

NEEDLESTICK INJURIES: SHARPEN YOUR AWARENESS



Report of the Short Life Working Group on needlestick injuries in the NHSScotland

TOWARDS A SAFER HEALTHIER WORKPLACE
NEEDLESTICK INJURIES IN THE NHSSCOTLAND

NEEDLESTICK INJURIES: SHARPEN YOUR AWARENESS

Report of the Short Life Working Group on needlestick injuries in the NHSScotland

TOWARDS A SAFER HEALTHIER WORKPLACE
NEEDLESTICK INJURIES IN THE NHSSCOTLAND

FOREWORD

NEEDLESTICK INJURY REPORT: NEEDLESTICK INJURIES: SHARPEN YOUR AWARENESS

Foreword by the Minister for Health and Community Care



We need to look after hard-working NHS staff. Nobody should be made ill by their work and protecting the health and well-being of NHS staff must be a priority.

Our National Health; A plan for action, a plan for change committed the NHS to provide staff with a safe working environment. That means looking out for their health and safety. Needlestick injuries are one of the most common injuries experienced by NHS staff. That is why we have been working in partnership with staff to investigate why this is and develop solutions to reduce the incidence of these injuries. The Needlestick Injuries Report, "Needlestick Injuries: Sharpen Your Awareness" makes a good start to addressing the issues and makes a series of practical and sensible recommendations.

Implementing the Report's recommendations is mainly the responsibility of NHS management. They have responsibility for the health and safety of their staff, tackling needlestick injuries must be part of that responsibility. In particular we need to raise awareness of the problem. We need to emphasise that needlestick injuries are not just 'part of the job' and that all needlestick injuries should be reported. Staff themselves-whether doctors, nurses, or ancillary workers-have a vital role in adopting best practice at all times and in this way protect themselves and their colleagues. I recognise that we also need to support more and better education and training. Many of these accidents are avoidable if best practice is understood and implemented by all concerned. The human cost of a member of staff actually contracting a blood-borne virus is incalculable.

The Report also addresses the need to consider the introduction of safer devices. It recommends that all NHS employers carry out a full risk assessment when deciding whether to introduce safer devices. This should ensure that

decisions are **not** taken solely on cost grounds, but also take into account a range of other factors such as risk and the effectiveness of the device.

Above all, I want staff to have a safe place to work. An environment that is safe for staff, patients and visitors and supports the delivery of high quality patient centred care.

A handwritten signature in black ink, appearing to read 'Susan C. Deacon'.

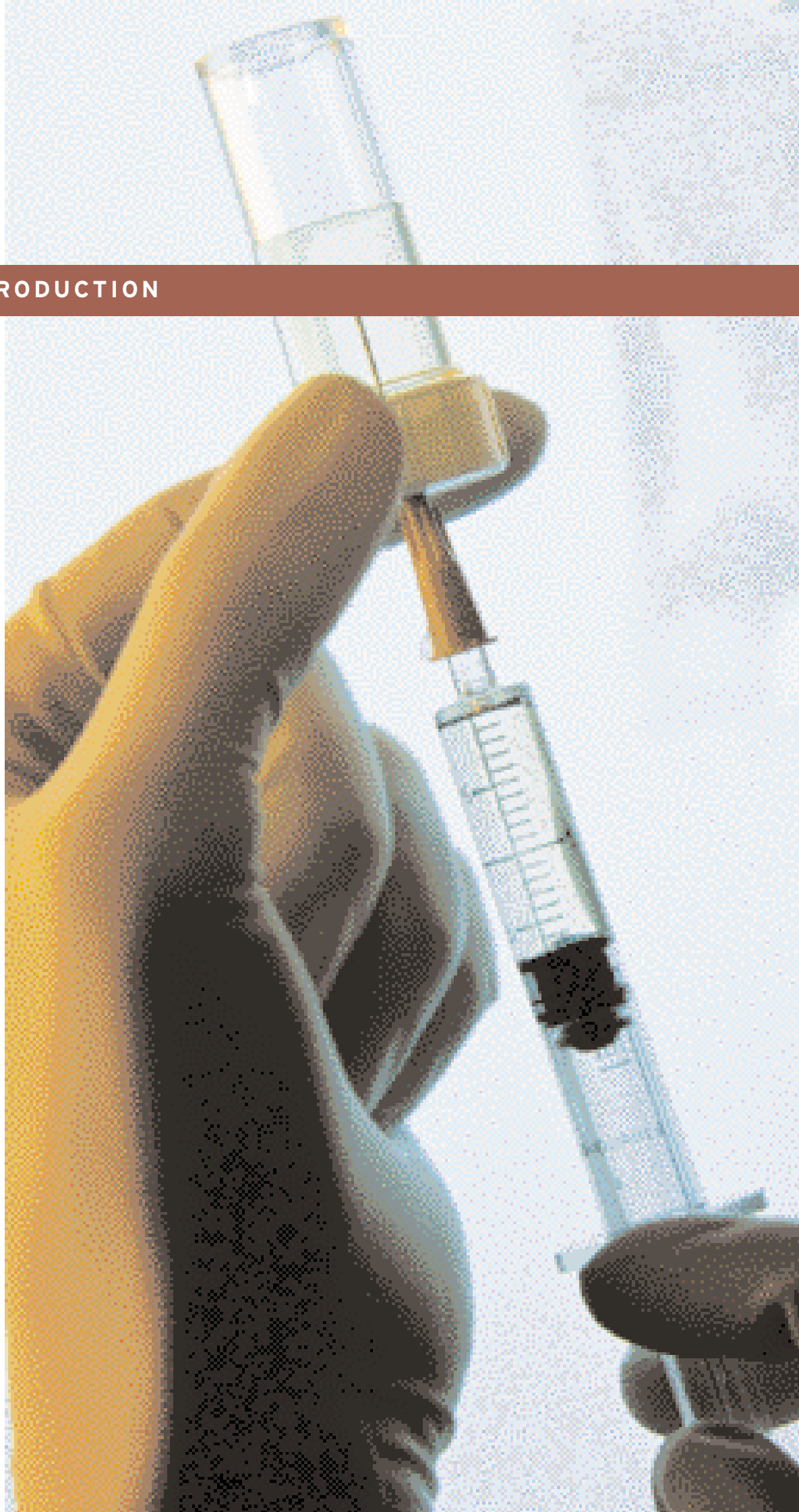
Susan Deacon MSP
Minister for Health and Community Care

CONTENTS

1 INTRODUCTION	4
Remit	5
Methodology	5
Data Protection Act	6
2. HEALTH & SAFETY RESPONSIBILITIES	8
Legislative	8
Scottish Executive	8
Employers	8
Managers	9
Staff and their Representatives	9
3 NEEDLESTICK INJURIES IN THE NHSSCOTLAND	12
Evidence	12
Where do Needlestick Injuries Occur?	13
What are the Main Causes of Needlestick Injuries in Scotland?	14
Standardisation of Reporting	16
Needlestick Policy	17
Needlestick and Sharps Risk Assessment and Audit	18
Raising Awareness	19
Occupational Health and Safety	21
4 SAFER DEVICES	24
5 MAJOR TRANSMISSIBLE DISEASES	27
Hepatitis B	27
Hepatitis C	27
HIV Infection	27

CONTENTS

6 COST TO THE NHSSCOTLAND	30
Estimated Financial Cost of Needlestick Injuries	30
Human Cost	30
Cost Benefit Assessment	30
 APPENDICES	 32
1 Membership	33
2 Legislative Framework	34
3 Good Practice Initiatives	37
 ANNEXES	 38
Annex 1 Model Incident Report Template	39
Annex 2 Device Assessment	42
Annex 3 Safer Devices Cost Benefit Assessment Template	43
 BIBLIOGRAPHY	 53
 WEB PAGES	 55
 GLOSSARY	 56



INTRODUCTION

1.1 In December 1999, Susan Deacon, Minister for Health and Community Care, launched the “*Towards a Safer Healthier Workplace, the Occupational Health and Safety Strategy for NHSScotland staff*”. The guiding principle was that staff are the most important resource in the NHSScotland and should be able to carry out their work without fear of risk to their health or safety. As stated, “**no one should be made ill by their work**”. This commitment was reinforced in “Our National Health; A plan for action, a plan for change”.

1.2 The Strategy committed all those involved in the NHSScotland; staff, management, trade unions, professional organisations and the Scottish Executive, to work together towards improving the health of staff at all levels and making the workplace a safer place for staff, patients and visitors. **For the purpose of this report the term NHSScotland employer applies equally to Trusts and Health Boards and should be read across and commended to independent contractors such as General Medical and Dental Practitioners and Community Pharmacists in relation to their status as employers.** References to Chief Executives should also be read across to their equivalent for General Medical and Dental Practitioners and Community Pharmacists as independent contractors.

1.3 Needlestick injuries were highlighted in the Strategy document as one of the most common types of injury to staff in the NHS Scotland. They are also injuries that often go unreported. The Needlestick Injury Short Life Working Group was established in March 2000 to investigate the prevalence, cause and prevention of such injuries and to make recommendations to minimise the risk to staff. Whilst the focus of the group has principally been the cause and prevention of needlestick injuries, many of the recommendations have relevance to wider Health and Safety issues in the NHSScotland.

1.4 The major health risks associated with needlestick injury result from blood-borne viruses. However, not all needlestick injuries carry the risk of infection. Many needles will not have come into contact with patients. Conversely, the transmission of blood-borne diseases does not result solely from needlestick

injuries and may be a consequence of a range of other exposures to infected blood or microbiological hazards.

1.5 The group recognises that there are differences between the risks associated with hollow-bore and solid needles but the principles of prevention should apply equally to all sharps and to any situation where exposure to blood-borne viruses is possible. A key message in the recommendations which follow is that healthcare workers should only use needles for procedures where it is absolutely necessary and that all procedures must be risk assessed. Where needles are used, existing policies on their use and disposal should be implemented and regularly reinforced to minimise risk to staff and patients. The Group is very aware that while some safer devices are available, they are not applicable to all clinical procedures.

