

# Clinical review

## Syringes – hypodermic luer slip

Version 2 May 2018



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## Guidance for use

This clinical evaluation report is aimed primarily at the NHS and all those working to support patient care. If you would like to talk through how this report can be used in your setting, please contact us at: [clinical.evaluationteam@nhs.net](mailto:clinical.evaluationteam@nhs.net)

Please note that the product assessment results should only be read and used in conjunction with the full text of this clinical review.

### **Version Two – Published May 2018**

This version has been updated from the original luer slip syringe report published in December 2016 to include results from new suppliers to the UK market

New sections have also been included:

4.2.1 Criteria explanation- inclusion

4.2.2 Criteria explanation- exclusion

These have been added to provide guidance as to the rationale for the inclusion and exclusion of the clinical criteria featured in this luer slip syringe device report.

## 1. Introduction

The NHS Clinical Evaluation Team was established in April 2016. The team's remit is to add independent clinical review to 'everyday healthcare consumables' used by the NHS.

Everyday healthcare consumables are products that are found in the majority of wards, clinics, health centres, treatment rooms and district nurse's bags across the NHS. The purpose of this report is two-fold; firstly to provide a clinical assessment of the usability and requirements from the NHS for the blunt drawing up devices (with or without an in-hub filter) that are available to the NHS from the national procurement provider. Secondly, to provide a clinical statement of desired functions and properties that the NHS requires of blunt drawing up devices for use in future procurement activities.

It is clear from the evidence that hypodermic luer slip syringes featured in this report are everyday healthcare consumables that are found in most clinics or ward settings and would certainly be items included in any stock list to set up a new clinical service. On that basis, the project was approved by the Clinical Reference Board in June 2016, culminating in the production of this report for their approval in November 2016.

Based on 2015 data supplied by NHS Supply Chain, in the NHS, 290 different Trusts are using over 150 million luer slip syringes annually with total spends approaching £8 million. At the time of the original report, there were 42 different product codes in the national catalogue supplied via 4 different suppliers, and this number is set to increase with new products coming to the UK market. The presentation of syringes is either in 2 or 3 piece designs, however 2 piece syringes represents less than 2% of total usage across the NHS and so this report covers the range of 3 piece luer slip syringes available as at August 2016. This accounts for 33 product codes and a range of sizes from 1ml-60ml.

Intelligence around luer slip syringes was gathered from a variety of sources to provide background information on the current evidence available to support the way in which the devices are designed and clinically evaluated.

Following this, clinical engagement sessions were held with the aim of identifying important clinical criteria for blunt drawing up devices from front line NHS clinicians. This information was used to develop clinical criteria for luer slip syringes, against which all brands available from the national procurement provider were reviewed.

Findings from these clinical reviews are collated into a product assessment report to allow users to identify products and see how they performed against the agreed clinical criteria.

A more detailed description of the team and our pathway approach can be found in the NHS Clinical Evaluation Team operating manual which can be found on our website at: [www.nhsbsa.nhs.uk/cet](http://www.nhsbsa.nhs.uk/cet)

## 2. Clinical Context

### 2.1 Clinical Definition and Scope

Hypodermic luer slip single use syringes have been used extensively in the NHS for many years and have been in use in healthcare since the late 1960s.

A luer slip syringe is used for general purpose injection or bolus infusion via IV access and aspiration of fluids from vials, ampoules and parts of the body below the surface of the skin and allows for a push fit of a luer compatible needle to the tip.

A luer slip syringe is supplied with either a concentric or eccentric tip; this refers to the location of the tip in relation to the body of the syringe. A concentric syringe has the tip located centrally and an eccentric syringe tip is offset towards the edge of the body.

This report has only reviewed luer slip syringes and has excluded luer lock which allows fixation by screw fitting along with catheter tip and insulin syringes which are also excluded.

### 2.2 Intended Clinical Use

The intended use of a hypodermic luer slip syringe is for parenteral administration of small solutions either through subcutaneous, intramuscular or intravenous bolus infusion (Bouwman, 2015).

A luer lock syringe allows fixation by screw and thus is a more secure fixation. Luer lock syringes are more commonly used for extended IV infusion using a syringe pump or in areas such as chemotherapy infusion where a secure connection is essential (Dougherty et al, 2015).

### 2.3 Clinical Practice

It is widely expected that changes in clinical practice, principally driven by the legislative paradigm surrounding the reduction of sharps injuries in UK healthcare [*the Health and Safety (Sharp Instruments in Healthcare) Regulations 2013*] and stricter enforcement and inspection regimes which are being experienced by Trusts from the Health and Safety Executive, will see these volumes of blunt drawing up devices increase at the expense of the previously used wider gauge hypodermic needles. Certainly, anecdotal evidence supports this contention as shown by increasing numbers of enquiries about blunt drawing up devices experienced within clinical forum such as the Clinical Procurement Specialists Network.

## 2.4 Clinical Impact

The clinical impact of this work will be to allow clinical staff faced with the legislative and compliance pressures described as well as improved understanding of good clinical practice around the effective and safe preparation of medicines for injection to make the necessary choices in the blunt drawing up equipment which they are increasingly required to use. The report should also enable other colleagues to understand this complex landscape in order to best support safe and effective care at the frontline. It is believed that the increased, appropriate use, of blunt drawing up devices will further serve to reduce harms associated with needlestick (sharps) injuries as sharp hypodermics usage is reduced commensurately with the uplift in usage of blunt drawing up devices.

In highlighting the value which filtered blunt drawing up devices can bring, this report will build on patient safety levels as particulate levels within the medicines administered will be significantly reduced by the increased uptake of blunt drawing up devices with in-hub filters. If this does not occur, patients will continue to have avoidable harms caused such as pain, inflammation and phlebitis (infection associated with injection and intravenous access). In severe examples emboli, disabling injury or death can occur.

## 2.5 Product Technical Design

Blunt drawing up devices are presented in a range of styles, some made entirely of rigid, moulded plastic but with most being similar in design to hypodermic needles (Luer tapered hub with needle shaft bonded to this). Unlike a hypodermic needle the needle shaft is not cut, bevelled, sharpened and polished. It is generally held that the force required to pierce a surface with a blunt drawing up device is between 9 and 10 times that which would be required by a hypodermic needle; for the sake of interest, this was first developed and assessed for appropriateness using reindeer hide as the test medium. The principle size seen within NHS settings is an 18 gauge device of 40mm needle length however 16, 19 and 20 gauge are also marketed and both shorter and longer lengths exist.

The in-hub filter contained within the body of some blunt drawing up devices is a 5 micron filter as supplier testing demonstrates this to be adequate for removal of the glass particles that they are principally designed to remove from medication as it is prepared for use.

### 3. Pathway Methods for Luer Slip Syringes

#### 3.1 Intelligence Gathering

In preparation of the criteria, account has been taken of academic and related clinical evidence, known guidance and nationally recognised publications as further described in this Section 3.

##### 3.1.1. Literature search

A literature search has been undertaken to establish what current academic knowledge exists on the products for evaluation. It should be noted that the team have not conducted a comprehensive or systematic review of literature. However, the team have interrogated the information to look for common themes which supported the development of the clinical criteria.

