimmond and Associates to assist an RCN working group (WG) of senior staff in infection prevention and control, health and safety, and communications, to review and update the RCN 2013 publication *Sharps Safety* (a guide to support the implementation of the 2013 UK Sharps Regulations).<sup>6</sup> The intent of the review was to bring members and readers up to date with what is happening with BBFE and staff safety in the UK and what impact the 2013 law has had. However, as stated above, the WG noted that no current UK national data on BBFE incidence was publicly available.

To ascertain current BBFE incidence and related experiences of its members, the RCN commissioned Grimmond and Associates to complete a similar, more extensive survey to the RCN 2008 survey.

With COVID-19, 2020 was a tumultuous year with unusually demanding workloads and increased intensity of procedures, particularly respiratory, and in addition, a record number of flu vaccinations were administered, and Covid vaccination commenced in December. The RCN was aware these factors may result in higher BBFE exposure-risk to members, and may also limit survey participation.

This report outlines the 2020 survey methodology and results, compares results with other databases where available, draws conclusions, and makes recommendations on how the RCN may assist and lobby employers of HCW, health care trainers and educators, and regulators, to bring about the intent of the 2013 regulations, namely to, "ensure health care workers were offered a good standard of protection and that the number of sharps injuries fall".<sup>7</sup>



## 2. Methodology

The 30-question survey ([Appendix 1](#)) was designed by the RCN 2020 working group. Questions duplicated those of the 2008 RCN survey<sup>2</sup> and sought additional exposure-related information. Responses were sought on member BBFE exposure risk, frequency of SI and mucocutaneous exposures (MCE) in their career and in last 12 months; post-exposure responses; access to safer devices, education and training; perception of disease risk; extent of fear of SI, employer policies and support; and demographic details of role, workplace, age, ethnicity, disability and gender.

Members were contacted via email and RCN newsletter and encouraged to complete the online survey (Survey-Smart). The survey was also publicised on RCN social media accounts. A draw for two electronic tablets was offered to incentivise participation.

The survey was conducted from 23 November to 13 December 2020 and was extended to 23 December to allow additional members to participate. Prevalence rates (% of staff having any exposure) and incidence rates (number of exposures per 100 full-time equivalent (FTE) staff) were calculated. To enable incidence calculations, “>5” exposures in last 12 months was conservatively taken as “6”. The denominator for prevalence and incidence rates was “total staff” which includes staff without exposure *risk* (Q1) and those without an *exposure incident* in their career (Q2). Questions 1-23 (exposure-related) were each cross-analysed against each of questions 24-30 (demographics). Answers were expressed to nearest digit unless <1.

Where demographic cross-tabulations resulted in small response numbers, groups were amalgamated to facilitate statistical analysis as follows:

- 16 workplaces were grouped into the six largest – acute hospital, home/nursing care, GP practice, patient homes, mental health, other
- 18 ethnicities were grouped into two: White, and Black, Asian, minority ethnic (BAME)
- four bank/agency work-hours categories were grouped into one (full/part time).

All cross-tabulations were statistically compared using 2-tail test-based method for comparison of rates with significance set at  $p \leq 0.05$  and rate ratios and 95% Confidence Limits were calculated.<sup>8</sup> Significant differences below  $p=0.001$ , were expressed as  $P<0.001$ . Significant differences, if present, are depicted with an asterisk in all tables.

### 3. Results and question-related comments

7,571 members responded to the 30-day survey. This response rate is approximately 1.7% of RCN members. This survey is the largest BBFE survey conducted by the RCN however, higher response rates are needed to lessen the risk of participant bias and future BBFE surveys should examine mechanisms whereby a response rate of >5% can be achieved.

The following abbreviations have been used in all tables:

**Roles:** nursing support worker (NSW), health care assistant (HC), assistant practitioner (AP), nursing assistant (NA), trainee nursing assistant (TrNA), registered nurse (RN), midwife (M), health visitor (HV) and student (Stud.)

**Workplace:** general practice (GP).

**Ethnicity:** Black, Asian and Minority Ethnic (BAME).

Note 1. Where cross-analysis results appear higher or lower than the all-staff response, the absence or presence of a statistically significant difference may be due to (i) low numbers in that response group or (ii) differing group-composition in the two cross-analysed questions.

Note 2. As there are no current UK national databases to which the results can be assessed, comparisons will be drawn against Health Protection Scotland annual BBFE summaries, U.S BBFE databases, the RCN 2008 Survey, published research, and UK regulations and guides.

**Table 1. Demographics of respondents (% in group)**

Role				Workplace						Bank	Ethnicity		Age					
NSW, HCA, AP	NA, TrNA	RN, M, HV	Stud.	Acute hosp.	GP	Patient homes	Care/ Nurs. home	Mental Health unit	Other (57)*	Full/ Part/T	White	BAME	17-24	25-34	35-44	45-54	55-64	65+
6.2	1.2	89.9	2.7	49.8	10.9	9.7	8.7	4.3	16.6	48.1	81.5	15.4	3.1	13.2	14.6	29.4	34.1	4.6
*Other = 57 different workplaces											3.1% unstated		1.1% unstated					

Additional demographics:

- 6.9% identified with having a disability (2.6% unstated).
- Female 88.7%; Male 9.2%; Non-binary 1.8%; Other/unstated 1.9%.

### 3.1 Prevalence and incidence of SI and MCE

These first four questions were asked to ascertain the frequency and extent of exposures among members. The percentage of respondents who experienced SI in their career and in the last 12 months, and the incidence of SI and MCE per 100 FTE in last 12 months, together with cross-analysis with role, workplace bank/agency work and ethnicity, are shown in Table 2.

**Table 2. Q1-4 Prevalence and incidence of SI and MCE**

Question	All staff	Cross analysis with role (Q24)				Cross-analysis with workplace (Q25)						Bank/Agency work (Q26)		Ethnicity (Q28)	
		NSW HCA AP	NA, TrNA	RN/ M/ HV	Stud.	Acute hosp.	GP	Patient homes	Care/ Nurs. home	Mental Health unit	Other# (57)	Full/ Part/ T	Never	White	BAME
BBFE risk at work	96%					(no crosstab)									
SI in career	63%	38%*	39%*	64%	20%*	61%	66%*	64%	59%	46%*	58%	60%	62%	62%	55%*
SI last 12mths	15%	25%*	48%*	17%	48%*	18%	17%	18%	22%*	25%*	11%*	20%*	16%	16%	22%*
SI/100FTE	20.3	34.9*	63.4*	22.3	62.8*	24.2	23.0	22.8	30.7*	31.6*	16.6*	26.5*	20.8	21.7	32.7*
MCE last 12mths	21%	27%	41%*	25%	26%	28%	18%*	21%*	36%*	32%	18%*	29%*	22%	23%	34%*
MCE/100FTE	56.9	78.4	88.8	67.2	84.4	76.4	42.6*	51.7*	109.9*	79.3	47.1*	77.7*	59.5	62.0	97.9*
		*Significant vs RN/M/HV				*Significant vs Acute Hospital						*Significant		*Significant	

# includes 57 different workplaces

#### a) All staff results

- i. **Blood and Body Fluid Exposure risk in role.** Of all respondents, 96% have a BBFE risk in their role (2008 = 96%). This is consistent with the 2019 RCN Employment Surveys showing 3-5% of members are in non-patient roles.<sup>9</sup>
- ii. **Sharps injury in career.** The 63% with an SI in their career is significantly higher than the 48% in the RCN 2008 survey, but within the “all staff, all roles” range published in a recent review of 21 similar questionnaire studies.<sup>10</sup>
- iii. **Sharps injury in last year.** In the last 12 months, 15% of staff sustained SI (10% in 2008), with 3% sustaining more than one SI (16% in 2008), with an overall incidence of 20.3/100FTE (12.0 in 2008 – significantly less). The 15% prevalence (people injured) indicates that 15/100 respondents sustained SI in the last year, while the 20.3/100FTE incidence (injuries sustained) indicates that 20.3 SI were sustained by every 100 staff in the year. The latter is a conservative incidence rate as the survey did not seek “working hours” of the respondents to determine exact FTE. However, the 2019 RCN Employment Survey showed that 30% of members work part-time and, if we assume 2 P/T = 1 FTE, then the 20.3 incidence rate is likely 20.3/85FTE which equates to 23.9/100FTE.