REMIT OF THE SHORT LIFE WORKING GROUP

1.6 To review the available data and information on preventing needlestick injuries, make recommendations on good practice and specifically consider the value of safer devices and make recommendations on their possible use in the NHSScotland. The review to be based on risk assessment and take account of current practice and procedures and of the cost and benefit to the NHSScotland of current and alternative practices. Recommendations to the Minister by the group should be practical, achievable and affordable and take account of current and planned Health and Safety laws.

METHODOLOGY

1.7 The Working Group convened for the first time at the end of March 2000 and met on five occasions. Information was collected from a range of different sources including professional organisations and trade unions, the Health and Safety Executive (HSE) and its Health Services Advisory Committee (HSAC); US organisations such as the Occupational Safety and Health Association (OSHA), Centers for Disease Control and Prevention (CDC); Training and Development of Innovative Control Technology (TDICT), and from NHSScotland Trusts and Health Boards. Current and planned Health and Safety Legislation was

considered although it should be noted that Health and Safety is a reserved matter under the Scotland Act 1998.

DATA PROTECTION ACT

1.8 Application of the recommendations in this report must maintain individuals' anonymity in accordance with the Data Protection Act.



LEGISLATIVE

2.1 The Group acknowledges that Health and Safety Legislation and employment law are reserved matters under the Scotland Act 1998 and for the Westminster Parliament to consider. It is the responsibility of the Westminster Parliament to ensure that European Community legislation is enacted within the UK. The Group considered the current legislation available within the UK, a resume of which is set out at Appendix 2, and believes that there are sufficient powers with existing health and safety legislation to promote the introduction of safer devices based on risk assessment of tasks and activities. Promotion, development and the introduction of safer devices should therefore be able to be accomplished within the existing legislation.

SCOTTISH EXECUTIVE

2.2 The Scottish Executive is responsible for NHSScotland and the terms and conditions of staff. *"Our National Health; A plan for action, a plan for change"* makes clear that protecting the health and well being of NHSScotland staff is a priority for the Scottish Executive and is committed to providing a safe working environment for staff. £0.5 million per year for the next three years has been committed to the implementation of the Occupational Health and Safety Strategy set out in *"Towards a Safer Healthier Workplace"*.

EMPLOYERS

2.3 Under existing legislation, employers have a duty to provide a safe working environment. They also have a responsibility to ensure the tasks and activities carried out in the workplace are properly risk assessed and action taken to minimise risk to the health and safety of staff and others using the premises. In the health service this includes patients, visitors and contractors and their staff working on health service premises. The ultimate legal responsibility rests with the Chief Executive of the NHSScotland organisation. While that legal responsibility cannot be delegated, Chief Executives will wish, as a priority, to ensure that they have a structure in place which promotes and develops health and safety with staff and their representatives. That structure should include

appropriate audit and monitoring arrangements to make sure that current health and safety practices and procedures are working along with a system of regular reports direct to the Chief Executive. Management Boards should receive copies of the reports and to demonstrate commitment from the top the non-executive member with specific responsibility for clinical governance should ensure the needlestick policy is implemented and is working.

MANAGERS

2.4 All managers have a legal responsibility to ensure a safe working environment for their staff. To help accomplish that they must work with their staff to risk assess the tasks and activities and to address and minimise risk. It is managers' responsibility to promote, encourage and ensure that all staff receive health and safety training and to ensure good practice is put into effect and works; and to take action when it does not.

STAFF AND THEIR REPRESENTATIVES

2.5 All staff have a right to a safe working environment and a responsibility to ensure that it is maintained. To achieve that, staff and their representatives should work with management to promote and develop safe working practices and procedures for their own benefit and that of patients and visitors. It is in the interest of all staff that they actively seek to attend health and safety training, to put the training into effect and inform managers when improper or unsafe procedures are used by other staff and which could put staff, patients or visitors health or safety at risk.

Recommendation 1

NHSScotland employers must give the non-executive member with specific responsibility for clinical governance, responsibility to ensure the needlestick policy is implemented and is working.

Recommendation 2

Management Boards must automatically receive regular reports on the implementation of health and safety policies, including needlestick policy, to ensure the policies are being effectively implemented, monitored and are working.

Recommendation 3

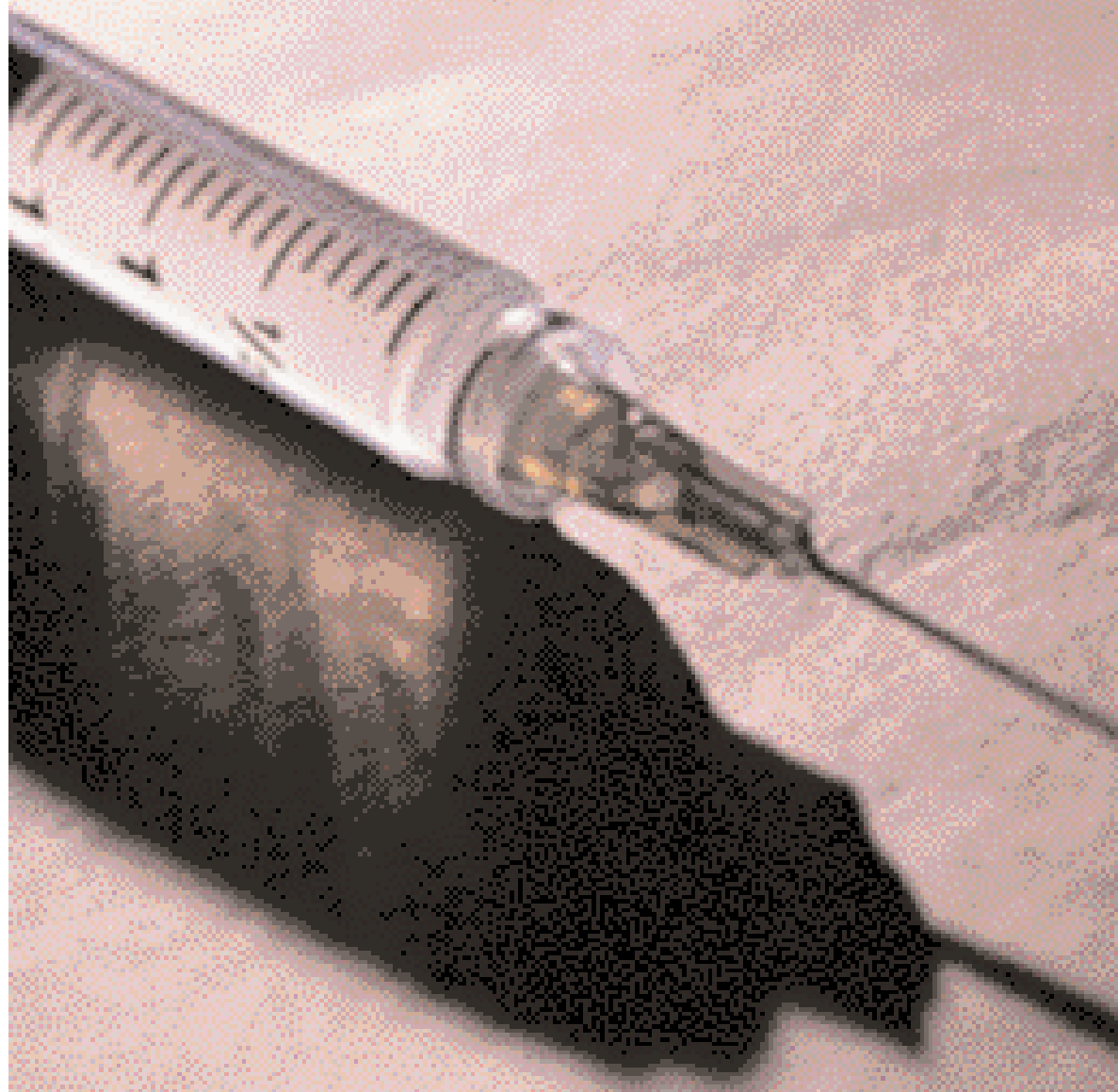
NHSScotland employers must ensure that their needlestick policy is actively implemented at all levels in the organisation. While Chief Executives are ultimately responsible for ensuring that all members of staff have a safe environment in which to work, routine compliance should be monitored by managers at local level.

Recommendation 4

All NHSScotland staff have a legal obligation under Health and Safety legislation to use and dispose of all needles safely. Employers must ensure that all staff are aware of their duty to maintain a safe working environment.

Recommendation 5

NHSScotland employers must ensure they have procedures in place which enable staff to raise concerns over health and safety issues without fear of reprisal.



EVIDENCE

3.1 One of the main barriers to the work of the group has been the lack of adequate information. Data pertaining to needlestick injuries are not collected consistently across the NHSScotland. In September 1999, all NHSScotland Trusts and Health Boards were asked by the Scottish Executive Health Department to provide information relating to the incidence of needlestick injuries in their area, 23 out of 28 Trusts and 15 out of 21 Health Boards (including Special Health Boards and the CSA) responded. The data, in general, covered the time period 1996-99 and have been extrapolated to represent all 28 Trusts in Scotland. The total number of reported injuries over the three years was 6811. Table 1 shows the annual breakdown. It has been estimated that 11 million needles are used in Scotland per annum but it is not known how many are involved in contact with patients or microbiological hazards. It can clearly be seen that there has been an increase in the reported number of needlestick injuries over the specified time period of almost 12.5 %. Whether this is a true increase in the number of needlestick injuries or a reflection of greater awareness and hence increased reporting is not known. However, if the number of needlestick injuries is considered as a factor of occupied beds, the percentage increase from 1997-1998 to 1998-99 is only 1.1 %. It should be noted that GP Medical and Dental Practices have not been included in this evaluation as only a small number of returns were received from these areas.

Table 1 Needlestick Injuries in NHSScotland Trusts 1996-1999

	1996-97	1997-98	1998-99
Number of Needlestick Injuries	2168	2204	2439
*Percentage of Injuries per Occupied Bed	NA	7.5	8.6

*Occupied beds have been used as a measure of activity but it is recognised that this does not reflect all activity.

