IMDRF International Medical Device Regulators Forum

Adverse Event Terminology and Coding Working Group

Sept 2019

Working Group Chair:

H. Ishikawa

Office of Standards and Compliance for Medical Devices

Pharmaceuticals and Medical Devices Agency

Overview of IMDRF AE WG

NWIP

Initial submission: September 2014

Not adopted

Followed by discussions in the small expert WG

Adoption: March 2015

Mission;

Development of a harmonized terminology for reporting adverse events related to medical devices including in-vitro diagnostics (IVDs).

Purpose;

To improve the efficiency of the adverse event management systems for faster response by both industry and regulatory agencies, with the use of a single, appropriate adverse event terminology and coding system.

Benefits;

- Improved accuracy of capturing and reporting of medical device related adverse events,
- Reduced ambiguity, hence increased effectiveness of the evaluation process, and
- Better usability, in contrast to narrative text;

for

- More sophisticated signal detection (i.e. the identification of potential novel risks), and
- Trending analysis by incident management systems including advanced querying functions and data visualization.

Thus enabling a faster response by both regulatory agencies and device manufacturers.

Member list

Australia: TGA
Pamela Carter
Jorge Garcia

Brazil: ANVISA
Maria Gloria Vicente
Sheila Martins Cordovil
Carla Cruz

Canada: Health Canada
Richard McAteer
Tanya Hiebert
Leanne Moore
Gayatri Jayaraman

European Union:
Jean-François Roche (EC)
Tony Sant (UK, MHRA)
Claudius Griesinger (EC/JRC)
Graham Nash (UK, MHRA)
Tim Raemaekers (EC/JRC)
Juan Antonio Blasco Amaro (EC/JRC)
Dimitrios Panidis (EC/JRC)
Robin Seidel (BfArM- Germany)

Russia: Roszdravnadzor
Aysylu Valeeva
Elena Astapenko
Yaroslav Kurtukov

WHO: Anita Sands

Japan: PMDA Hiroshi Ishikawa (Chair)
Mika Togashi
Kaori Ogawa
Tsutomu Makino
Yasuyuki Sakurai
Toru Takahashi
MHLW Fumihito Takanashi
Akimasa Takeuchi
Yusuke Ueda

