1. **USE CASE**

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| Name | Unable to determine specific trigger of allergy/intolerance reactions (to multi-ingredient medications)  |
| Use Case # |  |
| Goal | The purpose of this use case is to support the documentation of the assertion of Unable to determine a specific trigger of allergy/intolerance reactions (to multi-ingredient medications) for a patient who experienced adverse reactions several hours after administration of multi-ingredient medication. The information is then captured in hospital clinical information systems/EMRS; and to support the generation and exchange of such information in a hospital discharge summary, generation of allergy/intolerance and adverse reaction information for transmission to patient’s nominated community pharmacist, and for updating patient’s PHR where appropriate. |
| Primary Actor | *Attending physician* (Roles: accessing EMR data; documenting medical history, clinical findings and allergy/intolerance and adverse reaction information; authoring of discharge summary; updating PHR contents where applicable) |
| Other Actors | *Patient* (subject of care and informant; updating PHR where appropriate)*Attending physician* (accessing EMR data; documenting medical history, clinical findings and allergy/intolerance and adverse reaction information; authoring of discharge summary; updating PHR contents where applicable)*Hospital EMR/CIS* (clinical information and discharge summary repository; documentation and authoring applications)*Primary care physician/GP* (patient nominated recipient of discharge summary information)*Community pharmacist* (patient nominated recipient of medication allergy/intolerance and adverse reaction information) *PHR* (clinical and patient entered information repository; query/retrieval and documentation applications) [in Australia, this will be PCEHR] |
| Assumptions | Hospital has EMR/CIS that:* Provide access to Allergy/Intolerance and adverse reaction data
* Support documentation of allergy/intolerance and adverse reaction details
* Support generation and exchange of discharge summary/event summary containing allergy/intolerance and adverse reaction details; and adverse reactions details to be sent to nominated community pharmacist
* Updating PHR with recent adverse reaction details
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| Pre-conditions | Multi-ingredient medication was administeredPatient exhibited signs and symptoms of adverse reactions shortly after administration of medication in questionExact trigger (i.e. the exact ingredient of the multi-ingredient medication) of the adverse reaction could not be identifiedThe hospital uses electronic medical record systems capable of supporting the documentation of the adverse reaction event, management and revision of allergy/intolerance listHospital electronic clinical information system/EMRS capable of generating and transmitting electronic discharge summary to patient’s primary care providerHospital electronic clinical information system/EMRS capable of generating allergy/intolerance list information and transmitting to patient specified pharmacy(ies) and PHR |
| Triggers | A patient experienced signs and symptoms of adverse reactions several hours after administration of a multi-ingredient antibiotic prescribed to treat her urinary tract infection developed soon after her hip replacement operation in hospital. The adverse reaction was investigated. Adverse reactions to the multi-ingredient medication identified. The specific ingredient as trigger was unable to be identified. |
| Exclusions | Patient’s adverse reactions can be positively associated as allergy or intolerance reaction to a specific trigger (e.g. one of the ingredients of a multi-ingredient medication) prior to, during or subsequent to onset of the reactions. |
| Basic Flow of Events |
| 1. Patient was administered a dose of multi-ingredient antibiotic to treat urinary infection
2. Patient exhibited signs and symptoms of adverse reactions shortly after administration of the medication
3. Attending physician assessed patient’s full history of allergy/intolerance and physical examination; multi-ingredient medication was identified to be the trigger but the exact ingredient that might be the cause of the adverse reaction could not be identified
4. Attending physician accessed hospital EMR access to retrieve patient medication history and allergy/intolerance details. No previously known allergy/intolerance or adverse reaction to the multi-ingredient medication in question was identified
5. Attending physician made a diagnosis of patient’s condition as adverse reactions to the multi-ingredient medication in question
6. Attending physician prescribed appropriate intervention(s) including treating signs and symptoms of adverse reactions, cancellation of the multi-ingredient medication in question
7. Attending physician documented presenting problems, diagnosis, updating allergy/intolerance history, intervention(s) and outcomes with creation/update of allergy/intolerance lists in clinical information system or EHRS
8. Patient recovered from adverse reactions without further consequence
9. Attending physician authored discharge summary generated using hospital clinical information system or EMRS on patient’s discharge
10. Attending physician authored in EMRS allergy/intolerance and adverse reactions details for transmission to patient’s community pharmacist where applicable
11. Attending physician updated PHR with relevant clinical details where appropriate (as consented by patient)
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| Alternative Flows |
| Post-conditions | Updated EMRS record with diagnosis, new entry to allergy/intolerance list, adverse reaction details, and “Unable to determine allergy/ intolerance agent or trigger” information to a multi-ingredient medicationHospital discharge summary includes allergy/intolerance details and entry on “Unable to determine allergy/ intolerance agent or trigger” to the multi-ingredient medication givenAllergy/intolerance and adverse reaction information also transmitted patient specified pharmacy(ies) and PHR where applicablePHR updated with relevant clinical information including allergy/intolerance and adverse reaction information |
| Notes | *Allergy/intolerance details captured and transmitted include*: medication class, medication names, dose, datetime of medication start, datetime of adverse reaction onset, adverse reaction details, datetime of presentation to hospital/ED, datetime of treatment and details, datetime of resolution, updated allergy/intolerance list, informant/information provider (patient), author (treating physician) |