3.2 The data provided by the Trusts were further analysed with respect to the occupational groups reporting needlestick injuries. As shown in Table 2, the majority of reported needlestick injuries involve nursing staff. The percentage of reported incidents involving medical and dental staff was somewhat lower but anecdotal evidence suggests that this group are inclined to self-assess

and not report such injuries, contributing to the apparent lower incidence. Of reported incidents, 20% involved ancillary staff and others, including porters, domestic and grounds/estates staff. When the data are considered in terms of the percentage of total staff in the NHSScotland, needlestick injuries are shown to be more pronounced amongst the medical and dental category. This statistic, combined with the anecdotal evidence suggesting medical and dental staff are most likely to under report, provides a strong argument for greater training in awareness and safe practice particularly for medical and dental staff.

3.3 While a great deal of information is available from the United States, we do not know whether the US data are relevant to the situation in Scotland. For example we have little information on the type of needle which caused the accident or indication of the kind of safer device that might have been used as a replacement.

Table 2 Needlestick Injuries in the NHSScotland by Occupational Group

STAFF GROUP	PERCENTAGE OF NEEDLESTICK INJURIES	PERCENTAGE OF TOTAL STAFF*
Medical/Dental	17	7
Nursing	63	48
Ancillary	10	13
Other	10	32

* The figures shown are taken from the Manpower Summary, ISD at 30/9/97

WHERE DO NEEDLESTICK INJURIES OCCUR?

3.4 A number of Trusts (corresponding to 25% of the total number of needlestick incidents) provided information as to where the needlestick injury occurred. These data are shown in Table 3. The Trusts used in this breakdown included large acute Trusts and some of the smaller primary care Trusts but are not necessarily indicative of the picture across the country.

Table 3 Needlestick Injuries in Trust in the NHSScotland by Location

LOCATION	PERCENTAGE
Ward	53
Theatre	16
Maternity/Obs/Gyn	5
Accident and Emergency	3
X-Ray / Radiology	1
Community	7
Dental	2
Laboratory	2
ITU	1
Sterile Services	1.5
Kitchen	0.5
Laundry	1
Waste	0.5
Grounds	1.5
Other	5

WHAT ARE THE MAIN CAUSES OF NEEDLESTICK INJURIES IN THE NHSSCOTLAND?

3.5 Only a minority of Trusts provided information pertaining to the procedures being undertaken when a needlestick injury occurred. A comprehensive breakdown was however supplied by one Trust, South Glasgow University Hospitals NHS Trust, which detailed the procedure and type of device involved in reported needlestick injuries in the Trust over a one-year period. It should be noted that only a small number of incidents are involved and so minor variations may have a large impact on the figures quoted. The breakdown did, however, give an insight into how and why needlestick injuries were occurring. It can be seen from Figure 1, that only 15% of the injuries were directly attributable to clinical practice. The vast majority of incidents, 85%, may have been as a result of incorrect use or disposal of the equipment. The injuries can be further broken down into three main categories:

- Injuries which occur during a clinical procedure (IV-Line Related, Splash of Fluid, Restless Patient and handling/Passing Device) 24 %
- Injuries which occur after a clinical procedure but before disposal (Collision with HCW/Sharp, Disposal Related, Clean Up and Recapping) 48 %
- Injuries which occur after disposal (Concealed Sharps) 28 %

If correct procedure is followed, no injuries should result from collision of staff, cleaning-up after procedures or concealed sharps.

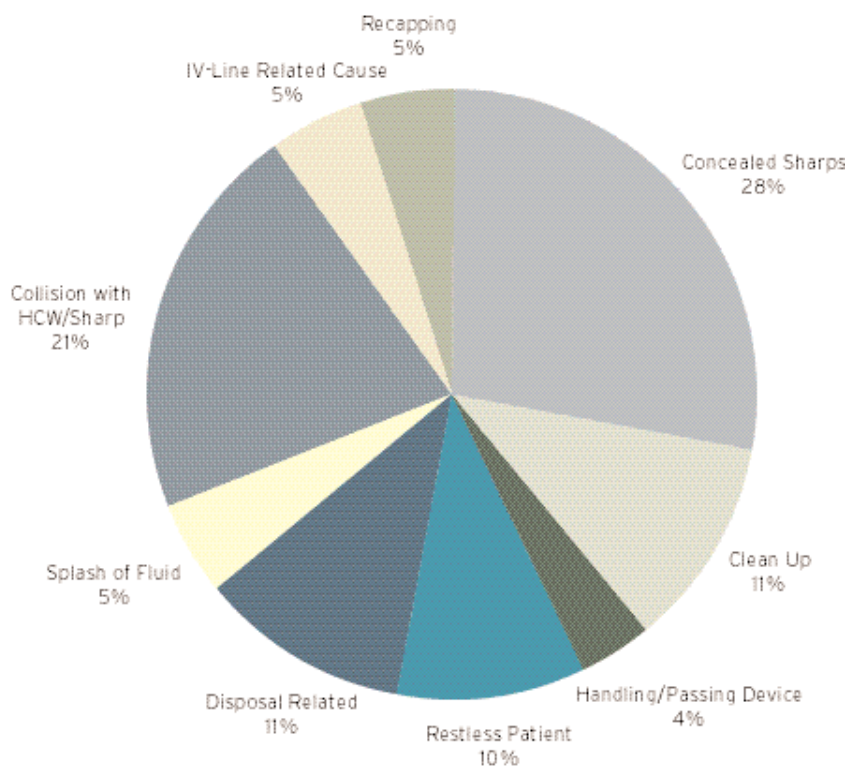


Figure 1. Breakdown of Needlestick Injuries by Procedure

The data shown are taken from a study in South Glasgow University Hospitals NHS Trust carried out between April 1999 and March 2000.

3.6 These data are similar to those of a larger American study (CDC, 1999) where only one quarter of the procedures undertaken when a needlestick injury occurred was during the clinical procedure. Again, the majority of needlestick injuries were as a result of improper use and disposal of needles. Safer disposal of needles is an important area where practice and procedure needs to be carefully reviewed with staff.

STANDARDISATION OF REPORTING

3.7 The lack of consistent, reliable data relating to the incidence and cause of needlestick injuries in the NHSScotland shows a requirement for minimum datasets for the collection of needlestick injury information to be established at local and national level. The resultant data would enable employers to monitor compliance with existing policies, to assist to evaluate new safer devices or procedures and to identify problem areas. A suggested local dataset is shown at Annex 1 along with a sample template for the collection of the data by the occupational health service. The local and national minimum dataset is set out in the Report of the Minimum Dataset Short Life Working Group published in March 2001. This asks all NHSScotland organisations to ensure they record the number, rate and occupational group of needlestick and sharps injuries.

3.8 It is generally recognised that needlestick injuries are under reported. To address this deficiency, the importance of reporting **all** needlestick injuries should be emphasised to staff. It is recognised however that some staff may be in possession of information which they feel enables them to make their own risk assessment and decide on whether or not they are at risk and therefore whether to report an incident to the occupational health service or their equivalent. Such staff must be persuaded to report incidents or there will continue to be under-reporting and difficulty in determining the full extent of the problem. To capture as much reporting as possible, all staff should be encouraged to report all incidents and to complete an accident form or as a very minimum to make an entry in the accident book. Employers and employees are referred to the Clinical Negligence and Other Risks Indemnity Scheme (CNORIS), MEL (2000)¹⁸ and the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR).

Recommendation 6

NHSScotland employers should establish local datasets for collection of needlestick injury data to inform employers and enable them to take appropriate action. The data collected must be signed off by the co-chairs of the Local Partnership Forum and published.

Recommendation 7

NHSScotland employers are asked to ensure they report annually the needlestick injury data as part of the local minimum dataset information established by the Scottish Partnership Forum.

Recommendation 8

NHSScotland employers must encourage all staff who suffer a needlestick injury to complete an accident reporting form or make an entry in the accident book.

NEEDLESTICK POLICY

3.9 The statistics, reported in Table 3 show that although the majority of needlestick injury incidents take place in clinical settings, 8.5 % occurred in “downstream” areas. While all incidents must be regarded as avoidable, those occurring in the “downstream” areas **must be due to inappropriate disposal of used needles by clinical staff and wholly avoidable** by using good practice and procedures for needle disposal. These are also the types of incident that may cause most stress and anxiety to the sufferer as it is often impossible to ascertain the source of the needle and hence the possible risk from infection. All Trusts must have robust needlestick policies in place that reflect current legislation, guidance and good practice. They must cover the use and disposal of needles and sharps; reporting and monitoring of any injuries; and the procedure to be used in the event of an injury occurring. Trust policies should also cover training and development of staff in the safe use of needles and need to raise awareness. Policies must have commitment from the top and be developed in partnership with staff and be readily accessible.

Recommendation 9

NHSScotland employers must have in place health and safety policies and procedures, which include needlestick injuries, and cover the legislative and regulatory requirements. Such policies and procedures must be regularly audited and reviewed. NHSScotland employers must also ensure that staff understand and follow good working practices at all times. This must be an inclusive process encompassing all relevant employee groups.

Needlestick Injury Policies must specifically cover:

- Education and training
- Safe working practices
- Safe disposal of devices
- Procedure in the event of a needlestick injury
- Monitoring and evaluation
- Procedures for reporting needlestick injuries

Recommendation 10

The Occupational Health and Safety Strategy Implementation Group (OHSSIG) should develop model needlestick injury policies as a priority.

NEEDLESTICK AND SHARPS RISK ASSESSMENT AND AUDIT

3.10 A key element in the OHSS Strategy for improving the OHSS is the setting up of a system of audit, peer review and benchmarking and to promote the use of good practice where it is seen to succeed. It is not enough simply to have procedures and monitoring in place. NHSScotland employers must first know where needles and sharps are used in their organisation, what risk might be involved in using those needles and consider whether there might be safer alternatives based on potential risk and harm to staff. They must also be aware of the type of needle or sharp being used and for what procedure. In determining what might be a safer alternative the employer must also consider the clinical risk to the patient. Improved data collection will allow organisations to identify areas and activities of highest risk. This is illustrated by the data provided by the South Glasgow University Hospitals NHS Trust (paragraph 3.5).

Recommendation 11

If this is not already routine practice, NHSScotland employers must undertake with staff a needlestick and sharps risk assessment and baseline audit of the tasks and activities which involve needles or sharps by end March 2002 to identify high risk areas and activities.

Recommendation 12

The OHSSIG must ensure that NHSScotland employers' needlestick policies and their implementation are an integral part of the peer review and audit process.

