



Medication Errors vs. Product Quality Issues

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Tragic Medication Errors Result in Accidental Abortions and Premature Birth

ABC News The Blotter August 21, 2009

Feds Alleged Ranbaxy Lied About Quality of Drugs

Associated Press July 14, 2008

U.S. Identifies Tainted Heparin in 11 Countries

New York Times April 22, 2008



Another Tylenol Recall

New York Times March 29, 2011

Death Was Third Fatal Medication Error At Children's

kjrotv.com September 28, 2010

Nanoscale Encryption: The Solution to Counterfeit Drugs?

Popular Mechanics August 16, 2011

Coding Challenges



- TABLETS DO NOT WORK LIKE WAFERS
- GENERIC DOES NOT HAVE THE SAME EFFECT AS BRAND NAME
- THE PILL SHE TOOK WAS IN THE BONIVA PACKAGE BUT BELIEVES IT WAS NOT BONIVA
- ALL 18 UNITS WERE ADMINISTERED AT ONCE DUE TO FAULTY PEN
- RED LUMP AT INJECTION SITE (COULD BE PATIENT INJECTION TECHNIQUE)
- EMPTIED CONTENTS OF CAPSULE INTO CEREAL
- BROKE THE SKIN ON HANDS TRYING TO GET THE COVER OFF
- GIVEN AVASTIN DOSE VIA A PACLITAXEL GIVING SET BY MISTAKE
- FOUND NO MEDICATION AT ALL IN CAPSULE
- BROKEN GLASS IN THE VITAMIN K1 VIAL

HLGT Medication errors

Medication Errors

US Food and Drug Administration (FDA)

- US FDA receives medication error reports on marketed human drugs (including prescription drugs, generic drugs, and over-the-counter drugs) and nonvaccine biological products and devices
- Currently, medication errors are reported to the FDA as
 - Manufacturer reports (adverse events resulting in serious injury and for which a medication error may be a component)
 - Direct contact reports (MedWatch)
 - Reports from the United States Pharmacopeia (USP) and the Institute for Safe Medication Practices (ISMP)
- The Division of Medication Errors and Technical Support (DMETS)
 - Reviews medication error reports sent to the USP Medication Errors Reporting Program and MedWatch to evaluate causality, and analyze the data to provide feedback to others at FDA
- Internet reference
 - <http://www.fda.gov/drugs/drugsafety/medicationerrors/default.htm>

Medication Errors

European Commission

- EU Pharmacovigilance System Legal Framework
 - Regulation (EC) No 726/2004 and Directive 2001/83/EC
 - Guidance documents that include guidelines, definitions, standards and information regarding the precise execution of pharmacovigilance-related procedures
 - Volume 9A of The Rules Governing Medicinal Products in the European Union - Pharmacovigilance
 - ICH (E2 series)
- Latest developments (January 2011) - New legislation will become applicable in July 2012
 - Allows patients to report adverse drug reactions directly to the competent authorities
 - Reporting of adverse reactions will be broadened to cover, for example, medication errors and overdose
- Internet reference
 - http://ec.europa.eu/health/human-use/pharmacovigilance/index_en.htm