1. **CLINICAL SCENARIOS/STORY**

**Use Case Scenarios** (aka business scenarios or clinical stories)

A 66-year old female exhibited signs and symptoms of urinary tract infection on Day 3 post-op after right total hip replacement. Patient was prescribed sulfamethoxazole/trimethoprim (co-trimoxazole) 800/160 mg orally every 12 hours. Approximately 3 hours after the administration of the first dose of the medication, the patient started to exhibit signs and symptoms of adverse reactions including: gastrointestinal disturbances (anorexia, nausea, vomiting) and allergic skin reactions (such as rash /urticaria and itching), and wheezing

Her *presenting complaints* include:

Gastrointestinal disturbances (anorexia, nausea, vomiting) and allergic skin reactions (such as rash /urticaria and itching), and wheezing. Time lapse between medication administration and onset of symptoms appropriately 3 hours

No other sign/symptom elicited

*Medical History*:

Hypertension

Ischaemic heart diseases (Class II Angina)

Severe arthritis of right hip with functional disability admitted for total hip replacement

*Medications*:

Metoprolol: 50mg twice per day

Isosorbide dinitrate (extended release): 40mg once daily

Diclofenac: 50mg three times daily

Glucosamine sulphate: 1500mg per day

Chondroitin sulphate: 800mg per day

Fish oil 4000mg two times per day

*Allergy/Intolerance History*

Morphine pseudoallergy (symptoms include: flushing, hives, itchness, sweating and mild hypotension.

*Physical Examinations*:

Mild anorexia, nausea vomiting

Abdomen: soft, hyperactive bowel sounds, abdominal cramps

Respiratory: mild wheezing, no cyanosis

Urticarial skin rash, itchiness; redness to face

*Diagnosis*:

Given the timing of medication administration and appearance of adverse reactions, it is probable that this is a case of adverse (allergic) reaction to multi-ingredient medication sulfamethoxazole/trimethoprim

Differentiating which ingredient is the most likely trigger to the adverse reaction is difficult / impossible

*Treatment*:

Stop further administration of sulfamethoxazole/trimethoprim

Supportive treatment for adverse reaction signs and symptoms

*Outcomes*:

Adverse reaction signs and symptoms resolve gradually after withdrawal of offending medication

A diagnosis of adverse (allergic) reactions to sulfamethoxazole/trimethoprim was established But specific trigger of the adverse reaction was not identified

The allergy/intolerance list was updated with entry of adverse (allergic reactions) to sulfamethoxazole/trimethoprim and recording statement of “Unable to determine specific trigger to adverse (allergic) reactions”

Hospital EMRS on this patient is updated with adverse reaction details and statement on “Unable to determine specific trigger to adverse (allergic) reactions”

On discharge of patient:

Discharge summary sent to primary care physician/GP including updated allergy/intolerance list with information on adverse (allergic) reaction to sulfamethoxazole/trimethoprim and statement on “Unable to determine specific trigger to adverse (allergic) reactions”

Allergy/intolerance details were also transmitted patient specified pharmacy(ies) and PHR