An initial literature search was completed using the NICE Evidence services:

<https://www.nice.org.uk/about/what-we-do/evidence-services/journals-and-databases>

Search criteria	Databases searched
<ul style="list-style-type: none"> <li>• Hypodermic luer slip syringe</li> <li>• Luer slip syringe</li> </ul>	<ul style="list-style-type: none"> <li>• NICE website Evidence search <a href="https://www.evidence.nhs.uk/">https://www.evidence.nhs.uk/</a></li> <li>• NICE website journals and databases <a href="https://www.nice.org.uk/about/what-we-do/evidence-services/journals-and-databases">https://www.nice.org.uk/about/what-we-do/evidence-services/journals-and-databases</a> (using Healthcare databases advanced search tool – AMED, EMBASE, HMIC, BNI, Medline, PsycInfo, CINAHL, HEALTH BUSINESS ELITE databases searched)</li> </ul>
<b>Date Range</b>	<b>Since 1975</b>
<b>Language</b>	<b>English</b>

The search returned two results which are summarised below:

<p>1. Failures of luer slip syringes.            Source: Anaesthesia; May 2007; vol. 62 (no. 5); p. 532-3; author reply 533            Publication Date: May 2007            Publication Type(s): Letter            PubMedID: 17448078            Author(s): McVey FK; Jayasheela N            Available in full text at Anaesthesia - from John Wiley and Sons</p>	<p>This was a letter to the Journal highlighting in practice usage issues with a range of syringes in 2005 when introduced in practice that they had reported to the supplier. The supplier also responded to the letter concerning its investigation &amp; vigilance work and the matter was closed.</p>
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<p>Available in full text at Anaesthesia - from Wiley Online Library Free Content NHS Collection</p> <p>Database: PubMed</p>	
<p>2. Is it true that best practice for administering IV flushes/boluses is via a Luer lock syringe as opposed to a Luer slip?</p> <p>Source: Nursing times; 2009; vol. 105 (no. 39); p. 19</p> <p>Publication Date: 2009</p> <p>Publication Type(s): Journal Article</p> <p>PubMedID: 19863029</p> <p>Author(s): Dougherty L</p> <p>Database: PubMed</p>	<p>This was a practice based question regarding the type of syringe for IV flush &amp; bolus. The author summarised that there was no clear evidence or recommendations for this type of activity however luer slip were commonly used for subcutaneous and intramuscular injection.</p>

A review of the Royal Marsden manual of nursing procedures highlighted the use of luer slip syringes for subcutaneous and intramuscular injection.

The Royal College of Nursing Standards for Infusion Therapy (4<sup>th</sup> Edition, 2016) and the Journal of Infusion Nursing Infusion Therapy Standards of Practice (Jan/Feb 2016) were reviewed with no specific guidance to the use of a luer slip syringe identified.

NHS Scotland had published a good practice statement for the preparation of injections in near patient areas, including clinical and home environments in 2002. This highlighted a number of practice statements regarding protection of sterility to syringes prior to use. It stated that clinical staff should peel wrappers from needles and syringes – do not push through wrappers as this will result in heavy particulate contamination.

### 3.1.2. National procurement provider specification

Hypodermic luer slip syringes are available in a range of sizes from 1ml-50/60ml with main volume usage in 2ml, 5ml, 10ml and 20ml.

The current National procurement provider's (NHS Supply Chain) framework specification allows for suppliers to submit either a 2-piece or 3 piece luer slip design for consideration and at present two suppliers provide a 2-piece syringe to the NHS. 2-Piece syringes consist of a barrel and plunger and use an alternative lubricant usually of fatty acid amides to help with plunger movement. Volumes of 2-piece syringe usage are low in the NHS with it accounting for less than 2% of the national volume. We were unable to identify through the literature or clinical engagement a reason to use 2-piece or 3 piece syringes but on the basis of NHS consumption we

have excluded 2-piece syringes from this report and these will be reviewed separately if required.

### National and international safety and quality standards

Account has also been taken of appropriate international and other standards as they pertain to the devices (e.g. ISO, EN and/or BSI).

The Medicines & Healthcare products Regulatory Agency (MHRA) website (<https://www.gov.uk/drug-device-alerts>) returned no product alerts relating to this product category against the search terms previously described.

A search of the NHS Central Alerting System (CAS) returned 27 results for the keyword syringe but none were related to the specific use of luer slip syringes.

### 3.1.3. Product suppliers and manufacturers

Requests for information were sent to all suppliers listed on the national procurement provider framework. Some suppliers provided some level of information from product brochure through to technical datasheets and compliance with standards. Not all suppliers submitted evidence.

### 3.1.4. Quality of evidence

Hierarchy of evidence

Levels of evidence sometimes referred to as hierarchy of evidence are assigned to studies based on the methodological quality of their design, validity, and applicability to patient care.

Hierarchy ranking	Description
Level 1	A systematic review of all relevant randomised controlled trials (RCT) or evidence-based clinical practice guidelines based on systematic reviews of RCT evidence
Level 2	Evidence from at least one well designed RCT
Level 3	Evidence from well-designed controlled trials; non-randomised, quasi experimental
Level 4	Well-designed case control & cohort studies
Level 5	Systematic reviews of descriptive and qualitative studies
Level 6	Evidence from a single, descriptive or qualitative study
Level 7	Evidence from the opinion of authorities and/or reports of expert committees

Figure 1 – Hierarchy ranking: Evidence based practice in nursing & healthcare: a guide to best practice” (B.M. Melnyk & E. Fineout-Overholt; 2005: p10)

## 4. NHS Clinical Engagement

In order to develop a shared vision of what hypodermic luer slip syringes should offer several methods of engagement were used.

These engagement events were used to formulate thoughts, ideas and needs from differing clinicians familiar with these products; identifying their own expectation(s) of the product for their given patient group, and intended patient outcome, being used in a variety of differing clinical environments.

Mapping exercises were undertaken to determine personnel that should be involved and/or consulted regarding these products. This stage of the report focused on clinical staff that are:

- a) recognised as subject experts, and/or
- b) recognised regular users of the devices in their clinical practice

Various methods of engagement were undertaken to ensure these clinical opinions were robust, and validated by peers from around the country, options of engagement included:

Regional and national face-to-face events with NHS clinical colleagues

Focussed visits to NHS clinicians regional and national face-to-face events

Website subscription

Attendance at specialist network events

Attendance at NHS Business Services Authority events

Web-based surveys and e-engagement tools (e.g. email, WebEx, portal based surveys)

### 4.1 Clinical Conversations

To build a broad caucus of attendees at our events letters were sent inviting Trusts to nominate clinical colleagues to attend a series of regional group events. These were hosted by NHS organisations throughout England to enable the widest possible access for all invited. This ensured to set aside any pre-existing regional variance.

Details of the discussion outcomes were recorded from the open events, then used together with the evidence gathered at the previous project stage to inform a list of clinical criteria against which the product(s) are measured against.

Much of these national clinical conversations featured opinions by generalist health care professionals, and allied health professionals. For the purpose of wound care products, ratification and validation was sought of the proposed criteria by tissue viability specialists. Engagement at regional tissue viability networks took place to obtain this validation. Furthermore these events were used to gain consent from these specialist clinicians to provide valuable feedback on the performance of products being used in their own clinical environment against the proposed criteria.

NHS clinician colleagues were asked to score the importance of each criteria, with 0 as having no importance and 10 as having critical importance.