US: FDA
Nancy Pressly
Evan Jacobs

Singapore: HSA
Woei Jiuang Wong
Lailing Liew

South Korea: MFDS
Hyeonho Kim

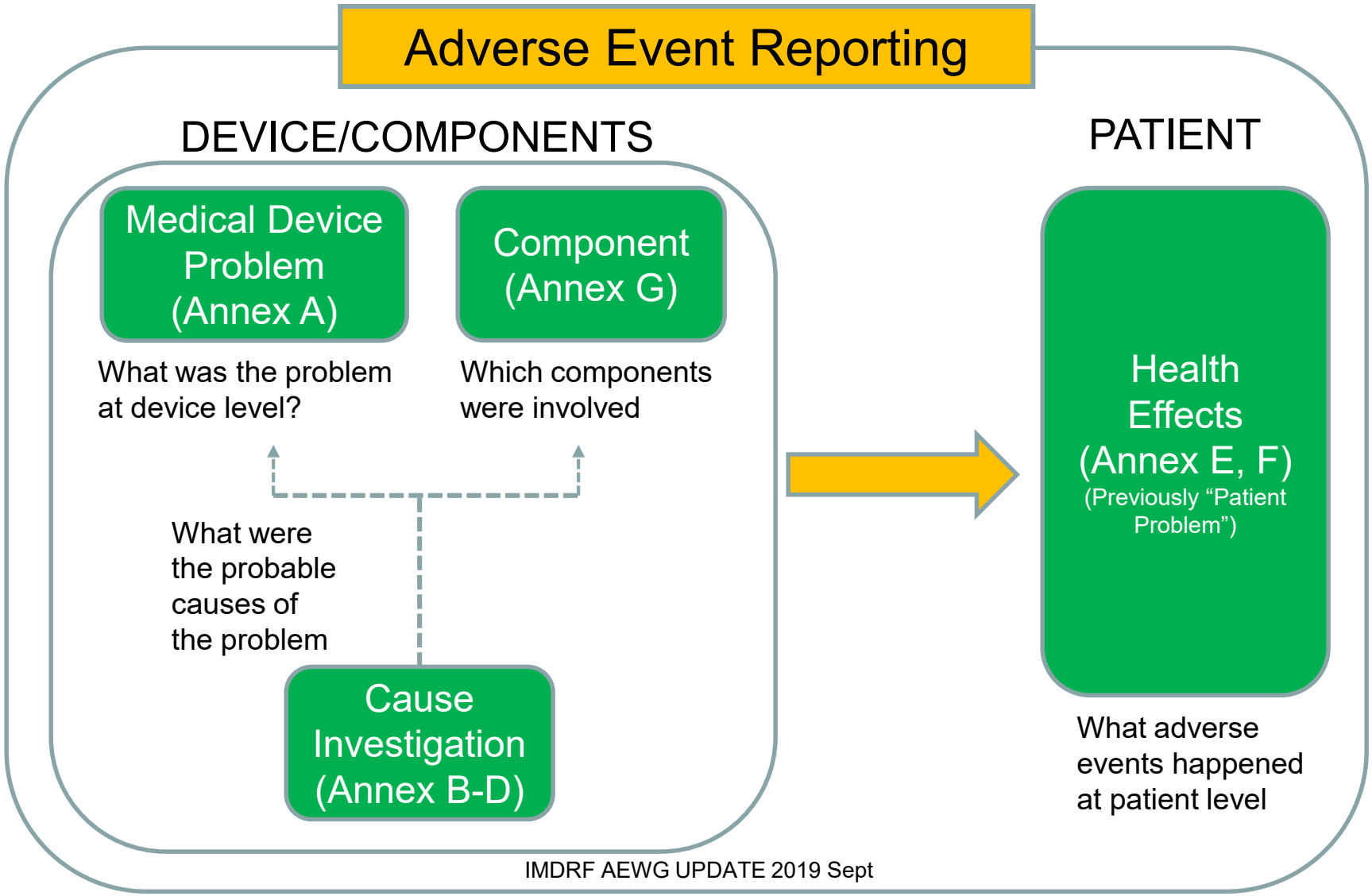
AHWP:
Sasikala Devi Thangavelu
Azat Iskaliyev
Dinara Esbolatova
Gulnar Berkimbayeva

Recent Meetings

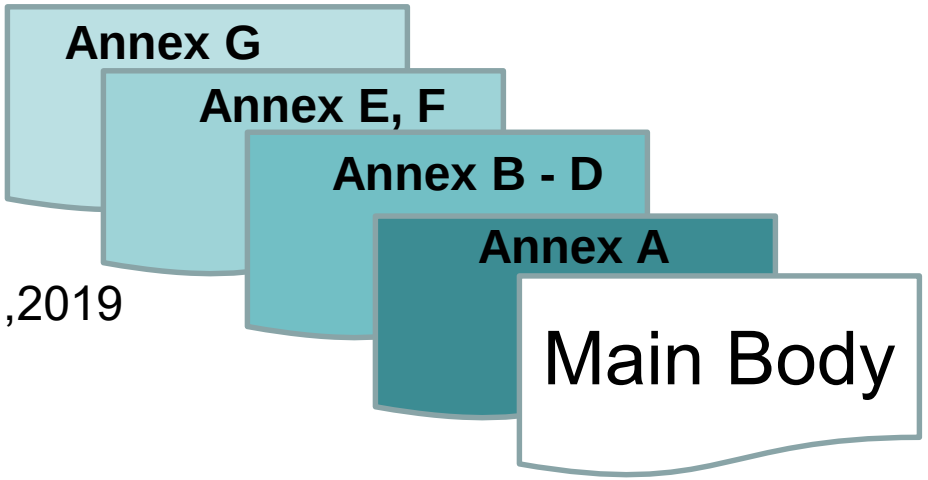
- March 26th – 29th, 2019
  8th Face to Face meeting in Brazil
- April 24th, 2019
  23rd Teleconference
- May 22nd, 2019
  24th Teleconference
- June 18th, 2019
  25th Teleconference

