Guidance for post-market surveillance and market surveillance of medical devices, including in-vitro-diagnostics
Post-market surveillance and market surveillance of medical devices, including in vitro diagnostics

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To be added.

Disclaimers

To be added.
INTRODUCTION

1 Introduction to post-market surveillance and market surveillance of medical devices, including in vitro diagnostics

Post-market surveillance is the process for manufacturers of medical devices to collect and analyse experience gained from medical devices that have been placed on the market. Post-market surveillance is a crucial tool to ensure that medical devices that have been placed on the market remain safe and effective and to consider necessary actions if the risk of continuing to use the device outweighs the benefit. The outcome of the analysis of post-market surveillance data can also highlight opportunities to improve the medical device. The WHO Global Model Regulatory Framework for Medical Devices, including in vitro diagnostic medical devices, like many other international regulatory frameworks, requires the implementation of post-market surveillance systems [ref]. This document indicates that receiving and evaluating feedback is the minimum for post-market surveillance, and that this can be expanded to include other activities. This framework also includes the activities of the national regulatory authorities (NRAs) to act upon complaints and reports of adverse events received, so-called vigilance. The definition of post-market surveillance in the WHO-framework focusses on the activities of the NRAs. In the context of the current document on post-market surveillance, such activities by NRAs are called market surveillance. The term post-market surveillance is reserved for the activities by the manufacturers.

Thus, the terms post-market surveillance, vigilance and market surveillance are closely linked. Post-market surveillance, as explained above, is an activity of the manufacturer to collect data from the actual use of medical devices, to analyse such data, and to identify the need to take action. Part of these data can be adverse events. Vigilance is the process whereby the manufacturer reports certain adverse events to the NRA and keeps the NRA updated on the actions taken in relation to the adverse event. The NRA will oversee the process of investigation of adverse events and further actions taken by manufacturers. This is closely connected to their market surveillance responsibilities. Market surveillance comprises the total package of activities undertaken by NRAs to obtain an oversight of medical devices on the market in their territory and to ensure that the safety, quality and performance of the devices on the market is adequate.

Over the last years, several developments have impacted on post-market surveillance. Around the same time that the WHO Global Model Regulatory Framework was published, also new European regulations on medical devices and in-vitro diagnostic medical devices (IVDs) were published in 2017 [ref]. These regulations establish strong and relatively detailed requirements on post-market surveillance and on how post-market surveillance data are to be used (e.g. updates to the risk management file and to the clinical evaluation). Also, the United States’ Food and Drug Administration (FDA) have been placing an increased emphasis on
Post-market surveillance and market surveillance of medical devices, including IVDs

... the possibilities for using data from experiences gained with the use of medical devices.¹

Recent horizontal ISO standards for medical devices place increased emphasis on the importance of post-market surveillance. The ISO standard ISO 13485 on Quality Management Systems for medical devices, used by most manufacturers, requires a post-market surveillance system to be in place. Furthermore, in the recent revision of the ISO standard on Risk Management, ISO 14971, requirements on post-market surveillance were also strengthened. The specific ISO guidance document on post-market surveillance for manufacturers of medical devices (ISO TR 20416) was recently published. Together, these documents provide a framework for conducting post-market surveillance and using post-market surveillance data to ensure devices’ continued safety and performance.

Post-market surveillance, as described in this guidance, is essential for all devices in order to enable continuous improvement of the devices.

In Part IV of this guidance, specific requirements for manufacturers of WHO-recommended medical devices and IVDs are given, including reporting to WHO.

Although the user/patient/client does not have an official role in post-market surveillance, most of the information on the actual use of medical devices comes from their feedback. On the other hand, users/patients/clients will benefit themselves if the medical devices on the market remain safe and effective and therefore should be encouraged to provide feedback to the manufacturer.

Medical devices and IVDs will be indicated by medical devices or otherwise specified, if appropriate.

### 2 Scope and intended audience of this guidance

#### Scope

This document pertains to the objectives and processes for post-market surveillance for medical devices conducted by manufacturers and their economic operators, as well as market surveillance conducted by regulators and the role of other stakeholders in these processes. It describes the measures taken to ensure the ongoing compliance of medical devices with the requirements for safety, quality and performance after they are placed on the market.

All medical devices, including in IVDs, are covered by this guidance.

#### Audience

The intended audience of this guidance is:

- Manufacturers
- Other economic operators
- Health care providers and their clients
- Programme implementers including procurement agencies and central medical stores
- NRAs.

¹ https://www.fda.gov/media/99447/download
This document provides an overview of pro-active and reactive procedures for post-market surveillance, with emphasis on reactive post-market surveillance through providing and evaluating feedback, and any required actions to correct and prevent recurrence. It also provides an overview of the market surveillance activities that are the responsibility of NRAs.

The post-market surveillance procedures described in this document are intended to supplement, and not substitute, the internal procedures for post-market activities that are expected to be an integral part of the manufacturer’s quality management system. National regulations may require manufacturers and other stakeholders to perform post-market activities and submit relevant post-market information to NRAs. The market surveillance activities described in this document are also intended to supplement existing activities as performed by the NRAs. Nascent NRAs are encouraged to take a risk-based approach to expanding market surveillance activities for medical devices.

The principles laid down in this document may be considered by NRAs when developing or amending existing national post-market surveillance and market surveillance obligations. It can also be used by procurement agencies and other entities that procure medical devices and wish to be assured of their continued quality, safety and performance.

This document intends to give an overview of the technical aspects of post-market surveillance and market surveillance for medical devices. NRAs are invited to adopt these guidelines in relation to the resources available, i.e. a phased implementation may be most appropriate.
\section*{3 Definitions and acronyms}

\subsection*{3.1 Definitions}

\textbf{Abnormal use}: conscious, deliberate act or deliberate omission of an act that is counter to or violates normal use and is also beyond any further reasonable means of user interface-related risk control by the manufacturer.

EXAMPLES: Reckless use or sabotage or deliberate disregard of information for Safety are such acts.

\textit{Note 1; deleted.}

\textit{Note 2 to entry: An intended but erroneous action that is not ABNORMAL USE is considered a type of USE ERROR.}

\textit{Note 3 to entry: ABNORMAL USE does not relieve the MANUFACTURER from considering non-USER INTERFACE-related means of RISK CONTROL.}

Source: IEC 62366-1:2015

\textbf{Accessory to a medical device}: means an article intended specifically by its manufacturer to be used together with a particular medical device to enable or assist that device to be used in accordance with its intended use.

\textbf{Accessory to an IVD}: means an article intended specifically by its manufacturer to be used together with a particular IVD medical device to enable or assist that device to be used in accordance with its intended use.

Note: Some jurisdictions include ‘accessories to a medical device’ and ‘accessories to an IVD medical device’ within their definitions of ‘medical device’ or ‘IVD medical device’, respectively. Other jurisdictions do not adopt this approach but still subject an accessory to the regulatory controls (e.g. classification, conformity assessment, quality management system requirements etc.) that apply to medical devices or IVD medical devices.

Source: GHTF/SG1/N071:2012

\textbf{Adverse event}: any unfavourable and unintended sign, symptom, disease, or other medical occurrence, including abnormal laboratory findings, with a temporal association with the use of a medical device, procedure, or other therapy, or in conjunction with a research study, regardless of causal relationship.

EXAMPLE: Death, back pain, headache, pulmonary embolism, heart attack.

Source: ISO 14199:2015, “including abnormal laboratory findings” added and medical product changed to medical device.

\textbf{Client/Patient}: person undergoing testing with an IVD, person who a medical device is used on.

\textbf{Conformity}: fulfilment of a requirement

Source: ISO 35001:2019

\textbf{Conformity assessment}: determining whether the relevant requirements in technical regulations or standards are fulfilled.

Source: Essential principles IMDRF (2018), taken from definition of conformity assessment body.

\textbf{Competent authority}: see national regulatory authority, used in European Union.

\textbf{Component}: one of the different parts of which a device is composed.
Note: An accessory is also considered a component

Complaint: written, electronic or oral communication that alleges deficiencies related to the identity, quality, durability, reliability, usability, safety or performance of a medical device that has been released from the organization’s control or related to a service that affects the performance of such medical devices
Source: ISO 13485:2016

Correction: action to eliminate a detected nonconformity
Note 1: A correction can be made in advance of, in conjunction with or after a corrective action
Note 2: A correction can be, for example, rework or regrade
Source: ISO 9000:2015

Corrective action: action to eliminate the cause of a detected non-conformity or other undesirable situation
Note 1 to entry: There can be more than one cause of non-conformity.
Note 2 to entry: Corrective action is taken to prevent recurrence whereas preventive action is taken to prevent occurrence.
Note 3 to entry: There is a distinction between correction and corrective action.
Source: ISO 9000:2015

Economic operator: manufacturer, an authorised representative, an importer, a distributor or the person combining different medical devices into one pack or sterilizing a system or procedure pack with the intent to place them on the market.
Source: MDR: 2017, “person combining, or sterilizing” replaces reference to article where these persons are mentioned.

Field safety corrective action: an action taken by a manufacturer to reduce a risk of death or serious deterioration in the state of health associated with the use of a medical device. Such actions should be notified via a field safety notice.
In assessing the need of the FSCA the manufacturer may use the methodology described in the international standard ISO 14971.
FSCAs may include:
- Return of a medical device to the manufacturer or its representative;
- Device modification;
- Device exchange;
- Device destruction;
- Advice given by manufacturer regarding the use of the device (e.g. where the device is no longer on the market or has been withdrawn but could still possibly be in use e.g. implants).

Device modifications may include:
- Retrofit in accordance with the manufacturer’s modification or design change;
- Permanent or temporary changes to the labelling or instructions for use;
- Software upgrades including those carried out by remote access;
• Modification to the clinical management of patients to address a risk of serious injury or death related specifically to the characteristics of the device. For example: for implantable devices it is often clinically unjustifiable to explant the device;

• Corrective action taking the form of special patient follow-up, irrespective of whether any affected un-implanted devices remain available for return;

• For any diagnostic device (e.g. IVD, imaging equipment or devices) the retesting of affected patients, samples or the review of previous results;

• Advice on a change in the way the device is used (e.g. IVD manufacturer advises revised quality control procedure -use of third -party controls or more frequent calibration).

Source: IMDRF N14: 2017

Field safety notice: a communication sent out by a manufacturer or its representative to the device users in relation to a Field Safety Corrective Action. Note: An FSN can also be “non-safety” customer product information.


In-vitro diagnostics: a medical device, whether used alone or in combination, intended by the manufacturer for the in-vitro examination of specimens derived from the human body solely or principally to provide information for diagnostic, monitoring or compatibility purposes.

Note 1: IVDs include reagents, calibrators, control materials, specimen receptacles, software, and related instruments or apparatus or other articles and are used, for example, for the following test purposes: diagnosis, aid to diagnosis, screening, monitoring, predisposition, prognosis, prediction, determination of physiological status

Note 2: In some jurisdictions, certain IVDs may be covered by other regulations. (GHTF/SG1/N071:2012)

Source: IMDRF GRRP WG/N47 FINAL: 2018

Harm: injury or damage to the health of people, or damage to property or the environment

Source: ISO 14971:2019

Hazard: potential source of harm

Source: ISO 14971:2019

Label: written, printed, or graphic information either appearing on the medical device itself, or on the packaging of each unit, or on the packaging of multiple devices

SOURCE: GHTF/SG1/N70:2011

Lot: defined amount of material that is uniform in its properties and has been produced in one process or series of processes

Source: ISO 18113: YYYY

Manufacturer: any natural or legal person with responsibility for design and/or manufacture of a medical device with the intention of making the medical device available for use, under their name; whether or not such a medical device is
designed and/or manufactured by that person themselves or on their behalf by another person(s)

Source: GHTF/SG1/N055:2009

Market surveillance: the activities carried out and measures taken by competent authorities [regulatory authorities] to check and ensure that devices comply with the requirements set out in the relevant Union harmonisation legislation and do not endanger health, safety or any other aspect of public interest protection

Source: MDR: 2017

Medical device: any instrument, apparatus, implement, machine, appliance, implant, reagent for in vitro use, software, material or other similar or related article, intended by the manufacturer to be used, alone or in combination, for human beings, for one or more of the specific medical purpose(s) of:

- diagnosis, prevention, monitoring, treatment or alleviation of disease;
- diagnosis, monitoring, treatment, alleviation of, or compensation for, an injury;
- investigation, replacement, modification, or support of the anatomy, or of a physiological process;
- supporting or sustaining life;
- control of conception;
- cleaning, disinfection or sterilization of medical devices;
- providing information by means of in vitro examination of specimens derived from the human body;

and does not achieve its primary intended action by pharmacological, immunological, or metabolic means, in or on the human body, but which may be assisted in its intended function by such means.

NOTE 1: Products which may be considered to be medical devices in some jurisdictions but not in others include:

- disinfection substances;
- aids for persons with disabilities;
- devices incorporating animal and/or human tissues;
- devices for in-vitro fertilization or assisted reproduction technologies.

(Modified from GHTF/SG 1/N071:2012)

NOTE 1: For clarification purposes, in certain regulatory jurisdictions, devices for cosmetic/aesthetic purposes are also considered medical devices

NOTE 2: For clarification purposes, in certain regulatory jurisdictions, the commerce of devices incorporating human tissues is not allowed

Source: IMDRF GRRP WG/N47 FINAL: 2018

(National) Regulatory Authority: a government body or other entity that exercises a legal right to control the use or sale of medical devices within its jurisdiction, and that may take enforcement action to ensure that medical products marketed within its jurisdiction comply with legal requirements.

Source: IMDRF/GRRP WG/N040:2017

Nonconformity: non-fulfilment of a requirement
276 **Post-market surveillance**: systematic process to collect and analyse experience
277 gained from medical devices that have been placed on the market
278 Source: ISO 13485:2016
279 *Note: for the purpose of this document, post-market surveillance includes the actions*
280 *taken by the manufacturer based on the analysed data.*
281 **Preventive action**: action to eliminate the cause of a potential nonconformity or
282 another undesirable situation
283 *Note 1 There can be more than one cause for nonconformity*
284 *Note 2 Preventive action is taken to prevent occurrence whereas corrective action is*
285 *taken to prevent recurrence*
286 Source: GHTF N18: YYYY
287 **(Medical Device) Registry**: Organized system with a primary aim to increase the
288 knowledge on medical devices contributing to improve the quality of patient care
289 that continuously collects relevant data, evaluates meaningful outcomes and
290 comprehensively covers the population defined by exposure to particular device(s)
291 at a reasonably generalizable scale (e.g. international, national, regional, and health
292 system.
293 Source: IMDRF/Registry WG/N42FINAL:2017
294 **Requirement**: need or expectation that is stated, generally implied or obligatory
295 Source: ISO 9000: YYYY
296 **Risk**: combination of the probability of occurrence of harm and the severity of that
297 harm
298 Source: ISO 14971: 2019
299 **Sample**: one or more representative elements selected from a set to obtain
300 information about that set
301 Source: ISO 22716:2007
302 **Sample size**: number of sampling units in the sample
303 Source: ISO 772:2011
304 **Serious Public Health Threat**: Any event type which results in imminent risk of death,
305 serious injury or serious illness that requires prompt medical action.
306 A serious injury is either:
307 - A life-threatening illness or injury,
308 - A permanent impairment of a body function or permanent damage to a
309 body structure,
310 - A condition necessitating medical or surgical intervention to prevent
311 permanent impairment of a body function or permanent damage to a body
312 structure.
313 Source: IMDRF/N14: YYYY
314 **Signal detection**: The process of determining patterns of association or unexpected
315 occurrences that have the potential to impact patient management decisions and/or
316 alter the known benefit-risk profile of a device.
317 Source: IMDRF/Registry WG/N42FINAL:2017
318 Unanticipated: a condition leading to an event that was not considered in a risk analysis performed during the design and development phase of the device.