Hypodermic Luer Slip Syringe Criteria / question
Any specific packaging requirements for this product?
Any specific issues with how we open and prepare this product for clinical use?
How important are the markings and grading?
How important is it that you can still attach a label, whilst still seeing the markings?
How important is a smooth plunger action?
How important is it that you can be confident in the accuracy of dosing?
How important is it that you can attach a range of needles safely and securely?
How important is secure universal fitting with needle-free access devices?
How important is the feel, shape and size of the wings and plunger top to enable accurate single handed use?
How important is it that you can operate the syringe with a gloved hand?
Does/would a ridged or textured plunger top make a difference?
Does/would a slightly indented plunger top make a difference?
What would make a “perfect” product if you could design your own based on your clinical experience and knowledge? What features would it have?

Figure 2 - Examples of the evidence gathering criteria questions posed for luer slip syringes.

## 4.2 Clinical Criteria

The data received from all the NHS clinical conversation events, alongside the data collected from individual experts, was assimilated into a series of clinical criteria.

A clinical criterion is defined for the purposes of this report as a principle or standard by which products may be evaluated. It is a statement which describes the clinician’s requirements for the product.

The proposed criteria were validated by workshop attendees and all other clinical experts engaged in the development process. In addition, other clinical experts who are likely to add further useful insight were also included, leading to the finalised clinical criteria listed below.

<b>Clinical Criteria – Hypodermic Syringes - 3 Piece IV Luer Slip</b>
<b>Packaging</b>
The product type, size, lot number and expiry date is simple for staff to identify on the external packaging
The external packaging is of a robust construction for storage and simple to access for removal of products
The product type, size, lot number and expiry date is simple to identify on the syringe wrapper
The syringe wrapper should give a clear indication of how to open
<b>Opening and preparation for clinical use</b>
The syringe can be opened quickly whilst protecting any sterility requirements
<b>Clinical use</b>
The volume numbers and measured graduation lines are clear, visible and easy to read for clinical staff
There is space to apply a drug label in certain clinical situations without compromising the visibility of graduations - This will only be a criteria for 2ml/5ml/10ml/20ml sizes in Luer Slip
The design should enable staff to use the syringe with a one-handed technique
The syringe should easily draw up and dispense a range of solutions commonly used in clinical practice
The syringe should accept a range of hypodermic, blunt and filter drawing up needles
The plunger should not easily be accidentally removed when drawing up a solution
The handling and use of the syringe should not be affected by wearing of medical gloves
<b>Disposal after use</b>
A range of hypodermic, filter & blunt drawing up needles that are secured to a luer slip syringe can be removed safely using a sharps container needle remover lid

Figure 3 – NHS Clinical Criteria Luer slip syringes; October 2016

Clinical criteria are published online at [www.nhsbsa.nhs.uk/CET](http://www.nhsbsa.nhs.uk/CET) .

#### 4.2.1. Criteria explanation- Inclusion (Luer slip syringes)

To enhance the readers understanding of this report, and to provide value to the results, an explanation for the defined clinical criteria is captured.

Packaging Criteria	Explanation
The product type, size, lot number and expiry date is simple for staff to identify on the external packaging	As syringes are used in high quantity, they are often stored in clinical environments in their original outer packaging, ease of identification of the size, type and product details aids clinicians in selecting the right product in a timely manner
The external packaging is of a robust construction for storage and simple to access for removal of products	Due to the high level of use, these products are often bought in large volumes, and stacked in their outer packaging which products may be dispensed directly from, strong packaging improves rigidity of these structure and space efficiency in clinical areas
The product type, size, lot number and expiry date is simple to identify on the syringe wrapper	Whilst many areas dispense syringes directly from their outer packaging, in areas of less space products may be decanted into trays/receptacles devoid of product information, thus access to product details on individual packaging is important
The syringe wrapper should give a clear indication of how to open	Clarity of packet opening reduces incidence of clinicians accessing sterile product in a non- aseptic method
Opening and Preparation Criteria	Explanation
The syringe can be opened quickly whilst protecting any sterility requirements	Luer slip syringes as mentioned in the definition and scope of this report are for the administration or removal of fluids into or out of the body, as such the fluid and device needs to be sterile to reduce the risk of healthcare associated infection
Clinical Use Criteria	Explanation
The volume numbers and measured graduation lines are clear, visible and easy to read for clinical staff	As these devices are used for fluid management in/out of the body including medication, clarity of volume is essential to support patient safety
There is space to apply a drug label in certain clinical situations without compromising the visibility of graduations - This will only be a criteria for 2ml/5ml/10ml/20ml sizes in Luer Slip	As many syringes may be pre-prepared or used with pumps/machines giving sustained release of medication an ability to apply a label to record what medication is present in the syringe is needed without obscuring the visibility of the plunger within the syringe

The design should enable staff to use the syringe with a one-handed technique	Luer slip syringes may be used to draw up/prepare medication, this will require clinicians to use devices with one hand whilst the other is securing the bottle/vial from which the fluid is being drawn up or into
The syringe should easily draw up and dispense a range of solutions commonly used in clinical practice	Fluid viscosity varies depending on the drug/medication being administered, as these syringes may be used for the preparation of a wide range of treatments, ability to perform well with these varying fluid viscosities is important
The syringe should accept a range of hypodermic, blunt and filter drawing up needles	As part of the process mentioned previously, these syringes may be used with hypodermic needles or blunt drawing up devices, to prepare treatments, as such the device needs to connect well with these apparatus
The plunger should not easily be accidentally removed when drawing up a solution	Accidental removal of plunger can result in loss of medication, breakdown of sterile environment, and cause undue stress to clinician and or patient
The handling and use of the syringe should not be affected by wearing of medical gloves	For certain procedures and preparation gloves may be worn, this should not impede the clinician's ability to perform their task
<b>Clinical Use Criteria</b>	<b>Explanation</b>
A range of hypodermic, filter & blunt drawing up needles that are secured to a luer slip syringe can be removed safely using a sharps container needle remover lid	Whilst a range of hypodermic needles or blunt drawing up devices need to easily attach to luer slip syringes, to manage waste effectively they also need to be safely and effectively removed.

#### 4.2.2. Criteria explanation- Exclusion (Luer slip syringes)

To capture true representation of clinical opinion, this report also aims to capture criteria that were raised, but not included as final criteria when the evaluation of these dressings took place.

Proposed Criteria	Explanation for exclusion
Resistance with plunger	Clinical conversation highlighted that clinicians found that plunger resistance when drawing up fluids was a factor in identifying quality of the syringe. Whilst this is acknowledged by CET, factors affecting plunger ease of use include fluid viscosity, vacuum pressure mode of drawing up, all of which are too variable to quantify in meaningful data

### 4.3 Product Evaluation

Evaluation methodologies are defined for each and every clinical criterion. They reflect a simulated clinical environment; actual clinical environment, or a laboratory test environment.

Wherever possible, products were supplied in a 'ward ready' unit of issue as would be found by clinical staff on accessing a store area in their clinical environment. Where this has not been possible it was acknowledged as part of the product assessment results matrix.