Coming Meeting

- Nov 4th- 7th, 2019
  9th Face to Face meeting in Switzerland


Adverse Event Reporting
DEVICE/COMPONENTS
PATIENT
Medical Device Problem (Annex A)
What was the problem at device level?
Component (Annex G)
Which components were involved
What were the probable causes of the problem
Cause Investigation (Annex B-D)
Health Effects (Annex E, F)
(Previously "Patient Problem")
What adverse events happened at patient level

Title: IMDRF terminologies for categorized Adverse Event Reporting (AER): terms, terminology structure and codes



Main Body: published on April 10th in 2017
revised with the addition of Annexes B, C ,D, E and F published as Edition 3 ,2019 on March 21st, 2019

Annex A (Medical Device Problem):
published with mapping on April 10th, 2017; Sep. 21st, 2017 (Edition2)

Annex B – D (Cause Investigation):
published on Sep. 21st, 2017

Annex E, F (Health Effects):
published on March 21st, 2019

Annex G (Component): Under process to Public consultation

Annex A: Medical Device Problem

Annex A Medical Device Problem

Level 1			Level 2			Level 3		
Term	Definition	Code	Term	Definition	Code	Term	Definition	Code
Patient Device Interaction Problem	Problem related to the interaction between the patient and the **device**.	A01	Patient-Device Incompatibility	Problem associated with the interaction between the patient's physiology or anatomy and the **device** that affects the patient and/or the **device**.	A0101	Biocompatibility	Problem associated with undesirable local or systemic effects due to exposure to medical device materials or leachates from those materials by a patient who has an implant or is receiving treatment with a **device** made from them.	A010101
						Device Appears to Trigger Rejection	The **device** appears to elicit undesired response in the patient to the presence of an implanted or invasive **device**, without inherent **device** failure, e.g. fibrous encapsulation, or inflammation of the tissue around the **device**, or extrusion of the **device**.	A010102
						Inadequacy of Device Shape and/or Size	The physical size and/or shape of the **device** was inadequate with regard to the patient's anatomy.	A010103
			Osseointegration Problem	Problem associated with interconnection between the bone tissue and the implanted **device**.	A0102	Failure to Osseointegrate	Problem associated with the failure to see direct anchorage of an implant by the formation of bony tissue around the implant without the growth of fibrous tissue at the bone-implant interface.	A010201
						Loss of Osseointegration	Problem associated with weakened integration of the **device** at the bone-implant interface due to loss of fibrous and/or bony tissue and leading to compromised anchorage of the device. i.e.	A010202

Level 1 term: Patient Device Interaction Problem

Annex B: Type of Investigation

Annex B: Type of Investigation

Note: Select as many terms as necessary/appropriate to characterise the investigation

Device (bold): For the purpose of this Annex B, a **device** means a medical device including accessories

Level 1		
Term	Definition	Code
Testing of Actual/Suspected Device	The investigation employed relevant empirical testing of the actual **device** suspected in the reported adverse event in order to establish their functional and other properties and to identify possible causes for [illegible] the	B01
Testing of Device from Same Lot/Batch Retained by Manufacturer	[illegible] of [illegible] ed [illegible] s for [illegible] by [illegible] ally be based on test methods used for evaluating safety and performance as described in the latest relevant standards.	B02
Testing of Device from Same Lot/Batch Returned from User	The investigation employed relevant empirical testing of the **device** of the same lot or batch than that of the suspected **device** in the reported adverse event in order to support the identification of possible causes for the adverse event. The **device** was returned from the user. Relevant testing would typically be based on test methods used for evaluating safety and performance as described in the latest relevant standards.	B03

Testing of Actual/Suspected Device

Annex C: Investigation Findings

Annex C Investigation Findings ("what were the findings?")

Device (bold): For the purpose of this Annex C, a **device** means a medical device including accessories and components.