Source: IMDRF N14: YYYY

322 Use error: User action or lack of user action while using the medical device that leads to a different result than that intended by the manufacturer or expected by the user.

Note 1 to entry: Use error includes the inability of the user to complete a task.

Note 2 to entry: Use errors can result from a mismatch between the characteristics of the user, user interface, task, or use environment.

Note 3 to entry: Users might be aware or unaware that a use error has occurred.

Note 4 to entry: An unexpected physiological response of the patient is not by itself considered use error.

Note 5 to entry: A malfunction of a medical device that causes an unexpected result is not considered a use error. [SOURCE: IEC 62366-1:2015, 3.21, modified — Note 6 to entry deleted]

User: the person, either professional or lay, who uses a medical device. The patient may be the user.

Source: GHTF/SG1/N70:2011

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339 3.1 Acronyms

CAPA corrective and preventive action

EQA external quality assessment (specifically referring to proficiency testing)

FSCA field safety corrective action

FSN field safety notice

GHTF Global Harmonization Task Force

IMDRF International Medical Device Regulators Forum

ISO International Organization for Standardization

IVD In-vitro diagnostics

IVDR In Vitro Diagnostics Medical Devices Regulation of European Union (see bibliography)

MDR Medical Devices Regulation of European Union (see bibliography)

NRA National Regulatory Authority

QC quality control

WHO World Health Organization

4 354 Basic principles of post market surveillance

4.1 Rationale for post-market surveillance by device manufacturers

Pre-market assessment is recommended for any medical device prior to entry into the marketplace in each country of intended use, based risk management principles. This serves to reduce risk to public safety. While pre-market assessment of medical devices can provide information on a product’s safety, quality and performance, there might be questions that cannot be fully answered in the pre-market
Manufacturers conduct post-market surveillance

Although medical devices are designed, developed, manufactured and distributed on the global market, residual risks regarding the medical device’s safety and performance remain throughout the product life cycle. This is due to a combination of factors, such as product variability, factors affecting the medical device’s use environment, different user interaction, as well as unforeseen medical device failure or misuse. Design and development activities of medical devices ensure that the residual risks are acceptable before product release (i.e. pre-market). However, it is important to collect and analyse information on the medical device during production and post-production to meet requirements for monitoring of product and processes and ensure the residual risk remains acceptable. Appropriate processes for collecting and analysing the information on the production and post-production feedback allow for early detection of any undesirable effects. These processes can also reveal opportunities for improvement.

Post-market surveillance is the process to enable manufacturers to perform such monitoring, by collecting data from actual use of medical devices and analysing these data. Based on the outcome of this analysis, the need for further actions can be decided, e.g. feedback into the risk management process, or notifying national regulators authorities (NRAs), making a correction and/or field safety corrective action which would be notified to users through a field safety notice.

4.2 Post-market surveillance mechanisms

Post-market surveillance depends upon the information that can be/is to be collected, see also Part II. The manufacturer shall first establish the objective of the post-market surveillance activities for the specific device or group of devices. Then, the manufacturer shall decide which sources are needed to fulfil these objectives. Based on that, the data shall be collected and analysed.

Depending on the sources selected and the methods to be used to collect the data, post-market surveillance is divided in reactive and proactive post-market surveillance.

The most basic form of post-market surveillance, which shall always be performed, is reactive post-market surveillance. Reactive post-market surveillance is done through notification and evaluation of feedback. Feedback is evaluated to establish if it constitutes a complaint, which in turn may require report as an adverse event – so-called vigilance. Proactive post-market surveillance is detecting issues such as through trainings, user support, scientific literature, conferences/tradeshows, publicly accessible market surveillance information on NRA websites including field safety notices, etc.

4.3 Post-market surveillance linked to risk management

Risk management of medical devices is a process that applies throughout all phases of the lifecycle of a medical device. A risk management process should be
implemented by all manufacturers of medical devices. The standard ISO 14971:2019 on risk management for medical devices is recognised in most parts of the world as the state-of-the-art process [REF]. The related technical report ISO/TR 24971 provides guidance on the application of the standard. Risk management should be a continuous and iterative process, during which the hazards associated with the medical device are identified. The associated risks are estimated and evaluated, these risks are controlled, and the effectiveness of the controls is monitored. Post-market surveillance has an important role in this process. It provides the essential link through which production and post-production information is gathered and analysed, so it can be fed back into the risk management process when needed. A schematic representation of the risk management process is provided in Figure 1.

Figure 1 – Risk management process for medical device manufacturers
(permission to seek clearance from ISO to reproduce this figure is in-progress)

As explained in ISO 14971, risk management is a complex subject, because each stakeholder can place a different value on the acceptability of risks in relation to the
anticipated benefits. The concepts of risk management are particularly important in
relation to medical devices because of the variety of stakeholders.

It is generally accepted that the concept of risk has two key components:
— the probability of occurrence of harm; and
— the consequences of that harm, that is, how severe it might be.

All stakeholders, including manufacturers, regulatory authorities, healthcare
professionals, healthcare institutions and patients need to understand that the use
of a medical device involves an inherent degree of risk. The acceptability of a risk to
a stakeholder is influenced by the stakeholder’s perception of the risk and the
benefit. Each stakeholder’s perception can vary depending upon their cultural and
socio-economic background, and many other factors. It is important to realize this
when deciding on the need for further actions, based on data gathered during the
post-market surveillance process.

5 Stakeholders’ roles in post-market surveillance and market surveillance

Post-market surveillance should be implemented by every manufacturer, at least in
its most basic form as a system to collect, analyse and react to feedback. Other
economic operators such as agents, distributors and authorised representatives play
an important supportive role to ensure feedback from users reaches the
manufacturer, including overcoming language barriers. National or regional
legislation can require the manufacturer to perform more elaborate post-market
surveillance, as only reacting to feedback will provide limited information on the
experiences with the medical devices in actual use. Therefore, it then leaves
information unused that could have been used to improve safety, quality and
performance.

Users and clients/patients (also implementers/procurers), manufacturers (and their
economic operators) and NRAs each play a role in the system of post-market
surveillance and market surveillance.

NRAs should raise awareness among users and clients/patients about the
importance of providing feedback to manufacturers to use for post-market
surveillance. Users and clients/patients will benefit from a medical device remaining
safe and effective during their lifetime.

Table 1 gives an overview of the different stakeholders’ roles in post-market
surveillance and market surveillance of medical devices, as described in Parts I-IV of
this document.

Table 1 – Stakeholders’ roles in post-market surveillance and market surveillance for devices, with
emphasis on feedback
<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Activity</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users and clients/patients (see Part I of this document)</td>
<td>1. Observe.  2. Document.  3. Report.  4. Act on manufacturers advice.</td>
<td>Users, and their clients/patients should observe for issues with devices (both positive and negative). Users should document the serial numbers/lot numbers (and expiry dates) of affected devices at the very least. Users are encouraged to provide feedback to the manufacturer as soon as they become aware, and to inform their NRA at the same time.</td>
</tr>
<tr>
<td>Manufacturers and their economic operators (see Part II of this document)</td>
<td>1. Implement a system for post-market surveillance, including handling feedback.  2. Classify feedback and establish if it is an adverse event that requires reporting to NRA.  3. If needed, undertake root cause analysis.  4. If needed, make a correction.  5. If needed, implement corrective actions.</td>
<td>Effective post-market surveillance system should include both active and passive collection of post-market information. Collecting and analysing feedback is critical. Manufacturers must establish a documented procedure for a feedback system and must quickly classify feedback. Such a feedback system will provide early warning of quality/safety problems and for input into corrective action/preventive action processes (as required by the ISO 13485 and ISO TR 20416). The action taken by the manufacturer following the classification of feedback might be to report to the NRA. This is vigilance and should include details of any investigations conducted such as through root cause analysis. Corrections and corrective actions may also be required to protect public safety.</td>
</tr>
<tr>
<td>NRA (see Part III of this document)</td>
<td>1. Ensure user feedback is forwarded to manufacturers  2. Conduct risk assessment.  3. Collect vigilance reports, oversee manufacturer’s investigation and other actions.  4. Conduct or coordinate testing using a risk-based approach.  5. Collect other post-market information.  6. Take regulatory action, if needed.  7. Share information with other NRAs.</td>
<td>NRAs should forward user feedback forms to the manufacturer, with copy of local economic operator, and conduct risk assessment. NRA should collect vigilance reports (initial, follow-up, final). NRAs should coordinate testing using a risk-based approach; either reactive or proactive. NRAs should strive to collect other forms of post-market intelligence. NRAs may need to undertake their own regulatory action, if the manufacturer does not or does not in a timely manner. NRAs should share information with other NRAs. Regulatory controls should be phased in depending on available regulatory capacity and resources and using a risk-based approach.</td>
</tr>
<tr>
<td>WHO (if applicable, see Part IV of this document)</td>
<td>1. Provide support for post-market surveillance of WHO recommended devices.</td>
<td>WHO assures that WHO recommended devices continue to uphold their safety, quality and performance. WHO provides support to manufacturers, NRAs and end users facing problems with WHO-prequalified devices. WHO reserves the right to conduct follow-up inspections for WHO prequalified devices to ensure that adequate actions are taken and corrective actions/preventive actions, if needed, have been implemented following a complaint.</td>
</tr>
</tbody>
</table>
Part I: PROVIDING FEEDBACK BY USERS AND PATIENTS/CLIENTS

Overview of responsibilities

Users play a crucial role

Feedback from users and patients/clients on the safety, quality, and performance of medical devices including IVDs is the basic part for every post-market surveillance system and providing feedback is of crucial importance. In this part of the document, professional users including lay users/caregivers, and patients/clients/self-testers will be indicated by users or otherwise specified, if appropriate. It is through the users providing feedback on the use of medical devices that manufacturers capture an essential part of the product’s post-market data. This section describes the responsibilities of users for post-market surveillance of medical devices. Although users have no official responsibility in post market surveillance, most of the information on the experience with the actual use of medical devices will come from the users. As safe and effective medical devices are also important for users, they should be encouraged to provide feedback and thereby take their role in the post-market surveillance process.

Appropriate use of medical devices

Users should use medical devices according to manufacturer’s instructions for use to maintain their safety, quality, and performance.

The principles for the use of the medical device are clearly laid out in the manufacturer’s instructions for use. This document is considered part of the medical device, as without it, the user is unable to use the product safely and correctly. The instructions for use describe proper storage, the actual use, disposal of medical devices and warnings, precautions and contra-indications. Every user must ensure proper storage of the medical devices according to the manufacturers’ instructions for use, which can include climate-control of the storage area, and, if applicable, should monitor and record the temperature of the storage facility. Furthermore, users should ensure that the storage areas are protected from sunlight, water, and excessive dust and dirt.

Document feedback

Users (in conjunction with appropriate technical expertise) should document their feedback in a broad sense, and as fully as possible. Users do not have to perform their own investigation.

Providing feedback

Users should provide feedback by reporting all information at their disposal to the manufacturer. Feedback should be sent to the manufacturer’s address as indicated in the contact details on the labelling or otherwise to the place where the medical device is bought/purchased, e.g. a pharmacy. Following the feedback from the user to the manufacturer, other parties might also become involved, such as an NRA (see Part III).
Figure 2 gives an overview of the steps involved in providing feedback and subsequent analysis by the manufacturer.

**Figure 2 – Actions of users in relation to manufacturer’s post-market surveillance**

<table>
<thead>
<tr>
<th>1</th>
<th>Detect/observe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Types of feedback</strong></td>
<td></td>
</tr>
<tr>
<td>499</td>
<td>User feedback can be classified in positive or negative feedback. Positive feedback may include for example experiences, suggestions for improvement, etc.</td>
</tr>
<tr>
<td>500</td>
<td>Negative feedback may include for example complaints, use errors, or abnormal use.</td>
</tr>
<tr>
<td>501</td>
<td>Users should be aware of issues that can indicate a problem that needs to be fed back to the manufacturer. Underneath, some examples of points to consider are included.</td>
</tr>
<tr>
<td><strong>How and what to detect</strong></td>
<td></td>
</tr>
<tr>
<td>505</td>
<td>The user should examine the device upon delivery through physical inspection:</td>
</tr>
<tr>
<td>506</td>
<td>• Verify if <strong>labelling matches</strong> the labelling for the product on NRA’s website if possible, or on the manufacturer’s website;</td>
</tr>
<tr>
<td>507</td>
<td>• Ensure <strong>manufacturer’s contact details</strong> are present;</td>
</tr>
<tr>
<td>508</td>
<td>• Check for any evidence of <strong>tampering</strong> of labels and/or packaging such as cracks, abrasion, erosion, breaks, seal integrity;</td>
</tr>
<tr>
<td>509</td>
<td>• Check for problems with <strong>labelling including instructions for use; or need for training</strong>, including inadequate instructions to the use; unclear, missing, worn out, incorrect or inaccurate labels; are intended users required to be adequately trained according to labelling and instructions for use.</td>
</tr>
</tbody>
</table>
• Check for manufacturing, packaging or shipping problems, including defective components, defective medical devices, medical devices damaged prior to use, damage to the materials used to construct the cover or outer packaging of the medical device, compromised microbiological state (e.g. sterility), of the medical device, missing listed components, and

• Verify if the correct product was delivered.

Users should request a certificate of analysis for the lot or serial number, if applicable, and use this as a reference for the physical inspection of product name, product code, lot number, expiry date, etc.

During routine use of medical devices, users should be aware of product problems, such as:

• **Patient-device incompatibility**, interaction between the patient’s/client’s anatomy/physiology and the medical device that affects patient/client.

• **Material integrity problem**, including broken, cracked, degraded, deformed, disintegrated, split/cut/torn, scratched materials/components.

• **Use problem**, including device handling, improper or incorrect procedure or method, misassembled by users, off-label use.

• **Misdiagnosis**.

Certain feedback may be considered an **adverse event**.

Registries are increasing used, especially for implantable medical devices that are used to collect data on clinical use and to assesses use in the device’s target patient population. These are generally maintained by healthcare facilities, by healthcare authorities including regional databases, and the relevant professional associations. Manufacturers might request access certain data from a given registry at the discretion of the registry owner.

Signal detection may be conducted using data collected in registries whereby associations or unexpected occurrences can be detected that might impact patient management and/or change the established benefit-risk profile of a device.

For IVDs, sources of data on the post-market information include external quality assessment schemes (EQAS), also known as proficiency testing, and from quality control (QC).

Where it exists, the data generated by an EQA schemes can be assessed to determine if any observations should be reported as feedback. Although, the primary purpose of EQA schemes is inter-laboratory comparison, these data can provide very useful information about the performance of IVDs, especially when many sites are using the same product (same or different lot numbers). EQA data analysis may indicate use errors and abnormal use errors.