This is an alarming recalled rate given the following reported rates in other countries:

- Scottish 2017 HCW rate of 1.9/100FTE<sup>4</sup>

- U.S. 2018 Nurse rate of 2.9/100FTE<sup>11</sup>
- French 2015 Nurse rate of 3.8/100FTE<sup>12</sup>
- Italian 2016 rate for nurses at 42 hospitals of 2.2/100FTE.<sup>13</sup>

However, these national rates are “reported” SI and their national non-reporting rates are varied, but, if the UK survey’s 29% non-reporting rate is conservatively applied, the four-country average would be 3.5 SI/100FTE. The RCN recalled SI incidence rate from this survey is thus 7x higher.

This high SI incidence raises three questions – Why have the 2013 UK Sharps Regulations not had their expected impact?<sup>14</sup> Is the high incidence due to COVID-19 intensity of procedures and workloads? Or did the survey strongly attract exposed respondents? While it is possible the the survey may have participant-bias and disproportionately attracted exposed members – it is unlikely biased to the extent that it raised rates to 7x that of other countries.

- iv. **Mucocutaneous Exposure in last year.** The prevalence and incidence of MCE in 2020 was 21% and 56.9/100FTE respectively. That MCE was higher than SI rates in both prevalence (21% vs 15%) and incidence (56.9 vs 20.3/100FTE) is disturbing. National studies in U.S. show MCE are invariably 25-30% of reported BBFE (SI+MCE),<sup>11,15</sup> in France in 2015 MCE were 20% of BBFE,<sup>12</sup> in Scotland in 2018, MCE were 10% of reported BBFE,<sup>4</sup> and in the UK *Eye of the Needle* significant exposures, MCE account for 29% of BBFE.<sup>3</sup>

For the 2020 MCE incidence to be 74% of all BBFE, we suggest is likely due to the intensity of COVID-19 procedures, particularly respiratory procedures.

Ascertaining the reason for the high SI and MCE incidence in 2020 is hampered by lack of UK data. Hambridge in a 2016 literature review made the observation that UK is surprisingly under-researched in the field of SI.<sup>16</sup> And in 2018, the HSE post-implementation review (HSEPIR),<sup>7</sup> could not conduct quantitative comparisons of SI incidence before and after the 2013 regulations because “official statistics for the number of sharps injuries sustained by health care workers in the UK are not collected.”<sup>7</sup> We propose that national UK studies of SI and MCE incidence and mechanisms of exposures before and after the 2013 regulations, and before, during and after COVID-19, are needed to clarify the reason(s) for the BBFE increase.

Irrespective of the reason for the high BBFE, the results show that preventative measures were insufficient to protect HCW in a high-workload year. If an effective risk hierarchy of preventative control measures is implemented, as required by the 2013 sharps regulations,<sup>16</sup> an increase in BBFE-risk procedures should not equate to such an increase in exposures.

**b) Cross-analysis with role, workplace and ethnicity**

In the four role groups (Table 2), significant differences in exposures are noted. The possible reasons for the differences will be discussed in later sections.

**i. Role risk.** Compared to RN/M/HV (largest role):

- nurse support staff (NSW/HCA/AP) had less SI in career, but in last 12 months had significantly higher SI prevalence and incidence
- nurse associates and trainee NA had less SI in career
- fewer students had SI in career (shorter career) but higher SI prevalence and incidence in last 12 months.

**ii. Workplace risk.** Compared to acute hospitals (largest workplace; intense procedures):

- GP staff had higher SI in career but lower MCE prevalence and incidence in last year
- patients' home staff had less MCE prevalence and incidence in last year
- care/nursing home staff had more SI and MCE exposures in last year
- mental health care unit staff had more SI in career and last year, but same MCE rates
- other workplaces (57 types) had less SI and MCE exposures in last year.

**iii. Bank/agency risk.** Comparison of staff who did, or did not, work as bank/agency staff.

- Bank/agency staff had higher SI and MCE prevalence and incidence.

**iv. Ethnicity risk.** Comparison of White and BAME staff.

- BAME staff had higher SI and MCE exposures than White in all five measurements.

### 3.2 Timing of last SI

Drilling down and asking at what stage of the procedure did the SI occur can reveal valuable information as to how and why BBFE are occurring.<sup>17,18</sup> The respondents’ answers to the timing of their last SI in relation to the procedure, are shown in Table 3.

**Table 3. Q5. Timing of sharps injury**

Question	All staff	Cross analysis with role (Q24)				Cross-analysis with workplace (Q25)						Bank/Agency work (Q26)		Ethnicity (Q28)	
		NSW HCA AP	NA, TrNA	RN/ M/ HV	Stud.	Acute hosp.	GP	Patient homes	Care/ Nurs. home	Mental Health unit	Other# (57)	Full/ Part/ T	Never	White	BAME
Before procedure	29%	19%	14%	29%	29%	31%	30%	25%	33%	23%	29%	28%	29%	27%	
During procedure	26%	24%	31%	26%	18%	28%	25%	23%	21%	18%	26%	27%	25%	25%	32%
During device activation	5%	7%	21%*	5%	12%	5%	6%	6%	5%	10%	5%	6%	5%	6%	5%
After activation	8%	13%	7%	8%	6%	7%	9%	7%	9%	10%	9%	8%	7%	7%	10%
During disposal	21%	22%	21%	21%	18%	18%	22%	25%	27%	22%	25%	20%	23%	22%	18%
Improper disposal	11%	14%	7%	11%	18%	12%	7%	10%	13%	7%	12%	11%	12%	12%	8%

a) **All staff results.** The top three timings of SI were, in order, “before procedure” (29%), “during procedure” (26%) and “during disposal” (21%). “During disposal” includes SI during transport of sharps to the sharps container and all those related to use and handling of the container. However, when “during disposal” and “improper disposal” are combined as “disposal-related” SI (transport + containment + improper) – it becomes #1 category (32%).

That “before procedure” was >20% in almost all roles, workplaces, bank staff and ethnicities, is unprecedented and enigmatic. The survey did not seek further information on this; however, speed may have been a factor – with COVID-19 high workloads and urgency of procedures. These findings are at odds with the final 2015 French survey and two recent U.S. databases which found: “before procedure” <3%; “during procedure” 46-52% and “disposal related” 8-9%.<sup>12,15,19</sup> However, France and the U.S. were early adopters of safer sharps regulations (enacted for 20 years or more), whereas, in contrast, Germany and Italy (like UK) are new adopters – and their disposal-related SI accounted for 29-40% SI.<sup>13,20</sup>

Disposal-related SI are considered “preventable adverse events”<sup>13,19</sup> as, with correct and immediate activation of safety devices and with British Standards-compliant<sup>21</sup> sharps bins close at hand, these SI should approach zero. That 26-40% of survey SI were disposal-related across all groups, is alarming and may have several causes: sharps container is not “as close as possible to point of use of sharp”,<sup>17,20,22,23</sup> the sharps container may not have appropriate safety features,<sup>20,22-23</sup> (there are eight mechanisms whereby sharps containers may be associated with SI);<sup>23</sup> and use of non-safety sharps or non-activation of safety sharps.<sup>13,20,26-29</sup>

Preventative control measures to minimise disposal-related SI are: ready access to proven safety sharps preferably with auto or semi-auto safety mechanisms,<sup>13,26,30</sup> effective education and training on correct and immediate activation of safer sharps,<sup>13,29,31-33</sup> ensuring size-appropriate, standards-compliant, safe sharps containers are in use,<sup>20,22,24,27</sup> and the sharps containers are close at hand prior to the procedure.<sup>20,22, 23,27</sup> Further studies and risk-assessments are needed to ascertain how the high level of disposal-related SI are occurring and which of the above preventative measures would minimise these.