The tests were formulated to move through the key aspects of product use using the NHS Clinical Evaluation Team product cycle:

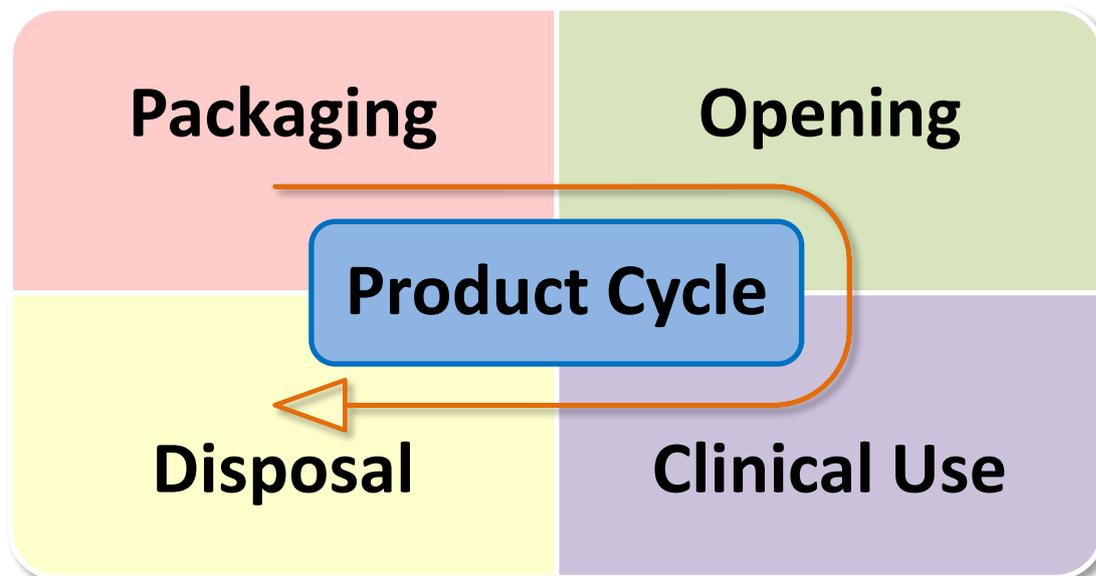


Figure 4 – NHS Clinical Evaluation Team Product Cycle

The evaluation product was ordered and picked from the NHS distribution centres. Products evaluated have been stored post evaluation for a period of three months after publication of this review.

Practicing NHS clinical staff were invited to review the products in accordance with the developed criteria. It was not possible to 'blind' the evaluations; in the sense that the evaluators were aware of the product brand; however, the product to be evaluated was independently picked in accordance with the product selection criteria in Section 2 and prepared for evaluation by colleagues who were not otherwise involved in the process.

Each clinical evaluator entered data independently and without inter-rater comparison into their own workbook. These were then collated, reviewed and summarised by the clinical specialist lead for the project.

As part of the evaluation preparation, each evaluator was given a more detailed and product specific definition for each of the scores

The defined criteria either prompted a 'yes/no' answer, represented with a ✓/X, or a score was given between 0 and 2, or 0 and 3 as follows:

Score	Meaning
0	This does not meet the criteria
1	This partially meets the criteria
2	This meets the criteria
3	This exceeds the criteria

Figure 5 – NHS Clinical Evaluation Team scoring methods

These numerical scores across all evaluators were totalled and a mean value determined. This mean value has then been converted into a star rating (see matrix below).

The mean values convert to a star rating in accordance with the following table:

Point scored	Star value
0 to 0.99	0 Stars
1 to 1.24	1 Star
1.25 to 1.74	1.5 Stars
1.75 to 2.24	2 Stars
2.25 to 2.74	2.5 Stars
2.75 to 3	3 Stars

Figure 6 – conversion of mean scores to star rating

The above scoring mechanisms will not be followed where the criterion identified by the CET cannot reasonably exceed expectations. For example, if the clinical criterion was whether the removal of an adhesive dressing was atraumatic and with the individual patient reporting no pain or skin damage, then it cannot reasonably be expected that a product could exceed that criteria. Therefore, in such circumstances, the relevant criteria will be based on the scoring regime of:

- a. If the criterion is a Yes/No response, the responses will be converted into aggregate percentages and then star ratings as follows:

Percentages (Yes)	Star value
0% to 24.99%	0 star
25% to 49.99%	1 star
50% to 74.99%	1.5 stars
75% to 100%	2 stars

Figure 7 – Percentage scores to star rating

- b. For other subjective criteria, the responses will be converted into mean scores and then star ratings as follows:

<b>Point scored</b>	<b>Star value</b>
<b>0 to 0.49</b>	<b>0 star</b>
<b>0.5 to 0.99</b>	<b>1 star</b>
<b>1 to 1.49</b>	<b>1.5 stars</b>
<b>1.5 to 2</b>	<b>2 stars</b>

Figure 8 – Points scores to star rating

On the basis that clinical evaluators will be providing scores as follows:

- 0 stars – Does not meet the criteria
- 1 star – Partially meets the criteria
- 2 stars – Meets the criteria

All supplemental products used in the evaluation are in use in the NHS and available through the national catalogue (e.g. clinical waste containers, gloves, drug labels and syringes).

Evaluators were also encouraged to record comments where they felt it necessary to provide rationale for their scoring and answers.

The results obtained have been validated by the NHS Clinical Evaluation Team moderation committee for consistency of scoring and interpretation. These results are presented in the product assessment reports herein.

## **5. Product Assessment Results**

The following product assessment results pages show the tested clinical criteria listed horizontally on the left-hand side of the page with the tested device found vertically across the top of the matrix. The accompanying photographs were taken during evaluation. These photographs are of sample products provided for evaluation. Lot numbers were recorded and samples have been retained in storage following the completion of evaluation.

The products represented are the range of suppliers and brands available through the NHS national procurement provider's framework at the time of the original report August 2016, and proposed new suppliers to UK market via the national distributor in December 2017.

Results can be seen within the product matrix. Each clinical product has been given a star rating and the evaluator's collated comments are included in the matrix.