Users who participate in EQA schemes are encouraged to report feedback to the manufacturer, if they report nonconforming results. EQA providers are encouraged
QC

Quality control (QC) is a process to detect whether performance requirements and quality objectives for an IVD have been met. Typically, a user might use biological QC material of a known reference result to test a sample of IVDs. It is critical to ensure that traceability of values assigned to such control materials is ensured through available reference measurement procedures or available reference materials of a higher order.

Biological QC materials are usually contrived biological specimens that is optimized for the product and is developed independently of the manufacturer. They are provided to laboratories/testing sites using the given product by the product manufacturer or another body responsible for quality. Ideally QC specimens should be tested in each test run or testing session. WHO recommends the following frequency of QC for monitoring quality by users:

- once weekly, preferably at the beginning of the week
- for any new operator (including trained staff who have not conducted testing for some time)
- for each new lot of test kits
- for each new shipment of test kits
- when any environmental conditions (for example, temperature and humidity) fall outside the range recommended by the manufacturer.

The results of QC specimens can be analyzed and results outside a pre-determined acceptance range can be identified and investigated. This approach is typically difficult for IVDs returning qualitative results such as rapid diagnostic tests or qualitative nucleic acid tests. Any implementation of QC for quality monitoring should be implemented using a risk-based approach.

Sentinel sites

For IVDs, using sentinel sites to perform user quality control monitoring can build capacity and collect data. This data can be fed into the risk management framework of the NRA and help to determine specific products that might require prioritization for market surveillance, see Part II.

2

Document

Users should document any feedback related to use of medical devices at any facility or testing site including as applicable product name and product code of the affected medical device, affected lot numbers (and expiry dates), affected patients/clients (age, concomitant diseases, current treatments, etc.), procedure/treatment the device was used for and any measures taken.

Feedback forms

Users should use a customer feedback form, if possible, see Annex 1.
Photographs of affected medical device and/or injuries should be taken to illustrate the feedback, if possible. If useful, take photographs of the packaging and instructions for use to document the problem(s).

Users should keep and appropriately store one or more of the affected medical devices as retention samples for later inspection and testing, if possible. It is advised that the user contacts the manufacturer or the place where the medical device is bought/purchased on the number of samples needed for later inspection and testing. It is recommended that reimbursement of the costs for such samples will be provided.

The documentation step will describe in more detail the circumstances related to the feedback and will enable the manufacturer to conduct their investigation.

Other methods of documenting and sending feedback can be considered. Use of smartphone applications and web forms that directly send feedback to a centralised database (usually maintained by the NRA) have been used with success, e.g. MHRA’s Yellow Card Scheme. Emerging solutions such as blockchain technology which is decentralized (data is not stored by any one entity), transparent (uses self-sovereign identity so the reporter’s identity is secured by cryptography) and immutable (data cannot be tampered with, all transactions are recorded) may be explored.

### Implementation of IMDRF’s framework for "Unique Device Identification (UDI) System for Medical Devices" might aid documentation of user feedback.

A machine readable (such as a bar code) and a human interpretable code will be placed on the device which allows for the device and the product level data to be identified. UDI may be added to electronic health records and registries.

All feedback, that reasonably suggests that the medical device has or may have caused or contributed to the death or serious deterioration in the health of a patient/client should be reported by the user to the manufacturer as soon as they become aware, while following national regulations.

Contact details for the manufacturer are displayed on the label or in the instructions for use. If this information is not self-evident, report to the site where the device was distributed, e.g. other economic operator (agent, distributor, supplier), health care facility, pharmacy, etc.

An overview of the steps in providing feedback by users is shown in Table 2.

Users will often be called upon to act on the contents of field safety notices including actions such as:

- Quarantine at the request of NRAs;
- Return of device or destruction of the device (recall) at the request of manufacturer;
Device modification such as changes to the instructions for use or other labelling, software upgrades, clinical management (including retesting), etc.

Patient/clients might need to be made aware of FSCAs usually via press release – in any case they should contact their healthcare facility.

Table 2 – Summary of steps in providing feedback by users

<table>
<thead>
<tr>
<th>What</th>
<th>How</th>
<th>How it will help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detect/observe</td>
<td>Single event observed by user (patient/client); proceed to documentation and reporting of the event.</td>
<td>If the circumstances concerning the use of the medical device concerned are observed and documented, it will make it later easier to understand if the situation can be attributed to an operator, a particular lot number, a particular health care facility site etc.</td>
</tr>
<tr>
<td></td>
<td>Accurate record-keeping, preferably using standardized site registers, inventory records, patient clinical files will contain the necessary information to fill the feedback form. Collect positive experiences.</td>
<td></td>
</tr>
<tr>
<td>Document</td>
<td>It is preferred to use site registers and inventory records, document the problem, e.g., affected product code/serial number, affected lot numbers (and expiry dates), any measures taken etc. If possible, retain and quarantine according to manufacturer’s storage conditions a reasonable number of medical devices from the same pack and/or lot as retention samples for later inspection and testing.</td>
<td>To ascertain which lots and/or consignments are affected, and the scope of the effect. To allow for subsequent inspection of packaging for breeches that might impact stability and testing.</td>
</tr>
<tr>
<td>Report</td>
<td>The user will communicate all feedback, including complaints to the manufacturer using a feedback form.</td>
<td>To allow manufacturer to initiate their customer feedback system, including evaluation for reporting to NRAs and commencing an investigation, including root cause analysis.</td>
</tr>
<tr>
<td>Act</td>
<td>The user should follow any advice provided by the manufacturer on the use of the device, particularly any field safety notice.</td>
<td>To assure public safety, examples include retesting/review of patients that had the device used on them.</td>
</tr>
</tbody>
</table>
PART II: POST-MARKET SURVEILLANCE BY
MANUFACTURERS (and their economic operators: 
authorised representatives, agents, and distributors)

This section describes the manufacturer’s post-market surveillance obligations and 
focusses on the assessment of feedback to distinguish administrative issues from 
technical issues product problems that could be adverse events. Other economic 
operators (authorized representatives, agents, distributors) may be required to act 
on behalf of the manufacturer. Therefore, an agreement should be in place 
between the manufacturers and their related economic operators, such as agents, 
distributors and importers, to receive feedback from customers and to forward this 
feedback to the manufacturers in a timely manner. This may include translation of 
feedback into the language used by the manufacturer.

Escalation of feedback is the first step, followed by further investigation, that could 
indicate that corrective or preventive action is needed, which can include field safety 
corrective actions.

Although this part is focussing on the role of the manufacturer, other economic 
operators can play a crucial role in collecting feedback and forwarding this to the 
manufacturer. By including these economic operators, more feedback might be 
collected, thereby providing the manufacturer with more information on the safety, 
quality and performance of the medical devices during actual use.

Basics for post-market surveillance

The manufacturer shall have a post-market surveillance plan in place, in which at 
least the following steps shall be included:

1. scope of the post-market surveillance plan;
   The manufacturer shall indicate for which specific medical device, medical 
device type or family the plan is applicable.

2. objective of the post-market surveillance plan;
   The manufacturer shall indicate what is to be achieved by the post-market 
surveillance for that device.

3. responsibilities;
   The manufacturer shall indicate responsibilities for all stages of the post-
market surveillance process.

4. data collection;
   The data collection shall be described.

5. data analysis;
   The method for data analysis shall be described.

6. Using data in risk management and other processes;
   A system shall be in place to feedback the data obtained from post-market
surveillance into other processes, such as risk management, improvement, clinical evaluation.

7. Consider and implement required actions.

Based on the data analyses and further analysis in the appropriate processes, mainly risk management, required actions must be considered and implemented, if needed.

Scope of the post-market surveillance plan

The manufacturer shall indicate for which products the post-market surveillance plan is applicable, as for different devices, different approaches might be needed. This can be due to differences in devices itself, risks associated with the device, but also due to the differences in time on the market and associated experiences gained. ISO TR 20416 provides more detailed guidance on this topic.

Objective of the post-market surveillance plan

The manufacturer shall indicate what the objectives are for post-market surveillance. At a minimum for every post-market surveillance plan, the manufacturer shall include the following objectives:

- Has any new hazard or hazardous situation been identified for the medical device or similar medical devices or has the risk acceptability changed?
- Has any misuse of the medical device occurred?
- Are there any unforeseen side effects for the medical device or similar medical devices?
- Is there a medical device malfunction that impacts the benefit-risk analysis?

The above-mentioned questions relate mainly to the observation of adverse events that users will report to the manufacturer.

Other objectives can be addressed as part of post-market surveillance. These objectives will provide the manufacturer with more information on the performance of the device(s). Examples of other objectives are:

- Do users experience any usability issues?
- Are recurring malfunctions due to service/maintenance deficiencies?
- How does treatment affect the quality of life of the patient?
- Can user/patient training reduce the likelihood of malfunction?
- Are there any improvements that can be made to the medical device?
- Has state of the art changed after design and development of the medical device?
- Are indications or contra-indications appropriate to ensure safety and effectiveness for the intended use of the medical device?

Responsibilities

Responsibilities and powers for post-market surveillance activities shall be defined by the manufacturer. The manufacturer shall ensure the availability of resources with the independence and competence for post-market surveillance activities.
Preferably, a team of people should be involved in post-market surveillance, covering all expertise required for post-market surveillance.

**Data collection**

As stated before, reactive post-market surveillance, based on collecting feedback, should always be in place. Based on the objectives, the manufacturer shall choose the appropriate data sources to allow the fulfil the objectives of the post-market surveillance plan. For example, to make sure that the medical device is still state-of-the-art, actively collecting data on similar devices and procedures from literature, congresses and trade shows is required. The data sources selected should provide reliable data, which need to be verified.

After the appropriate data sources have been selected, methods to collect the data need to be in place, including the time span for which the data need to be collected. When establishing the data collection method, it needs to be ensured that the data collected can be analyzed in a meaningful way.

**Data analysis**

To be able to obtain useful information from the data collected through post-market surveillance, the data need to be analysed. The data analysis should be considered when setting up the data collection. The data analysis can vary from simple qualitative analysis to advanced statistical analysis. Qualitative analysis will often be required as an initial step for the analysis of a complaint. The data obtained from the qualitative analysis of complaints can also be used for quantitative analysis. An often-used method for quantitative analysis is trend analysis. Trend analysis can only be performed if enough data for a sufficiently long period are available.

**Using data in risk management and other processes**

The data collected and analysed shall be used in the applicable other processes, such as risk management, improvement and clinical evaluation. In this document, the focus will be on the use of post-market surveillance data in risk management. By using the post-market surveillance data in other processes, conclusions can be drawn on the changes in risk, the need or possibilities to make changes to a medical device or the need to obtain more clinical data.

Manufacturers should be familiar with standards such as ISO 13485 on quality management systems, ISO 14971 on risk management and ISO TR 20416 on post-market surveillance, that outline the manufacturer’s requirements for compliance with post-market surveillance aspects.

**Considering and implementing required actions**

Based on the outcome of further analysis of post-market surveillance data in other processes, such as risk management, actions might be required to correct problems or defects related to a medical device (correction), to remove cause of nonconformity to avoid reoccurrence (corrective action) or to prevent occurrence of additional issues (preventive action). The manufacturer shall consider the options to remedy the unwanted situation and decide on the appropriate action and implement that action.
See Figure 3 for details on actions taken by manufacturers.

Figure 3 - Actions of manufacturers for post-market surveillance

1 Receiving feedback

In the rest of this chapter, the focus will be on receiving and acting upon feedback by the manufacturer, as this is the basic form of post-market surveillance that always needs to be performed, irrespective of the available resources.

The manufacturer shall make it possible for users and patients/clients to provide feedback as easily as possible. This means that the methods to submit feedback shall be readily available in the area concerned and provide as little barrier as possible to users and patients/clients to provide the feedback. The manufacturer shall document all feedback received. As feedback might contain a complaint or report of an adverse event, feedback should be analysed as soon as possible and feedback that constitutes an administrative/technical complaint or an adverse event should be escalated further.

Feedback may include:

- **administrative/contractual** complaints related to any aspect of the procurement contract not fulfilled, for example, agreed delivery time not adhered to, agreed guaranteed shelf life upon delivery not adhered to, incorrect product and/or quantity delivered etc.
- **technical** complaints affecting the safety, quality or performance of a medical device.

Initially, the manufacturer shall distinguish between administrative feedback and technical feedback. Administrative complaints are not considered to be linked to a safety, quality or performance issue, these are considered normal feedback and do...
not require immediate action, but an analysis shall be done periodically on such complaints. Technical feedback shall be further classified, see next section.

Information about such issues may become available in other sources of post-market information than through user feedback, for example through literature and other scientific documentation). From within the production site and/or quality management system such as through management review, high rates of non-conforming product, risk assessment, and other relevant clauses of ISO 13845 and ISO 14971.

However, manufacturers should, if possible, employ other proactive sources for post-market surveillance. Such sources can be aimed at obtaining other information from users and patients/clients by using enquiries., which also allows more positive feedback to be solicited. From scientific literature, the manufacturer can obtain information on side-effects and complication, also from similar devices, but can also provide insight into state of the art.

For equipment requiring regular servicing, service reports can provide insight into performance of the equipment, including information on wear of parts using spare parts and other observations.

User training is an opportunity to observe the users, understand their thought process and challenges, and estimate the distribution of user skills. Feedback from user training can also provide insight into new risks due to unforeseen user interaction with the medical device and possibilities for improvement.

The manufacturer shall choose the appropriate sources in line with the objective of the PMS-plan. Underneath, an overview of possible data sources is provided (ref. ISO TR 20416):

- Complaints, including adverse events reported to the organization;
- Maintenance (including preventive maintenance / corrective maintenance and repair / refurbishing);
- Installation;
- Returned medical devices;
- Explants;
- Medical device registries;
- Post-market clinical follow-up (PMCF) studies, and post-market performance follow-up (PMPF) if IVD;
- Controlled market release phase;
- User training;
- Advisory notices;
- Scientific literature;
- Market surveillance activities by regulatory authorities and their related publications and recommendations;
• Publicly accessible databases from regulatory authorities on adverse events and advisory notices;

• Conferences, tradeshows, etc.;

• Regulatory requirements, standards, guidance and best practices;

• Social media;

• Public media;

• Medical device distribution and medical device tracking;

• Finished products, product quality information;

• Internal audits and external inspections.

Each data source may require a specific method of collecting that data and the analysis of each data source might be different. For example, obtaining data from scientific literature will require expert judgement, whereas extracting information from maintenance records requires administrative work.

When more data are collected, a quantitative analysis can be performed. As already mentioned in the paragraph on basics for post-market surveillance, the quality of the data to be analysed shall be checked and the quality of the data needed can also play a role in selecting the appropriate data sources.

Economic operators

For users and patients/clients, the contact details of the manufacturer might not be evident, or it is not possible to send feedback through the channels made available by the manufacturer. In that case, the users and patients/clients should go to the site from where they obtained the device or where the device was used on them (e.g. pharmacy, healthcare facility, etc.). By making it easier for users and patients/clients to provide feedback, more feedback should be received, allowing the manufacturer to get more data on the experiences gained during the actual use of the device.