RAISING AWARENESS

3.11 A main part of the Education, Training and Lifelong Learning Strategy is about continuing these key issues throughout working life to enable staff to provide the best service possible for patients. Occupational health and safety issues are an integral part of this process. A key factor leading to needlestick injuries that has been identified in studies is staff behaviour. NHS employers, with staff representatives, should raise staff awareness of health and safety and its importance to staffs own health and well being. Staff who are fully aware of and practise good health and safety procedures are less likely to put at risk their own health or that of the health of patients or fellow colleagues. Good occupational health and safety practices must be promoted to all staff throughout their career and form an integral part of pre-employment NHS training courses. The importance of occupational health and safety in the NHSScotland should be emphasised by employers including it in their local induction programmes. That emphasis can be maintained through continuing training programmes for staff which can be a practical method of ensuring staff are kept up to date and made aware of new needlestick policies, practices or procedures.

3.12 Occupational health and safety research into employee related illness is important in helping to determine new and improved practices. Research can also raise staff awareness and sends the message to staff that their health and

well being is a priority. The Chief Scientist Office of the Health Department should therefore encourage research into employment related staff health.

Recommendation 13

NHSScotland employers should seek innovative ways to raise awareness about needlestick injuries and keep the issue at the forefront of employee's considerations.

Recommendation 14

Pre-employment education in health and safety must form a part of all courses for prospective NHSScotland staff. The Scottish Executive Health Department should take this issue forward with the Scottish Executive Enterprise and Life Long Learning Department and relevant educational bodies by December 2001.

Recommendation 15

NHSScotland employers must ensure that all new staff are made aware of the organisation's Health and Safety policies and procedures at induction sessions, including those returning to work following career breaks.

Recommendation 16

NHSScotland employers should provide specific good practice needlestick injury awareness and avoidance courses, based on the educational needs of particular staff groups. All staff (including medical and dental staff) likely to have access to needles or sharps should attend.

Recommendation 17

The Chief Scientist's Office should encourage research proposals in occupational health and employment areas concerning staff health, including needlestick injuries.

OCCUPATIONAL HEALTH AND SAFETY (OHSS)

3.13 A key element in the OHSS Strategy for improving the OHSS is the setting up of a system of audit, peer review and benchmarking and to promote the use of good practice where it is seen to succeed. Occupational health and safety also has the key role in delivering a safer workplace through risk assessment, advice, treatment and counselling services. It is recognised that it is not always Occupational Health departments in all Health Board areas who cover such functions. These recommendations should be applied to the relevant department, be that occupational health, infection control teams or other similar units.

3.14 All staff need to be aware of the procedure to be undertaken in the event of a needlestick injury. This can be done for example through posters, leaflets and induction training. Lothian NHS Occupational Health Service provide a 24-hour service and this is highlighted to all staff by means of an advice card in the style of a credit card which details the procedure and contact details in the event of an injury. This is an on-call service out of normal working hours. It is recognised that it is not practical for all Trusts to provide a 24-hour service via occupational health departments. However, guidance issued by the Scottish Office Department of Health in 1997 recommended that Post Exposure Prophylaxis should be available in A & E Departments, and other key sites. Collaboration between occupational health departments and A & E departments is to be encouraged so all NHSScotland staff have access to appropriate care. This concept was reinforced by the recent Guidance from the UK Chief Medical Officers Expert Advisory Group on AIDS (July 2000) which covers all UK Health Departments.

3.15 To reduce the risk to staff from Hepatitis B infection the occupational health and safety service must ensure an appropriate immunisation and surveillance programme for staff is in place. Where a needlestick injury occurs it is necessary to undertake a risk assessment, to offer counselling and Post Exposure Prophylaxis and treatment where necessary.

3.16 Much of the OHSS information concerning an individual member of staff is paper based and not readily transferable between OHSS. To assist the OHSS it is proposed to investigate the use of a smart card and/or electronic employment record which will be held by individual members of staff and which they can take with them when they move jobs and present to their new employer. The card would for example show vaccination status.

Recommendation 18

OHSS must ensure that all staff know the procedure to be undertaken in the event of a needlestick injury.

Recommendation 19

OHSS and A & E Departments should collaborate to provide staff with 24 hour access to Post Exposure Prophylaxis and treatment, where necessary.

Recommendation 20

All staff who report a needlestick injury must be given access to appropriate counselling programmes. This must be quickly and easily accessible.

Recommendation 21

OHSS must ensure that they have an appropriate immunisation and surveillance programme for staff, paying particular attention to blood-borne viruses such as Hepatitis B.

Recommendation 22

The Scottish Executive with the OHSSIG should investigate the use of a smart card and/or electronic employment record for staff which will include occupational health information, including vaccination information as a priority.



4.1 The safety of medical devices in the UK is the responsibility of the Medical Devices Agency (MDA) under the Medical Devices Regulations. Devices which have a Comité Europa (CE) marking on their products have been assessed to be safe and fit for purpose, when used in accordance with their instructions for use.

Medical devices which are not CE marked cannot be placed on the European market and therefore cannot be used by NHSScotland.

4.2 By definition, a safer device incorporates engineering controls to prevent needlestick injuries, before, during or after use through built in safety features (UNISON, 2000). The term “safer device” is broad and includes many different types of needle. The common feature is that they aim to reduce the risk of needlestick injuries to those using the device. The majority of safer devices have not been rigorously evaluated in clinical practice, although there are US studies which show the effectiveness of some devices.

4.3 A decision to select the most suitable product for a particular clinical need must rest with individual Trusts, through their appropriate risk assessment process. The Health Technology Board for Scotland in conjunction with the MDA should establish a programme to evaluate the clinical and cost effectiveness of safer devices as a matter of urgency.

4.4 There are currently only a limited number of safer devices available on the market in the UK that have CE markings and these **do not cover all clinical situations**. The Group and the MDA are not aware that any of these devices have been subject to systematic evaluation in clinical practice within the NHS workplace or what their failure rate might be. It has not been possible to make recommendations regarding particular devices due to the lack of information about their effectiveness and application. However, given the awareness of healthcare staff of the devices and the availability of some devices, the group have identified a number of US-based websites providing guidance on how to assess effectiveness of new devices. UNISON also issues a regularly updated list of manufacturers with products available in the UK.

4.5 Evidence from the United States suggests that effectiveness levels of safer needles range from 29-89 %. This means that healthcare workers are still at risk when using these devices and good practice needs to be followed at all times. For this reason it is essential that all staff are made aware that the use of safer devices does not automatically mean that all risk is eradicated. NHSScotland Organisations considering safer devices should first test and evaluate them.

Recommendation 23

Medical Devices Agency, Health Services Advisory Committee, Health and Safety Executive, Chief Scientists Office, Health Trade Unions and professions and the UK Health Departments should be invited to prepare a co-ordinated plan to test and evaluate safer devices and safer disposal methods.

Recommendation 24

The Health Technology Board for Scotland with the MDA should be asked as a matter of urgency to evaluate the clinical and cost effectiveness of safer devices.

Recommendation 25

NHSScotland employers introducing safer devices should first test and evaluate the devices using the criteria provided in Annex 2. To avoid duplication, employers should co-operate and collaborate with each other.



5.1 Although needlestick injuries may result in local trauma, the principal associated health risk is transmission of blood-borne viral disease, in particular hepatitis B and C and HIV infection. However, the transmission of a number of other diseases has been linked to needlestick injuries (UNISON, 2000).

HEPATITIS B

5.2 Hepatitis B can be transmitted from an infected patient to a health care worker, and all staff who encounter blood or bloodstained body fluids in the course of their work are advised to have a complete course of hepatitis B immunisation. Those who fail to respond to immunisation can be given hepatitis B immunoglobulin following a known, or suspected exposure.

HEPATITIS C

5.3 There is no world-wide register of documented cases of occupationally acquired hepatitis C in health care workers. The risk of transmission of infection from an infected source to a health care worker is generally estimated to be of the order of 3%, although a recent study in Italy estimated a transmission rate of 0.44%. Between July 1997 and December 1999, 360 cases of occupational exposure to hepatitis C were reported in England and Wales, with only one known seroconversion. These figures were obtained from a voluntary study. Over the same period in Scotland there were 41 reported exposures with no seroconversions identified. On the information available at present the group's best estimate of the rate of seroconversion in Scotland is that there would be a healthcare worker HCV seroconversion every two years.