Medication Error Terms in MedDRA

Background

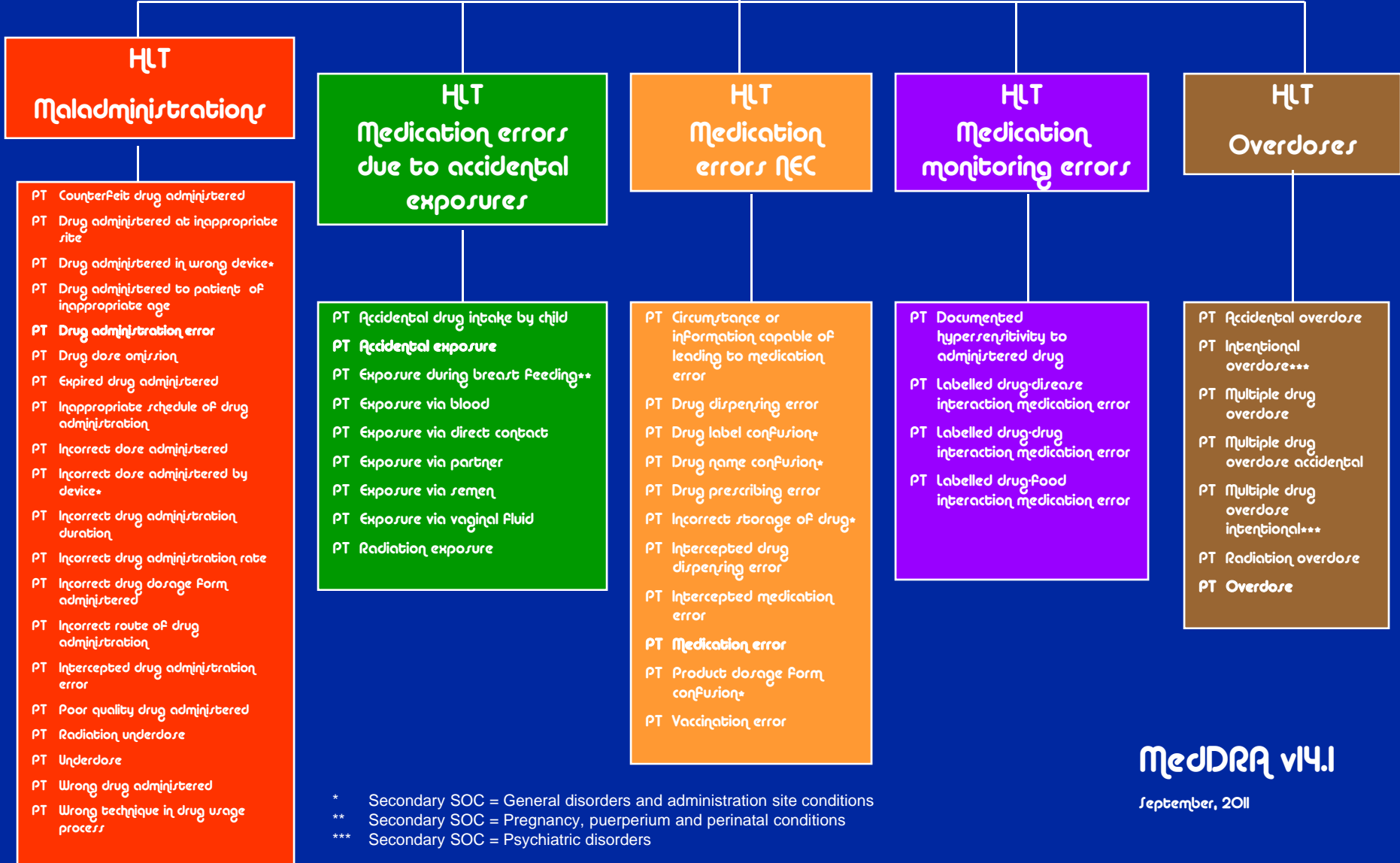
- MedDRA v8.0 • a significant number of specific medication error terms were added
- HLGT = Medication errors
SOC = Injury, poisoning and procedural complications
- MedDRA v14.1 has 51 PTs/166 LLTs in this HLGT
- Medication errors are addressed in MedDRA Term Selection: Points to Consider
- Medication error term concept descriptions are incorporated in Appendix B of the MedDRA v14.1 Introductory Guide

Definition

Introductory Guide MedDRA Version 14.1

Medication errors are defined as any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in control of the health care professional, patient or consumer. Such events may be related to professional practice, health care products, procedures and systems, including prescribing, order communication, product labeling, packaging and nomenclature, compounding, dispensing, distribution, administration, education, monitoring and use.

HLGT Medication errors



MedDRA Term Selection: Points To Consider

Based on MedDRA Version 14.1

3.15 - Medication/Administration Errors and Accidental Exposures

Reports of medication errors may or may not include information about clinical consequences.

3.15.1 - Medication error reported with clinical consequences

If a medication error is reported with clinical consequences, select terms for both the medication error and the clinical consequences.

3.15.2 - Medication error reported without clinical consequences

Medication errors without clinical consequences are not AEs/AEs. However, it is important to record the occurrence or potential occurrence of a medication error. Select a term that is closest to the description of the medication error reported.

MedDRA Term Selection: Points To Consider

Based on MedDRA Version 14.1

3.15.5 Do not infer a medication error

Do not infer that a medication error has occurred unless specific information is provided. This includes inferring that extra dosing, overdose, or underdose has occurred.