Implementation of IMDRF’s Unique Device Identification (UDI) System for Medical Devices is intended to “facilitate unambiguous identification of the medical device through distribution and use by providing a single global identifier that can be used to link and integrate existing government, clinical, hospital, and industry databases”. UDI will allow industry and regulatory authorities to more rapidly identify medical devices involved in adverse events. UDI may be added to vigilance reports, and registries. UDI (Device Identifier (UDI-DI) + Production Identifier (UDI-PI)) throughout distribution and use. The framework for UDI implementation is promulgated in IMDRF/UDI WG/N7FINAL:2013.

Users and manufacturers should be aware that software as a medical device, including artificial intelligence is subject to this guidance, where applicable.
Classify feedback and escalate where needed

All technical feedback shall be initially analysed to verify if it constitutes a complaint, including any adverse event. Complaints can identify quality, safety and performance issues that are of high risk and therefore might require immediate action to protect public health and safety.

Categories of problems (technical feedback) are listed in Table 3. IMDRF has issued a series of annexes and guidance on adverse event reporting terminology. WHO recommends that this coding and classification be implemented, using the following seven annexes for all vigilance reporting:

- Annex A: Medical Device Problem
- Annex B: Cause Investigation - Type of Investigation
- Annex C: Cause Investigation - Investigation Findings
- Annex D: Cause Investigation – Investigation Conclusion
- Annex E: Health Effects - Clinical Signs and Symptoms or Conditions
- Annex F: Health Effects - Health Impact
- Annex G: Medical Device Component
### Table 3 – Categories of problems reported as feedback, taken from IMDRF adverse event reporting Terminology guidance (annex A)

*(permission to seek clearance from IMDRF to reproduce this figure is in-progress)*

<table>
<thead>
<tr>
<th>No.</th>
<th>Problem category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01</td>
<td>Patient-device incompatibility problem</td>
<td>Problem related to the interaction between the patient and the device.</td>
</tr>
<tr>
<td>A02</td>
<td>Manufacturing, packaging or shipping problems</td>
<td>Problem associated with any deviations from the documented specifications of the device that relate to nonconformity during manufacture to the design of an item or to specified manufacturing, packaging or shipping processes (out of box problem).</td>
</tr>
<tr>
<td>A03</td>
<td>Chemical problem</td>
<td>Problem associated with any from the documented specifications of the device that relate to any chemical characterization, i.e., element, compound, or mixture.</td>
</tr>
<tr>
<td>A04</td>
<td>Material integrity problem</td>
<td>Problem associated with any deviations from the documented specifications of the device that relate to the limited durability of all material used to construct device.</td>
</tr>
<tr>
<td>A05</td>
<td>Mechanical problem</td>
<td>Problems associated with mechanical actions or defects, including moving parts or subassemblies, etc.</td>
</tr>
<tr>
<td>A06</td>
<td>Optical problem</td>
<td>Problem associated with transmission of visible light affecting the quality of the image transmitted or otherwise affecting the intended application of the visible light path.</td>
</tr>
<tr>
<td>A07</td>
<td>Electrical/electronic property problem</td>
<td>Problem associated with a failure of the electrical circuitry of the device.</td>
</tr>
<tr>
<td>A08</td>
<td>Calibration problem</td>
<td>Problem associated with the operation of the device, related to its accuracy, and associated with the calibration of the device.</td>
</tr>
<tr>
<td>A09</td>
<td>Output problem</td>
<td>Problem associated with any deviation from the documented specifications of the device that relate to the end result, data, or test results provided by the device.</td>
</tr>
<tr>
<td>A10</td>
<td>Temperature problem</td>
<td>Problem associated with the device producing unintended temperatures.</td>
</tr>
<tr>
<td>A11</td>
<td>Computer software problem</td>
<td>Problem associated with written programs, codes, and/or software system that affects device performance or communication with another device.</td>
</tr>
<tr>
<td>A12</td>
<td>Connection problem</td>
<td>Problem associated with linking of the device and/or the functional units set up to provide means for a transfer of liquid, gas, electricity or data.</td>
</tr>
<tr>
<td>A13</td>
<td>Communication or Transmission Problem</td>
<td>Problem associated with the device sending or receiving signals or data. This includes transmission among internal components of the device to which the device is intended to communicate.</td>
</tr>
<tr>
<td>A14</td>
<td>Infusion or flow problem</td>
<td>Problem associated with the device failing to deliver or draw liquids or gases as intended (e.g. delivering drugs at incorrect rate, Problems with drawing fluid from a system). This includes vacuum collection devices.</td>
</tr>
<tr>
<td>A15</td>
<td>Activation, positioning or separation</td>
<td>Problem associated with any deviations from the documented specifications of the device that relate to the sequence of events.</td>
</tr>
<tr>
<td>Problem Type</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Protective measure problem</td>
<td>Problem associated with any deviations from the documented specifications of the device that relate to the implemented and inherited design features specific to devices used for reducing risks to patient or caregiver or maintaining risks within specified levels.</td>
<td></td>
</tr>
<tr>
<td>Compatibility problem</td>
<td>Problem associated with compatibility between device, patients or substances (medication, body fluid, etc.)</td>
<td></td>
</tr>
<tr>
<td>Contamination/decontamination problem</td>
<td>Problem associated with the presence of any unexpected foreign substance found in the device, on its surface or in the package materials, which may affect performance or intended use of the device, or problem that compromise effective decontamination of the device.</td>
<td></td>
</tr>
<tr>
<td>Environmental compatibility problem</td>
<td>Problem associated with the surrounding conditions in which the device is being used such as temperature, noise, lighting, ventilation, or other external factors such as power supply.</td>
<td></td>
</tr>
<tr>
<td>Installation-Related Problem</td>
<td>Problem associated with unsatisfactory installation, configuration, and/or setup of a specific device.</td>
<td></td>
</tr>
<tr>
<td>Label, instructions for use or training problems</td>
<td>Problem associated with device markings/labelling, instructions for use, training and maintenance documentation or guidelines.</td>
<td></td>
</tr>
<tr>
<td>Human-device interface problem</td>
<td>Problem associated with an act or omission of an act that has a different result than that intended by the manufacturer or expected by the operator.</td>
<td></td>
</tr>
<tr>
<td>Use of device problem</td>
<td>Problem associated with failure to process, service, or operate the device according to the manufacturer's recommendations or recognized best practices.</td>
<td></td>
</tr>
<tr>
<td>Adverse Event Without Identified Device or Use Problem</td>
<td>An adverse event (e.g. patient harm) appears to have occurred, but there does not appear to have been a problem with the device or the way it was used.</td>
<td></td>
</tr>
<tr>
<td>No Apparent Adverse Event</td>
<td>A report has been received but the description provided does not appear to relate to an adverse event. This code allows a report to be recorded for administration purposes, even if it doesn't meet the requirements for adverse event reporting.</td>
<td></td>
</tr>
<tr>
<td>Insufficient Information</td>
<td>An adverse event appears to have occurred but there is not yet enough information available to classify the device problem.</td>
<td></td>
</tr>
<tr>
<td>Appropriate term/code not available</td>
<td>The device problem is not adequately described by any other term. Note: this code must not be used unless there is no other feasible code. The preferred term should be documented when submitting an adverse event report. This information will be used to determine if a new term should be added to the code table.</td>
<td></td>
</tr>
</tbody>
</table>

Source: IMDRF Adverse Event Reporting Terminology (IMDRF/AE WG/N43 FINAL:2020)
As soon as feedback is received, an assessment of technical feedback must be performed by the manufacturer to establish the impact (scale and scope) of the problem. The degree of risk will determine the timeline for action and who should be informed. The requirement for root cause analysis will remain, irrespective of the classification.

The manufacturer (or their economic operator, including the marketing authorization holder) should send a vigilance report to the NRA, in the following circumstances:

- When use of a medical device leads to:
  - Death of a user, patient/client or other person (adverse event)
  - Serious deterioration in health of a user, patient/client or other person (adverse event)
  - Indirect harm, such as misdiagnosis, delayed diagnosis, delayed treatment, inappropriate treatment, absence of treatment or transfusion of inappropriate materials.

- Discovery of a serious public health threat

- No death or serious deterioration in health occurs but the event might lead to death or serious deterioration in health of a patient, user of other person if it recurs.

In general, most technical feedback will be considered as adverse events.

Any adverse events that represent a serious public health threat should be reported immediately and not later than 2 calendar days to the relevant NRAs.

National regulations might contain other timelines. Examples might be if an IVD used for blood screening of infectious diseases is observed to return higher than expected rate of false negative results, hacking of software (as a medical device) that changes dosing of infusion pumps, dosing of therapeutic radiation, etc.

Other serious adverse events including death or serious deterioration in health that occurred or may have occurred for the patient, end-user or other individual should be reported within 5 days to the relevant NRAs.

A manufacturer vigilance reporting form can be found in Annex 2.

Further analysis is needed, see below. This might require the manufacturer to obtain additional information from the person providing the feedback, to be able to perform the analysis.

A system shall be in place for such events to be monitored for the frequency of occurrence or change in the type/severity of the outcome following such an event.

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2 Any event type, which results in imminent risk of death, serious injury, or serious illness that may require prompt remedial action. Source: GHTF/SG2/N79R11:2009
This is known as trending and should happen periodically, e.g. on a monthly basis. Based on this analysis, it might be necessary to undertake further action, changes to manufacturing, update of the IFU etc.

In addition to the above immediate reporting of adverse events, all feedback should be reported to the NRA as part of the annual/periodic summary post-market surveillance reports, if required by national legislation.

A use error, as defined, might include slips, lapses, mistakes and reasonably foreseeable misuse.

Examples include:

- Inserting a test strip backward into a glucose monitor
- Not engaging the handbrake on a wheelchair when using public transportation.

Issues occurring despite adequate proper instructions for use and proper design according to manufacturer’s analysis could be potential use errors.

The error may be due to a medical device being poorly designed, or it may have been used in a situation that promoted incorrect usage (foreseeable misuse). By reporting such near misses, it helps the manufacturer to reduce the chance of other users making the same use error with similar or worse consequences.

An abnormal use error (see definition) is a conscious, deliberate act, or deliberate omission of an act, by the user as a result of conduct that is beyond any reasonable means of risk control by the manufacturer.

Examples include:

- Use of a medical device despite obvious packaging breach
- Failure to follow manufacturer’s instructions for clean care, i.e., use of antiseptic
- Continued use of a medical device after the manufacturer’s stated expiry date
- Product analysis showing that the medical device was working according to specifications; further investigation revealing that the user was inadequately trained.3

Ideally, there should be no barrier to report abnormal use-errors to the health care organization (safe reporting). This will allow the organization to take measures and will also allow the manufacturer better insight into problems occurring during use.

Manufacturers might also receive feedback internally through their quality management system. This does not typically need to be reported to the NRA, unless a FSCA is implemented as a result.

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3 This list does not purport to be definitive and each case should be handled individually.
3 951 Undertake root cause analysis

952 For certain feedback, especially adverse events, the manufacturer should undertake
953 a root cause analysis to determine if the feedback can be independently verified and
954 a root cause can be established. All reasonable efforts should be made by the
955 manufacturer to determine if there is a causative link between the medical device
956 and the adverse event.
957 “Root cause analysis helps identify what, how and why something happened, thus
958 preventing recurrence.
959 • Root causes are underlying, are reasonably identifiable, can be controlled by
960 management [review] and allow for generation of recommendations.
961 • The process involves data collection, cause charting, root cause identification and
962 recommendation generation and implementation.\(^4\)
963 As stated above, a systematic approach should be used to determine the root
964 cause(s) of an adverse event by establishing a methodology for determining the
965 causes, then determining all probable causes and likelihoods for each cause (i.e., the
966 probability that the cause contributed to the adverse event or incident); and the
967 evidence for reported causes and likelihoods.
968 A variety of methods exists for root cause analysis. Manufacturers may also use
969 failure mode and effects analysis (FMEA). The following set of information is
970 required:
971 • Device involved (medical device, accessory or part)
972 • intended use of the device
973 • The event
974 • Effect of the event
975 • Cause of event
976 • Current control
977 • Recommended action
978 A fishbone diagram approach is useful as a guide to rule in or rule out the following
979 causes: material, methods, mother nature, measurement, man and machine\(^5\).


4 980 Decide if a correction is required

981 Following the investigation of the complaint, the manufacturer must consider if a
982 correction is required, whereby a correction (see glossary) refers to:
983 • Repair, modification, adjustment, relabeling, destruction, or inspection
984 (including patient monitoring) of a product without its physical removal to some
985 other location\(^6\).
The manufacturer might also consider other corrections:
- Additional surveillance of the device in use;
- Retraining;
- Explantation;
- Additional clinical review of patients/clients; or
- Retesting, if IVD.

The manufacturer may decide the nonconformity has little associated risk or is unlikely to recur. In such cases the manufacturer may decide only to carry out a correction.

The manufacturer might also decide that a field safety corrective action is required. Such urgent information is notified to those responsible for the device or affected by the problem through a field safety notice, see next section.

The manufacturer might decide that no action is required.

5 Take corrective action

The difference between a correction and corrective action is that a correction is an action undertaken by the manufacturer to eliminate detected nonconformity – most typically this would be a product recall or modification to labelling. Whereas a corrective action is is to eliminate the cause of a corrective action – such as increased quality control stringency, manufacturing process modification, etc. These are both reactive in nature. A correction may be made in conjunction with a corrective action.

Based on the results of root cause analysis for one or more complaints, corrective action and preventive action (CAPA) should be considered. GHTF’s Quality management system – Medical Devices – Guidance on corrective action and preventive action and related QMS processes (GHTF N18) provides additional guidance on CAPA. CAPA are often improvements made to the manufacturing process or the design of the medical device, or to the quality management system (QMS) to eliminate causes of nonconformities to prevent their reoccurrence, see also definitions. Any process for CAPA should use the outcome of the systematic investigation of reported adverse events (malfunction/failures). To ensure that corrective and preventive actions are effective, the systematic investigation of the adverse event is pivotal in identifying the corrective and preventive action to be undertaken. The degree of action taken should be dependent upon and related to the risk, size and nature of the problem and its effect(s) on product safety, quality and performance.

Corrective action (see definition) should be handled according to ISO 13485, Section 8.3. (control of nonconforming product) and 8.5.2 (corrective action), depending on

6 https://www.fda.gov/medical-devices/postmarket-requirements-devices/recalls-corrections-and-removals-devices#:~:text=Under%2021%20CFR%20806%2C%20Medical,the%20Act%20caused%20by%20the
whether a nonconforming device is involved or if action is taken to prevent
recurrence of a nonconforming device.

Preventive action (see definition) is a proactive process undertaken by the
manufacturer to identify opportunities for improvement of the device in advance,
before a problem is identified. Preventive action is taken when a potential
nonconformity is identified as the result of quality control testing, and other
relevant sources of information. Examples of preventive action include (but are not
limited to):

• Reviews of contracts (with key suppliers), purchasing, processes, design
• Supplier surveillance
• Management review of quality management system
• User training programmes, job aids
• Benchmarking.