Level 1			Level 2			Level3		
Term	Definition	Code	Term	Definition	Code	Term	Definition	Code
Biological Problem Identified	Problems relating to, caused by or affecting biological processes or living organisms.	C01	Biocompatibility Problem Identified	The **device** causes cellular or tissue responses that elicit an undesirable local or systemic effect in the recipient or beneficiary of that therapy. (See ISO 10993)	C0101			
			Biological Contamination	The undesirable presence of living organisms such as bacteria, fungi, or viruses or their products (enzymes or toxins).	C0102	Endotoxin Contamination	The undesirable presence of toxins associated with certain bacteria (e.g. gram negative bacteria).	C010201
							ble presence of ms or microbes such as fungi (yeasts and	C010202
			Material or Material Leachate Pyrogenic Problem	The undesi pyrogens o organisms permeate t				
			Cytotoxicity Problem Identified	The **device** wa undesirable level of toxicity to living cells.				
			Genotoxicity Problem Identified	The **device**'s ability to cause damage to genetic material (e.g. leading to malignant tumors). (See ISO 10993)	C0105	Carcinogenic Problem	The **device**'s ability to trigger development of cancer.	C010501
						Mutagenic Problem	The **device**'s ability to change genetic information (usually DNA) of an organism and thus increasing the frequency of mutations.	C010502
			Hematological Problem Identified	The **device** affects or impacts the blood or its components. (See ISO 10993 all parts)	C0106	Agglutination Problem	The **device** affects the ability of the blood to clot which may be induced by chemical, mechanical, or thermal properties of the **device**	C010601

Level 2 term: Biological Contamination

Annex D: Investigation Conclusion

Annex D: Investigation Conclusion ("why did the incident/adverse event occur?")

Device (bold): For the purpose of this Annex D, a **device** means a medical device including accessories and components.

Level 1			Level 2		
Term	Definition	Code	Term	Definition	Code
Cause Traced to Device Design	Problems traced to the design specifications (e.g. in the requirements, testing processes, hazard analysis, implementation strategy).	D01	Design Inadequate for Purpose	Problems traced to design/design features of the **device** that do not support or interfere with the intended purpose of the **device**.	D0101
			Human Factors Engineering - Device Difficult to Operate	Problems traced to inappropriate and/or inadequate assessment and engineering design of the **device** to accommodate how or where the **device** will be used.	D0102
			Human Factors Engineering - Device Difficult to Assemble	Problems traced to inadequate design of the component parts and/or assembly steps resulting in the **device** not being able to be assembled correctly.	D0103
			Human Factors Engineering - Device Difficult to Reprocess	Problems traced to inadequate design of the reprocessing steps and/or the **device** resulting in the **device** remaining unclean.	D0104
			Missing or Inadequate Safety Measures	Problems traced to inadequate design or complete lack of safety measures leading to **device** malfunction or unintended properties of the **device** including possible hazards for persons using the **device**.	D0105
			Design Change Validation Inadequate	Problems traced to inadequate or lack of validation of design changes of the **device** leading to malfunction or unintended properties of the **device** including possible hazards for persons using the **device**.	D0106

Level 2 term:
Human Factors Engineering – Device Difficult to Operate

Annex E and F: Health Effects Terms and Codes

Annex E — Clinical Signs, Symptoms and Conditions

e.g. Paralysis
Keratitis
Burn
Fracture

Annex F — Health Impact

e.g. Death
Delay to Diagnosis/Treatment/Therapy
Hospitalisation or Prolonged Hospitalisation
Inadequate/Inappropriate Treatment
Minor Injury/ Illness/Impairment
Serious Public Health Treat/Injury/Illness/Impairment
Misdiagnosis/Misclassification
Intervention/Medical Intervention