HIV INFECTION

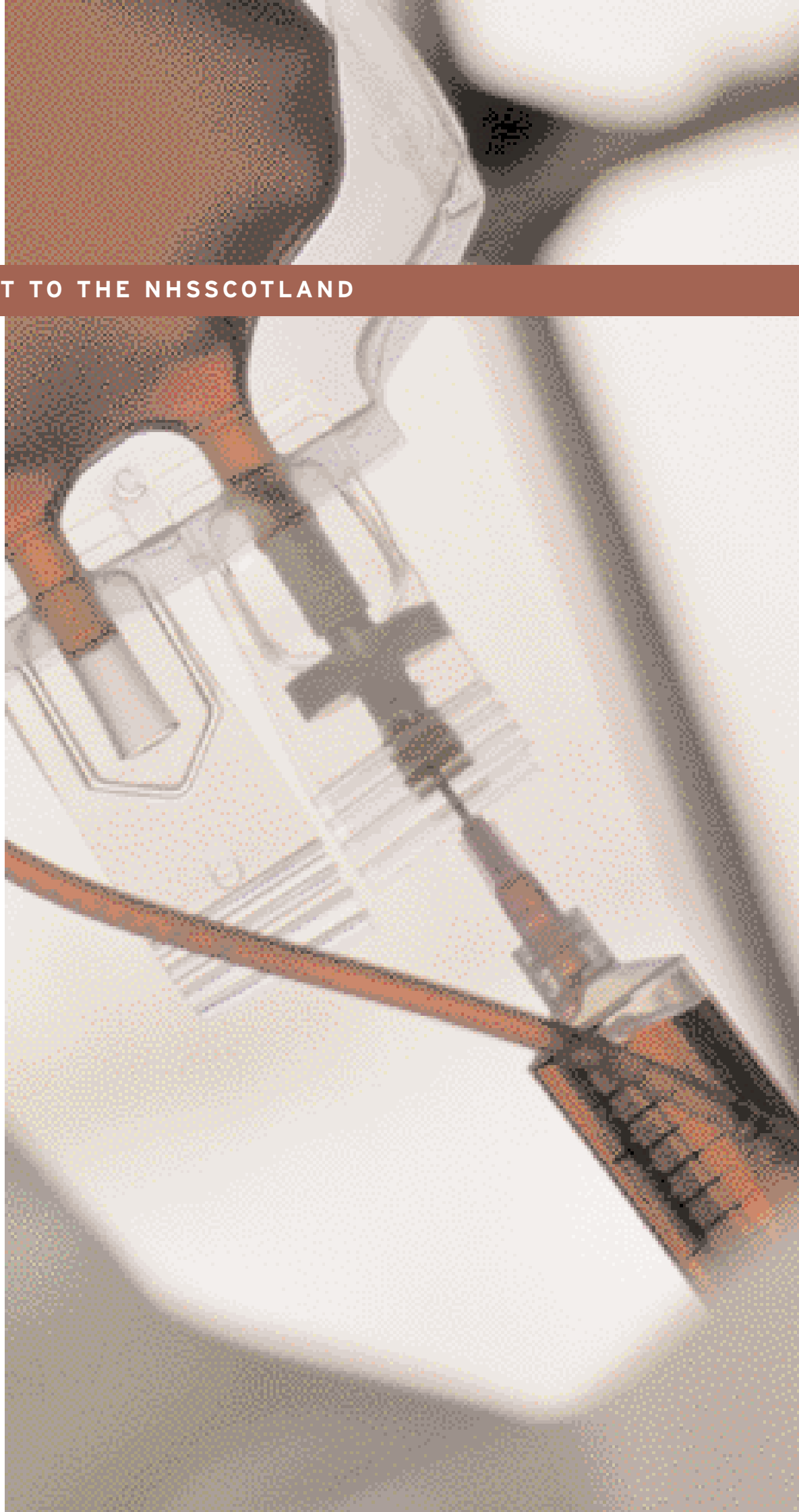
5.4 The risk of occupationally acquired HIV infection is extremely small. World-wide, up to the end of December 1999, a total of 102 seroconversions to HIV infection had been recorded among health care workers; of these 35 were European cases, including 5 from the UK. In addition there were 217 HIV infections world-wide which were possibly acquired occupationally; of these 68 were from Europe, including 8 from the UK. All 8 probably acquired infection outwith the UK.

5.5 The overall rate of HIV transmission from a single percutaneous exposure to HIV infected blood is of the order of 0.3%. Post-exposure prophylaxis (PEP) has been shown in one study to reduce this rate by 80%. UK guidance on HIV PEP was first issued in July 1997 and revised in July 2000. Since 1997, national surveillance of occupational health exposure to blood-borne viruses has been in place. By the end of 1999, 255 incidents involving an HIV positive source had been reported in England, with one seroconversion to HIV. These figures are based on a voluntary scheme and the true figures may be higher (Communicable Disease Report, PHLS). Over the same period in Scotland there were 19 reports of occupational exposure to HIV, with no seroconversions. On the information available at present the group's best estimate of the rate of seroconversion in Scotland is that there would be a health care worker HIV seroconversion every forty years (presuming PEP is not given, every 200 years if it is).

5.6 The relatively low rates of transmission of blood-borne viral infections through needlestick injuries must not be an excuse for complacency.

Recommendation 26

NHSScotland employers must ensure that all incidents involving a risk of transmission of blood-borne viruses are fully reported, for example to the Occupational Health Service, infection control team and, where applicable, the Scottish Centre for Infection and Environmental Health (SCIEH).



ESTIMATED FINANCIAL COST OF NEEDLESTICK INJURES

6.1 As with most information concerning needlestick injuries the actual financial cost is not known. For instance, taking account of known legal costs and compensation paid; estimated loss of staff time and absence from work directly related to a needlestick injury; estimated cost of treatment for needlestick injuries, it is thought the current cost to the NHSScotland is around £260K. It must be stressed that is very much an estimated figure and clearly it would only require a few successful high cost claims for the £260K to quickly rise significantly. The risk of acquiring a serious transmissible disease does not appear large and is set out in Section 5. As already noted, it is important to recognise that many needles do not come into contact with patients and carry little risk of infection to staff and that while safer devices exist they are not applicable to all clinical procedures. Before safer devices are introduced NHS employers must evaluate the costs and benefits of introducing safer devices along with the risk of injury to staff, complemented by good practice and training.

HUMAN COST

6.2 Scotland has been fortunate in recent years in not knowingly having had needlestick injury cases with serious life threatening consequences. We cannot continue however to rely on good fortune against an increasing background of patients with HIV, Hepatitis B and C and CJD. The reality is that there is a potential risk of serious illness and of fatality and vigilance must be a priority for all staff who use needles.

COST BENEFIT ASSESSMENT

6.3 The working group attempted to analyse the potential costs and benefits of introducing safer devices throughout the NHSScotland. However due to large gaps in the information available a robust analysis could not be made. Some of the necessary information may be available at a local level and so the methodology employed has been included in Annex 3 along with a template for analysis and an illustration. The template utilises information available from published work where it is available. In those areas where published information

is not available the template has been illustrated with figures derived from assumptions. In particular there are no robust estimates of the effectiveness of safer devices which is a critical factor in the template. A value has only been included to illustrate how the template works. The template is provided as a tool that can be used locally by Trusts and Health Boards **as part** of their evaluation of safer devices. The template is designed to be illustrative and should be considered in conjunction with local issues and information.

Recommendation 27

NHSScotland employers should evaluate the costs and benefits, both to the organisation and the individual, of the introduction of safer devices. NHSScotland employers should take into account a number of factors when considering the introduction of safer devices. The decision as to whether they should be introduced in specific clinical areas should not be based solely on cost but must take into account good practice, current legislation and risk assessment. Local cost benefit assessments should be used as an indication of the potential costs, risks, benefits, and harm to staff.

APPENDICES



Appendix 1

MEMBERSHIP

Chair	Dr Hugh Whyte	Senior Medical Officer, Scottish Executive Health Department
Group Members	Prof. Jeremy Bagg	Professor of Clinical Microbiology, University of Glasgow Dental School/ British Dental Association
	Miss Libby Campbell	West Lothian Healthcare NHS Trust
	Mr John Cowie	Scottish Healthcare Supplies
	Dr Barbara Davis	Public Health Policy Unit, Scottish Executive Health Department
	Mr Tom Harvie-Clark	Purchasing Economics and Information, Scottish Executive Health Department
	Mr Paul Hopson	Royal College of Nursing
	Dr Roger Hughes	British Medical Association
	Dr Pamela Jeffrey	Health and Safety Executive
	Mr Alex Joyce	Scottish Trade Union Congress/Unison
	Mr Sandy Kinnear	Finance Directorate, Scottish Executive Health Department
	Ms Jenny Lopez	Health Services Advisory Committee
	Mrs Thelma McGuire	Lothian NHS Occupational Health Service/Scottish Partnership Forum
	Mr Bernard Scully	Director of Human Resources, South Glasgow University Hospitals NHS Trust
	Dr Ian Symington	Director. Glasgow Occupational Health, North Glasgow University NHS Trust
	Mr Julian Topping	Department of Health
	Mrs Pamela Warrington	Deputy Chief Pharmacist, Scottish Executive Health Department
Secretariat	Mr Bill Welsh	Human Resources, Scottish Executive Health Department
	Dr Mary Doherty (Secretary)	Human Resources, Scottish Executive Health Department

Appendix 2

LEGISLATIVE FRAMEWORK

HEALTH AND SAFETY AT WORK ACT

Preventing needlestick and sharps injuries and the related prevention of infection are health and safety, risk management and clinical governance issues. All employers in the NHS, including primary care medical and dental practitioners, community pharmacists and those working privately in the NHS have legal obligations under the Health and Safety at Work Act 1974 (HSWA). They have a duty to protect their employees and others that may be affected by their work activities such as contractors, agency staff, patients and visitors. Under HSWA employers must ensure their employees are appropriately trained and proficient in the procedures necessary for working safely. Employees have duties to comply with systems and procedures put in place by employers to ensure their health, safety and welfare; they also have a duty not to do anything that would put others at risk. These requirements apply throughout England, Scotland and Wales. In Northern Ireland, separate legislation and regulations apply.

MANAGEMENT OF HEALTH AND SAFETY AT WORK REGULATIONS

Under the Management of Health and Safety at Work Regulations 1999, employers must carry out a risk assessment and must have arrangements for the effective planning, organisation, control, monitoring and review of the preventive and protective measures. They must also provide their employees with adequate health and safety training.

CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH

The Control of Substances Hazardous to Health Regulations 1999 (COSHH) are designed to protect employees against recognised hazards, which include those related to needlestick or sharps injuries. The key duty under COSHH, in relation to microbiological hazards, is to prevent exposure. Where prevention is not reasonably practicable, employers must take steps to eliminate, reduce or control the risk of exposure by using the measures listed in Schedule 3 to the Regulations. These measures include: the design of work processes and

engineering control measures (such as safer needles) so as to prevent or minimise the release of biological agents into the place of work; instituting means for the safe collection, storage and disposal of contaminated waste; and specifying procedures for taking, handling and processing samples that may contain biological agents. Employers must carry out a risk assessment considering all the factors pertinent to the work and make an informed and valid judgement about the risks, the steps which need to be taken to achieve and maintain adequate control, and whether health surveillance is necessary.

REPORTING OF INJURIES, DISEASES AND DANGEROUS OCCURRENCES REGULATIONS 1995 (RIDDOR)

Some needlestick injuries will be reportable to the enforcing authority (generally the Health and Safety Executive) under RIDDOR. Those which result in an absence from work for more than 3 working days will be reportable, as will those where the source patient is known to carry a blood-borne virus e.g. Hepatitis B, Hepatitis C or HIV. All forms of viral hepatitis contracted by those at work are reportable where the work involves the exposure to human blood products or any source of viral hepatitis. HIV and any other infection, will be reportable where it can be readily attributed to work with people (living or deceased) during health care work or during investigation involving exposure to blood or body fluids.