5.1 Field safety corrective action

A field safety corrective action (FSCA) is triggered by information about the
occurrence of one or more problems with already distributed devices that poses an
unacceptable increase in risk when that device is used. Such problems include
malfunction or deterioration affecting the performance or operational
characteristics of a device, as well as any inadequacy in the instructions for use
which might lead or might have led to the death of a patient, user or other individual
or to a serious deterioration in his/her state of health. The analysis of feedback on
such occurrences is described in the previous paragraphs.

In assessing the need for the FSCA, the manufacturer is advised to use the
methodology described in the standard ISO 14971:2017 Medical devices -
Application of risk management to medical devices. Implementation of risk
management principles and activities within a quality management system is
described in GHTF guidance “Implementation of risk management principles and
activities within a Quality Management System” (GHTF/SG3/N15R8).

Risk assessment is thus a key element of the manufacturer determining the need for
an FSCA. Appropriate expertise must be used to determine the potential harm and
the risk properly.

FSCA may include:

• Return of a type of device to the manufacturer or its representative (also
  known as recall)
• Device modification
• Device exchange
• Device destruction

7 The NRA should ensure a record of disposal of affected product and inform the
manufacturer so that they may reconcile product distributed and product destroyed.
• Advice given by the manufacturer regarding the use of the device

Device modifications can include:
• Retrofitting in accordance with the manufacturer's modification or design change
• Permanent or temporary changes to the labelling or instructions for use
• Software upgrades including those carried out by remote access
• Modification to the clinical management of patients to address the risk of death or serious injury or death specifically to the characteristics of the device.

The relative urgency of the FSCA should be communicated, consider introducing categories of urgency.

A FSCA is communicated through a Field Safety Notice (FSN); see next page for details.

The manufacturer is usually required to report any FSCA to the relevant NRAs where the medical device is supplied, according to the national regulations. It is advised to use IMDRF’s adverse event reporting terminology [IMDRF/AE WG/N43INAL:2020 and its annexes].

The manufacturer should issue a notification to NRAs of all the countries affected through a FSCA report, in line with national legislation. A format is proposed in Annex 5. The FSCA report should include the following information:

• Name of the manufacturer;
• Product name, product code and lot number of the affected device;
  Note: in the case that the FSCA related to certain lots only, an explanation why the other lots are not affected;
• List of all affected countries;
• Background information and reason for the FSCA, including a description of the device deficiency or malfunction, clarification of the potential hazard associated with the continued use of the device and the associated risk for the patient, user or other person and any possible risks to patients associated with previous use of affected device;
• Relevant parts from the risk analysis;
• Description and justification of the corrective and/or preventive action;
• Advice on the actions to be taken by economic operators and users (include as appropriate):
  o Identifying and quarantining the device;
  o Method of recovery, disposal or modification of the device;
  o Recommended patient follow-up;
  o A request to pass any attached Field Safety Notice to all those who need to be aware of it.

National regulations might require other items to be included.
A follow-up report should be submitted by the manufacturer to the NRA as per national legislation.

The follow-up report should provide:

- An update of the progress of reconciliation of the FSCA and estimated timescales for completion
- Confirmation, where practicable, that users have received the FSN

National regulations might require other items to be included.

A final report should be submitted to NRAs of all the countries affected through a FSCA report, in line with national legislation. This should include information on the effectiveness of the action per country involved (e.g., percentage of devices that underwent the FSCA).

If the FSCA includes return of affected stock to the manufacturer or an update of the instructions for use or a modification/update of existing medical devices on- or off-site, records of completed actions should be fully reconciled against distribution records in order to maintain control of the progress of the FSCA.

The final report should contain the following information:

- A final assessment of the root cause of the problem and proposed action to reduce the chance of recurrence, e.g., redesign, update in the field, improved instructions for use etc. and the progress of the implementation of such actions;
- The outcome of the reconciliation of the FSCA.

National regulations might require other items to be included.

### 5.2 Field safety notice (FSN)

Field Safety Notices are an important means of communicating FSCA and safety information to users. They may also be used to provide updated information about how a medical device should be used.

Manufacturers should inform affected users with copy to the relevant NRAs of any FSCA via FSN. Affected users will usually receive the FSN via their procurement agents or through in-country distributors who must inform all users within their region of supply. To be able to reach out to the affected users, the manufacturer and the other economic operators need to keep records to allow traceability of the medical devices to the users.

The manufacturer should ensure that the FSN is distributed to all affected users and must keep track of confirmation of receipt of the FSN. A full, detailed distribution list with contact name and (email) address for each intended recipient must be kept and must be made available to WHO on request for pre-qualified devices. Further purchasing information requirements are specified in the guidance to ISO 13485 [ref].
The manufacturer should use a standardized format for an FSN (see example in Annex 4). The FSN should be written on company letterhead and in English. It may be translated into required local languages by in-country distributors.

The FSN should include the following items, see also GHTF Medical Devices Post Market Surveillance: Content of Field Safety Notices (GHTF N57):

- A clear title like "Urgent Field Safety Notice" on the notice itself, and the subject line, if sent by email;
- The intended audience: clear statement about the intended recipient of the notice;
- Concise description of product, product code, lot number(s);
- A factual statement explaining the reasons for the FSCA, including description of the problem;
- A clear description of the hazards associated with the specific failure of the device and, where appropriate, the likelihood of occurrence, being mindful of the intended audience;
- The recommended action(s) to be taken by the recipient of the FSN including any action(s) recommended for people that have previously used or been treated by affected device, including recalls;
- Where appropriate, include timeframes by which the action(s) should be taken by the manufacturer and user;
- Designated contact point for the recipient of the FSN to obtain further information.

The FSN should not include any:

- Comments and descriptions that downplay the level of risk;
- Information that is intended to promote a manufacturer or their product’s market visibility for the purposes of sales and marketing.

It is recommended that manufacturers should provide a draft of the FSN to the NRA allowing a minimum of 48 hours for comment unless the nature of the FSCA dictates shorter timescale, e.g., for serious public health threat.

In a very few cases, where an urgent FSCA is needed because of serious safety risks, the NRA may accept that prior consultation may not be possible.

All types of reports related to complaints (including adverse events) should be kept on file by the manufacturer. These documents include: the initial, follow-up and final manufacturer adverse event investigation reports; root cause analysis reports; corrective action/prevention action plans; FSCA and FSN; and annual post-market surveillance summary reports.

During the post-market surveillance process, the manufacturer should update the Risk Management file including:

- Risk analysis;
Part II: Manufacturers

- Risk evaluation
- Risk control
- Evaluation of overall residual risk acceptability
- Risk management report
- Production and post-production information.

Vigilance reports and FSCA reports should mention the scope of updates made as a result of risk management activities.

Figure 4: Schematic representation of handling feedback
Part III: MARKET SURVEILLANCE BY NRAs

Overview of responsibilities

Market surveillance is a set of activities conducted by the NRA to ensure that devices used in their market continue to meet safety, quality and performance requirements.

[Table]

In certain countries, the NRA may not be capacitated or have legislation to guide market surveillance activities. In such cases, NRA should be advised to appoint such person in the absence of legislation within their institution unless the NRA does not exist. Administrative arrangements can be done within the NRA to facilitate market surveillance. Certain activities such as ensuring users report feedback, and to receive and act on FSNs to minimise risk to public safety should be prioritized.

Forward post-market information

Health authorities, including the NRA should raise awareness among users and clients/patients about the importance of providing feedback. NRAs should develop a system embedded with the law to enable receiving of feedback directly from users and their patients/clients, economic operators and manufacturers.

The NRA should forward all feedback to the manufacturer. NRAs may conduct a risk assessment to ensure that registered/authorised devices are subject of the feedback, devices that are not would be considered unregistered and regulatory action may be undertaken as a result.

The NRA should receive, review and act on vigilance reports received from manufacturers including via economic operators. The NRA may also receive directly feedback from users. The NRA oversees investigations undertaken by the manufacturer as described in the vigilance reports which should include a root cause analysis and analysis of impact on similar products. The investigation should be underpinned by risk management principles.

NRAs use a risk-based approach to market surveillance of devices placed on their market according to a set of risk classification rules. Risk classes A through D were created for IVDs considering risk to the individual and risk to the public. The level of regulatory scrutiny will depend on the risk the device presents, risk to the public and the setting of intended use.

Plan market surveillance

In view of the resources required, a plan for market surveillance should be promulgated with resource (human and financial) requirements using a risk management framework. The market surveillance plan might include which devices will be prioritized for closer surveillance using a risk-based approach, including sampling intervals and instructions. It should also describe roles and responsibilities, include elements of monitoring and evaluation, timelines for the various activities and a budget.

Risk based testing

NRAs may establish a mechanism to arrange for testing of devices based on risk in order to ensure that they continue to meet their quality, safety and performance.
requirements. Such testing should be conducted at a laboratory designated by the
NRA, for the following reasons
- Reactive testing with due cause;
- Proactive testing based on risk management principles.

It is acknowledged that testing capacity to cover all products types may not be
possible or required and that any testing activities be guided by risk management.
As part of the market surveillance plan, testing aspects such as where to collect, how
to collect, who will collect, number of samples to be collected, and where to test
(laboratories, depending on capacity) should be included.

Falsified devices

In certain circumstances, the NRA may investigate incidents where suspected
falsified medical devices have been discovered. For-cause testing might also assist
the NRA’s risk assessment for feedback about use of unregistered devices. For
suspected substandard medical devices, the manufacturer is generally best placed to
carry out the investigation as they have the means to trace all users who received the
same or similar product.

Take regulatory action

The NRA should take regulatory actions, as appropriate, to address any issues
identified through vigilance reports, or through their own market surveillance
activities. This includes overseeing any field safety corrective action undertaken by
the manufacturer. Their ultimate objective is to ensure their citizens are protected
related to medical devices, including market surveillance information exchange with
other NRAs (confidentiality agreement to be signed).

Phased implementation

The implementation of market surveillance measures will depend on the maturity
and capacity of the NRA to handle vigilance reports and notify manufacturers for
their evaluation and action. In the early phases of the development of market
surveillance, WHO can receive feedback from users for WHO recommended
products and ensure that manufacturers are informed so they follow-up accordingly.
Testing activities might be implemented later after vigilance reporting is well
established. Figure 5 describes the various actions undertaken by the NRA.

Figure 5 – Actions of regulators to oversee manufacturer investigation of feedback
1271 Forward feedback conduct risk assessment

The NRA may receive feedback directly from users and their clients/patients as described in Part I. NRAs will forward such feedback onto the manufacturer immediately.

Upon receipt of feedback, the NRA will conduct a risk assessment to ensure public safety is immediately protected, which may include the following steps:

1. Check if this product is registered, otherwise authorised for importation.
2. Check the local representative has permission to import the product.
3. Contact health facility where the issue/observation occurred with request for clarification of any details as required (minimum three attempts to contact).
4. Determine if quarantine of affected product is warranted, consider a risk-based approach whereby the absence of a device and a defective device is considered against a functioning device (is something better than nothing, or vice versa).
5. Inform manufacturer, copy the local representative, as soon as the NRA become aware. This step may be in parallel or closely times with step 3.
6. Continue dialogue with manufacturer to ensure timelines for their response(s) are followed.

This step will also allow for enhanced detection of suspected falsified devices.
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<table>
<thead>
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<tbody>
<tr>
<td>2</td>
<td>Collect vigilance reports and oversee investigations</td>
</tr>
<tr>
<td>1294</td>
<td>Manufacturers of devices are obliged to report adverse events to the NRA.</td>
</tr>
<tr>
<td>1295</td>
<td>For device manufacturers (and other economic operators any observation that</td>
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<tr>
<td>1296</td>
<td>presents a serious public health threat should be reported immediately and not later</td>
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<tr>
<td>1297</td>
<td>than two calendar days of becoming aware to the relevant national regulatory</td>
</tr>
<tr>
<td>1298</td>
<td>authorities.</td>
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<tr>
<td>1299</td>
<td>Other adverse events including death or serious deterioration in health occurred or</td>
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<tr>
<td>1300</td>
<td>may have occurred for the patient, d-user or other individual should be reported</td>
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<tr>
<td>1301</td>
<td>within five calendar days of becoming aware to the relevant national regulatory</td>
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<tr>
<td>1302</td>
<td>authorities.</td>
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<tr>
<td>1303</td>
<td>These vigilance reports are a subset of all customer feedback reported by users to</td>
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<td>1304</td>
<td>the manufacturer, see Part II.</td>
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<tr>
<td>1305</td>
<td>In brief, the manufacturer evaluates the feedback and determines if risk or harm has,</td>
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<tr>
<td>1306</td>
<td>or may have, occurred. Certain feedback is escalated to a complaint and if classified</td>
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<td>1307</td>
<td>as an adverse event then a decision on the need to report to relevant NRAs is made,</td>
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<tr>
<td>1308</td>
<td>according to the national legislation in country of use. The manufacturer initiates a</td>
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<tr>
<td>1309</td>
<td>root cause analysis, and analysis of impact on similar products.</td>
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<tr>
<td>1310</td>
<td>The NRA may receive a series of vigilance reports from the manufacturer that</td>
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<tr>
<td>1311</td>
<td>contains a summary of the steps taken by the manufacturer to investigate the</td>
</tr>
<tr>
<td>1312</td>
<td>adverse event and initiate corrections and implement corrective actions.</td>
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<tr>
<td>1313</td>
<td>1. Manufacturer submits an initial manufacturer vigilance report to the NRA, as</td>
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<tr>
<td>1314</td>
<td>soon as the decision on reportability is made (immediately and not later</td>
</tr>
<tr>
<td>1315</td>
<td>than two days if serious public health threat, or five days if adverse event</td>
</tr>
<tr>
<td>1316</td>
<td>occurred or may have occurred), see also part II.</td>
</tr>
<tr>
<td>1317</td>
<td>2. The NRA should review the report for scientific rigor, evidence of</td>
</tr>
<tr>
<td>1318</td>
<td>documented procedures, timeliness and rationality.</td>
</tr>
<tr>
<td>1319</td>
<td>3. Follow-up manufacturer vigilance reports may be submitted when interim</td>
</tr>
<tr>
<td>1320</td>
<td>updates are required but should follow no more than 15 calendar days after</td>
</tr>
<tr>
<td>1321</td>
<td>the initial vigilance report is sent.</td>
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<tr>
<td>1322</td>
<td>Where appropriate, the manufacturer may initiate an FSCA which is notified to</td>
</tr>
<tr>
<td>1323</td>
<td>affected users through an FSN. The NRA should maintain a repository of FSNs and</td>
</tr>
<tr>
<td>1324</td>
<td>make these publicly available on the website. At the completion of the FSCA, the</td>
</tr>
<tr>
<td>1325</td>
<td>manufacturer should submit an FSCA report to the NRA.</td>
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<tr>
<td>1326</td>
<td>4. Manufacturer submits a final investigation report to the NRA, preferably</td>
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<tr>
<td>1327</td>
<td>within 15 days of the initial vigilance report or the last follow-up vigilance</td>
</tr>
<tr>
<td>1328</td>
<td>report.</td>
</tr>
<tr>
<td>1329</td>
<td>The NRA reserves the right to make any reasonable request for clarification of the</td>
</tr>
<tr>
<td>1330</td>
<td>investigation undertaken and possibly the conclusions drawn.</td>
</tr>
<tr>
<td>1331</td>
<td>The following aspects of the manufacturer’s vigilance and/or FSCA report might</td>
</tr>
</tbody>
</table>
| 1332 | require clarification:
• Greater clarity on protocols used for functional testing of retained, and
  where possible returned, samples from affected lots;
• Greater clarity of protocols used for physical inspection of retained, and
  where possible returned, samples from affected lots; and
• Stability of product (all components) at different temperatures or humidity
  (claimed shelf life, in-use stability, shipping stability).