Note. In 2019 British Standards (BS) adopted the new ISO sharps container standards by publishing new single use and reusable sharps container standards for UK (BS EN ISO 23907-1 & 2:2019).<sup>21</sup>

- b) **Role results.** NB. Statistical significance was difficult to achieve because of small numbers in most role group answers. The top three timings in the four role groups mirrored those of all staff with the exception of NA/TrNA group whose “during activation” rate (21%) was their equal #2 and was significantly higher than “during activation” in other roles. Disposal-related SI (during disposal + improper disposal) ranged from 28-36% across the roles – some 3x that of French and U.S. databases.<sup>12,15,19</sup>
- c) **Workplace results.** Although the order changed occasionally across workplaces, the top three SI timings across all workplaces were “before procedure”, “during procedure”, and “during disposal”. Disposal-related SI was high in all workplaces, ranging from 29-40% (Care/nursing homes and Other workplaces were significantly highest).
- d) **Bank/agency staff.** Top three SI timings, once again, were, in order, “before procedure”, “during procedure”, “during disposal”. Disposal related SI (disposal and improper) was 31%.
- e) **Ethnicity results.** Top three SI timings were again, “before procedure”, “during procedure”, “during disposal”. Disposal related SI was 34% in White staff and a significantly lower 26% in BAME staff.

### 3.3 Reporting of last SI

Under the 2013 sharps regulations, it is mandatory for staff to report all SI to employer or a person with specific responsibility for health and safety so that the employer can record, investigate and take any necessary action to prevent a recurrence.<sup>5,17</sup> Table 4 shows the reporting response of all respondents.

**Table 4. Q6 and Q7. Reporting of sharps injury and reasons for not reporting**

Question	All staff	Cross analysis with role (Q24)					Cross-analysis with workplace (Q25)						Bank/Agency work (Q26)		Ethnicity (Q28)	
		NSW HCA	AP	NA, TrNA	RN/ M/ HV	Stud.	Acute hosp.	GP	Patient homes	Care/ Nurs. home	Mental Health unit	Other# (57)	Full/ Part/ T	Never	White	BAME
<b>Did you officially report last SI?</b>																
Yes	71%	79%	90%	72%	59%	73%	69%	75%	56%*	81%	76%	71%	72%	73%	67%	
No, reported to manager or colleague instead	12%	13%	3%	11%	26%	12%	10%	7%*	24%*	10%	10%	12%	11%	11%	14%*	
No, did not report it at all	17%	9%	7%	17%	15%	16%	21%*	18%	21%	9%*	14%	17%	16%	16%	19%	
<b>Reason for not officially reporting last SI</b>																
Thought injury low risk	39%	28%	67%	39%	36%	42%	40%	31%	31%	38%	39%	38%	39%	39%	37%	
Reported it to manager	19%	25%	0%	18%	21%	17%	14%	16%	26%	29%	21%	19%	18%	18%	21%	
No benefit in reporting	15%	13%	0%	16%	0%	17%	18%	20%	12%	13%	12%	15%	16%	16%	12%	
Thought patient low risk	7%	6%	33%	7%	0%	7%	12%	5%	8%	0%	5%	6%	8%	6%	11%	
Impact on career	6%	6%	0%	7%	14%	5%	3%	13%	10%	0%	10%	8%	6%	6%	9%	
No time	6%	9%	0%	5%	7%	6%	4%	5%	3%	8%	6%	6%	5%	5%	6%	
Did not know had to	4%	9%	0%	3%	14%	3%	6%	4%	4%	13%	3%	4%	4%	4%	1%	
Too inconvenient	3%	3%	0%	3%	0%	3%	2%	6%	3%	0%	1%	3%	2%	3%	2%	
Did not know how to	2%	0%	0%	2%	7%	0.9%	2%	1%	3%	0%	3%	1%	2%	2%	2%	
						*Significant vs Acute Hospital								*Significant		

#### a) Reporting SI

- i. **All staff results.** Although a mandatory UK requirement, 29% of SI were not reported officially (did not report/reported only to manager). This rate is higher than the 2008 non-reporting rate of 10%, but less than the 41% non-reporting rate found in a recent review of 21 similar questionnaire studies.<sup>10</sup> However, it means 29% of SI were not recorded, thus official reports to facility-leadership understate SI incidence. It also means 29% of SI are not officially investigated and no remedial action is taken to prevent their recurrence. That 17% were not reported at all,



means 17% of injured staff did not receive information on BBFE risk, nor follow-up, nor counselling.

We examined the hypothesis that staff who had SI with sterile needles (Q8) may not have reported their injury. We compared the All Staff sterile needle SI rate (41%) (Table 4) with the sterile needle rate (73%) among staff who did not report their injury. The difference was highly significant ( $p < 0.001$ , RR 0.55, CL95 0.50-0.60) and confirms that staff who had an SI with a sterile needle reported their injury less frequently than staff who had SI with a contaminated needle. The 2013 sharps regulations require all SI to be reported, whether sterile or contaminated.<sup>5</sup> Reporting of SI was not associated with bloodborne pathogen disease fear.

- ii. **Role results.** Although rates varied by roles, no significant differences were found when other roles were compared with RN/M/HV.
- iii. **Workplace results.** Compared to acute hospital staff: care/nursing homes staff officially reported fewer SI and reported more to manager/colleague; staff at patients' homes reported fewer to manager or colleague; GP staff reported fewer SI.
- iv. **Bank/agency staff.** No difference between bank staff and others.
- v. **Ethnicity.** BAME staff reported more SI to manager/colleague than White staff.

#### b) Reasons for not reporting SI

- i. **All staff results.** The top three reasons accounted for 73% of answers and were: "thought injury low risk"; "reported it to manager instead"; "no benefit in reporting". The "thought injury low risk" response was also #1 in 2008 survey. Staff stating any of these three reasons would benefit from further education on the law, BBFE risk, and correct reporting protocols – all are specified in the 2013 sharps regulations.<sup>5</sup> No significant differences were seen between workplaces, bank/agency staff or ethnicity.
- ii. **Role results.** The top three reasons for all roles were identical to the All Staff top 3 reasons, with two exceptions: NA/TrNA had zero for "no benefit" and the highest (33%) for "patient was low risk"; and students had the highest rate of "impact on career". For all staff, and students in particular, a just and trust, "no blame, no shame" culture must permeate the facility and be demonstrated and supported by senior managers.

The 2013 HSE Guidance states employers should investigate all SI and look at the root cause.<sup>17</sup> It often takes the "5 Whys" of root cause analysis to get to the real reason for the injury as, without the true cause, it is not possible to implement effective preventative measures.<sup>18</sup> But, if the injury is not reported, no investigation or prevention is possible.

No staff member should use their judgement as to whether to report an SI or not. The regulations are clear: all SI must be reported officially, and all staff must be trained in the reasons why, and the procedure for, reporting of BBFE.

That 3% or less of staff thought their organisation's reporting procedure was inconvenient is of interest as "inconvenience/burdensome" was in the top three reasons for failing to report an SI in a recent literature review.<sup>10</sup>

### 3.4 Events at last SI

An SI should trigger a series of procedures (some only if indicated), which include first aid, reporting, investigation with help of injured staff-member, information on risk given to staff-member, bloods taken from staff and patient, counselling, prophylaxis, follow-up, trends investigated and preventative measures implemented. Table 5 examines what events occurred at the respondent’s last injury.