Example: VT = Antibiotic was prescribed for a week, and the patient stopped treatment after 2 days because of bitter taste

LLT: Prescribed dosing duration not completed

PT: Incorrect drug administration duration

and

LLT: Taste bitter

PT: Dysgeusia

RIGHT DRUG + RIGHT PATIENT

- PT Counterfeit drug administered
- PT Drug administered to patient of inappropriate age
- PT Expired drug administered
- PT Incorrect drug dosage form administered
- PT Poor quality drug administered
- PT Wrong drug administered

RIGHT DOSE

- PT Drug dose omission
- PT Incorrect dose administered
- PT Incorrect dose administered by device*
- PT Underdose
- PT Radiation underdose

RIGHT ROUTE

- PT Drug administered at inappropriate site
- PT Incorrect route of drug administration
- PT Drug administered in wrong device*

RIGHT TIME

- PT Inappropriate schedule of drug administration
- PT Incorrect drug administration duration
- PT Incorrect drug administration rate

- PT Drug administration error
- PT Intercepted drug administration error
- PT Wrong technique in drug usage process

HLT Overdoses



PT Overdose

PT Accidental overdose

PT Intentional overdose***

PT Radiation overdose

PT Multiple drug overdose

PT Multiple drug overdose accidental

PT Multiple drug overdose intentional***

*** Secondary SOC = Psychiatric disorders

HLT Medication monitoring errors

MedDRA Term Selection: Points to Consider (Based on MedDRA v14.1)

3.15.4 Medication errors in the context of labeled interactions

If the label describes known effects when the product is co-administered with specific drugs, with specific foods, or to patients with specific disease states, then select a medication error term for the type of interaction, such as those listed below:

- PT Documented hypersensitivity to administered drug
- PT Labelled drug-disease interaction medication error
- PT Labelled drug-drug interaction medication error
- PT Labelled drug-food interaction medication error

HLT Medication errors due to accidental exposures

- PT Accidental drug intake by child
- PT Accidental exposure
- PT Exposure during breast feeding**
- PT Exposure via blood
- PT Exposure via direct contact
- PT Exposure via partner
- PT Exposure via semen
- PT Exposure via vaginal fluid
- PT Radiation exposure

** Secondary SOC = Pregnancy, puerperium and perinatal conditions

HLT Medication errors NEC



PRESCRIBING

PT Drug prescribing error

DISPENSING

PT Drug dispensing error

PT Intercepted drug dispensing error

PT Circumstance or information capable of leading to medication error

PT Drug label confusion*

PT Drug name confusion*

PT Product dosage form confusion*

PT Incorrect storage of drug*

* Secondary SOC = General disorders and administration site conditions
HLGT = Product quality issues

PT Medication error

PT Intercepted medication error

PT Vaccination error

PT Vaccination error

This is the only instance where "vaccination" related to a medication error is found at the PT level. All other instances are LLTs:

Expired vaccine used

Inadvertent exposure to vaccine

Inappropriate age at vaccine administration

Inappropriate dose of vaccine administered

Inappropriate formulation of vaccine administered

Inappropriate route of vaccination

Inappropriate schedule of vaccine administered

Poor quality vaccine administered

Vaccine administered at inappropriate site

Vaccine exposure via breast milk

Vaccine underdose

Viral vaccine antibody exposure via breast milk

Viral vaccine exposure via breast milk

Wrong vaccine administered

HLGT Product quality issues

Product Quality Issues

Good Manufacturing Practices (GMPs)

- GMPs For Active Pharmaceutical Ingredients published in 1999 by the International Conference on Harmonization (ICH) are regulations that describe the methods, equipment, facilities, and controls required for producing pharmaceuticals including active pharmaceutical ingredients, diagnostics, foods, pharmaceutical products and medical devices
- Many countries have legislated that pharmaceutical and medical device companies must follow GMP procedures
 - The **U.S.** pharmaceutical product regulations are called "current" Good Manufacturing regulations or "cGMPs", to emphasize that the expectations are dynamic
 - Human pharmaceutical products and veterinary products (21 CFR 210-III)
 - Biologically derived products (21 CFR 600 and 21 CFR 620)
 - Medical devices (21 CFR 820)
 - Processed food (21 CFR 100)
 - Internet reference: <http://www.cgmp.com/index.htm>
 - The **European Union** Good Manufacturing Practices (EU GMP) Guide is the document that provides details supporting the principles of the GMPs in the EU