Annex E: Clinical Signs, Symptoms and Conditions

No./ Category (Level 1) (Organs, Systems, Disorders, Concepts)	
1. Nervous System	14. Reproductive System and Breast
2. Mental, Emotional and Behavioural Disorders	15. Pregnancy, Childbirth and the Puerperium
3. Blood and Lymphatic System	16. Musculoskeletal System
4. Immune System	17. Skin and Subcutaneous Tissue
5. Vascular System	18. Neoplasms Benign, Malignant and Unspecified
6. Heart	19. Infections
7. Respiratory System	20. Injury
8. Eye	21. Procedural Complications
9. Ear and Labyrinth	22. Investigations and Diagnostic Tests
10. Gastrointestinal System	23. General Disorders
11. Hepatic and Biliary System	24. Others
12. Metabolism and Nutrition	LIST (all terms in one sheet)
13. Kidney and Urinary Tract	

Annex E: Clinical Signs, Symptoms and Conditions

Annex E. Clinical signs, symptoms and conditions

Device (bold): For the purpose of this Annex, a device means a medical device including accessories and components

Wherever appropriate "patient" should be taken to include user, operator or any other person affected by the incident.

LEVEL 1	LEVEL 2							LEVEL 3						
Category	Term	Definition	IMDRF Code	MedDRA Code	MedDRA LLT	Primary Category	Secondary Category	Term	Definition	IMDRF Code	MedDRA Code	MedDRA LLT	Primary Category	Secondary Category
Nervous System	Balance Problems	A feeling of falling down which can occur whether the person is standing, sitting or lying down.	E0101	10049848	Balance disorder									
	Brain Injury	Damage to the brain.	E0102	10060690	Traumatic brain injury	Nervous System	Injury	Encephalocele	Hernia of brain substance and meninges through a congenital or traumatic opening of the skull.	E010201	10014617	Encephalocele	Nervous System	Injury
	Cerebral Edema	...lling in the br... by ...sence... fluid...					Generalized ...isorders							
	Cerebral Hyperperfusion Syndrome	Unexp... cerebral... carotid end... or carotid arte... (CAS).					...scular System							
	Cerebral Ventriculomeglia	Abnormal enlar... cerebral ventric...												
	Cerebrospinal Fluid Leakage	The loss of cere... into the surroun...												
	Cognitive Changes	Changes in per... thinking, or rem...						Confusion/ Disorientation	A mental state characterized by a lack of clear and orderly thought and behavior.	E010701	10010300	Confusion		
								Dementia	Loss of intellectual abilities interfering with an individual's social and occupational functions.	E010702	10012267	Dementia		
	Concussion	Traumatic brain injury as a result of the action of a mechanical force on the head.	E0108	10010254	Concussion	Nervous System	Injury							
	Convulsion/Seizure	Sudden, involuntary skeletal muscular contractions of cerebral or brain stem origin.	E0109	10010904	Convulsion			Convulsion, Clonic	A convulsion marked by alternating contracting and relaxing of the muscles.	E010901	10053398	Clonic convulsion		
								Convulsion, Tonic	A convulsion marked by prolonged contraction of the muscles.	E010902	10043994	Tonic convulsion		
								Epilepsy	Epilepsy caused or apparently caused by **device**. Do not use when epilepsy is a pre-existing condition.	E010903	10015037	Epilepsy		
								Status Epilepticus	A life-threatening condition caractarized by a single proplonged seizures or a series of seizures without intervening full recovery of conciousness.	E010904	10041962	Status epilepticus		
	Decreased Sensitivity	Lower capacity to notice through one or more senses.	E0110	10071552	Hyporesponsive to stimuli									
	Increased Sensitivity	Higher capacity to notice through one or more senses.	E0111	10082489	Hyperresponsive to stimuli									
	Dizziness	A sensation of lightheadedness, unsteadiness, turning, spinning or rocking.	E0112	10013573	Dizziness									
	Dysphasia	Impairment of verbal communication skills, often	E0113	10013951	Dysphasia			Aphonia	Inability to speak.	E011301	10002953	Aphonia		