	B BRAUN OMNIFIX							
<b>SYRINGES - HYPODERMIC LUER SLIP</b>								
NPC	FWC075	FWC403	FWC189	FWC283	FWC068	FWC975	FWC230	FWC517
MPC	9161406V	4616022V	4616025V	4616057V	4616103V	4616200V	4616308F	4616502F
Brand	B Braun Omnifix	B Braun Omnifix	B Braun Omnifix	B Braun Omnifix	B Braun Omnifix	B Braun Omnifix	B Braun Omnifix	B Braun Omnifix
Base Description	Tuberculin 1ml 100 Graduations at 0.01 ml Increments	2ml Concentric	2 - 3ml Concentric	5ml Eccentric	10ml Eccentric	20ml Eccentric	30ml Eccentric	50/60ml Eccentric
Unit of Issue	Box 100	Box 100	Box 100	Box 100	Box 100	Box 100	Box 100	Box 100
Graduation Lines Measured in	0.01ml	0.1ml	0.1ml	0.2ml	0.5ml	1ml	1ml	1ml
<b>CLINICAL CRITERIA - IV Luer Slip 3 Piece Syringes</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>
The product type, size, lot number and expiry date is simple for staff to identify on the external packaging	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (1.8)
The external packaging is of a robust construction for storage and simple to access for removal of products	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.0)	★★★★ (1.8)	★★★★ (1.8)	★★★★ (1.8)
The product type, size, lot number and expiry date is simple to identify on the syringe wrapper	★★★★ (2.0)	★★★★ (2.0)	★★★★ (1.8)	★★★★ (1.8)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
The syringe wrapper should give a clear indication of how to open	★★★★ (1.2)	★★★★ (1.2)	★★★★ (1.2)	★★★★ (1.2)	★★★★ (1.2)	★★★★ (1.2)	★★★★ (1.2)	★★★★ (1.2)
The syringe can be opened quickly whilst protecting any sterility requirements	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (1.8)
The volume numbers and measured graduation lines are clear, visible and easy to read for clinical staff	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
There is space to apply a drug label in certain clinical situations without compromising the visibility of graduations - This will only be a criteria for 2ml/5ml/10ml/20ml sizes in Luer Slip	Not applicable	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	Not applicable	Not applicable
The design should enable staff to use the syringe with a one-handed technique	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (1.8)	★★★★ (1.8)	★★★★ (1.8)
The syringe should easily draw up and dispense a range of solutions commonly used in clinical practice	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (1.4)	★★★★ (1.4)	★★★★ (2.0)
The syringe should accept a range of hypodermic, blunt and filter drawing up needles	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
The plunger should not easily be accidentally removed when drawing up a solution	★★★★ (1.8)	★★★★ (2.0)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (1.8)	★★★★ (2.2)	★★★★ (1.8)	★★★★ (2.0)
The handling and use of the syringe should not be affected by wearing of medical gloves	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
A range of hypodermic, filter & blunt drawing up needles that are secured to a luer slip syringe can be removed safely using a sharps container needle remover lid.	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)

	BD EMERALD		
<b>SYRINGES - HYPODERMIC LUER SLIP</b>			
NPC	FWC253	FWC254	FWC255
MPC	307727	307731	307736
Brand	BD Emerald	BD Emerald	BD Emerald
Base Description	2ml Concentric	5ml Concentric	10ml Concentric
Unit of Issue	Box 100	Box 100	Box 100
Graduation Lines Measured in	0.1ml	0.2ml	0.2ml
<b>CLINICAL CRITERIA - IV Luer Slip 3 Piece Syringes</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>
The product type, size, lot number and expiry date is simple for staff to identify on the external packaging	★★★☆☆ (1.8)	★★★☆☆ (1.8)	★★★☆☆ (1.8)
The external packaging is of a robust construction for storage and simple to access for removal of products	★★★☆☆ (1.6)	★★★☆☆ (1.6)	★★★☆☆ (1.6)
The product type, size, lot number and expiry date is simple to identify on the syringe wrapper	★★★☆☆ (2.0)	★★★☆☆ (2.0)	★★★☆☆ (2.0)
The syringe wrapper should give a clear indication of how to open	★★★☆☆ (1.2)	★★★☆☆ (1.2)	★★★☆☆ (1.2)
The syringe can be opened quickly whilst protecting any sterility requirements	★★★☆☆ (1.8)	★★★☆☆ (2.0)	★★★☆☆ (2.0)
The volume numbers and measured graduation lines are clear, visible and easy to read for clinical staff	★★★☆☆ (2.0)	★★★☆☆ (2.0)	★★★☆☆ (2.0)
There is space to apply a drug label in certain clinical situations without compromising the visibility of graduations - This will only be a criteria for 2ml/5ml/10ml/20ml sizes in Luer Slip	★★★☆☆ (2.0)	★★★☆☆ (2.0)	★★★☆☆ (2.0)
The design should enable staff to use the syringe with a one-handed technique	★★★☆☆ (2.0)	★★★☆☆ (2.0)	★★★☆☆ (2.0)
The syringe should easily draw up and dispense a range of solutions commonly used in clinical practice	★★★☆☆ (2.0)	★★★☆☆ (2.0)	★★★☆☆ (2.0)
The syringe should accept a range of hypodermic, blunt and filter drawing up needles	★★★☆☆ (2.0)	★★★☆☆ (2.0)	★★★☆☆ (2.0)
The plunger should not easily be accidentally removed when drawing up a solution	★★★★☆ (2.4)	★★★☆☆ (2.0)	★★★☆☆ (1.8)
The handling and use of the syringe should not be affected by wearing of medical gloves	★★★☆☆ (2.0)	★★★☆☆ (2.0)	★★★☆☆ (2.0)
A range of hypodermic, filter & blunt drawing up needles that are secured to a luer slip syringe can be removed safely using a sharps container needle remover lid.	★★★☆☆ (2.0)	★★★☆☆ (2.0)	★★★☆☆ (2.0)

	BD PLASTIPAK						
<b>SYRINGES - HYPODERMIC LUER SLIP</b>							
NPC	FWC429	FWC000	FWC306	FWC128	FWC021	FWC067	FWC035
MPC	303172	300185	302187	302188	300613	301231	300866
Brand	BD Plastipak	BD Plastipak	BD Plastipak	BD Plastipak	BD Plastipak	BD Plastipak	BD Plastipak
Base Description	Tuberculin 1ml 100 Graduations at 0.01ml Increments	2ml Concentric	5ml Concentric	10ml Eccentric	20ml Eccentric	30ml Eccentric	50ml Eccentric
Unit of Issue	Box 120	Box 100	Box 100	Box 100	Box 120	Box 60	Box 60
Graduation Lines Measured in	0.01ml	0.1ml	0.2ml	0.5ml	1ml	1ml	1ml
<b>CLINICAL CRITERIA - IV Luer Slip 3 Piece Syringes</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>
The product type, size, lot number and expiry date is simple for staff to identify on the external packaging	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
The external packaging is of a robust construction for storage and simple to access for removal of products	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)
The product type, size, lot number and expiry date is simple to identify on the syringe wrapper	★★★★ (2.0)	★★★★ (2.0)	★★★★ (1.8)	★★★★ (1.8)	★★★★ (1.8)	★★★★ (1.8)	★★★★ (1.8)
The syringe wrapper should give a clear indication of how to open	★★★ (1.2)	★★★ (1.2)	★★★ (1.2)	★★★ (1.2)	★★★ (1.2)	★★★ (1.2)	★★★ (1.2)
The syringe can be opened quickly whilst protecting any sterility requirements	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
The volume numbers and measured graduation lines are clear, visible and easy to read for clinical staff	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
There is space to apply a drug label in certain clinical situations without compromising the visibility of graduations - This will only be a criteria for 2ml/5ml/10ml/20ml sizes in Luer Slip	Not Applicable	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	Not Applicable	Not Applicable
The design should enable staff to use the syringe with a one-handed technique	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
The syringe should easily draw up and dispense a range of solutions commonly used in clinical practice	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
The syringe should accept a range of hypodermic, blunt and filter drawing up needles	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
The plunger should not easily be accidentally removed when drawing up a solution	★★★★ (1.8)	★★★★ (2.0)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.0)
The handling and use of the syringe should not be affected by wearing of medical gloves	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
A range of hypodermic, filter & blunt drawing up needles that are secured to a luer slip syringe can be removed safely using a sharps container needle remover lid.	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)