RELATED GUIDANCE

The Advisory Committee on Dangerous Pathogens (ACDP) has published guidance entitled “Protection Against Blood-borne Infections in the Workplace: HIV and Hepatitis” (1995). UK Health Departments have issued guidance via “Protecting Health Care Workers and Patients From Hepatitis B” (1993) and “Guidance for Clinical Health Care Workers: Protection Against Infection and Blood-borne Viruses” (1998). Additionally the Scottish Office and subsequently the Scottish Executive Health Department has guidance on related matters such as HDL (2000)³, “Hepatitis B Infected Health Care Workers” and “Guidelines on Post-Exposure Prophylaxis (PEP) for Healthcare Workers Occupationally Exposed to HIV” which covers recommendations developed by

Appendix 2

the Chief Medical Officers Advisory Group on AIDS (EAGA) amended for Scotland. Guidance concerning PEP has recently been updated and issued by the UK Health Departments (July 2000). The Scottish Infection Manual was published by the Advisory Group on Infection, Scottish Office Department of Health in 1998. Guidance on the “Decontamination of Medical Devices” issued as NHS HDL(2001)10.

The Clinical Negligence and Other Risks Indemnity Scheme (CNORIS) came into effect on 1 April 2000 (MEL (2000)18) and relates to claims for liability arising from the work of NHSScotland staff. This covers clinical negligence claims for all NHS clinical activities and selected non-clinical claims including employers liability. The scheme detailed in the MEL does not cover personal accident. NHS Organisations are legally liable for the negligent acts or omissions of their employees or agents with a clear responsibility to act to reduce the incidence of liabilities.

NORTHERN IRELAND LEGISLATION

In Northern Ireland the Health and Safety Executive (NI) are the regulators. The base legislation is the Health and Safety at Work (NI) Order 1978 from which the following EC “6 pack” regulations flow:

- The Management of Health & Safety at Work Regulations (NI) 1992
- The Manual Handling Operations Regulations (NI) 1992
- The Health and Safety (Display Screen Equipment Regulations (NI) 1992
- The Workplace (Health, Safety and Welfare) Regulations (NI) 1993
- The Provision and Use of Work Equipment Regulations (NI) 1993
- The Personal Protective Equipment at Work Regulations (NI) 1993

Appendix 3

GOOD PRACTICE INITIATIVES

The remit of this short life working group was to investigate the cause, prevalence and prevention of needlestick injuries in the NHS Scotland. The issue of needlestick injuries has been highlighted over recent years by a number of trade unions and professional bodies.

UNISON has mounted an extensive publicity campaign to reduce the number of injuries caused by sharps and needles. They have also called for changes in legislation to address the evaluation and introduction of safer needles. Details of some of the campaign publications are contained in the bibliography. The working group has addressed many of the issues raised by UNISON, such as the need for UK specific data, staff education and training and the evaluation of safer devices.

The Royal College of Nursing (RCN) launched an initiative in April 2000 to investigate a method of reporting, monitoring and tracking of needlestick injuries. This is part of a wider Working Well Initiative which will also look at risk assessment guidance, model policies and an update of the RCN Universal Precautions guidance. The surveillance programme commenced in July 2000 and is to run for approximately 12 months involving 14 pilot sites across the UK. The initiative is being supported by EPINet (Exposure Prevention Information Network), University of Virginia and will be managed locally by infection control teams and safety representatives. Data emanating from this initiative will help to inform future recommendations both locally and nationally.

The British Medical Association published the Code of Practice for the Safe Use and Disposal of Sharps in 1995. The document contains sections on transmission of infection, occupational risk factors, risk management, sharps policy, procedure following sharps injuries and education and training. The underlying principles of the code mirror the recommendations of the working group.

ANNEXES



Annex 1

MODEL INCIDENT REPORT TEMPLATE

This annex details the suggested minimum information which Occupational Health Services should collect. This will facilitate greater understanding of the scale of the problem resulting from needlestick injuries in Scotland and will help to remove the problems encountered by the Working Group due to lack of consistent, comparable data. Any data collected should be anonymised when published to ensure that the confidentiality of all staff is conserved. A sample reporting form is included, this is illustrative and not intended to be prescriptive. Employers may for example prefer to use other recording processes such as the EPINet or NaSH data reporting systems.

EMPLOYEE INFORMATION

This should include personal information on the employee i.e. name; address; D.O.B; contact number; employment information - post, grade and location of employment; and contact details of the employee's GP.

DETAILS OF INCIDENT

The date and time of the incident being reported should be recorded, as should the area in the Trust where the incident took place.

PROCEDURE/IMPLEMENT INVOLVED IN INJURY

The clinical procedure being carried out at the time of the incident should be recorded, as should the actual cause, if known. The type of implement causing the injury should be detailed and, if applicable, the failure of any safety mechanism recorded.

NATURE OF INJURY

The specific area of the body injured should be recorded along with the extent of the injury i.e. was there bleeding, was the injury superficial?

CONTAMINATION

If the injury resulted in any form of contamination, this should be recorded. Suggested categories of contamination are:-Blood, Blood Stained Fluid,

Annex 1

Non-Blood Stained Fluid which if possible should be specified i.e. if a particular chemical is being used.

RISK ASSESSMENT

The incident should be risk-assessed by an Occupational Health specialist. Areas that should be covered are whether first aid was administered directly after the incident, was the incident risk-assessed locally, was an incident form completed at the time of the injury, were gloves worn by the employee during the procedure. Details of the employee's immunisation record should be recorded.

If the employee has been contaminated by a patient's blood or fluid, information, if known, regarding the source patient should be recorded. This information should include results of testing of the source blood for HCV, HBV and HIV. If the source patient is not known, as in the case of downstream injuries, this should be recorded.

TREATMENT

Any treatment advised/arranged by Occupational Health should be detailed.

FOLLOW-UP PROCEDURES

Any follow-up procedures should be recorded. This will be particularly relevant if blood samples have been taken from the source and/or employee or if the source is known and considered to be high risk.

PEP IMPLEMENTATION

If the risk to the employee is regarded as high, PEP may be required. Details of this should be recorded, i.e. if the PEP was completed or whether it was inappropriate.

DETAILS OF OH STAFF COMPLETING FORM

Details of the member of Occupational Health staff responsible for completion of the form should be detailed and the form dated upon completion.

MODEL INJURY REPORTING FORM

Employee Information

Name	Trust/Practice	Name of Employee's GP
Address	Department	Address
	Ward	
Phone	Post Held	
DOB	Grade	Phone

Incident

Date/Time of Incident
Date/Time of Reporting
Location

Procedure

Procedure at Time of Incident
Purpose Sharp was Used for

Implements Causing Injury

Implement Involved
Cause of Injury

Nature of Injury

Superficial ☐	Deep ☐	Moderate ☐
Bleeding ☐	Glove Penetrated by Sharp ☐	
Part of Body Injured		

Type of Contamination

Blood ☐	Blood Stained Fluid ☐	Non Blood Stained Fluid ☐	Unknown ☐
--------------------------------	--	--	----------------------------------

Risk Assessment/Treatment

First Aid	Yes ☐	Advised ☐	NA ☐	Risk Assessed	Yes ☐	No ☐	NA ☐
Incident Form	Yes ☐	Advised ☐	NA ☐	Gloves Worn	Yes ☐	No ☐	NA ☐
Date of Last Hepatitis B Course/Booster/Anti HBS							
Date of Last Tetanus				Reportable under RIDDOR	Yes ☐	No ☐	NA ☐
Information Regarding Source Patient							
Known ☐	Unknown ☐			Anti-HCV+	Yes ☐	No ☐	NK ☐
Source Blood Requested	Yes ☐	No ☐		HBsAg+	Yes ☐	No ☐	NK ☐
Source Blood Obtained	Yes ☐	No ☐		Anti-HIV+	Yes ☐	No ☐	NK ☐
Blood Speciment Taken by							
Follow Up Strategy/Comments							
Sample taken for Storage	Yes ☐	No ☐		Sample Taken by			
Follow up Sample Storage	Yes ☐	No ☐		Sample Stored by			
PEP Procedure Instigated	Yes ☐	No ☐		PEP Instigated by			

HIV-PEP Implementation Details and Outcome

Completed ☐	Not Completed ☐	Inappropriate ☐
------------------------------------	--	--

HIV-PEP Implementation Details and Outcome

Name	Designation
Signature	Date

Annex 2

DEVICE ASSESSMENT

This annexe details some criteria for evaluating safer devices. This list has been adapted from a US evaluation which is available on the Training and Development of Innovative Control Technology web page (www.tdict.org). The web page contains a number of downloadable forms for assessment and evaluation of various categories of device. Copies of the evaluation sheets are also to be found in UNISON's guidance.

GENERAL EVALUATION CRITERIA

- **The device is CE marked**
- The safety feature can be activated using a one-handed technique
- The safety feature does not obstruct vision of the tip of the sharp
- Use of this product requires use of the safety feature
- This product does not require more time to use than a non-safety device
- The safety feature works well with a wide variety of hand sizes
- The device is easy to use while wearing gloves
- The device does not interfere with uses that do not require a needle
- The device offers a good view of any aspirated fluid
- The device will work with all required syringe and needle sizes
- There is a clear and unmistakable change that occurs when the safety feature is activated
- The safety feature operates reliably
- The exposed sharp is permanently blunted or covered after use prior to disposal
- The device is no more difficult to process after use than non-safety devices
- The user does not need extensive training for correct operation
- The design of the device suggests proper use
- It is not easy to miss a crucial step in the proper use of the device

INTRODUCTION

This annex provides an illustrative template for assessing the costs and benefits associated with introducing safer devices. The template is designed to allow individual units, by utilising information available locally, now or in the future, to undertake a cost benefit analysis. It has not been possible to perform a cost benefit analysis at a national level because of a lack of information in several key areas, namely the number of needles used on patients, the cost of safer devices and the effectiveness of safer devices. However this cost benefit assessment template has been created utilising the expertise and information of the members of the working group - expertise which may not be available at a local level. It is therefore an attempt to bridge the gap between information available nationally and locally.

Advice is also given on the method of estimating the local costs and benefits of introducing safer devices.