Level 2 term: Brain Injury

Annex F: Health Impact

Level 1 terms	
Change in Therapeutic Response	Recognised Device or Procedural Complication
Death	Reduction in Life Expectancy
Brain Death	Sedation
Delay to Diagnosis	Rehabilitation
Delay to Treatment/ Therapy	Surgical Intervention
Disruption of Subsequent Medical Procedure	Serious Public Health Threat
Exacerbation of Existing Condition	Unexpected Deterioration
Hospitalization or Prolonged Hospitalization	Unexpected Diagnostic Intervention
Fetal Harm	Unexpected Medical Intervention
Inadequate/Inappropriate Treatment or Diagnostic Exposure	Insufficient Information
Minor Injury/ Illness / Impairment	Unanticipated Adverse Device Effect
Serious Injury/ Illness/ Impairment	No Health Consequences or Impact
Misdiagnosis/ Misclassification	No Patient Involvement
Prolonged Episode of Care	Appropriate Term/Code Not Available

Annex F: Health Impact

Annex F. Health Impact

Device (bold): For the purpose of this Annex, a **device** means a medical device including accessories and components

Wherever appropriate "patient" should be taken to include user, operator or any other person affected by the incident.

LEVEL 1			LEVEL 2			LEVEL 3		
Term	Definition	IMDRF Code	Term	Definition	IMDRF Code	Term	Definition	IMDRF Code
Change in Therapeutic Response	Change in response to treatment or cure of a disorder or disease.	F01	Therapeutic Response Decreased	A reduction in the desirable and beneficial effects resulting from a medical treatment.	F0101			
			Therapeutic Response Increased	An increase in the desirable and beneficial effects resulting from a medical treatment.	F0102			
			Unexpected Therapeutic Effects	Unanticipated desirable and beneficial effects resulting from a medical treatment.	F0103			
Death	The cessation of life.	F02	Intrauterine Fetal Death	Death in utero; failure of the product of conception to show evidence of respiration, heart beat, or definite movement of a voluntary muscle after expulsion from the uterus, with no possibility of resuscitation.	F0201			
Brain Death	The perma function absence external reflex an							
Delay to Diagnosis	Patient d significant consequence of **device** performance.							

Level 1 term: Death

Annex G:Component *Public consultation was closed*

Device (bold): For the purpose of this Annex G, a **device** means a medical device including accessories and components.

	Level 1			Level 2		
	Term	Definition	Code	Term	Definition	Code
Electrical & Magnetic	Antenna	A component designed to transmit or receive electromagnetic signals.				
	Battery	A component designed to produce an electric current through chemical reaction.				
	Battery Charge	A **device** designed to restore the capacity [illegible]				
	Cable, Electrical	A [illegible] distanc		Cable Grip	Component used for tensioning, pulling or stringing of wires and cables.	
				Cable Sleeve	Component used to protect cables and wires from abrasion, moisture and the elements.	
	Circuit Board	A non- tracks a circuit.				
	Circuit Breaker	A component designed to open an electrical circuit when it becomes overloaded.				
	Computer Hardware	The physical components from which a computer is constructed (electronic circuits and input/output **devices**).		Computer Processor	Component that carries out the instructions of a computer program by performing the basic arithmetic, logic, controlling, and input/output operations specified by the instructions.	
				Memory/Storage	Any component that can hold data in machine-readable format.	
				Network Interface	Point of interconnection between a computer and other computer that are linked each other.	
	Computer Software	A collection of data or computer instructions that tell the computer how to work.		Driver	A computer interface designed to control the interaction between a CPU and a peripheral device.	
				Software Interface	Languages, codes and messages that	