Product Quality Issues

US FDA

- cGMP regulations are enforced by the US FDA
 - FDA inspects pharmaceutical manufacturing facilities worldwide
 - FDA also relies upon reports of potentially defective drug products from the public and the industry
- Drug Quality Reporting System (DQRS) - encourages health care professionals to voluntarily report observed or suspected defects or quality problems with marketed drug products
 - Also receives reports through MedWatch
- The Division of Compliance Risk Management and Surveillance
 - Evaluates and prioritizes drug quality reports in order to identify and follow-up on significant health hazards
 - Drug quality reports are also used to identify industry trends associated with pharmaceutical manufacturing, packaging, and labeling
 - Reviews and identifies potential bioequivalence problems with generic medications

Product Quality Issues

US FDA

- Required Postmarketing Reports
 - 21 CFR 314.81 (1)(i)
 - Any incident that causes the drug product or its labeling to be mistaken for, or applied to, another article (adulterated or misbranded)
 - 21 CFR 314.81 (1)(ii)
 - Bacterial contamination
 - Significant chemical, physical or other change
 - Product deterioration
 - Out-of-specification
 - Internet reference:
<http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?fr=314.81>

Product Quality Issues

European Commission Requirements

- EudraLex - The Rules Governing Medicinal Products in the European Union
 - Volume 4 EU Guidelines to Good Manufacturing Practice Medicinal Products for Human and Veterinary Use
 - Part I Chapter I Quality Management
 - Requirement to perform Product Quality Review
(1.4) (viii) *Should include a review of all quality-related returns, complaints and recalls and the investigations performed at the time*
 - Part I Chapter 8 Complaints and Product Recall
 - Complaints (8.3) *Any complaint should be recorded and thoroughly investigated*
 - Complaints (8.7) *Special attention should be given to possible counterfeiting*
 - Internet reference: http://ec.europa.eu/health/documents/eudralex/vol4/index_en.htm

Product Quality Issues

Background

- MedDRA v12.0 - Product quality terms were added
- HLG7 = Product quality issues
 - SOC = General disorders and administration site conditions
- MedDRA v14.1 has 63 PTs/189 LLTs in this HLG7
- Product quality issues are addressed in MedDRA Term Selection; Points to Consider 3.27
- Product quality term concept descriptions are incorporated in Appendix B of the MedDRA v14.1 Introductory Guide
 - The word "issue" for the purpose of MedDRA is used as a general term, which does not necessarily point to a failure or defect when paired with a product or device

MedDRA Term Selection: Points To Consider

Based on MedDRA Version 14.1

3.27.3 - Product quality issue vs. medication error

It is important to distinguish between a product quality issue and a medication error.