The NRA should also review and determine their acceptability, at their discretion:
• Suggested corrective/preventive actions;
• Suggested actions for customers;
• Risk management file updates.

NRA follow-up

If the NRA determines that the investigation as detailed in the vigilance report is
 unacceptable, they should make these findings in writing to the manufacturer. It is
 suggested to present findings in tabular format with the following headings, or
 similar: topic, clarification(s), action(s) by manufacturer, etc. Any review of
 documentation should focus on evidence of implementation of any written
 procedures, and any data integrity concerns. The inspectorate may be requested to
go on-site to review actual records of investigations.

If any issue(s) cannot be accepted and/or resolved through desk review of
 documentation, the NRA may decide to take regulatory action until they are
 satisfied that product placed on their market does not present any safety issues.

The NRA must be informed of any FSCA as soon as the manufacturer initiates it
 usually by sending the draft FSN for review and approval, see annex 4 for an
 example field safety notice format. This also applies to FSCA that were initiated
 based on user feedback generated in other justifications.

3 Oversee testing

The NRA has a mandate to conduct testing of devices that have been placed on the
 market, if appropriate. Annex 7 details how to conduct lot testing for IVDs.

As previously mentioned, it is critical to establish a plan for testing as a market
 surveillance activity which is based on risk management. In particular, the better the
 user feedback system and the more compliant the quality management system of
 the manufacturer, the lesser the need for resource-intensive testing activities.

Elements of the plan for testing as market surveillance include which devices to be
 collected based on risk assessment, where to collect, how to collect, who will collect,
 number of samples to be collected, where to test (laboratories, depending on
 capacity). If a country does not have the capacity to test all types of devices, they
 might rely on results generated by certified testing laboratories in other jurisdictions.

| Testing conducted by the NRA is not intended to replace the manufacturer’s quality control (QC) lot testing undertaken throughout the manufacturing process, and at final release of the product. |

Quarantine and store
The NRA should arrange for an appropriate number of samples of devices to be quarantined and stores according to the manufacturer’s instructions for use, until testing takes place.

The following types of testing might be requested by the NRA:

- Reactive testing, with due cause when a public health threat presents;
- Proactive testing, without specific cause, to determine on-going compliance with regulatory requirements based on risk management principles.

**Reactive testing**

For-cause (reactive) testing may be conducted by the NRA when customer feedback doesn’t accord with the manufacturer’s investigation findings, on a case-by-case basis. It may also be applied to unregistered products that may have been widely used. It is considered as reactive market surveillance and may help to determine if the device in the hands of the user still meets the manufacturer’s claims for safety, quality and performance as stated in instructions for use. Reactive testing provides additional information to assist the NRA on any decision to take regulatory action of its own.

**Proactive testing**

For any device that has undergone evaluation of clinical evidence to support safety, quality, and performance, any proactive testing should be considered using a risk-based approach.

It should be noted that testing of device pre-distribution to users will only provide information about product at the start of the life cycle when it is expected that well-regulated devices should function according to their specifications.

With the same above assumption, the testing of device post-distribution to users once they have been in use might bring additional information related to the fulfillment of the specifications related to stability.

Implementing this post-distribution to user testing might validate if customer feedback systems are operational as one would expect that users should detect any adverse events and/or product problems related to use of the product.

This approach to testing will not necessarily be able to detect quality issues if the lot has not been homogenously produced. Pre-distribution testing cannot detect stability issues that might lead to degradation of the device during shelf-life, including all components and accessories.

Samples should be taken by appropriately trained and qualified NRA personnel (or otherwise delegated agency). Samples should be transported to the testing laboratory in such a way that the integrity of the devices is not adversely affected and that the appropriate storage conditions, as specified by the manufacturer, are maintained. If applicable temperature log monitors should be included within the transportation packing for the samples.

A risk-based approach should be considered to minimise waste of resources and to leverage on the previous regulatory assessment decision.
For testing pre-distribution to users, each lot should be sampled initially. After a
certain period of acceptable results (12 months or 10 lots, whichever comes first),
the sampling frame may change from systematic sampling and testing of each lot, to
random sampling of lots delivered to countries. The random sampling frame should
be selected (every 5th lot). If any issue is observed with random pre-distribution
testing, the NRA may elect to re-commence systematic testing of each lot. The
decision about the sampling frame is therefore made using a risk-based approach.

A testing laboratory should be identified to perform testing and should:
- Be mandated by national authorities to perform testing for market
  surveillance of devices, and therefore have enough resources to conduct lot
  testing;
- Strive to adhere to internationally recognized quality standards, e.g., ISO
  17025: General requirements for the competence of testing and calibration
  laboratories;
- Participate in external quality assessment (EQA) schemes and act on results,
  as required.

In this guidance, testing is generally comprised of two elements:
- Physical examination, and
- Functional testing.

All samples should be physically examined, and any observations recorded.
- Packaging, including defective components, defective devices, devices
  damaged prior to use, damage to the materials used to construct the cover or
  outer packaging of the device, compromised decontamination of the device,
  one or more of the listed components is missing.
- Label, instructions for use or training problems, including inadequate
  instructions to the user and their patients/clients; unclear, missing, worn out,
  incorrect or inaccurate labels.
- Material integrity problem, including broken, cracked, degraded, deformed,
  disintegrated, split/cut/torn, scratched materials/components.

NRAs should apply international standards in force for the respective category of
medical devices.

The testing laboratory should present results in the report which would be sent to
the requesting NRA.

Figure 6 – Actions of regulators for testing in the context of market surveillance
Part III: NRAs

4 Collect other post-market information

Sentinel sites

If sentinel surveillance sites are established, these sites can collect information on safety, quality and performance of devices.

Signal detection

If national device registries, mainly for implanted or other high-risk devices, are kept, this can provide useful information to detect signals.

Post-market evaluation

Post-market evaluation conducted by NRAs or other designated authority, this becomes post-market performance follow-up (in the context of IVDs).

For all the above, the NRA passes the information to manufacturer from them to act upon.

5 Decide if additional regulatory action is required

Depending on the risk/benefit posed by an adverse event or product problem discovered in the post-market phase and/or potential for future harm, NRAs should consider the following possibilities:

- No action;
- Perform additional surveillance of the device concerned in use;
- Issue a safety alert giving advice to users;
- Require the manufacturer to make appropriate changes in the design, manufacturing process or information/labelling supplied with the device;

---

8 This list does not purport to be definitive and each case should be handled individually.
Mandate (enforce and monitor) a field safety corrective action (for example a device recall/withdrawal);

Send the data acquired to the manufacturer and store it in a database to help identify trends that require action.

NRAs are required to prioritize regulatory action using the following questions:

1. How much product was supplied?
2. Where product is located?
3. Remaining shelf life for product?
4. Percentage of product remaining (if reagents, accessories, consumables)?
5. Is the manufacturer providing timely updates on progress of recall?
6. Is there an alternative product for users?

NRA may request users to quarantine of product while the decision on recall/withdraw is made by the manufacturer. Only once the observation is confirmed at proceed to support manufacturer’s FSCA.

NRA send out staff to look for products noted in a given FSCA.

Economic operators must assist the manufacturer to conduct the recall. Therefore, any agreement for key suppliers should note that economic operator should help with FSCA. Centralised warehouses and other governmental storage facilities might also have a role would have distribution records that are useful to located affected users.

Timelines should set for FSCAs to be closed-out.

6 Share information

Certain information should be made publicly available, including a searchable list of products that meet regulatory requirements (or are otherwise approved for importation). NRAs may consider making a searchable list of products that have been withdrawn/terminated/cancelled from the market publicly available, especially if they might present a serious risk to public health.

All field safety notices for registered products should be maintained in repository by the NRA, if possible searchable list online. NRAs might offer an email subscription service whereby users can receive alerts on a current FSNs.

IMDRF publishes a table that provides links to device safety information as published by IMDRF NCAR Exchange Members http://www.imdrf.org/safety/safety.asp

Annex 5 provides an information exchange reporting form should be used by NRAs for sharing post-market data gathered through market surveillance. The reporting forms should be completed and the vigilance report and/or FSCA report and FSN attached. This is built on IMDRFs “Medical Devices: Post Market Surveillance: National Competent Authority Report Exchange Criteria and Report Form” (IMDRF/NCAR WG (PD1)/N14R4).
The IMDRF NCAR system is a way for NRAs to exchange confidential information about safety, quality and performance of devices where there is an anticipated or unanticipated serious public health threat, defined as:

- Death of a patient, user or other person
- Serious injury of a patient, user or other person
- No death or serious injury occurred but the event might lead to death or serious injury of a patient, user or other person if the event recurs.

Certain NRAs might request confidentiality agreements for such sharing of information, but the objective of the exchange is to ensure that information can be acted upon by the receiving NRA.

This programme is used to exchange early information on significant concerns or potential trends that individual NRAs have observed, but that have not yet resulted in FSCA or recall.

NRAs reserve the right to directly contact the manufacturer for additional information such as vigilance reports and/or FSCA report, and FSNs.
PART IV: SPECIFIC REQUIREMENTS FOR PRODUCTS RECOMMENDED BY WHO

Role of WHO

WHO makes recommendations on products based on the following forms of quality assurance procedures:

- WHO prequalification
- WHO Emergency Use Listing
- Other products recommended/procurement by WHO.

Beneficiaries

The findings of WHO Prequalification and Emergency Use Listing are used to provide independent technical information on safety, quality and performance of IVDs and other medical devices, principally to other United Nations (UN) agencies but also to WHO Member States and other interested organizations.

WHO collects feedback on WHO recommended devices and oversees the evaluation and investigation conducted by the manufacturer. Manufacturers should report to WHO in the form of manufacturer vigilance reporting form as per Annex 2.

Managers of WHO recommended devices agree, and as a condition of WHO prequalification, to undertake the following post-market surveillance actions:

- Actively encourage users and their patients/clients to report any feedback related to use of a device to manufacturers so that action can be taken, if needed.
- Notify WHO of any problems relating to the product that have affected (or could have affected) the performance of the device, safety of the client, users, or any person associated with the product.
- Any adverse event should be reported to WHO within 7 days of the manufacturer becoming aware.
- WHO will request that the manufacturer provide further information relating to the incident, including details of the root cause analysis, any analysis of impact on similar products, any corrections made, and any correction action proposed.
- Notify WHO of all events that require FSCAs such as withdrawal of devices from sale or distribution, physical return of a device to the manufacturer, device exchange, destruction of the device, device modification/s or...

---

9 Prequalification does not imply any approval by WHO of the product and manufacturing site(s). Moreover, prequalification does not constitute any endorsement or warranty by WHO of the fitness of any product for a particular purpose, including its safety, quality, or performance.

10 Issues related to abnormal use do not need to be reported (see page 22 for details).
additional advice provision to customers to ensure that the device continues
to function as intended.
- Submit information concerning all complaints, including any FSCA, carried out
  in the previous calendar year as part of the mandatory annual summary
  reporting.
- Note: These actions do not replace the responsibilities of the manufacturer to
  report to NRA’s, see part 3.

The outcomes of certain vigilance reports are notified through post-market
information exchange to other NRAs and procurers/implementing partners such as
non-governmental organizations as per Annex 5. WHO may act with regard to WHO
recommended devices, as appropriate, including:
- Post-market surveillance information exchange with NRAs
- Publishing safety notices on WHO’s website
- Performance of additional surveillance of the device concerned
- Removal of the product from the list of WHO recommended products (WHO
  prequalified devices, EUL, etc.), if needed
- Inspection of manufacturing site to ensure that CAPA as a result of any
  complaint have been implemented.

Where WHO believes that the FSN does not fully meet the requirements as
described in this document and explain the risk and how it will be removed/reduced,
WHO may issue its own safety or advisory notice and send it to the relevant NRAs
for further dissemination to users.

For recommended devices, WHO reserves the right to issue information notices for
users in certain circumstances: if the manufacturer has not undertaken an
appropriate FSCA within an appropriate time frame, if the manufacturer has not
disseminated an appropriate FSN, and to give information to users about how to
interpret the contents of FSN. WHO information notices may include any
recommendations to programmes and implementing partners for alternative testing
arrangements and to procurers for past, on-going or future purchase orders of
affected or potentially affected products.

Figure 7 – Flow chart for reporting complaints related to WHO recommended
devices
Feedback submitted to WHO

WHO reviews feedback

Insufficient information, WHO request additional information

Sufficient information, feedback proceeds

WHO sends feedback form to manufacturer

Manufacturer conducts investigation, if needed

Manufacturer submits initial report to WHO

Manufacturer submits FSCA report to WHO

Manufacturer submits draft FSN to WHO for review/approval

Manufacturer issues FSN to affected users.

WHO informs relevant stakeholders

Manufacturer submits final investigation report to WHO
1.1 Reference documents

The following reference documents have been used in preparing this document. Some documents are dated when a reference is made to a specific clause in that standard. Notwithstanding the reference to a clause, readers are encouraged to use the latest version of documents.

Medical device post-market surveillance

- EN 13975: 2003 Sampling procedures used for acceptance testing of in vitro diagnostic medical devices – Statistical aspects
- ISO 9000:2005 Quality management systems — Fundamentals and vocabulary
- ISO 13485:2016 Medical devices — Quality management systems — Requirements for regulatory purposes
- ISO 13485:2016 Medical Device — A practical guide, Advice from ISO/TC210
- ISO 14971: 2019 Medical devices — Application of risk management to medical devices
- ISO/TC210 Medical devices — Post-market surveillance for manufacturers
- ISO/TR 24971:2020 Medical devices — Guidance on the application of ISO 14971
- ISO 15189: 2016 Medical laboratories — Particular requirements for quality and competence of medical laboratories
- ISO 17025: 2018 General requirements for the competence of testing and calibration laboratories

Medical device vigilance

- WHO Global Model Regulatory Framework for Medical Devices including in vitro diagnostic medical devices, WHO Medical device technical series, 2017
- GHTF/SG2/N54R8:2006 Medical Devices Post Market Surveillance: Global Guidance for Adverse Event Reporting for Medical Devices
- GHTF/SG2/N008R4:1999 Guidance on How to Handle Information Concerning Vigilance Reporting Related to Medical Devices
- GHTF/SG2/N57R8:2006 Medical Devices Post Market Surveillance: Content of Field Safety Notices
- GHTF/SG3/N15R8:2005 Implementation of risk management principles and activities within a Quality Management System
- MEDDEV 2 12-1 rev. 8 Vigilance European Commission Guidelines on a medical devices vigilance system
• IMDRF/NCAR WG (PD1)/N14R4 Medical Devices: Post Market Surveillance: National Competent Authority Report Exchange Criteria and Report Form”

• GHTF SG2-n87-2012-xml-schema-electonic-transfer-adverse-event-data

• GHTF/SG2/N36R7:2003 Manufacturer's Trend Reporting of Adverse Events

• IMDRF/AE WG/N43 FINAL:2020 (Edition 4) IMDRF terminologies for categorized Adverse Event Reporting (AER): terms, terminology structure and codes

• GHTF/SG3/N18:2010 Guidance on corrective action and preventive action and related QMS processes

• GHTF/SG1/N071:2012 Definition of the Terms ‘Medical Device’ and ‘In Vitro Diagnostic (IVD) Medical Device’

• ISO 14199:2015 Health informatics — Information models — Biomedical Research Integrated Domain Group (BRIDG) Model
**Annex 1 – Device Feedback Reporting Form**

### PROVIDING FEEDBACK TO MANUFACTURERS ON MEDICAL DEVICES INCLUDING IVDs

For **device end-users** – all types of feedback should be reported to the manufacturer (and local authorized representative) as soon as you become aware. You can find manufacturer’s contact details in the instructions for use.