**Table 5. Q8-11. Events at last sharps injury**

Question	All staff	Cross analysis with role (Q24)					Cross-analysis with workplace (Q25)						Bank/Agency work (Q26)		Ethnicity (Q28)	
		NSW HCA	AP	NA, TrNA	RN/ M/ HV	Stud.	Acute hosp.	GP	Patient homes	Care/ Nurs. home	Mental Health unit	Other# (57)	Full/ Part/ T	Never	White	BAME
Needle was sterile	41%	36%	34%	41%	38%	42%	42%	42%	41%	43%	36%	42%	40%	40%	45%	
SI resulted in bleeding	83%	87%	89%	83%	76%	83%	87%	81%	79%	78%	82%	83%	83%	84%	77%	
Helped bleeding/ rinsed	97%	99%	100%	97%	86%	98%	99%	96%	97%	96%	96%	98%	97%	97%	98%	
Knew source patient	88%	89%	79%	89%	71%	88%	90%	92%	91%	90%	88%	89%	89%	89%	89%	
Patient bloods tested	56%	51%	58%	57%	43%	66%	44%*	51%*	36%*	57%	54%*	61%*	54%	57%	58%	
My bloods taken	75%	83%	79%	75%	81%	82%	73%	77%	41%*	78%	73%	77%	74%	77%	70%	
Offered prophylaxis	18%	26%	32%	18%	33%	19%	19%	15%	15%	28%	19%	21%*	17%	18%	24%*	
After bloods, attended follow-up meeting	48%	48%	73%	47%	71%	48%	36%	42%	39%	64%	52%	47%	47%	46%	54%	
<b>Received bloodborne disease-risk advice</b>																
No advice given	40%	34%	37%	40%	38%	38%	42%	39%	59%*	19%*	37%	38%	41%	40%	37%	
Immediately	31%	35%	37%	30%	38%	32%	34%	23%	22%	42%	31%	31%	31%	31%	31%	
Within 24 hours	20%	19%	11%	21%	14%	20%	16%	28%	16%	26%	23%	21%	21%	20%	24%	
Within 48 hours	4%	4%	5%	5%	0%	5%	5%	4%	3%	6%	4%	5%	4%	5%	4%	
After 48 hours	4%	8%	11%	4%	10%	5%	3%	6%	1%	7%	5%	5%	4%	5%	4%	
												*Significant vs Acute Hospital			*Significant	

Most results from all staff were mirrored across most groups, with a few exceptions noted in the relevant sections below.

- a) **SI with sterile needle.** SI with a sterile/unused needle are not common and usually occur in medication draw-ups or immediately before a patient procedure commences. Although void of BBFE risk, it is still an injury, occasionally can have severe consequences, and is reportable under the 2013 Sharps regulations. It is puzzling that 41% of SI were with a sterile needle – this is very high compared to 2019 U.S. sterile needle SI rate of 7%.<sup>15</sup> If investigation shows these are occurring during draw-up, then use of blunt draw-up needles is indicated.

With before procedure SI (Section 3.2 and Table 3), the needle was likely sterile, however, as stated in 3.2(a) the 29% before procedure rate is puzzling compared to U.S. rate of  $\leq 3\%$ .<sup>15,19</sup> This anomaly requires further research.

**b) Actions surrounding last SI.**

Table 5 shows 48% of all staff attended a follow-up meeting after their bloods were taken – this is significantly less than the 71% in 2008 survey. Other answers in this section did not differ from those in 2008. No significant differences in answers between roles was seen, however the following differences were noted for workplace and ethnicity:

- GP practices, patient homes and other workplaces had fewer source-patient bloods taken than in acute hospitals
- agency/bank staff had more patient bloods tested and were offered prophylaxis more often than non-agency/bank workers
- BAME staff were offered prophylaxis more often than White staff.

**c) Receiving disease-risk advice.** The 2013 sharps regulations require employers to give medical advice to staff if the SI may have exposed the employee to a biological agent.<sup>5,17</sup> It is of concern that 40% did not receive disease-risk advice. Across workplaces, advice was received less often in care/nursing homes, and more often in mental health units, than in acute hospitals. The 40% rate is significantly higher than the 2008 rate of 28%. The rate raises the question as to whether staff did not receive/seek advice because: the needle was sterile; or because they did not report the SI? To probe these sub-questions, questions 6 (reporting), 8 (Sterile needle) and 11 (receiving advice) were cross analysed against each other with the following results:

- staff injured with a sterile needle were significantly less likely to receive disease-advice
- staff who did not report their SI were significantly less likely to receive disease advice. (34% of staff reporting SI did not receive disease advice vs 86% if they reported SI). This is readily understood as without reporting, there is no mechanism for advice to be received. It is interesting how 14% of staff who did not report SI, stated they received advice – perhaps from manager or colleague?

That 34% of staff who reported SI, yet did not receive advice, needs probing in future surveys.

### 3.5 Disease-risk perception, last SI safety, contributing factors to SI

Table 6 shows results for questions 12-14 which pertain to perception of disease-risk, use of safer sharp, and factors contributing to last sharps injury.

**Table 6. Q12-14. Disease-risk, use of safer sharp and factors contributing to injury**

Question	All staff	Cross analysis with role (Q24)				Cross-analysis with workplace (Q25)						Bank/Agency work (Q26)		Ethnicity (Q28)	
		NSW HCA AP	NA, TrNA	RN/ M/ HV	Stud.	Acute hosp.	GP	Patient homes	Care/ Nurs. home	Mental Health unit	Other# (57)	Full/ Part/ T	Never	White	BAME
<b>Disease-risk perception</b>															
Nil	14%	20%	26%	13%	10%	12%	14%	10%	22%*	13%	14%	13%	14%	12%	18%*
Low	68%	61%	42%	69%	67%	68%	71%	76%	63%	61%	68%	68%	69%	71%	56%*
Medium	12%	11%	11%	12%	10%	13%	11%	9%	10%	19%	11%	13%	12%	12%	16%
High	6%	8%	21%*	6%	14%	7%	3%*	5%	5%	7%	7%	6%	5%	5%	10%*
Safer sharp was used at last SI	35%	47%*	59%*	34%	44%	37%	28%*	29%*	33%	48%	32%*	40%*	29%	31%	51%*
<b>Contributing factors to last SI:</b>															
Fatigue/ tiredness	27%	14%	8%	20%	23%	21%	22%	13%*	17%	14%*	20%	18%	20%	20%	16%*
Lack of safety equip.	25%	18%	18%	18%	15%	17%	18%	22%*	17%	18%	19%	17%	19%	19%	15%*
Non-coop. patient	25%	22%	18%	17%	5%	15%	26%*	17%	21%*	24%*	17%	17%	18%	17%	20%*
Lack of space	21%	16%	14%	15%	18%	16%	12%*	18%	13%	15%	16%	16%	15%	15%	16%
Poor lighting	12%	7%	14%	8%	10%	8%	5%	13%*	10%	8%	7%	9%	8%	8%	9%
Staffing levels	12%	9%	6%	9%	5%	10%	5%*	6%*	9%	7%	9%	10%	8%	8%	11%*
Wearing of PPE	9%	7%	12%	6%	11%	6%	9%*	6%	8%	7%	5%	7%	6%	6%	7%
Lack of train./ educ.	9%	7%	8%	6%	13%	7%	4%	5%	6%	8%	7%	6%	7%	7%	6%
		*Significant vs RN/M/HV				*Significant vs Acute Hospital							*Significant		

#### a) All staff results

**Disease-risk perception.** Staff were less concerned with disease-risk than in 2008 (In 2008 34% perceived their disease-risk to be medium to high vs 18% in 2020). The lower disease-risk perception in 2020 respondents may be related to the high incidence of SI with sterile needles mentioned in 3.4(a). International databases seldom address this matter however studies confirm a high level of disease-fear may be present in 40-80% of staff, particularly if they have sustained SI previously.<sup>34-38</sup> Disease fear was not associated with whether SI were reported nor whether SI were sustained in previous 12 months.