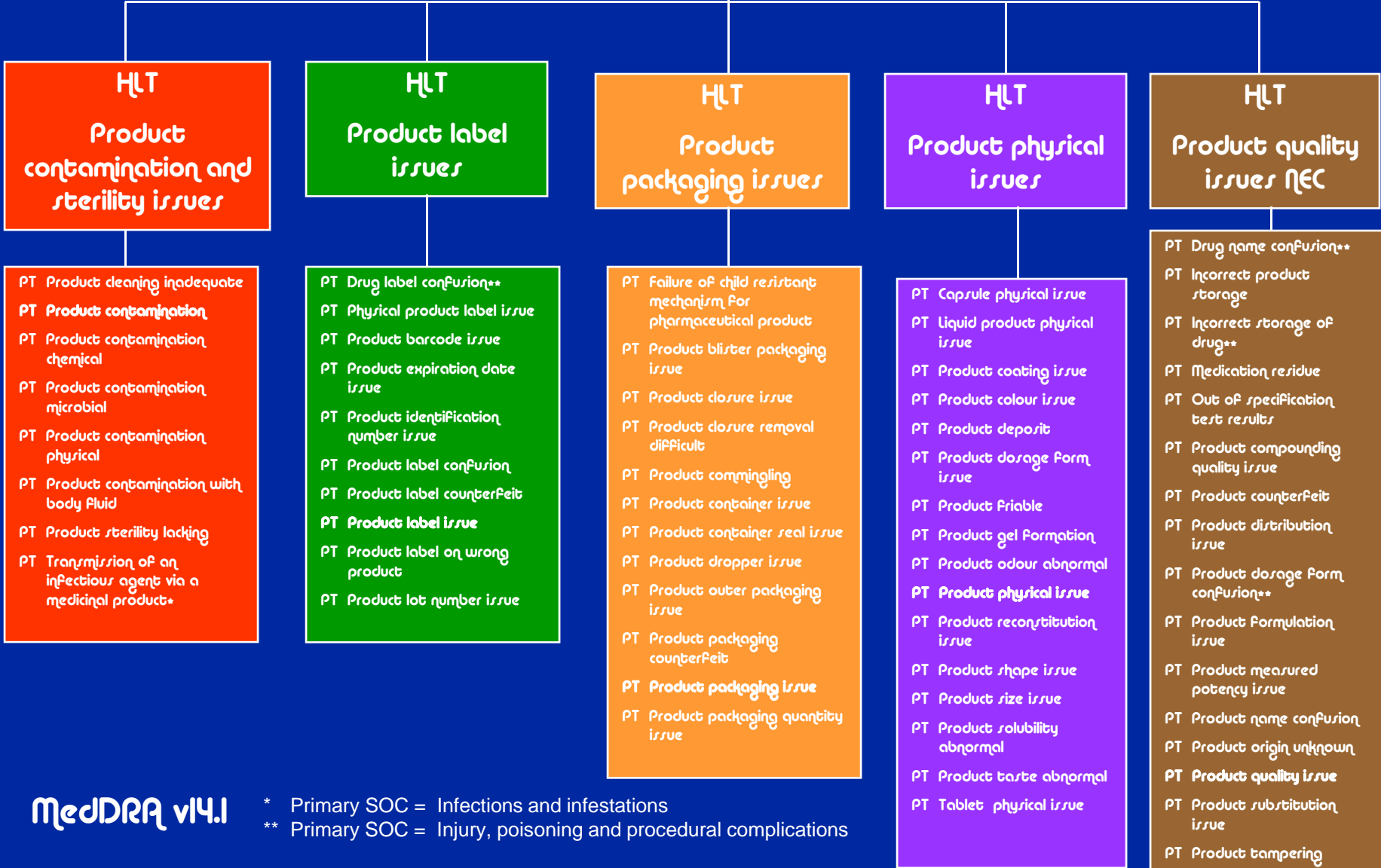
Product quality issues are defined as abnormalities that may be introduced during the manufacturing/labeling, packaging, shipping, handling or storage of the products. They may occur with or without clinical consequences.

Medication errors are defined as any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in control of the health care professional, patient or consumer.

Reported Term	LLT Selected	Comment
Pharmacist dispensing Drug A inadvertently attached a product label for Drug B	Wrong label placed on medication during dispensing	Medication error
The drug store clerk noted that the wrong product label was attached to some bottles in a shipment of mouthwash	Product label on wrong product	Product quality issue

HLGT

Product quality issues



* Primary SOC = Infections and infestations
 ** Primary SOC = Injury, poisoning and procedural complications

HLT Product contamination and sterility issues



- PT Product cleaning inadequate
- PT Product contamination
- PT Product contamination chemical
- PT Product contamination microbial
- PT Product contamination physical
- PT Product contamination with body fluid
- PT Product sterility lacking
- PT Transmission of an infectious agent via a medicinal product*

* Primary SOC = Infections and infestations

HLT Product label issues



PT Physical product label issue

PT Product barcode issue

PT Product expiration date issue

PT Product identification number
issue

PT Product label counterfeit

PT Product label issue

PT Product label on wrong product

PT Product lot number issue

PT *Drug* label confusion**

PT *Product* label confusion

** Primary SOC = Injury, poisoning and procedural complications

HLT Product packaging issues



PT Failure of child resistant mechanism for pharmaceutical product

PT Product blister packaging issue

PT Product closure issue

PT Product closure removal difficult

PT Product commingling

PT Product container issue

PT Product container seal issue

PT Product dropper issue

PT Product outer packaging issue

PT Product packaging counterfeit

PT Product packaging issue

PT Product packaging quantity issue

HLT Product physical issues



PT *Capsule physical issue*

- LLT Capsule physical issue
- LLT Capsule extra shell
- LLT Capsule fill abnormal
- LLT Capsule issue
- LLT Capsule open
- LLT Capsule separation

PT *Tablet physical issue*

- LLT Tablet issue
- LLT Scored tablet splitting issue
- LLT Tablet chipped
- LLT Tablet clumping
- LLT Tablet cracked
- LLT Tablet damaged
- LLT Tablet physical issues

PT *Liquid product physical issue*

- LLT Liquid product physical issue
- LLT Liquid product flow abnormal
- LLT Product appearance cloudy
- LLT Product viscosity variable