Providing feedback to the manufacturer is a critical role for users of medical devices.

<table>
<thead>
<tr>
<th>Adverse events may be:</th>
<th>Product problems may be:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Death of the patient, end-user or any other person occurred or may have occurred</td>
<td>• Packaging – damaged, defective, suspect tampered</td>
</tr>
<tr>
<td>• Serious deterioration in health of the patient, end-user or any other person occurred or may have occurred</td>
<td>• Labelling – insufficient instructions for use, illegible</td>
</tr>
<tr>
<td></td>
<td>• Sampling – device doesn’t collect/transfer specimen</td>
</tr>
<tr>
<td></td>
<td>• Liquid – leak, splash</td>
</tr>
<tr>
<td></td>
<td>• Mechanical – misalignment, jam</td>
</tr>
<tr>
<td></td>
<td>• Electrical - unable to charge, power loss or fluctuation</td>
</tr>
<tr>
<td>For IVDs:</td>
<td>• Data – capture, display, or storage affecting product functionality</td>
</tr>
<tr>
<td>• A false negative result</td>
<td>• Software – network, program, algorithm, or security affecting product functionality</td>
</tr>
<tr>
<td>• A false positive result</td>
<td>• Environmental – noise, temperature, humidity/moisture, fungal/bacterial growth, or dust affecting product functionality</td>
</tr>
<tr>
<td>• Non-reproducible results</td>
<td>• Failure to calibrate</td>
</tr>
<tr>
<td>• High or low readings, high- or low-test results</td>
<td>• Increased rate of invalid or unreturnable test results</td>
</tr>
<tr>
<td></td>
<td>• Obviously incorrect, inadequate or imprecise result or readings</td>
</tr>
<tr>
<td></td>
<td>• Unable to obtain reading</td>
</tr>
</tbody>
</table>

**Note:** this is not an exhaustive list of feedback that should be reported to the manufacturer

### 1. Contact details of the reporting organization/person

<table>
<thead>
<tr>
<th>Name of organization:</th>
<th>Street Name and No.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>City and postcode:</td>
<td>Country:</td>
</tr>
<tr>
<td>Name of contact person (for organization):</td>
<td>Mobile telephone of contact person (for organization):</td>
</tr>
<tr>
<td>Position of contact person (for organization):</td>
<td>Email of contact person (for organization):</td>
</tr>
<tr>
<td>Report date:</td>
<td>Reporter’s report identifier:</td>
</tr>
</tbody>
</table>

Safe reporting: would you be willing to be contacted by the manufacturer for additional information? Be assured that reporting feedback is not an act of omission.
2. **Product details**

<table>
<thead>
<tr>
<th>Product name/commercial name/brand name:</th>
<th>Product code/catalogue number(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial number(s):</td>
<td>Model number(s):</td>
</tr>
<tr>
<td>Lot number/batch number(s):</td>
<td>Expiry date(s):</td>
</tr>
<tr>
<td>Associated devices/accessories</td>
<td>Instructions for use version number:</td>
</tr>
<tr>
<td>(lot numbers/expiry dates):</td>
<td></td>
</tr>
<tr>
<td>Authorized representative name:</td>
<td>Manufacturer name:</td>
</tr>
<tr>
<td>Authorized representative contact</td>
<td>Manufacturer contact details (e-mail</td>
</tr>
<tr>
<td>details (e-mail or telephone):</td>
<td>or telephone):</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Please attach a copy of the instructions for use and photographs of the device and its labelling.**

3. **Event details**

Event description (explain what went wrong with the medical device, and what was the health impact [death, life-threatening, indirect harm such as misdiagnosis or delayed diagnosis/treatment]).

Date of the observation/event: % of device involved:

Number of devices involved: Number of patients involved:

Operator/user at the time of the event/problem (please choose):
- Healthcare professional
- Patient/lay user
- Other (specify):

Has more than one user experienced the problem with the product?
- Yes
- No

Comments:

Date of report: Signature:

**Disclaimer:** The act of reporting an event is not an admission of manufacturer, user or patient liability for the event or its consequences. Submission of an adverse event report does not, in itself, represent a conclusion by the manufacturer that the content of this report is complete or confirmed, that the device(s) listed failed in any manner. It is also not a conclusion that the device caused or contributed to the adverse event.
Annex 2– Manufacturer Vigilance Reporting Form

For manufacturers (or their economic operator) – adverse events that represent a serious public health threat should be reported immediately and not later than 2 calendar days to the relevant NRAs and to WHO (e-mail: rapidalert@who.int).

For manufacturers (or their economic operator) - other adverse events including death or serious deterioration in health occurred or may have occurred for the patient, end-user or other individual should be reported within 5 days to the relevant NRAs and to WHO (e-mail: rapidalert@who.int).

MANUFACTURER VIGILANCE REPORTING FORM

| Send to: |
| Relevan National Regulatory Authorities and |
| World Health Organization, 20 Avenue Appia CH-1211, Geneva 27 Switzerland |
| Email: rapidalert@who.int |

1. Report details

Name of recipient organization (name of NRA):

Street Name and No.: City and postcode:

Country: Telephone:

Name and position of recipient contact person: Email of contact person:

Identifier assigned by the manufacturer: Report identifier assigned by NRA:

Date of this report:

Type of report: □ Initial report □ Follow-up report □ Combined initial and final report □ Final report

State any other NRAs who were also sent this report:

Draft 1, 31 July 2020
2. Reporter details

Name of reporting manufacturer:

Street Name and No.:  

City and postcode:

Country:

Telephone:

Name of contact:

E-mail of contact:

3. Product details

Product name:

Product code/catalogue number(s):

Lot number/batch number/serial number(s):

Expiry date(s):

Associated devices/accessories (lot numbers/expiry dates):

Instructions for use version number:

Please attach a copy of the instructions for use.

4. Event/problem details
### Where observation/event happened:

### Date(s) observation/event happened:

### Date feedback reported to manufacturer (and/or economic operator) by user:

### Event/problem description narrative (explain what went wrong with the product, and a description of the health effects [if applicable], i.e. clinical signs, symptoms, conditions as well as the overall health impact [death, life-threatening, indirect harm]), and the health/medical condition for which the device was being used):

### IMDRF Medical device problem code(s) (annex A):

**User at the time of the event/problem (please choose):**
- [ ] Healthcare professional/lay provider
- [ ] Patient/client
- [ ] Other (specify):

**Has more than one user experienced the problem with the product?**
- [ ] Yes
- [ ] No

**Number of devices involved:**

**Number of patients involved:**

### IMDRF Clinical Sign Codes (annex E);

### IMDRF Health impact codes (annex F):

---

**5. Manufacturer’s preliminary comments (initial/follow-up reports)**

**Manufacturer’s preliminary analysis of event:**

**IMDRF Type of Investigation (annex B):**

**IMDRF Investigation Findings (annex C):**

**Initial correction implemented by manufacturer:**

**Expected date of next report:**

---

**6. Results of the final investigation (final report)**
<table>
<thead>
<tr>
<th><strong>Manufacturer’s analysis of event:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Any additional IMDRF Type of Investigation (annex B):</strong></td>
</tr>
<tr>
<td><strong>Any additional: IMDRF Investigation Findings (annex C):</strong></td>
</tr>
<tr>
<td><strong>IMDRF Investigation Conclusion (annex D):</strong></td>
</tr>
<tr>
<td><strong>Any additional corrections implemented by manufacturer:</strong></td>
</tr>
<tr>
<td><strong>Corrective action/preventive action implemented by manufacturer:</strong></td>
</tr>
<tr>
<td><strong>Field safety corrective action by manufacturer:</strong></td>
</tr>
<tr>
<td><strong>Date field safety notice issued:</strong></td>
</tr>
<tr>
<td><strong>Field safety notice identifier:</strong></td>
</tr>
<tr>
<td><strong>Time schedule for implementation of the identified actions:</strong></td>
</tr>
<tr>
<td><strong>Final comments from the manufacturer:</strong></td>
</tr>
<tr>
<td><strong>Further investigations, including analysis of other impacted areas:</strong></td>
</tr>
</tbody>
</table>

**Is the manufacturer aware of similar events with this device with a similar root cause?**
- [ ] Yes
- [ ] No

**If yes, state in which countries: If yes, number of similar incidents:**

**State which countries this report has been disseminated to:**

**7. Signature**

<table>
<thead>
<tr>
<th>Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature:</td>
</tr>
<tr>
<td>Date:</td>
</tr>
</tbody>
</table>
### FIELD SAFETY CORRECTIVE ACTION REPORT

<table>
<thead>
<tr>
<th>Send to:</th>
<th>Relevant National Regulatory Authorities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>World Health Organization, 20 Avenue Appia CH-1211, Geneva 27, Switzerland</td>
</tr>
<tr>
<td></td>
<td>Email: <a href="mailto:rapidalert@who.int">rapidalert@who.int</a></td>
</tr>
</tbody>
</table>

#### 1. Report details

- **Date of this report:**

<table>
<thead>
<tr>
<th>Type of report:</th>
<th>□ Initial report</th>
<th>□ Follow-up report</th>
<th>□ Final report</th>
</tr>
</thead>
</table>

| FSCA reference number assigned by NRA: |

| Name of recipient organization: |

<table>
<thead>
<tr>
<th>Name of contact person:</th>
<th>Email of contact person:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Street and No.:</th>
<th>City and postcode:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Country:</th>
<th>Telephone:</th>
</tr>
</thead>
</table>

#### 2. Reporter details

| Name of manufacturer: |

<table>
<thead>
<tr>
<th>Street and No.:</th>
<th>City and postcode:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Country:</th>
<th>Telephone:</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Name of contact person:</th>
<th>Email of contact person:</th>
</tr>
</thead>
</table>

| Identifier assigned by the manufacturer: |
### 3. Product details

<table>
<thead>
<tr>
<th>Product name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product code (catalogue number):</td>
</tr>
<tr>
<td>Lot number/batch number/serial number:</td>
</tr>
<tr>
<td>Expiry date:</td>
</tr>
<tr>
<td>Associated devices/accessories (lot numbers/expiry dates):</td>
</tr>
<tr>
<td>Instructions for use version number:</td>
</tr>
</tbody>
</table>

Please attach a copy of the instructions for use.

### 4. FSCA description

- **Background information and reason for the FSCA:**

- **Description and justification of action (corrective/preventive):**

- **Date feedback reported by manufacturer:**

- **Advice on actions to be taken by distributor and the user:**

- **Field Safety Notice attached:** □ Yes □ No
  - **Status of FSN:** □ Draft □ Final

- **Time schedule for implementation of different actions:**

- **List of countries this FSCA has been distributed to:**

### 5. Comments


### 6. Signature

<table>
<thead>
<tr>
<th>Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature:</td>
</tr>
<tr>
<td>Date:</td>
</tr>
</tbody>
</table>
URGENT FIELD SAFETY NOTICE

Product name: [insert name of the affected product]
FSCA-identifier: [insert]
Type of action: [e.g., return of device to supplier, device modification (including instructions for use),
device exchange, device destruction, retrofit of device by purchaser of manufacturers modification
or design change, advice given by manufacturer regarding use of the device and/or follow-up of
patients, users, or others].

Date: dd/mm/yyyy
Attention: [insert intended audience]
Details on affected device:
[Specific details to easily identify the affected device, e.g., product name, product code, lot number]
Description of the problem:
[A factual statement explaining the reasons for the FSCA, including description of the problem and a
clear description of the potential hazard associated with the continued use of the MC device and the
associated risk to the patient, user or other person.]
Advice on action to be taken by the user: [include, as appropriate]
• Identifying and quarantining the device;
• Method of recovery, disposal or modification of device, including instructions for use and
  labelling;
• Recommended patient follow-up;
• Timelines;
• Confirmation form to be sent back to the manufacturer.
The above recommended action(s) are to be taken by all recipients of this FSN, including action(s)
recommended for people that have previously used or been treated by affected devices.
Transmission of this Field Safety Notice: [as appropriate]
This notice needs to be passed on all those who need to be aware within your organization or to any
organization where the potentially affected product has been transferred. Please be aware of this
notice and resulting action for an appropriate period to ensure effectiveness of the corrective action.
Contact person for further information:
[insert name, organization, address, contact details]
The undersigned confirms that this notice has been notified to the appropriate National Regulatory
Authorities.
Signature:
### Annex 5 – Post-Market Information Exchange Reporting Form for NRAs

**Post-Market Information Exchange Reporting Form for NRAs**

1. **Report details**

<table>
<thead>
<tr>
<th>NRA report number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose of exchange:</td>
</tr>
<tr>
<td>□ Share information</td>
</tr>
<tr>
<td>□ Events leading or highly likely to lead to unanticipated public health threat</td>
</tr>
<tr>
<td>□ Observations from national trend analysis</td>
</tr>
<tr>
<td>□ Request information</td>
</tr>
<tr>
<td>□ Summary of query findings</td>
</tr>
<tr>
<td><strong>Confidentiality:</strong> □ Yes □ No</td>
</tr>
</tbody>
</table>

---

*Draft*
2. Initiating NRA

<table>
<thead>
<tr>
<th>Name of NRA:</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of contact person:</th>
<th>Email of contact person:</th>
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<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Street and No.:</th>
<th>City and postcode:</th>
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<td></td>
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<table>
<thead>
<tr>
<th>Country:</th>
<th>Telephone:</th>
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<td></td>
</tr>
</tbody>
</table>

3. Product details

<table>
<thead>
<tr>
<th>Product name:</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Product code (catalogue number):</th>
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<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lot number/batch number/serial number:</th>
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</thead>
<tbody>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>Expiry date:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Associated devices/accessories (lot numbers/expiry dates):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Instructions for use version number:</th>
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<tbody>
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<td></td>
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<table>
<thead>
<tr>
<th>Manufacturer name:</th>
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<tbody>
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</table>

<table>
<thead>
<tr>
<th>Street and No.:</th>
<th>City and postcode:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Country:</th>
<th>Telephone:</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of contact person:</th>
<th>Email of contact person:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Please attach a copy of the instructions for use.**

4. Background information

<table>
<thead>
<tr>
<th>Background information and reason for this report:</th>
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<tbody>
<tr>
<td></td>
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<table>
<thead>
<tr>
<th>Is the investigation of the report completed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Yes □ No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attachments [insert FSN, FSCA reports etc.]:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Yes □ No</td>
</tr>
</tbody>
</table>
5. Additional remarks


6. Details of responding NRA

<table>
<thead>
<tr>
<th>Name of NRA:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of contact person:</td>
<td>Email of contact person:</td>
</tr>
<tr>
<td>Street and No.:</td>
<td>City and postcode:</td>
</tr>
<tr>
<td>Country:</td>
<td>Telephone:</td>
</tr>
</tbody>
</table>

7. Signature

| Name: |  |
| Signature: |  |
| Date: |  |
Annex 6 – Recommendations for specific end-user groups

Clinical laboratories
For clinical laboratories, feedback from users (technicians and clinical analytical experts) will either be related to technical operation of the analysers or to the results obtained. If feedback relates to results obtained, these data should be made available to the manufacturer, allowing the manufacturer to perform an investigation into the issue. It is also important to provide details on the lot numbers of the consumables involved, and preferably, some samples will be kept apart, to facilitate further investigation by the manufacturer.