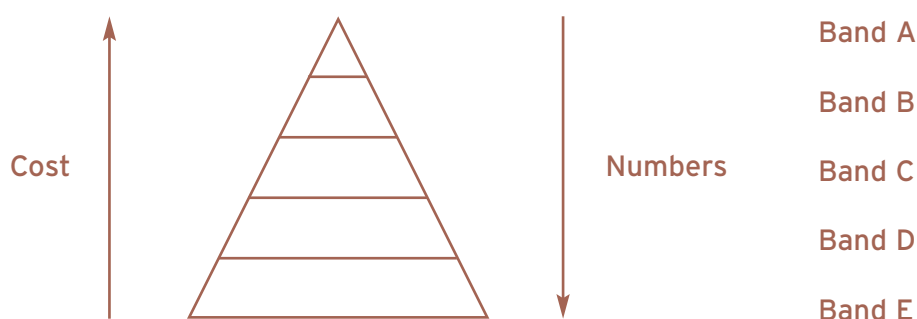
The aim has been to include all effects (financial and human) and the results should therefore be viewed as indicative of the total benefit of introducing safer devices. However given the degree of uncertainty associated with many of the parameters any results obtained from using the template should not be seen as definitive. The rest of the annex is laid out in five sections:

- Section One describes the resource implications of needlestick injuries.
- Section Two lists all the assumptions that have been made.
- Section Three describes the methodology behind the model.
- Section Four gives the parameter values and provides notes on how to vary parameters to reflect local conditions. An example benefit calculation is provided at the end.
- Section Five briefly discusses the major conceptual problems addressed in the model.

Annex 3

1. THE RESOURCES IMPLICATIONS OF NEEDLESTICK INJURIES

The damage or cost caused by needlestick injuries can be segregated into 5 broad cost bands. These bands can be represented by a triangle with the number of injuries decreasing but the costs per injury increasing as one rises up the triangle. Each band is explained below:



Band A represents the needlestick injuries that result in the transfer of a blood-borne disease. These are rare, less than one every two years. However, for such cases the financial and human costs are high and are estimated to range from approximately £10,000 to £620,000.

Band B represents those needlestick injuries that fall into the SCIEH reportable class (i.e. where the source patients are known to be HIV or HCV positive or who are high risk) but which do not result in a seroconversion. Figures from SCIEH indicate that the expected number of such needlesticks will be 24 a year. These injuries involve a large amount of staff time and cause considerable distress. Costs (human and financial) are estimated to range from £3,000 to £5,000 per case.

Band C is for downstream injuries where the source cannot be traced. It is estimated that there are around 240 cases a year. Such cases, while usually being low risk, can cause considerable distress for the healthcare worker concerned - and have resource consequences for occupational health and laboratory services. The costs of such cases are dominated by the distress caused and are estimated to be between £1,000-2,000 per case.

Band D represents the needlestick injuries that are low risk but are reported to A & E or occupational health. It is assumed that the source blood can be tracked but cases such as these still involve occupational health and laboratory services, and possibly counselling for the individual. From Trust returns it is estimated that there are approximately 2,150 of these incidents a year. The cost of such work is thought to be in the range of £50-£100 per case.

Band E contains those needlestick injuries that are rarely reported or go unreported. Clearly it is difficult to estimate the numbers of such injuries although studies have estimated the proportion of needlestick injuries that are reported ranges from 30-75%. The resource implications of these injuries are due to distraction of the injured healthcare worker and the time required to treat the injury. The cost of such injuries are thought to be up to £10 per case. Due to the small size of these costs (even when multiplied by the number of injuries) they have not been included in the template calculation.

Compensation payments are not explicitly included in the template. This is because the template looks at the costs and benefits to society as a whole. If a financial compensation payment is made to a health worker for an injury the compensation payment is a cost to the NHS and a benefit to the healthcare worker. In economic terms these cancel each other out. The real cost to society is of course the damage to the worker's health, which is valued and is included in the framework.

2. ASSUMPTIONS

The lack of data in this field meant that several untested assumptions had to be made. These assumptions are:

- There is no under-reporting of needlesticks (other than 'Band E' injuries).
- There is no interaction between the introduction of safer needles and the needlestick injury rate - i.e. staff will not take more care because they have to take more precautions or less care because they think it is safer.
- There is no interaction between the likelihood of incurring a needlestick injury and the probable prevalence of HIV & HCV in the patient.

Annex 3

- The recommendations of the Short Life Working Group and any action taken as a result will have no impact on the number of needlestick injuries. While it is recognised that as awareness is raised, reporting of needlestick injuries will probably increase, this cannot be quantified and has not been factored into the template.
- Safer devices will not take more time to use and have no impact on patient care.
- The impact of a needlestick injury is only on the person injured - i.e. other staff members are not affected.
- Lost hours multiplied by the average wage rate is a good proxy for lost output.

3. METHODOLOGY

The benefits from introducing safer devices arise from avoiding the costs associated with needlestick injuries. The template therefore seeks to calculate the cost of needlestick injuries and then derives a benefit as based on the percentage of needlestick injuries (and hence the cost) that would be avoided if safer devices were used.

The total cost of needlestick injuries is made up of four components; the estimated cost from HCV infection, the estimated cost from HIV infection, the lost output and treatment cost of needlestick injuries and the pain and suffering incurred when infection is unknown.

- The estimated cost from HCV infection per needlestick injury is calculated as below and then multiplied by the number of needlestick injuries per year to give the cost from HCV infection per year:
 - The known prevalence of HCV multiplied by the sero-conversion rate from a single percutaneous exposure gives the risk of infection of HCV from a needlestick injury. The seroconversion rate used is 3%.

- The 'human costs' of HCV are calculated by multiplying the value of losing a year of one's life by the loss of QALYs associated with HCV infection. The value of losing a life year has been calculated as £30,500¹ and a recent SNAP report estimated the average loss of QALYs across all who contract HCV (i.e. including those who do not develop a serious form of the disease).
 - The human cost is then added to the costs of treating HCV (£2,019 for the average 30-year-old infected in the SNAP report).
 - Multiplying the total cost of one HCV infection by the risk of infection of HCV from a needlestick injury gives a theoretical cost per needlestick injury.
 - Should an effective treatment become available for HCV the costs will have to be factored into the calculation as below for HIV.
- The theoretical cost from HIV infection is calculated in the same way with the addition of Post-Exposure Prophylaxis (PEP) as a complicating factor:
 - It is assumed that PEP is not given unless the case is known to be high risk. Where PEP is given it is assumed to be 80% effective (i.e. it reduces the sero-conversion rate by 80%) and costs £830 per patient.
 - The seroconversion rate used is 0.31%. The value of losing a life year is, of course, the same at £30,500. The loss of QALYs has been estimated at 17 for those for whom PEP is not effective
 - The cost of treatment has been calculated at £100,608 based on treatment costs of £12,000 a year over a life expectancy of 12 years, discounted at 6%².

¹ The value of preventing a fatality year of £27,900 in 95/96 prices per "The costs to Britain of workplace accidents and work related ill health in 1995/96" by the HSE, uprated for inflation. This approach has been used to illustrate the potential benefits. It would be beneficial to look at the sensitivity of any results to alternative values placed on each QALY.

² The discount rate in "Appraisal; and Evaluation in Central Government" (also known as the Green Book).

Annex 3

- The lost output is calculated by multiplying the average staff cost per hour (£10.84) by the average working hours lost (2.4) per needlestick injury (supplied by one trust) to give a cost of lost time (as a proxy for lost output). To this is added the average treatment costs of £55 (supplied by one trust). For those cases involving a needlestick injury from a known HIV or HCV positive source the lost output and treatment costs are estimated to be £1,000.
- The pain and suffering incurred when infection is unknown is calculated by multiplying the number of downstream injuries by £1,000 and the number from known sources that are either HIV or HCV positive by £2,000. Downstream needlesticks were reported by trusts as being approximately 10% of all needlesticks.

It should be noted that three factors have not been quantified. These are:

- The value of the lost output that occurs when a healthcare worker contracts HCV or HIV over and above the lost output that normally occurs due to declining health. This additional lost output is due to the working restrictions placed on healthcare workers who are HIV positive or HCV positive.
- The cost of replacing staff (i.e. recruitment and training costs) that are unable to work due to contracting a blood borne virus from a needlestick injury.
- The worry caused to other healthcare workers when some-one else incurs a needlestick - i.e. the anxiety of healthcare workers that they may receive a needlestick injury.

4. UTILISING THE TEMPLATE

The table below contains all the parameters within the model, the values of those parameters and whether those parameters are dependent on local conditions. Notes on how to estimate those parameters that are dependent on local conditions are provided below.

Parameters were also broadly categorised as to whether or not they were sensitive to local conditions. These are those marked 'Yes' in the table.

Other parameters are marked 'No' because they were based on the best information available to the group at the time of analysis and were unlikely to be readily available at a local level. If it were felt locally that better information on these parameters exists either now or in the future then it would, of course, be appropriate for Trusts/Health Boards to adjust these parameters.

Parameter	Value	Adjust at Local Level
<i>Number of Needlestick Injuries per Annum</i>	<i>Scenario Dependent</i>	<i>Yes</i>
<i>Expected Reduction in Cases</i>	<i>60%</i>	<i>Yes-dependent on effectiveness of device</i>
<i>Prevalence of HCV</i>	<i>Scenario Dependent</i>	<i>Yes</i>
HCV Seroconversion rate	3.0%	No
HCV cost of treatment (discounted)	£2,019	No
Loss of QALYs from HCV infection (discounted)	1	No
Annualised valuation of prevented fatality	£30,500	No
<i>Prevalence of HIV</i>	<i>Scenario Dependent</i>	<i>Yes</i>
HIV Seroconversion rate	0.31% ³	No
HIV cost of treatment (discounted)	£100,608	No
Loss of QALYs from HIV infection (discounted)	17	No
Cost of PEP (for HIV)	£830	No
Effectiveness of PEP (for HIV)	80%	No
Average cost of lost time	£26	No
Average treatment costs	£55 ⁴	No
Distress caused by downstream needlestick	£1,000	No
Distress caused by needlestick from known HIV, known HCV or 'At Risk' patients.	£2,000	No

The baseline year for all figures is 1999/00. The only exception is the average cost of lost time which is based on 1998/99 data as no HCHS inflation figure was, at the time of writing, available for 1999/00. The average cost of lost time should therefore be modified by this figure to reflect pay increases in 1999/00.