	IMS EURO					
<b>SYRINGES - HYPODERMIC LUER SLIP</b>						
NPC	FSW988	FSW992	FSW994	FSW995	FSW996	FSW998
MPC	41000	41002E	41003E	41004E	41031	41074
Brand	Troge	Troge	Troge	Troge	Troge	Troge
Base Description	1ml Concentric	5ml Eccentric	10ml Eccentric	20ml Eccentric	30ml Eccentric	50/60ml Eccentric
Unit of Issue	1000	1000	1000	1000	500	500
Graduation Lines Measured in	0.05ml	0.2ml	0.2ml	1ml	1ml	1ml
<b>CLINICAL CRITERIA - IV Luer Slip 3 Piece Syringes</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>
The product type, size, lot number and expiry date is simple for staff to identify on the external packaging	★★★★ 2.00	★★★★ 2.13	★★★★ 2.13	★★★★ 2.00	★★★★ 2.13	★★★★ 2.00
The external packaging is of a robust construction for storage and simple to access for removal of products	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88
The product type, size, lot number and expiry date is simple to identify on the syringe wrapper	★★★★ 1.25	★★★★ 1.50	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe wrapper should give a clear indication of how to open	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe can be opened quickly whilst protecting any sterility requirements	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 1.88	★★★★ 2.00	★★★★ 1.88
The volume numbers and measured graduation lines are clear, visible and easy to read for clinical staff	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
There is space to apply a drug label in certain clinical situations without compromising the visibility of graduations - This will only be a criteria for 2ml/5ml/10ml/20ml sizes in Luer Slip	N/A	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The design should enable staff to use the syringe with a one-handed technique	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 1.88
The syringe should easily draw up and dispense a range of solutions commonly used in clinical practice	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe should accept a range of hypodermic, blunt and filter drawing up needles	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The plunger should not easily be accidentally removed when drawing up a solution	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The handling and use of the syringe should not be affected by wearing of medical gloves	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
A range of hypodermic, filter & blunt drawing up needles that are secured to a luer slip syringe can be removed safely using a sharps container needle remover lid.	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00

	MATZ MEDICAL LTD							
SYRINGES - HYPODERMIC LUER SLIP								
NPC	FSW1124	FSW1126	FSW1128	FSW1130	FSW1132	FSW1134	FSW1136	FSW1138
MPC	MML_SY_93	MML_SY_95	MML_SY_97	MML_SY_99	MML_SY_101	MML_SY_103	MML_SY_105	MML_SY_107
Brand	Matz	Matz	Matz	Matz	Matz	Matz	Matz	Matz
Base Description	1ml Eccentric	2ml Eccentric	3ml Eccentric	5ml Eccentric	10ml Eccentric	20ml Eccentric	30ml Eccentric	50/60ml Eccentric
Unit of Issue	100	100	100	100	100	100	100	100
Graduation Lines Measured in	0.05ml		0.1ml	0.2ml	0.2ml	1ml	1ml	1ml
CLINICAL CRITERIA - IV Luer Slip 3 Piece Syringes	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating
The product type, size, lot number and expiry date is simple for staff to identify on the external packaging	★★★★ 2.38	Syringe not Available for Evaluation	★★★★ 2.38	★★★ 1.88	★★★★ 2.38	★★★★ 2.38	★★★ 1.88	★★★★ 2.38
The external packaging is of a robust construction for storage and simple to access for removal of products	★★★★ 2.00	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.13	★★★★ 2.00
The product type, size, lot number and expiry date is simple to identify on the syringe wrapper	★★★★ 2.13	Syringe not Available for Evaluation	★★★★ 2.13	★★★★ 2.00	★★★★ 2.13	★★★★ 2.13	★★★★ 2.00	★★★★ 2.13
The syringe wrapper should give a clear indication of how to open	★★★★ 2.13	Syringe not Available for Evaluation	★★★★ 2.13	★★★ 1.13	★★★★ 2.13	★★★★ 2.13	★★★ 1.13	★★★★ 2.13
The syringe can be opened quickly whilst protecting any sterility requirements	★★★★ 2.13	Syringe not Available for Evaluation	★★★★ 2.13	★★★★ 1.88	★★★★ 2.13	★★★★ 2.13	★★★★ 2.00	★★★★ 2.00
The volume numbers and measured graduation lines are clear, visible and easy to read for clinical staff	★★★★ 2.13	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
There is space to apply a drug label in certain clinical situations without compromising the visibility of graduations - This will only be a criteria for 2ml/5ml/10ml/20ml sizes in Luer Slip	N/A	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The design should enable staff to use the syringe with a one-handed technique	★★★★ 2.00	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe should easily draw up and dispense a range of solutions commonly used in clinical practice	★★★★ 2.00	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe should accept a range of hypodermic, blunt and filter drawing up needles	★★★★ 2.00	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The plunger should not easily be accidentally removed when drawing up a solution	★★★★ 2.00	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The handling and use of the syringe should not be affected by wearing of medical gloves	★★★★ 2.00	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
A range of hypodermic, filter & blunt drawing up needles that are secured to a luer slip syringe can be removed safely using a sharps container needle remover lid.	★★★★ 2.00	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00

	MEDICINA LTD							
<b>SYRINGES - HYPODERMIC LUER SLIP</b>								
NPC	FWC345	FWC346	FWC347	FWC348	FWC409	FWC349	FWC351	FWC352
MPC	IVS01	IVS03	IVS05	IVS10	IVS10E	IVS20	IVS30	IVS60
Brand	Medicina	Medicina	Medicina	Medicina	Medicina	Medicina	Medicina	Medicina
Base Description	1ml Concentric	3ml Concentric	5ml Concentric	10ml Concentric	10ml Eccentric	20ml Eccentric	30ml Eccentric	60ml Eccentric
Unit of Issue	100	100	100	100	100	50	30	30
Graduation Lines Measured in	0.01ml	0.1ml	0.2ml	0.2ml	0.2ml	1ml	1ml	1ml
<b>CLINICAL CRITERIA - IV Luer Slip 3 Piece Syringes</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>
The product type, size, lot number and expiry date is simple for staff to identify on the external packaging	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13	★★★★ 1.88	★★★★ 1.88	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13
The external packaging is of a robust construction for storage and simple to access for removal of products	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25
The product type, size, lot number and expiry date is simple to identify on the syringe wrapper	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13	★★★★ 1.88	★★★★ 1.88	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13
The syringe wrapper should give a clear indication of how to open	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe can be opened quickly whilst protecting any sterility requirements	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The volume numbers and measured graduation lines are clear, visible and easy to read for clinical staff	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
There is space to apply a drug label in certain clinical situations without compromising the visibility of graduations - This will only be a criteria for 2ml/5ml/10ml/20ml sizes in Luer Slip	N/A	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The design should enable staff to use the syringe with a one-handed technique	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe should easily draw up and dispense a range of solutions commonly used in clinical practice	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe should accept a range of hypodermic, blunt and filter drawing up needles	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The plunger should not easily be accidentally removed when drawing up a solution	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The handling and use of the syringe should not be affected by wearing of medical gloves	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
A range of hypodermic, filter & blunt drawing up needles that are secured to a luer slip syringe can be removed safely using a sharps container needle remover lid.	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00