Level 1 term: Battery

Maintenance **Public consultation was closed**

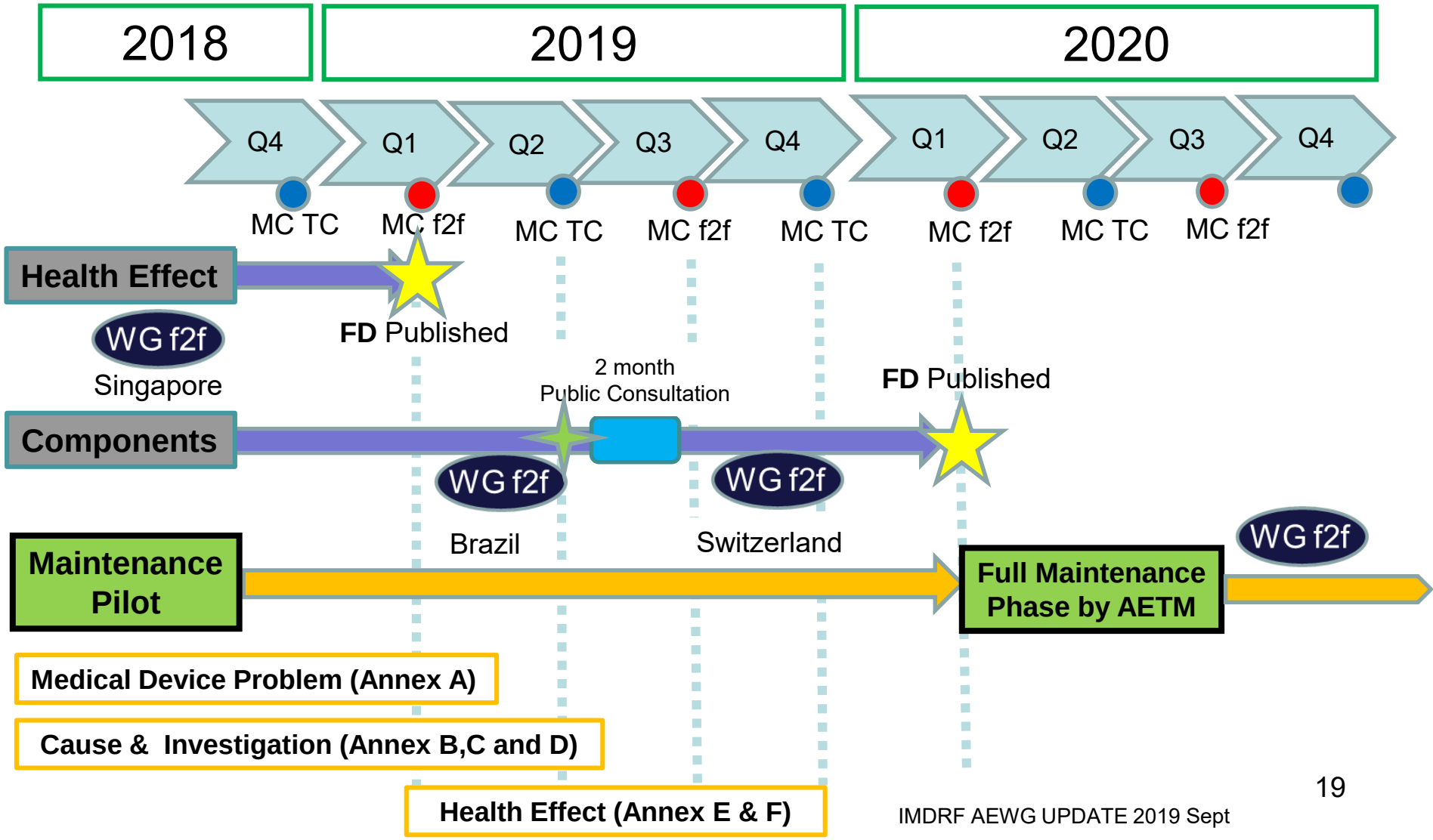
Modified according to the N44 maintenance document

Annex A: Medical Device Problem

A03	Device Ingredient or Reagent Problem	Problem associated with any deviations from the documented specifications of the device that relate to any ingredient or reagent characterization.	A0302	Unexpected Color	Color of product is different from that expected.	A030208
A08	Undercorrection	Problem associated with an adjustment that falls below a set of criteria.	A0805			
A09	Incorrect, Inadequate or Imprecise Result or Readings	Pro… nonco… results pr… performa…		Erratic Results	Reports of erroneous/discrepant results which combine high/low and/or positive/negative results. This term is not to be selected where reports indicate consistently high or low or false positive or false negative results.	A090813

Level 2 term: Undercorrection

AE terminology Working Plan (as of July 2019)



Thank you!