³ The seroconversion rate is estimated to be 0.56% for blood-filled hollow bore needles.

⁴ £1,000 when the source is known to be from a HIV or HCV positive source.

Annex 3

Notes on Estimation of Parameters to be set locally

The number of needlestick injuries per annum should be estimated from local trust data. Ideally the number of needlestick injuries per annum should relate only to those needles that are to be replaced by safer devices. If this information is not available then the number could be derived from pro-rating from the total number of needlesticks a year and the number of needles used a year (an adjustment must be made for the proportion of needles that are not used on patients)

Expected Reduction in Cases: The effectiveness of the safer needle as established by testing- i.e. the proportion of needlestick injuries that would be avoided by introducing safer devices. A figure of 60% has been used as this represents an approximate mid-point of evaluations performed in the United States. These evaluations have found effectiveness levels ranging from 29% to 89%. **It should be noted that this is a critical figure in the template and must be updated before any realistic estimates can be obtained.**

Calculating Cost

To complete the cost benefit analysis the cost of using safer devices must be calculated. This cost is the additional cost of safer devices plus any other additional costs such as stocking and/or training cost. To calculate the additional cost of using safer devices one multiplies the additional cost per device by the number of devices per year that are used on patients.

A stocking cost may arise where the number of safer devices used per year is small due to devices being held for some time without being used. Hence the cost occurs before the benefit is realised and this should be recognised. Any training costs should be spread over the period for which the training will be beneficial.

5. CONCEPTUAL POINTS

Costs relating to Hepatitis B have not been modelled, despite it having a higher seroconversion rate than Hepatitis C and HIV. This is because the vast majority of clinical health workers are immunised against Hepatitis B. Those who have not been immunised or who have not responded to immunisation can be offered immunoglobulin as protection after the needlestick. Costs relating to possible Hepatitis B infection would therefore be small and due to their insignificance have not been included. There are approximately eighteen other pathogens which can be transmitted from infected patients via needles. Costs relating to these pathogens are estimated to be small and hence these costs have also not been included.

There is currently some debate over the HCV seroconversion rate from a percutaneous needlestick injury. Early research estimated the sero-conversion rate to be approximately 3%. More recent research has provided evidence that the rate may be substantially lower. It was felt prudent to use the higher seroconversion rate until the debate is resolved

Example-Benefit assessment Using safer devices just on 'at risk' groups

The at risk category considered to which the following parameters relate is current injecting drug users (IDUs).

1. The number of needlestick injuries involving current IDUs was estimated using the prevalence of HIV and HCV in current IDUs (approximately 40% and 50% respectively - figures from the Drugs Misuse Statistics Scotland 1999 and Scottish Health Statistics 1999).
2. Prevalence of HCV among current IDUs estimated at 62% from figures supplied by SCIEH.
3. Prevalence of HIV among current IDUs estimated at 5% from figures supplied by SCIEH.
4. It is assumed that no-one catches both HIV and HCV from the same needlestick injury.
5. It is assumed that 'at risk' groups are classed as high risk and PEP is given.

Annex 3

Example Benefit Calculation – Introducing Safer Devices Just on Known IDUs (Scotland)

Estimated Number of Needlestick Injuries Per Year			No. 26
Theoretical Costs from HIV & HCV			
Prevalence of HCV	62.0%		
HCV seroconversion rate	3.0%		
Risk of Infection of HCV from Needlestick		1.860%	
HCV Infection – Cost of Treatment (discounted)	£2,019		
Loss of QALYs (discounted)	1		
Annualised valuation of prevented fatality	£30,500		
Cost of HCV Infection – Human Cost	£30,500		
Cost of HCV Infection		£32,519	
Theoretical Cost from HCV per needlestick injury		£604.85	
(a) Theoretical Cost per Year from HCV			£15,726
Prevalence of HIV	5.00%		
HIV seroconversion rate	0.31%		
Effectiveness of PEP	80.00%		
Risk of Infection of HIV from Needlestick PEP		0.0031%	
HIV Infection – Cost of Treatment (discounted)	£100.608	£830.00	
Loss of QALYs (discounted)	17		
Annualised valuation of prevented fatality	£30,500		
Cost of HIV Infection – Human Cost	£518,500		
Cost of HIV Infection		£619.108	
Theoretical Cost from HIV per needlestick injury		£849.19	
(b) Theoretical Cost per Year from HIV			£22,079
Lost Output and Treatment Costs			
Average Staff Cost per Annum	£18,298		
Average working hours per Annum	1,687.5		
Average Staff Cost per hour	£10.84		
Average Working Hours Lost	2.4		
Average Cost of lost time		£26.02	
Average Treatment Costs		£700.00	
Actual Cost per Needlestick (Excl. HIV & HCV)		£726.02	
(c) Actual Cost per Year from Needlesticks (Excl. HIV & HCV)			£18,877
Pain & Suffering of Negative Result			
Downstream Injuries – distress averted	£0		
No. of cases a year	0		
Injuries from known HIV or HCV source	£2,000		
Number of cases a year	11		
(d) Pain and Suffering per Year			£22,000
Total Cost of Needlestick Injuries per Year – (a)+(b)+(c)+(d)			£78,682
Estimated Reduction		60%	
Total Benefit Per Year (before deduction of cost of safer devices)			£47,209
Additional Cost of Safer Devices		x	
NET COST/BENEFIT		XX	

BIBLIOGRAPHY

The Short Life Working Group in developing this report has used the following publications and reports.

A Code of Practice for the Safer Use and Disposal of Sharps, British Medical Association (1995)

At the Sharp End, Martell, R., Nursing Standard (2000) 14

Beyond the Syringe, Health Service Journal (2000)

Drug Misuse Statistics Scotland, Information and Statistics Division, Common Services Agency (1999)

Environmental and Occupational Risks of Healthcare, British Medical Association (1994)

Global Surveillance of Hepatitis C, Journal of Viral Hepatitis (1999), 6, 35-47

Good Practice in Infection Control, Royal College of Nursing (2000)

Guide to Preventing Needlestick Injuries, SEIU, 1998

HIV Post-Exposure Prophylaxis: Guidance from the UK Chief Medical Officers' Expert Advisory Group on AIDS, UK Health Departments, July 2000

HIV and Viral Hepatitis at Work: An Introduction to the Relevant Health and Safety Law, Occupational Health Review (2000)

Needle Safety at Work, A UNISON Guide (1999)

Needlestick and Similar Injuries: Analysis of Time and Resource, South Glasgow University Hospitals NHS Trust, 2000

Needlestick Injury Prevention and Management Campaign, Royal College of Nursing (2000)

NIOSH Gets Sharp on Needlesticks, Occupational Health Review (2000)

Occupational Health and Safety Minimum Dataset (HDL(2001)22, March 2001)

Occupational Needlestick Injuries, Harrower, C., Vascular Access Network News (1999)

Our National Health, A plan for action, a plan for change (December 2000)

Papers of the Needlestick Injury Conference, Leeds (April 2000)

Preventing Needlestick Injuries in Healthcare Settings, National Institute for Occupational Health and Safety (1999)

Safer Needle Devices: Protecting Healthcare Workers, Occupational Safety and Health Administration (1999)

6 Dickson v Bridge Hotel (1999) and Howell v Bolton Hospitals NHS Trust (1995)

BIBLIOGRAPHY

- Safer Needles - Question and Answer, A UNISON Guide (1999)
- Scottish Infection Manual, Department of Health, Scottish Office (1998)
- Sharps Audit Report, West Lothian Healthcare NHS Trust, (1999)
- Towards a Safer, Healthier Workplace, Scottish Executive (1999)
- The Costs to Britain of Workplace Accidents and Work-related Ill Health in 1995/96, The Health and Safety Executive
- Universal Precautions, Royal College of Nursing (2000)
- Zero-stick Safety Device Evaluation, West Lothian Healthcare NHS Trust (1999)

WEB PAGES

As the majority of research into the cause and prevention of needlestick injuries has been carried out by the United States, the Internet was used as a major tool in obtaining information. The following web pages have useful background information and downloadable booklets and templates.

www.med.Virginia.edu/medcntr/centers/epinet

www.osha-slc.gov/SLTC/needlestick

www.tdict.org

www.cdc.gov/niosh

www.hse.gov.uk

www.medical-devices.gov.uk

www.seiu.org

The following websites contain information relating to safer devices. A list of companies who claim to produce or distribute safer devices is also provided (UNISON, May 2000). It should be noted that the Scottish Executive, in publishing these details, does in no way endorse any of the products detailed.

WEBPAGES

www.simsportex.com

www.btgplc.com

www.vital-signs.com

www.rexam-medical.co.uk

www.bbmuk.demon.co.uk

www.bd.com

www.new-medical-technology.com

www.jnj.com

COMPANIES

B. Braun Medical

BD (formerly Becton Dickinson)

Greiner Labortechnik

Johnson and Johnson Medical

Kimal PLC

Needleguard International Ltd

NMT

Owen Mumford

Safeguard Medical

Safe-T

SIMS Portex Ltd

Vitalsigns

GLOSSARY

ACDP	Advisory Committee on Dangerous Pathogens
BDA	British Dental Association
BMA	British Medical Association
CDC	Centres for Disease Control and Prevention
CE	Comité Europa
CJD	Creutzfeldt-Jakob Disease
CNORIS	Clinical Negligence and Other Risks Indemnity Scheme
COSHH	Control of Substances Hazardous to Health
EAGA	Expert Advisory Group on Aids
HIV	Human Immunodeficiency Virus
HSAC	Health Services Advisory Committee
HSE	Health and Safety Executive
HSWA	Health and Safety at Work Act
MDA	Medical Devices Agency
MEL	Management Executive Letter
OHSS	Occupational Health and Safety Service
OSHA	Occupational Safety and Health Association
PEP	Post Exposure Prophylaxis
RCN	Royal College of Nursing
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
SCIEH	Scottish Centre for Infection and Environmental Health
TDICT	Training and Development of Innovative Control Technology

Needlestick Injuries: Sharpen your Awareness is available as an Executive Summary and both versions are available on the Internet at www.scotland and www.show.