- I. **Safer sharps at last SI.** At last SI, 35% of staff were using a safer sharp. This question was not asked in 2008, however recent U.S. surveys state 45-52% of

SI were with safer sharps,<sup>15,19</sup> As the use of safer sharps rises, so too will the proportion of SI with them, so this low rate is of concern as it may indicate a low uptake of safety sharp usage.<sup>13,29</sup> However the 35% is at odds with a 2016 study of sharps container contents in 7 UK hospitals which found 93% of hollow-bore needles were safety engineered devices (safer sharps).<sup>28</sup>

It is also at odds with the 2016 HSEPIR survey of health care managers and staff that stated 79% of staff used safer sharps “most or all of the time.”<sup>7</sup> It should be noted that the 2020 survey question was asked of “your last SI” – future surveys should also ask if a safer sharp was used “in your last sharp procedure”.

- ii. **Contributing factors to SI.** The top three contributing factors to SI were “fatigue/tiredness”, “lack of safety equipment” and “non-co-operative patient”. International databases seldom address this matter however the literature confirms a strong association between fatigue/stress and increased SI.<sup>29,34,36,39,40</sup> Fatigue in UK health care workers during COVID-19 has been extreme. Gerada and Walker in May 2020 stated, “*The initial eagerness to play our part in this crisis, ... has been replaced by an intense and overwhelming fatigue*”.<sup>41</sup> The annual NHS staff survey conducted September-November 2020 (overlapping with the RCN BBFE survey) confirmed this with 44% of staff feeling unwell as a result of work-related stress in last 12 months – a marked rise over previous years.<sup>42</sup>

Wearing PPE was considered a contributing factor by 9% of staff. Respiratory PPE during COVID-19 was more onerous and this may indicate that competency training was required in SI procedures while wearing PPE.

- b) **Role results.** All roles mirrored “all staff” results in disease-risk perception (82% Nil to Low). Compared to RN/M/HV role, NSW/HCA/AP and NA/TrNA had significantly higher use of safety sharp at last SI. For contributing factors, although rates varied widely among roles, statistical significances were not found.
- c) **Workplace results.** Workplaces mirrored all staff disease-risk perception, with two exceptions: compared to acute hospitals, care/nursing homes had lower overall concern (likely related to their clientele); and among GP staff, fewer regarded disease-risk as “high”.

For contributing factors to SI, compared to acute hospitals, the following significant differences were noted:

- i. fatigue – fewer staff working in patient homes and mental health units placed this #1
- ii. lack of safety equipment – staff working in patient homes placed this #1
- iii. non-co-op patient – GP, care/nursing homes, mental health units placed this #1
- iv. lack of space – GP staff had less concern
- v. poor lighting – staff working in patient homes had higher concern
- vi. staffing levels – GP and patient home staff had less concern
- vii. wearing PPE – GP staff had higher concern.

- d) **Bank/agency workers.** Same disease-risk perception as all staff; higher use of safety sharps at last SI and same contributing factors as non-bank/agency workers (and same top three as all staff).
- e) **Ethnicity.** BAME staff perceived disease-risk to be higher than White; used safer sharps more frequently than White; and for contributing factors, differed from White in placing #1 Non-co-operative patient, #2 Fatigue and lack of space equal, #3 Lack of safety equipment, and more regarded staffing levels as an issue.

## 3.6 Employer policies and access to training and safer devices

Table 7 shows results for questions 15-20 which pertain to staff opinions on their perceived BBFE risk, employer policies and support, their access to safer sharps, sharps bins, and education.

**Table 7. Q15-20. Access to training and safer sharps, and opinion on employer policies**

Question	All staff	Cross analysis with role (Q24)				Cross-analysis with workplace (Q25)						Bank/Agency work (Q26)		Ethnicity (Q28)	
		NSW HCA AP	NA, TrNA	RN/ M/ HV	Stud.	Acute hosp.	GP	Patient homes	Care/ Nurs. home	Mental Health unit	Other# (57)	Full/ Part/ T	Never	White	BAME
Employer has SI Policy	94%	92%	99%	95%	85%	95%	92%	96%	85%*	93%	95%	95%	94%	94%	93%
<b>I received:</b>															
Training on safer sharps	75%	81%	80%	74%	81%	81%	70%*	70%*	57%*	69%*	74%*	76%	74%	74%	79%
Training on each safer sharp I need use	62%	69%	77%	62%	72%	68%	53%*	58%*	46%*	59%	64%	64%	61%	61%*	70%
Education on reporting SI	79%	83%	90%	79%	87%	84%	73%*	79%	63%*	78%	79%	80%	79%	78%	83%
<b>My access to safer sharps is:</b>															
Nil	4%	4%	3%	3%	2%	2%	5%*	2%	10%*	3%	5%*	3%	4%*	3%	3%
Poor	11%	8%*	14%	12%	9%	11%	14%*	9%	19%*	10%	10%	11%	12%	12%	11%
Good	40%	38%	38%	40%	48%	42%	37%	37%	43%	37%	37%*	43%	37%*	39%	44%*
Excellent	45%	50%	45%	45%	41%	45%	44%	52%*	28%*	50%	48%	43%	47%*	46%	43%
<b>Have point of use access to sharps bin</b>															
Always	77%	79%	72%	77%	66%	71%	96%*	74%	72%	77%	86%*	72%*	81%	77%	75%
Often	17%	13%	23%	17%	27%*	22%	3%*	20%	15%*	14%*	10%*	20%*	14%	17%	18%
Sometimes	5%	6%	6%	5%	5%	6%	0.3%*	6%	8%	5%	3%*	6%*	4%	5%	5%
Rarely	1%	1%	0%	1%	2%	1%	0.2%	1%	3%*	2%	1%	1%	1%	1%	1%
Never	1%	1%	0%	1%	0%	0.2%	0.3%	0.3%	2%*	2%*	1%	1%	1%	0%	1%
		*Significant vs RN/M/HV				*Significant vs Acute Hospital								*Significant	

**a) Employer SI prevention policy.** Virtually all staff (94%) said their employer had an SI prevention policy (6% did not know) and this was the same rate as in 2008. The 94% was mirrored across all roles, workplaces, bank/agency workers, and ethnicities, with one exception – significantly fewer staff in care/nursing homes said their employer had an SI prevention policy.

### b) Training and education

- The 2013 sharps regulations require that all staff be trained in the safe use of sharps and on all safer sharps they are meant to use.<sup>5</sup> It is of concern that 25% of staff had not received training in safer sharps use, and even less (62%) had received training in all safer sharps they needed to use. This means one-quarter of

staff had not received training in any safer sharps, and one-third were using some safer sharps without having been trained in their use. The absence of training in safer sharps use was significantly less in all workplaces when compared to acute hospitals.

**Staff who received training on all safer sharps they used had a significantly lower incidence of SI (21.4/100FTE) than staff who did not (26.6/100FTE).**

Clearly this anomaly needs addressing as training is crucial for correct use and activation of all safer sharps,<sup>13,29,31-33</sup> and is a mandatory requirement of the regulations.<sup>5</sup> Training in the correct use and activation of safer sharps results in significantly less SI than safer sharps alone should be competency-based and continuous, that is, delivered at orientation, regular periods thereafter, after new safer sharps are adopted, and after any SI event.<sup>29,43,44</sup>

- Table 4 showed that 29% of staff did not report their SI. Table 7 above may supply the explanation in that 21% of staff received no training in the importance of reporting SI. The absence of this training was heightened in GP and care/nursing home workplaces. Again, this is a mandatory requirement of the regulations,<sup>5</sup> and as stated earlier, employers cannot implement effective preventative measures if they have not been informed of the hazard.