PT *Product physical issue*

- LLT Product physical issue

HLT Product physical issues



PT Product coating issue

PT Product colour issue

PT Product deposit

PT Product dosage Form issue

PT Product Friable

PT Product gel Formation

PT Product odour abnormal

PT Product reconstitution issue

PT Product shape issue

PT Product size issue

PT Product solubility abnormal

PT Product taste abnormal

HLT Product quality issues NEC



PT Medication residue
PT Out of specification test results
PT Product compounding quality issue
PT Product counterfeit
PT Product distribution issue
PT Product dosage form confusion**
PT Product formulation issue
PT Product measured potency issue
PT Product origin unknown
PT Product quality issue
PT Product substitution issue
PT Product tampering

PT *Drug name confusion***

PT *Product name confusion*

PT *Incorrect product storage*

PT *Incorrect storage of drug***

** Primary SOC = Injury, poisoning and procedural complications

Terminology - Issues vs. Errors

Product Quality Issues

PT Product expiration date issue

LLT Product expiration date illegible

LLT Product expiration date incorrect

LLT Product expiration date issue

LLT Product expiration date missing

Medication Errors

PT Expired drug administered

LLT Expired drug administered

LLT Expired drug used

LLT Expired medical agent used

LLT Expired vaccine used

Terminology - Issues vs. Errors

Product Quality Issues

PT Product label on wrong product

LLT Product label on wrong product

Medication Errors

PT Drug dispensing error

LLT Wrong directions typed on label

LLT Wrong label placed on medication during dispensing

Terminology - Issues vs. Errors

Product Quality Issues

PT Capsule physical issue

LLT Capsule separation

Medication Errors

PT Wrong technique in drug usage process

LLT Inappropriate removal of drug from capsule

Terminology - Issues vs. Errors

Product Quality Issues

PT Product reconstitution issue

LLT Product reconstitution issue

Medication Errors

PT Wrong technique in drug usage process

LLT Wrong solution used in drug reconstitution

Terminology - Issues vs. Errors

Product Quality Issues	<p data-bbox="627 348 994 399">PT Tablet issue</p> <ul data-bbox="734 428 1539 842" style="list-style-type: none"><li data-bbox="734 428 1429 499">LLT Scored tablet splitting issue<li data-bbox="734 514 1159 571">LLT Tablet chipped<li data-bbox="734 585 1178 656">LLT Tablet clumping<li data-bbox="734 671 1139 742">LLT Tablet cracked<li data-bbox="734 756 1197 842">LLT Tablet damaged
Medication Errors	<p data-bbox="627 942 1539 1013">PT Wrong technique in drug usage process</p> <ul data-bbox="734 1028 1539 1170" style="list-style-type: none"><li data-bbox="734 1028 1371 1085">LLT Tablet crushed incorrectly<li data-bbox="734 1099 1313 1170">LLT Tablet split incorrectly

Terminology - Issues vs. Errors

Product Quality Issues

PT Product label counterfeit

PT Product counterfeit

PT Product packaging counterfeit

Medication Errors

PT Counterfeit drug administered

LLT Counterfeit drug administered

Terminology - Issues vs. Errors or Other

How would you code this term?

TABLETS DO NOT WORK LIKE WAFERS

LLT Drug effect decreased

PT Drug effect decreased

HLT Therapeutic and nontherapeutic responses

HLGT Therapeutic and nontherapeutic effects (excl toxicity)

SOC General disorders and administration site conditions

LLT Product Formulation issue

PT Product Formulation issue

HLT Product quality issues NEC

HLGT Product quality issues

SOC General disorders and administration site conditions

Terminology - Issues vs. Errors or Other

How would you code this term?

GENERIC DOES NOT HAVE THE SAME EFFECT AS THE BRAND NAME

LLT	Drug effect decreased	LLT	Product substitution issue brand to generic
PT	Drug effect decreased	PT	Product substitution issue
HLT	Therapeutic and nontherapeutic responses	HLT	Product quality issues NEC
HJGT	Therapeutic and nontherapeutic effects (excl toxicity)	HJGT	Product quality issues
SOC	General disorders and administration site conditions	SOC	General disorders and administration site conditions
	LLT		Generic substitution altered therapeutic response
	PT		Therapeutic response unexpected with drug substitution
	HLT		Therapeutic and nontherapeutic responses
	HJGT		Therapeutic and nontherapeutic effects (excl toxicity)
	SOC		General disorders and administration site conditions

Terminology - Issues vs. Errors or Other

How would you code this term?