		MEDICURE SCIENTIFIC								
SYRINGES - HYPODERMIC LUER SLIP										
NPC	FSW1276	FSW1262	FSW1263	FSW1265	FSW1267	FSW1269	FSW1326	FSW1271	FSW1273	FSW1275
MPC	TUB1ML-BB	TUB1ML-AB	22LC-B	33LC-B	55LC-B	10LC-B	10LE-B	20LE-B	30LE-B	60LE-B
Brand	Rays S.P.A. Inj/Light	Rays S.P.A. Inj/Light	Rays S.P.A. Inj/Light	Rays S.P.A. Inj/Light	Rays S.P.A. Inj/Light	Rays S.P.A. Inj/Light	Rays S.P.A. Inj/Light	Rays S.P.A. Inj/Light	Rays S.P.A. Inj/Light	Rays S.P.A. Inj/Light
Base Description	1ml Tuberculin syringe Graduations at 0.01ml increments	1ml Concentric	2ml Concentric	3ml Concentric	5ml Concentric	10ml Concentric	10ml Eccentric	20ml Eccentric	30ml Eccentric	60ml Eccentric
Unit of Issue	800	800	800	800	800	800	800	400	400	200
Graduation Lines Measured in	0.01ml	0.01ml	0.1ml	0.1ml	0.2ml	0.2ml	0.2ml	1ml	1ml	1ml
CLINICAL CRITERIA - IV Luer Slip 3 Piece Syringes	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating	CET Evaluation Rating
The product type, size, lot number and expiry date is simple for staff to identify on the external packaging	Syringe not Available for Evaluation	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25	★★★★ 2.00	★★★★ 2.00	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25
The external packaging is of a robust construction for storage and simple to access for removal of products	Syringe not Available for Evaluation	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25	★★★★ 2.25
The product type, size, lot number and expiry date is simple to identify on the syringe wrapper	Syringe not Available for Evaluation	★★★★ 1.75	★★★★ 1.75	★★★★ 1.75	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe wrapper should give a clear indication of how to open	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe can be opened quickly whilst protecting any sterility requirements	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The volume numbers and measured graduation lines are clear, visible and easy to read for clinical staff	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
There is space to apply a drug label in certain clinical situations without compromising the visibility of graduations - This will only be a criteria for 2ml/5ml/10ml/20ml sizes in Luer Slip	Syringe not Available for Evaluation	N/A	★★★★ 1.75	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The design should enable staff to use the syringe with a one-handed technique	Syringe not Available for Evaluation	★★★★ 1.88	★★★★ 1.88	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe should easily draw up and dispense a range of solutions commonly used in clinical practice	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe should accept a range of hypodermic, blunt and filter drawing up needles	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The plunger should not easily be accidentally removed when drawing up a solution	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The handling and use of the syringe should not be affected by wearing of medical gloves	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
A range of hypodermic, filter & blunt drawing up needles that are secured to a luer slip syringe can be removed safely using a sharps container needle remover lid.	Syringe not Available for Evaluation	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00

**SPRINT MOTO UK**

<b>SYRINGES - HYPODERMIC LUER SLIP with WHITE PLUNGER</b>							
NPC	FSW1015	FSW1017	FSW1019	FSW1021	FSW1023	FSW1319	FSW1321
MPC	60-0016	60-0018	60-0020	60-0022	60-0024	60-0026	60-0028
Brand	Sprint	Sprint	Sprint	Sprint	Sprint	Sprint	Sprint
Base Description	1ml Concentric	2ml Concentric	3ml Concentric	5ml Concentric	10ml Concentric	20ml Concentric	30ml Eccentric
Unit of Issue	1000	1000	1000	1000	1000	400	200
Graduation Lines Measured in	0.01ml	0.1ml	0.1ml	0.2ml	0.5ml	1ml	2ml

CLINICAL CRITERIA - IV Luer Slip 3 Piece Syringes	CET Evaluation Rating						
The product type, size, lot number and expiry date is simple for staff to identify on the external packaging	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13
The external packaging is of a robust construction for storage and simple to access for removal of products	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The product type, size, lot number and expiry date is simple to identify on the syringe wrapper	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe wrapper should give a clear indication of how to open	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe can be opened quickly whilst protecting any sterility requirements	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88
The volume numbers and measured graduation lines are clear, visible and easy to read for clinical staff	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13	★★★★ 2.13
There is space to apply a drug label in certain clinical situations without compromising the visibility of graduations - This will only be a criteria for 2ml/5ml/10ml/20ml sizes in Luer Slip	N/A	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88
The design should enable staff to use the syringe with a one-handed technique	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe should easily draw up and dispense a range of solutions commonly used in clinical practice	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The syringe should accept a range of hypodermic, blunt and filter drawing up needles	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
The plunger should not easily be accidentally removed when drawing up a solution	★★★★ 1.75	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88	★★★★ 1.88
The handling and use of the syringe should not be affected by wearing of medical gloves	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00
A range of hypodermic, filter & blunt drawing up needles that are secured to a luer slip syringe can be removed safely using a sharps container needle remover lid.	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00	★★★★ 2.00

	TERUMO						
<b>SYRINGES - HYPODERMIC LUER SLIP</b>							
NPC	FWC531	FWC407	FWC102	FWC103	FWC104	FWC539	FWC421
MPC	SS01T1	SS02S1	SS05S1	SS10E1	SS20E1	SS30ESE1	SS50E1
Brand	Terumo	Terumo	Terumo	Terumo	Terumo	Terumo	Terumo
Base Description	Tuberculin 1ml 100 Graduations at 0.01ml Increments	2 to 2.5ml Concentric	5ml with 0.2ml graduations Concentric	10ml Eccentric	20ml Eccentric	30ml Eccentric	50ml Eccentric
Unit of Issue	Box 100	Box 100	Box 100	Box 100	Box 50	Box 50	Box 25
Graduation Lines Measured in	0.01ml	0.1ml	0.2ml	0.2ml	1ml	1ml	1ml
<b>CLINICAL CRITERIA - IV Luer Slip 3 Piece Syringes</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>
The product type, size, lot number and expiry date is simple for staff to identify on the external packaging	★★★★ (1.8)	★★★★ (1.8)	★★★★ (1.8)	★★★★ (1.8)	★★★★ (1.8)	★★★★ (1.8)	★★★★ (1.8)
The external packaging is of a robust construction for storage and simple to access for removal of products	★★★★ (2.0)	★★★★ (1.8)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
The product type, size, lot number and expiry date is simple to identify on the syringe wrapper	★★★★ (1.6)	★★★★ (1.6)	★★★★ (1.6)	★★★★ (1.6)	★★★★ (1.6)	★★★★ (1.4)	★★★★ (1.6)
The syringe wrapper should give a clear indication of how to open	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)
The syringe can be opened quickly whilst protecting any sterility requirements	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)
The volume numbers and measured graduation lines are clear, visible and easy to read for clinical staff	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
There is space to apply a drug label in certain clinical situations without compromising the visibility of graduations - This will only be a criteria for 2ml/5ml/10ml/20ml sizes in Luer Slip	Not Applicable	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	Not Applicable	Not Applicable
The design should enable staff to use the syringe with a one-handed technique	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
The syringe should easily draw up and dispense a range of solutions commonly used in clinical practice	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
The syringe should accept a range of hypodermic, blunt and filter drawing up needles	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (1.8)	★★★★ (2.0)
The plunger should not easily be accidentally removed when drawing up a solution	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.0)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.2)	★★★★ (2.0)
The handling and use of the syringe should not be affected by wearing of medical gloves	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)
A range of hypodermic, filter & blunt drawing up needles that are secured to a luer slip syringe can be removed safely using a sharps container needle remover lid.	★★★★ (1.6)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)	★★★★ (2.0)