Hospitals/Health care facilities
As a lot of medical devices are mostly used in health care facilities, it is important for the manufacturer to obtain feedback from the users in the healthcare facilities. Preferably, the manufacturer or other economic operators involved, will discuss providing feedback as part of the purchase or even contracts. The health care facilities should also consider how data they have can be made available to the manufacturer. The manufacturer on the other hand should be aware that health care professionals have limited time available and providing feedback other than incidents or adverse event, should be made as easy as possible.

Primary care
See health care facilities. As primary care facilities will be relatively small, there will be limited staff available to invest time in a system to provide systematic feedback to the manufacturer. The sales force might be one of the best ways to obtain feedback from primary care facilities.

Self-testing
Self-testing is most often performed the individual on themselves. If observations are made during the performance of the test, not expert will be available to assist the user. And as such tests are often purchased in drugstores or supermarkets, it is unlikely that sufficient expertise is available there. Therefore, for feedback or advice, the labelling of the self-test shall contain the contact details of the manufacturer or the distributor.

Implants

Artificial intelligence
Annex 7 – Lot testing for IVDs

1. Rationale

The NRA has a mandate to conduct testing of devices in their market place, if appropriate.

Lot testing conducted by the NRA is not intended to duplicate the manufacturer’s quality control (QC) lot testing undertaken throughout the manufacturing process, and at final release of the product. Release of the product is the mandate of the manufacturer.

Despite the manufacturers’ obligation to test each lot during production and at release, variations in the characteristics of each lot may occur due to differences in the lots of key components (starting materials) used, different personnel involved in production processes, variations in manufacturing processes, and a range of other variables.

For an IVD, lot sizes are varied, depending on how the manufacturing site configures their operations. The EU standard EN 13975: 2003 *Sampling procedures used for acceptance testing of in vitro diagnostic medical devices – Statistical aspect* defines the term lot as follows: “A defined amount of material that is uniform in its properties and has been produced in one process or series of processes. The material can be either starting material, intermediate material or finished product”. In the context of these guidelines, lot testing is focused on a commercially available test kit which is provided with a unique lot number and where the single components are matched to this kit, e.g. microplate or nitrocellulose membrane, antigen, conjugate, specimen diluent, etc.

For-cause lot testing conducted by a testing laboratory under the auspices of the NRA.

Pre-distribution (but post-shipment to country) as proactive market surveillance should be considered using a risk-based approach. Its aim would be to ensure lot-to-lot consistency against a baseline (reference) lot.

With the same above assumption, the testing of device post-distribution to users once they have been in use might bring additional information related to the fulfillment of the specifications related to stability.

Implementing this post-distribution to user testing might validate if customer feedback systems are operational as one would expect that users should detect any adverse events and/or product problems related to use of the product.
1.2 Limitations

This approach to lot testing will not necessarily be able to detect quality issues if the lot has not been homogenously produced. Pre-distribution lot testing cannot detect stability issues that might lead to degradation of the product during shelf-life, including all components and accessories.

1.3 Method

Samples should be taken by appropriately trained and qualified NRA personnel (or otherwise delegated agency) from central medical stores (or similarly centralized warehousing facility) for pre-distribution to users testing, and from user sites for post-distribution to users testing. Samples should be transported to the reference testing laboratory in such a way that the integrity of the test kits is not adversely affected and that the appropriate storage conditions, as specified by the manufacturer, are maintained. Temperature log monitors should be included within the transportation packing for the samples.

A risk-based approach should be considered to minimise wastage of resources and to leverage on the previous regulatory assessment decision.

For testing pre-distribution to users, each lot should be sampled initially. After a certain period of acceptable results (12 months or 10 lots, whichever comes first), the sampling frame may change from systematic sampling and testing of each lot, to random sampling of lots delivered to countries. The random sampling frame should be selected (every 5th lot). If any issue is observed with random pre-distribution lot verification testing, the NRA may elect to re-commence systematic testing of each lot. The decision about the sampling frame is therefore made using a risk-based approach.

Testing post-distribution to users carries a different risk as the product has already been in use and depending on the throughput of the user site, it may or may not be close to its expiry date. Therefore, the sampling frame does not need to include every lot delivered to country but should rather be conducted twice per year.

A reference laboratory should be identified to perform lot testing and should:

Be mandated by national authorities to perform testing for market surveillance of devices, and therefore have enough resources to conduct lot testing;

Strive to adhere to internationally recognized quality standards, e.g., ISO 15189: Medical laboratories — Particular requirements for quality and competence or ISO 17025: General requirements for the competence of testing and calibration laboratories;

Participate in external quality assessment schemes (EQAS), and act on results, as required.
Testing staff competencies

The staff performing the lot testing should be qualified and competent to undertake the task and to demonstrate that they can perform the test procedure correctly.

The technical supervisor should:

• Ensure that technicians are blinded to the reference test results for the lot testing panel by assigning the specimen vials with codes;
• Supervise the performance of the testing;
• Ensure that the testing results of subjectively read test kits are read independently by two technicians;
• Collate the readings from each technician and sign off the data collection sheets at the end of each testing day;
• Transcribe or verify that correct transcription of final results of lot testing into the testing report to be provided to the NRA.

The technicians should:

• Perform the procedure according to the manufacturers’ instructions for use;
• Record any readings on the data collection sheet; and
• Store all data collection sheets in a folder.

The supervisor and technicians should not proceed with testing until they are confident regarding every aspect of the testing procedure.

Quality assurance measures must always be in place and be adhered to.

The reference laboratory (in conjunction with the user) should be able to undertake an investigation of perceived issues to eliminate all other possible causes that are not test kit-related (i.e. user-related, poor quality assurance measures).

What is lot testing? Lot testing is comprised of two elements:

• Physical examination, and
  ▪ Functional testing against a panel of well-characterized specimens, if IVDs, or a recognized method, for other devices.

1.4 Physical examination

All samples should be physically examined, and any observations recorded.

• Packaging, including defective components, defective devices, devices damaged prior to use, damage to the materials used to construct the cover or outer packaging of the device,
compromised decontamination of the device, one or more of the listed components is missing.

- **Label, instructions for use or training problems**, including inadequate instructions to the user and their patients/clients; unclear, missing, worn out, incorrect or inaccurate labels.
- **Material integrity problem**, including broken, cracked, degraded, deformed, disintegrated, split/cut/torn, scratched materials/components.

### 1.5 Functional testing

- Sampling – device doesn’t collect/transfer specimen
- Liquid – leak, splash
- Mechanical – misalignment, jam
- Electrical - unable to charge, power loss or fluctuation
- Data – capture, display, or storage affecting product functionality
- Software – network, program, algorithm, or security affecting product functionality
- Environmental – noise, temperature, humidity/moisture, fungal/bacterial growth, or dust affecting product functionality
- Failure to calibrate
- Increased rate of invalid or unreturnable test results
- Obviously incorrect, inadequate or imprecise result or readings
- Unable to obtain reading

For testing IVDs, a set of clinically-derived reference specimens are constructed into a panel. Detail on preparation of specimen panels and lot verification testing by the reference laboratory. **The testing should be conducted on a standardized panel.**

### 1.6 Reporting testing results

The reference testing laboratory should present results in the report as defined in Annex 2 which would be sent to the requesting NRA. The testing should be carried out using the same standardized panel as the pre-distribution lot testing.

#### Collect other post-market information

Other sources of data on the quality and performance of IVDs on the market include external quality assessment schemes (EQAS), also known as proficiency testing, and from quality control (QC) programmes.

**EQAS**

Where it exists, the data generated by an EQAS can be assessed. Although the primary purpose of EQAS is inter-laboratory comparison, these data can provide very useful information about the performance of IVDs.
EQAS data analysis may indicate not only operator-related errors (for example transcription errors), but also errors related to the test itself, especially if large numbers of laboratories/testing sites are using the same test kit.

A QC specimen is a specimen that has reactivity that is just above the cut-off for positivity of a test kit. It is usually a manufactured specimen that is optimized for the test kit and may be provided by a national authority to all laboratories/testing sites using the test kit as part of a QC programme. All attempts should be made to procure and distribute QC material to any site undertaking testing QC specimens should be tested in each test run (for an immunochromatographic RDT, no more than 10 tests per run). The results of QC specimens can be graphically represented and results outside a pre-determined acceptance range identified and investigated. This approach is typically not all that useful for RDTs that generally are used in settings outside of the laboratories without test kit controls and external QC specimens.

If sentinel surveillance sites are established, these sites could collect information on safety, quality and performance of IVDs.

**Model certificate of analysis for in vitro diagnostic medical devices (IVDs)**

**Background**

A model certificate of analysis (CoA) is used by manufacturers of in vitro diagnostic medical devices (IVDs) to report the results of the final quality control for lot release, and state that the lot complied with the specifications stated in the instructions for use for the IVD. It may also be used by quality control laboratories that act on behalf of national regulatory authorities to conduct market surveillance. The items included are based on Technical Guidance Series for WHO Prequalification – Panels for quality assurance and quality control of in vitro diagnostic medical devices\(^{11}\), WHO guidance of post-market surveillance of in vitro diagnostics\(^{12}\), and WHO guidance for procurement of in vitro diagnostics and related laboratory items and equipment\(^{13}\). In addition, requirements of the International Standards Organization General requirements for the competence of testing and calibration laboratories - ISO/IEC 41 17025\(^{14}\) have been considered.

---


If any specific legal requirements exist in the country of issue or importation they should be respected when issuing the certificate.
Table 1 outlines the specific elements for physical inspection and function testing for different assay formats.

<table>
<thead>
<tr>
<th></th>
<th>Physical inspection</th>
<th>Panel functional testing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rapid diagnostic tests (RDTs)</strong></td>
<td>secondary packaging primary packaging desiccant buffer vials specimen transfer devices lancets alcohol swabs, etc.</td>
<td>• 3 replicates of 5 positive serum/plasma specimens near to the cutoff claimed by the manufacturer;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 3 replicates of 5 negative serum/plasma specimens;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 3 replicates of 5 positive whole blood specimens near to the cutoff claimed by the manufacturer;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 3 replicates of 5 negative whole blood specimens.</td>
</tr>
<tr>
<td><strong>Immunoaassays (IAs)</strong></td>
<td>secondary packaging primary packaging reagent vials, etc.</td>
<td>• 3 replicates of 5 positive serum/plasma specimens near to the cutoff claimed by the manufacturer;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 3 replicates of 5 negative serum/plasma specimens.</td>
</tr>
</tbody>
</table>
| **Nucleic acid testing (NAT) assays - quantitative** | secondary packaging primary packaging reagent vials, etc. | For IVDs used in a laboratory (conventional platform)\(^{15}\):
• 25 replicates at LoD claimed by manufacturer;
• 25 replicates at 2x LoD claimed by manufacturer;
• 25 replicates of 1000 copies/ml;
• 5 replicates of 10,000 copies/ml;
• 4 replicates of negative (normal human plasma).
For IVDs used at point of care:
Same as above. |
| **Nucleic acid testing (NAT) assays - qualitative** | secondary packaging primary packaging reagent vials, etc. | For IVDs used in a laboratory (conventional platform):
• 24 replicates at 4x LoD claimed by manufacturer;
• 24 replicates at 2x LoD claimed by manufacturer;
• 24 replicates at LoD claimed by manufacturer;
• 24 replicates at 0.5x LoD claimed by manufacturer;
• 24 replicates at 0.25x LoD claimed by manufacturer;
• 5 replicates of negatives.
Plus:
Minimum of 3 replicates for the most common subtypes/genotypes\(^{16}\) at 2x LoD claimed by manufacturer.
For IVDs used at point of care:
Same as above. |

A model of such certificate is shown in annex 7A.

\(^{15}\) For example, for a conventional NAT assay with an LOD of 45 copies/ml, the following concentrations would be used: 10,000 copies/ml (5 replicates), 1,000 copies/ml (25 replicates), 100 copies/ml (25 replicates), 50 copies/ml (25 replicates), and negative dilutions (4 replicates).

\(^{16}\) For HIV-1 A, B, C, D, CRF02_AG and HIV-2 Group A
Annex 7A:

**1. Laboratory issuing certificate of analysis:**

<table>
<thead>
<tr>
<th>Organization name:</th>
</tr>
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<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Responsible Person (Surname, Given name): Position:</th>
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**2. Reference for this certificate of analysis:**

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<table>
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**3. Requestor of certificate of analysis:**

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<thead>
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**4. Sample details:**

<table>
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<th>Date sampled/received (dd/mm/yyyy):</th>
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<table>
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<th>Quantity sampled/received:</th>
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**5. Product details:**

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<table>
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<tr>
<th>Unique device identification (UDI-DI + UDI-PI):</th>
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<th>Date of expiry date (dd/mm/yyyy):</th>
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<table>
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<th>Packaging configuration (number of tests):</th>
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<table>
<thead>
<tr>
<th>Contents of sample:</th>
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</table>
6. Result of physical inspection:
Date of inspection (dd/mm/yyyy):

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<th>Element inspected</th>
<th>Result</th>
<th>Accepted</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>x defective/x not defective</td>
<td>Pass/Fail</td>
</tr>
<tr>
<td></td>
<td>x defective/x not defective</td>
<td>Pass/Fail</td>
</tr>
<tr>
<td></td>
<td>x defective/x not defective</td>
<td>Pass/Fail</td>
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<tr>
<td></td>
<td>x defective/x not defective</td>
<td>Pass/Fail</td>
</tr>
<tr>
<td></td>
<td>x defective/x not defective</td>
<td>Pass/Fail</td>
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</table>

*Expand as needed*
Attach photographs of all inspected samples of reagents/kits.

7. Results of panel functional testing:
Date of testing (dd/mm/yyyy):

<table>
<thead>
<tr>
<th>Panel identification number</th>
<th>Result</th>
<th>Reference results</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td></td>
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<td></td>
<td>Pass/Fail</td>
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<tr>
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<td>Pass/Fail</td>
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<td>Pass/Fail</td>
</tr>
<tr>
<td></td>
<td>x detected/x tested</td>
<td></td>
<td>Pass/Fail</td>
</tr>
</tbody>
</table>

*Expand as needed*
Attach photographs of all testing results, if subjectively read assay format.
8. Additional comments:

Including any invalid or unreturnable results.

9. Conclusion on compliance of the sample with the specifications:

Compliance statement:

Surname, Given name: 

Street, Postcode, City, Country: 

Date issued (dd/mm/yyyy): 

Signature: 