THE PILL SHE TOOK WAS IN THE BONIVA PACKAGE BUT BELIEVES IT WAS NOT BONIVA

LLT Pharmaceutical product counterfeit

PT Product counterfeit

HLT Product quality issues NEC

HLGT Product quality issues

SOC General disorders and administration site conditions

LLT Counterfeit drug administered

PT Counterfeit drug administered

HLT Maladministration

HLGT Medication errors

SOC Injury, poisoning and procedural complications

Terminology - Issues vs. Errors or Other

How would you code this term?

ALL 18 UNITS WERE ADMINISTERED AT ONCE DUE TO FAULTY PEN

LLT Incorrect dose administered by device

PT Incorrect dose administered by device

HLT Maladministration

HLGT Medication errors

SOC Injury, poisoning and procedural complications

LLT Drug delivery system malfunction

PT Device Malfunction

HLT Device malfunction events NEC

HLGT Device issues

SOC General disorders and administration site conditions

Secondary SOC:

HLT Device malfunction events NEC

HLGT Device issues

SOC General disorders and administration site conditions

Terminology - Issues vs. Errors or Other

How would you code this term?

RED LUMP AT INJECTION SITE (COULD BE PATIENT INJECTION TECHNIQUE)

LLT Injection site mass

PT Injection site mass

HLT Injection site reactions

HLGT Administration site reactions

SOC General disorders and administration site conditions

LLT Wrong injection technique

PT Wrong technique in drug usage process

HLT Maladministration

HLGT Medication errors

SOC Injury, poisoning and procedural complications

Secondary SOC:

SOC Injury, poisoning and procedural complications

Terminology - Issues vs. Errors or Other

How would you code this term?

EMPTIED CONTENTS OF CAPSULE INTO CEREAL

LLT	Inappropriate removal of drug from capsule
PT	Wrong technique in drug usage process
HLT	Maladministration
HLGT	Medication errors
SOC	Injury, poisoning and procedural complications

Terminology - Issues vs. Errors or Other

How would you code this term?

BROKE THE SKIN ON HANDS TRYING TO GET COVER OFF

LLT Skin laceration

PT Laceration

HLT Skin injuries NEC

HLGT Injuries NEC

SOC Injury, poisoning and procedural complications

LLT Product closure removal difficult

PT Product closure removal difficult

HLT Product packaging issues

HLGT Product quality issues

SOC General disorders and administration site conditions

Secondary SOC:

HLT Skin injuries and mechanical dermatoses

HLGT Epidermal and dermal conditions

SOC Skin and subcutaneous tissue disorders

Terminology - Issues vs. Errors or Other

How would you code this term?

GIVEN RIVASTIGMINE DOSE VIA A PACUITAKEL GIVING SET BY MISTAKE

LLT	Drug administered in wrong device
PT	Drug administered in wrong device
HLT	Maladministration
HLGT	Medication errors
SOC	Injury, poisoning and procedural complications

Secondary SOC:

HLT	Device malfunction events NEC
HLGT	Device issues
SOC	General disorders and administration site issues

Terminology - Issues vs. Errors or Other

How would you code this term?

FOUND NO MEDICATION AT ALL IN CAPSULE

LLT	Capsule fill abnormal
PT	Capsule physical issue
HLT	Product physical issues
HLGT	Product quality issues
SOC	General disorders and administration site conditions

Terminology - Issues vs. Errors or Other

How would you code this term?

BROKEN GLASS IN VITAMIN K1 VIAL

- LLT Product contamination glass
- PT Product contamination physical
- HLT Product contamination and sterility issues
- HLGT Product quality issues
- SOC General disorders and administration site conditions

Medication Errors and Product Quality Issues

Summary

- There is an expectation from health authorities/regulatory agencies that medication errors and product quality issues will be reported.
- Do you have a company strategy for handling these reports?
- Coding challenges
 - Do you have internal coding conventions based on need to detect signals and trends?
 - Did the patient receive the correct dose via the appropriate route at the right time (medication error)?
 - Was there a product quality issue?
 - Was there a device failure?
- How often is the analysis performed?
- How are trends and findings communicated internally?
- How is it determined if any additional actions need to be taken?

THANK
YOU



We Innovate Healthcare