**c) Access to safer sharps.** It is of concern that only 45% stated their access to safer sharps was excellent – when the 2013 regulations require that, where so far as is reasonably practicable, ie, where safer sharps are commercially available, clinically acceptable, and a risk assessment supports their implementation, they must be used.<sup>6,17</sup>

In facilities where this regulation is fully implemented, it would be hoped that close to 100% of staff would state they had “excellent” access – 45% is well below this – and in care/nursing homes the figure was significantly lower at 28%.

On average, 15% of staff stated “nil to poor” access to safer sharps. In care/nursing homes this figure was significantly less at 29%. Although low, it indicates some improvement as in 2008 47% of staff said they had no access to safer sharps,<sup>2</sup> and the 2014 MindMetre survey found 33% of trusts and boards did not have safer sharps available.<sup>45</sup>

**Staff who had “Excellent” access to safer sharps had a significantly lower incidence of SI (16.7/100FTE) than staff who had “Nil to Poor” access (35.0/100FTE).**

The survey results indicate that the organisations need implement additional preventative measures. Excellent access to safer sharps by all staff must be the target.

**d) Access to sharps bins at point of use of sharp.** The survey revealed that 23% of respondents stated sharps containers are not always close at hand. This was mirrored by all roles and workplaces, with the exception of GP (96%) and other workplaces



(86%) which had sharps bins close at hand significantly more frequently, however bank/agency staff (72%) had sharps bins close-by significantly less frequently.

**Staff who had sharps bins always close during procedure had significantly lower incidence of SI (20.6/100FTE) than staff who had sharps bins rarely or never close at hand (31.3/100FTE).**

The 2013 regulations state employers must ensure sharps containers are located close to areas where medical sharps are used. This requirement is essential for sharps safety and is soundly evidence-based<sup>6,20,22,23,27</sup> as transporting sharps to a distant SC increases SI risk via carrying, dropping, stumbling, momentarily putting sharp down, multi-tasking during transport, impacting with objects and collision with colleagues.<sup>22</sup>

### 3.7 Employer compliance, sharps injury fear, and employer support following BBFE

Table 8 presents the answers to questions 20-23 relating to the quality of safer sharps offered, the level of fear of SI among staff, and the support staff receive from employers when they sustain a BBFE.

**Table 8. Q21-23. Employer compliance, sharps injury fear, employer support**

Question	All staff	Cross analysis with role (Q24)				Cross-analysis with workplace (Q25)						Bank/Agency work (Q26)		Ethnicity (Q28)	
		NSW HCA AP	NA, TrNA	RN/M/HV	Stud.	Acute hosp.	GP	Patient homes	Care/Nurs. home	Mental Health unit	Other# (57)	Full/Part/T	Never	White	BAME
<b>Employer offers safer reliable sharps:</b>															
Poorly	8%	6%	6%	8%	2%*	6%	9%*	6%	20%*	10%*	8%*	7%	8%	8%	8%
Reasonably well	42%	36%	34%	42%	54%*	46%	35%*	39%*	47%	39%	36%*	46%*	38%	40%	53%*
Very well	50%	58%*	61%	49%	44%	48%	56%*	55%*	32%*	51%	56%*	46%*	53%	52%	39%*
<b>I fear SI:</b>															
Not at all	28%	34%	18%	28%	21%	25%	32%*	32%*	27%	23%	34%*	24%*	32%	30%	20%*
A little	57%	51%	61%	58%	55%	58%	60%	57%	54%	63%	52%*	58%	57%	59%	50%*
A fair amount	11%	9%	11%	11%	19%*	12%	7%*	10%	14%	10%	10%	13%*	9%	9%	19%*
A great deal	4%	7%*	10%*	4%	4%	5%	2%*	2%*	5%	4%	4%	5%*	2%	2%	11%*
<b>When I have BBFE, I feel:</b>															
Poorly supported	7%	8%	15%*	7%	4%	6%	6%	7%	15%*	7%	6%	8%	7%	7%	8%
Reasonably supported	26%	24%	15%	26%	31%	26%	22%*	25%	27%	33%	24%	27%*	24%	24%*	30%
Well supported	49%	55%	49%	49%	38%*	50%	55%	48%	38%*	42%	51%	48%	51%	50%	46%
Did not need support	18%	13%*	20%	18%	27%*	18%	17%	20%	19%	18%	19%	17%	19%	19%*	15%
		*Significant vs RN/M/HV				*Significant vs Acute Hospital						*Significant			

**a) Employer offers reliable, straightforward safer sharps.** This question pertains to the quality of safer sharps offered by employers and answers to this question mirror those of Q18 (access to safer sharps) ie, about 50% of staff state, “very well” and it is of concern that 8% stated “poorly”. These results were mirrored by nearly all roles and workplaces (see Table 8), with the following exceptions: Fewer students answered “poorly” but more care/nursing home, mental health and other workplaces answered “poorly”.

It is difficult to find a perfect safer sharp that suits all users, nevertheless, no staff member should feel the employer meets the law “poorly”. Employers and employees must strive to achieve a higher, routine usage of safer sharps, and adopt the safest sharps for as many procedures as they are commercially available.

A 2016 UK audit on use of safer sharps stated, “Although not achieved by hospitals in this study, activation rates of 100% and SED (safer sharps) usage rates of 98% are achievable and setting these goals would assist UK institutions greatly in their strategies

to reduce staff exposure risk, but they need to be coupled with thorough and widespread staff education and training.”<sup>28</sup>

A zero SI rate can only be approached when we set high targets of safety device adoption, activation and training, such as: 90% of sharps are safer sharps;<sup>28</sup> 100% of safer sharps are activated immediately and correctly post-procedure;<sup>28,46</sup> safety devices with automatic or semi-automatic safety-mechanisms are adopted where available and clinically acceptable,<sup>26,30</sup> and all staff are regularly trained to competency in all the safety sharps they use.<sup>28,31</sup>

It would be hoped that, in an organisation that has fully implemented the 2013 regulations and has involved end-users in the selection of all safer sharps (as required by HSE<sup>17</sup>), then >80% of staff would state “very well” when asked how well their employer met this clause of the law.

- b) Fear of SI.** That 85% of staff said they fear SI “not at all” to “a little” is surprising. In 2008, the figure was 38%. In the survey, only 4% of staff feared SI “a great deal” (23% in 2008). Staff are regarding SI with less fear. Again, this may be related to the high incidence of SI with sterile needles mentioned in 3.4(a).

Generally, when individuals underestimate a hazard, they may not follow recommended safety policies and procedures – and illnesses/injuries continue, eg, smoking, road accidents.<sup>47</sup> However, cross analysis of SI incidence with fear of SI among study respondents showed a linear and significant relationship between fear and SI incidence – respondents with nil fear had lowest SI incidence in last 12 months (13.3 SI/100FTE), followed by a little fear (22.4/100FTE; a fair amount of fear (42.0/100FTE; and a great deal of fear (54.8/100FTE). This linear relationship needs further investigation as it raises the hypothesis that staff with no fear may be adhering fully to policies and procedures and not taking risks, and by doing so feel well protected and safe, and incur fewer injuries.

The purpose of SI education is not to instil fear, but to impart facts regarding the probability and consequences of a hazard occurring, and the reasons why the employer has implemented preventative measures to minimise injury incidence.