	UNISURGE					
<b>SYRINGES - HYPODERMIC LUER SLIP</b>						
NPC	FSW1349	FSW1357	FSW1358	FSW1361	FSW1359	FSW1360
MPC	FSWLS02	FSWLS03	FSWLS05	FSWLS10	FSWLS20	FSWLS50
Brand	Safeway	Safeway	Safeway	Safeway	Safeway	Safeway
Base Description	2ml Concentric	3ml Concentric	5ml Concentric	10ml Concentric	20ml Eccentric	50ml Eccentric
Unit of Issue	2400	2400	2400	1000	500	400
Graduation Lines Measured in	0.1ml		0.2ml	0.2ml		1ml
<b>CLINICAL CRITERIA - IV Luer Slip 3 Piece Syringes</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>	<b>CET Evaluation Rating</b>
The product type, size, lot number and expiry date is simple for staff to identify on the external packaging	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00
The external packaging is of a robust construction for storage and simple to access for removal of products	★★★☆☆ 2.13	Syringe not Available for Evaluation	★★★☆☆ 2.13	★★★☆☆ 2.13	Syringe not Available for Evaluation	★★★☆☆ 2.13
The product type, size, lot number and expiry date is simple to identify on the syringe wrapper	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00
The syringe wrapper should give a clear indication of how to open	★★★☆☆ 1.88	Syringe not Available for Evaluation	★★★☆☆ 1.88	★★★☆☆ 1.88	Syringe not Available for Evaluation	★★★☆☆ 1.88
The syringe can be opened quickly whilst protecting any sterility requirements	★★★☆☆ 1.88	Syringe not Available for Evaluation	★★★☆☆ 1.88	★★★☆☆ 1.88	Syringe not Available for Evaluation	★★★☆☆ 1.63
The volume numbers and measured graduation lines are clear, visible and easy to read for clinical staff	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00
There is space to apply a drug label in certain clinical situations without compromising the visibility of graduations - This will only be a criteria for 2ml/5ml/10ml/20ml sizes in Luer Slip	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00
The design should enable staff to use the syringe with a one-handed technique	★★★☆☆ 1.75	Syringe not Available for Evaluation	★★★☆☆ 1.75	★★★☆☆ 1.75	Syringe not Available for Evaluation	★★★☆☆ 1.75
The syringe should easily draw up and dispense a range of solutions commonly used in clinical practice	★★★☆☆ 1.88	Syringe not Available for Evaluation	★★★☆☆ 1.88	★★★☆☆ 1.88	Syringe not Available for Evaluation	★★★☆☆ 1.88
The syringe should accept a range of hypodermic, blunt and filter drawing up needles	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00
The plunger should not easily be accidentally removed when drawing up a solution	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00
The handling and use of the syringe should not be affected by wearing of medical gloves	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00
A range of hypodermic, filter & blunt drawing up needles that are secured to a luer slip syringe can be removed safely using a sharps container needle remover lid.	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00	★★★☆☆ 2.00	Syringe not Available for Evaluation	★★★☆☆ 2.00

## 6. Using the Product Assessment Results Matrix

The clinical criteria displayed are designed to capture key clinical elements that health professionals may wish to consider when reviewing/selecting products for their own clinical practice. The report is intended as a guidance tool to aid product selection and is not intended to be a universal determination of the clinical effectiveness of any particular product. Each clinical practitioner should therefore make their own assessments taking into account all relevant considerations for their particular situation.

Not all clinical criteria cited in the report will be relevant or important in all environments,

**i.e. The external packaging is of a robust construction for storage and simple to access for removal of products- in a clinical environment where syringes are decanted into receptacles**

Likewise not all clinical criteria will be relevant or important for all patient groups;

**i.e. Ability to draw up viscous fluid for patients attending an anti-coagulation clinic**

Clinicians may identify the criteria that most represent their clinical environment and patient demographic, and may choose to build their own hierarchy of importance to aid product(s) selection for patient outcome goals using the matrix presented in this report, their own clinical knowledge, as well as any other resources (including publications) to provide informed choice and transparency of their decision for product(s) being used.

## 7. Further Considerations and Recommendations

### 7.1 Future recommendations

The review of hypodermic luer slip syringes has enabled the NHS to develop and test new clinical criteria for the requirements of a product in clinical use.

The developed criteria have demonstrated the importance of packaging both in external boxes and internal wrappers and the need for clinical staff to quickly be able to identify the key attributes of the product.

The indication of how to open syringe wrappers scored lower across the majority of suppliers and this may want to be considered by industry in future packaging design. NHS teams have clearly indicated that future design of syringes should continue to enhance the clarity of graduation markings and measurements.

The evaluation team have found that much of the criteria identified by NHS clinical staff is covered to some degree in the ISO standards associated with the product and it is recommended that we should make these requirements more visible and accessible to NHS staff so that they can understand how quality and safety is built into medical device development and manufacture.

Overall this evaluation has shown the majority of criteria identified met the minimum standards and products could be considered similar in practice; however we would recommend for safety and consistency in practice that the mixing of brands at different sizes should be minimised where possible and standardised across an organisation unless clinical exceptions are required.

Based on the intended use of a luer slip syringe we have not identified these exceptions at a national level. However, there may still need to be a requirement for local NHS organisations to provide any examples of exceptions which can feed into future evaluation/specification development.

## **7.2 Barcodes**

The CET are aware of the Scan4Safety project and are aligned with the ambitions of the programme, which will deliver significant benefits in terms of patient safety and efficiency, to the NHS. The adoption of standards, driven by Scan4Safety, enables patient, product and location identification and traceability from the supply chain to the patient.

Adoption of these standards has also been shown to improve the quality of care by minimising the risk of human error.

The CET will be considering the inclusion of an evaluation criteria relating to the presence of GS1 compliant barcodes in future reports, as following our clinical conversations we have seen clinical staff asking for it to be included, but further information will be issued by the CET on this to stakeholders in advance.

## **8. Disclaimer**

Reports published by the NHS Clinical Evaluation Team represent general guidance and the team's opinions on products are based on the clinical evaluations undertaken, using the information and clinical criteria generated from extensive stakeholder engagement in line with the team's requirements and evaluation pathway. Reports will be reviewed and updated at the team's discretion as deemed appropriate to reflect any changes.

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Reports are accurate at the time of publication, any recommendations or best practice guidance should be checked for updates.

## **9. Acknowledgements**

On behalf of the Clinical Reference Board and the NHS Clinical Evaluation Team, we would like to acknowledge the support, help and advice given by our colleagues across a range of organisations. We would particularly like to thank the Department of Health and Social Care, NHS Business Services Authority and their Communications team along with publishing partners The APS Group and, most importantly, our NHS colleagues who have supported our work.

The team would also like to acknowledge the inspiration of Mandie Sunderland who saw this opportunity and who, through her personal drive and enthusiasm, has ensured that the clinical voice and the need for quality, safety and value throughout the NHS has been heard

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**‘Quality, safety and value are at the heart of our work and it’s important that we use our clinical experience to deliver high standards of care while reducing cost and waste in the NHS.’**

Mandie Sunderland  
Chair, Clinical Reference Board  
(Governing body of the NHS Clinical Evaluation Team)