In SI education sessions, some staff, in defence of their lack of fear, raise the point that HCV and HIV now have effective treatment and HBV is a highly effective vaccine. These are true statements but HCW forget - there are not three blood and body fluid pathogens that can be transmitted by SI – there are 60.<sup>1</sup>

- c) Support from employer following a BBFE.** The 2020 NHS staff survey found that 61% of staff felt they were treated fairly after a patient-related incident,<sup>42</sup> however this RCN survey question sought to ascertain how safe and supported do staff feel after a BBFE incident to themselves. It was of concern that only 49% of respondents felt well-supported following an SI or MCE – and was lower for students (38%) and care/nursing home staff (38%). This figure has decreased since 2008 when 69% of staff felt well supported. That 7% of staff felt poorly supported, with this rising to 15% among nurse assistants and care/nursing home staff, is also an indication that employers need do more, and be seen to do more. Leadership support in SI prevention is a vital factor as confirmed by Gershon, who states, “Employees who perceived strong senior leadership support for safety and who received high levels of safety-related feedback and training were half as likely to experience blood or body fluid exposure incidents.”<sup>48</sup>

## 4. Have preventative measures brought about a fall in sharps injuries?

Some organisations have had falls in SI since 2013.<sup>7</sup> However, with the survey results showing alarmingly high BBFE; the widespread non-compliance of trusts and boards in 2014-16;<sup>45,49,50</sup> the 2018 HSE post-implementation review being unable to determine if SI had fallen;<sup>7</sup> and the five-year study in four Irish teaching hospitals finding that implementation of the EU Directive had not reduced SI;<sup>14</sup> we conclude preventative measures have not brought about a national fall in SI.

With no annual data on BBFE in UK, it is difficult to ascertain the reasons for the high BBFE.

The survey results and literature indicate:

- the 2013 regulations have not had their intended impact on BBFE incidence
- preventative measures have been insufficient to reduce SI and MCE
- access to, and training in safer sharps, education in BBFE risk and reporting, and use of more effective auto and semi-auto safety sharps, are sub-optimal.

These factors, together with COVID-19 workloads, fatigue, and stress, and increased vaccinations, likely resulted in a perfect storm to bring about the unprecedented BBFE incidence in 2020.

The SI risks of mass vaccinations apply more so to the COVID-19 vaccination programme as the UK has never attempted to vaccinate so many, so intensely, and, as mentioned throughout this report, attention to safety devices adopted, training in their use and disposal, and a culture of safety, are essential for the safety of the vaccinators.<sup>51</sup>

For BBFE to fall, preventative measures need to be stronger and international evidence cited above suggests the following:

- “Safer sharp” needs to be “safest sharp”.** The 2013 regulations define safer sharp as a medical sharp “...designed and constructed to incorporate a feature or mechanism which prevents or minimises the risk of accidental injury from cutting or pricking the skin”.<sup>5</sup> However, these safety engineered devices (SED) vary greatly in their ability to protect the user and patient, and are constantly evolving. Adopting safer sharps has not brought about a fall in SI and organisations must now evaluate SED that have been proven to be the safest for that procedure, and adopt if clinically acceptable.
- Cost alone cannot be a consideration.** The 2004 Scottish Court ruling deemed that, under the EU Directive, no consideration of cost is admissible in the purchase of safety devices.<sup>52</sup> An identical ruling has been made in the U.S.<sup>53</sup>

The RCN believes expenditure on safer sharps is justified,<sup>6</sup> as the cost of safety devices is often met or exceeded by savings in SI direct and indirect expenses,<sup>38</sup> and is an investment in improving the health and safety of staff.<sup>31</sup> When organisations evaluate safety devices, the choice of device must be based on clinical acceptance and it having the highest level of safety for the procedure. A lower cost, less safe device is

not acceptable. Of course, when two safety devices have been evaluated and scored clinically equal by users, the lower cost device should be purchased.

- iii. **Adopt devices less dependent on manual activation.** Where clinically acceptable to users, safer devices that are less dependent on manual activation must be adopted, i.e. devices that have auto or semi-auto safety mechanisms.<sup>26</sup> Adoption of such devices reduces SI to the user and to downstream non-users of the device.
- iv. **Review preventative measures annually.** The 2013 regulations require employers to review SI prevention policies and procedures, "...at suitable intervals...to remain up to date and effective".<sup>5</sup> We believe these reviews must be regular, preferably annually, and be in consultation with recognised trade union safety representatives. Annually ensures that, as relevant safer devices become available, they be evaluated by the organisation and adopted if clinically acceptable. A search for and evaluation of safer devices should also be carried out when an investigation of a rise/trend indicates that a device is associated with the injuries. Evaluations must include a cross-section of users of the devices.
- v. **Training be competency-based and continuous.** The regulations require "training ...for the type of work carried out by the employee."<sup>5</sup> This training needs be "competency-based; in all safer sharps the employee is expected to use; and be conducted at orientation, regular intervals, when new devices are adopted, and whenever the employee is injured with that device". As stated above, continuous, hands-on-device training is crucial to effective and safe use of safer sharps. This must include agency staff.
- vi. **Removal of all non-safety devices.** Once a safer device is adopted, all standard devices must be removed from the organisation unless the user applies and gains, approval from the relevant safety committee.

It is essential that employees are safe, and feel safe, in using sharps. The 2013 regulations and UK safety laws prior to 2013, require employers to carry out a risk assessment to identify where sharps are being used and to implement measures to reduce the risk of a sharps injury where the use of sharps cannot be eliminated, including the provision of safer devices. Employers must follow a hierarchy of controls approach as required under the Control of Substances Hazardous to Health Regulation 2002.<sup>54</sup>

What this survey has shown is that employers must also assess other factors which could increase the risk of a sharps injury including fatigue, poorly lit environment, staff shortages, wearing of additional PPE, and lack of space – and put measures in place to reduce the risk of harm.

It is not uncommon for health care workers to believe that sharps injuries "come with the job". Why should health care employees come to work expecting to sustain an injury with a disease-transmission risk and the associated psychological impact? No other UK industry would tolerate such a culture. Neither should health care.<sup>55</sup>

## 5. Conclusions

- a) The reason for the high incidence of SI and MCE in 2020 is difficult to ascertain as UK has little BBFE data available, however, it is likely related to COVID-19 workloads, fatigue, and stress.
- b) That not all members have access to safer sharps, device training and BBFE education, may be a contributing factor to the high incidence, and also needs investigation to ascertain if reduced access is due to “not available from employer” or “not taken up by employee”.
- c) Results indicate preventative measures by employers are not protecting health care workers against BBFE.
- d) The high level of “disposal-related” SI may be related to sub-optimal access to safer sharps, and/or non-activation of the devices, and/or sub-optimal sharps bins or access to them.
- e) Safer, more automated sharps with regular competency training for each is indicated.
- f) The high “before procedure” and “disposal-related” SI rates require investigation.
- g) National public health bodies “% ambitions” for safer sharps usage/activation and training/education are needed.
- h) Publication of national public health bodies annual SI and MCE incidence data from all trusts and boards are needed to monitor the impact of BBFE preventative measures nationally.
- i) Regular RCN surveys would assist ascertain and monitor progress in BBFE prevention measures. A larger survey sample is needed to decrease risk of participant bias.

## 6. Recommendations

- a) In addition to requirements of the 2013 regulations, employers need to assess other factors which increase sharps injury risk including fatigue, poorly lit environment, staff shortages, wearing of additional PPE, and lack of space – and put measures in place to reduce the risk of harm, including:
  - i. annually review their SI data and prevention policies and evaluate with users, the safest sharps devices commercially available for all procedures
  - ii. adopt semi-auto or auto safety-mechanism devices where available and clinically acceptable after evaluation by users
  - iii. remove all standard devices from the organisation once they are replaced by safer devices
  - iv. ensure all sharps bins are British standards-compliant and are always positioned close to where sharps are used prior to any sharps procedure commencing
  - v. ensure all users of safety sharps are competency-trained on all safer sharps they will use – at induction, regular intervals, whenever a device-related SI occurs, and whenever a new device is introduced to their procedures. Specific attention to be paid to staff groups with significantly higher BBFE incidence as shown in the survey
  - vi. ensure all staff are educated on risks of BBFE exposure and importance of SI prevention and SI reporting. Specific attention to be paid to staff groups with significantly higher BBFE incidence as shown in the survey
  - vii. at regular intervals, conduct sharps bins audits to ascertain the % of sharps that are safer sharps, and the % of safer sharps activated correctly.
- a) Urgent RCN lobbying is needed for employers, staff, trainers, educators, and regulators to ensure effective policies and a just and trust culture permeates all workplaces to enable the above recommendations to be carried out and ensure staff can work in a safe environment.
- b) National public health bodies to collate and publish annual summary of SI and MCE incidence data from all NHS trusts and boards. Relevant associations are encouraged to conduct and publish BBFE surveys nationally or regionally of members and their staff eg, Royal College of General Practitioners.
- c) The RCN to repeat BBFE survey regularly (perhaps every three years), with additional questions where indicated, and examine mechanisms to increase member-response (to try to achieve a  $\geq 5\%$  response).

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# Appendix 1: RCN 2020 Blood and Body Fluid Survey questions

Sharps injuries are a serious occupational hazard affecting nursing and midwifery staff and at times of stress and exhaustion such as now, sharps injuries are more likely to occur.

The RCN successfully campaigned for the 2013 sharps regulations to protect you and other health care staff and are committed to reducing sharps injuries to zero.

We want to hear from all our members regarding:

- Whether you experienced a sharps injury in the last year
- Safety measures in your place of work
- Access to safer sharps devices

Please help us identify the issues in your workplace. A single sharps injury is one too many.

This joint initiative involves the RCN and Sharpsmart UK Ltd. The RCN have retained Grimmond & Associates to analyse and report results and all responses will be anonymised.

## Optional prize draw

As a thank you for participating, there is an opportunity to win one of two Samsung Galaxy tablets. To enter, please supply your contact details when requested. Your contact details will not be linked to your survey responses.

Prize winner contact details will be shared with Sharpsmart for the purpose of delivering the prize only. RCN staff and their families are not eligible to enter the prize draw.

If you have any queries about the survey or prize draw, please email:  
kim.sunley@rcn.org.uk

The survey takes approximately 10 minutes and closes at 11pm on Sunday 13 December.

1. Do you have a risk of exposure to blood or body fluids, by any means, in the course of your work?

Yes

No

2. In the course of your career, have you ever been stuck/cut with a needle/sharp?

Yes

No

3. In the last 12 months, the number of times have you been stuck/cut with a needle/ sharp is:

0  1  2  3  4  5  More than 5

4. In the last 12 months, the number of times have you sustained a mucocutaneous blood or body-fluid exposure to your skin, nose, eyes or mouth is:

0  1  2  3  4  5  More than 5

5. The last time you were stuck/cut, did the injury occur:

- Before the procedure
- During the procedure
- During activation of protection mechanism
- After activation of protection mechanism but before disposal
- During disposal
- Because of improper disposal e.g. sharp was on floor, in patient bed

6. The last time you were stuck/cut, was the needle/sharp sterile?

- Yes
- No

7. The last time you were stuck/cut, did you report the incident?

- Yes
- No

8. What was your main reason for not reporting the incident?

- Thought patient was low-risk
- Thought injury was low risk
- No time
- Reporting procedure too inconvenient
- Did not know how to report the incident
- Did not know I had to report the incident
- No benefit in reporting incident
- Potential negative impact on career/fear of the consequences

9. The last time you were stuck/cut:

	Yes	No	Don't know
Did you bleed after the injury?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you know the source-patient for which the needle/sharp was used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was the source-patient blood-tested?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you have blood taken for tests?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were you offered prophylactic treatment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. After you had your blood taken for tests, did you attend a follow up meeting?

Yes

No

11. The last time you were stuck/cut, when did you receive advice on risk of bloodborne diseases?

I didn't receive any advice

Immediately

Within 24 hours

Within 48 hours

More than 48 hours later

12. The last time you were stuck/cut, did you perceive your risk of contracting a bloodborne disease to be:

Nil

Low

Medium

High

13. The last time you were stuck/cut, were you using a safer sharp (sharp with mechanism to prevent or minimise sharps injury)?

Yes

No

14. The last time you were stuck/cut, what were the contributing factors? Select all that apply:

- Poor lighting
- Lack of space to carry out procedure safely
- Non-cooperative patient
- Fatigue or tiredness
- Staffing levels
- Lack of safety equipment (e.g. sharps bins or safer sharps)
- Lack of training/education in sharps procedure
- Restricted by the wearing of PPE

15. Does your employer have a policy that covers sharps-injury prevention and reporting?

- Yes
- No
- Don't know

16. In your current employment, have you received training on safe sharps use?

- Yes
- No

17. In your current employment, have you received education on the reasons why reporting a sharps-injury is important?

- Yes
- No

18. In your current employment, your access to safer sharps (sharps with protection mechanisms) is:

- Nil
- Poor – available for very few sharps procedures
- Good – available for many sharps procedures
- Excellent – available for nearly all sharps procedures



19. In your current employment, have you received training in the correct use and activation of each type of safer sharps you are required to use in the course of your work?

Yes

No

20. Do you have access to sharps bins at the point of use of sharps?

Always

Often

Sometimes

Rarely

Never

21. Employers must (with employee input) risk-assess sharps use and if sharps are indicated they must, where reasonably practicable, be safer sharps which are reliable, easy to use, and have straightforward, integral protection-mechanisms. In the course of your work, do you feel this requirement is met:

Poorly

Reasonably well

Very well

22. Please indicate the degree to which you fear a sharps injury in your current employment:

Not at all

A little

A fair amount

A great deal

23. With regard to your employer offering you adequate support when a blood exposure occurs, do you feel:

Poorly supported

Reasonably supported

Well supported

24. Which of these do you work as?

- Nursing support worker/Health care assistant/Assistant practitioner
- Nursing associate/Trainee nursing associate
- Nurse/Midwife/Health visitor
- Student

25. Which of these best describes where you mainly work?

- Acute hospital
- Ambulance Trust/Service
- Call centre
- Care/nursing home
- Further/higher education
- GP practice
- Hospice
- In patients' homes
- Industry/workplace
- Learning disability unit
- Mental health unit
- Office environment
- Prison/police custody
- School
- Other (please specify):

26. Do you work bank or agency?

- Always
- Often
- Sometimes
- Rarely
- Never

27. How old are you?

- 17-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65+
- Prefer not to say

28. To which broad ethnic group do you belong?

- Asian/Asian British: Bangladeshi
- Asian/Asian British: Indian
- Asian/Asian British: Pakistani
- Asian/Asian British: Filipino
- Asian/Asian British: other
- Black/Black British: African
- Black/Black British: Caribbean
- Black/Black British: other
- Chinese
- Mixed: White and Asian
- Mixed: White and Black African

- Mixed: White and Black Caribbean
- Mixed: other
- White: British (including English, Northern Irish, Scottish and Welsh)
- White: Irish
- White: other
- Prefer not to say
- Other (please specify):

29. Do you identify yourself as having a disability?

- Yes
- No
- Prefer not to say

30. How would you describe your gender?

- Female
- Male
- Non-binary
- Prefer not to say
- Other (please specify):

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The RCN represents nurses and nursing, promotes  
excellence in practice and shapes health policies

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