

# PHARMACY BULLETIN

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Data adopted from  
Kursus Failure  
Mode and Effect  
Analysis, organized  
by Bahagian  
Perkhidmatan  
Farmasi,  
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Healthcare is hazardous as errors are common. Errors are common as healthcare involves multiple steps and those steps involve human. As healthcare professionals, we should continuously improve our system in order to reduce the risk of errors. The first step to start with is to identify the risks of errors. FMEA is one of the tools or quality activities to aid identification of risks.

**What is FMEA?**

**Failure**

When a system or part of a system performed in an unintended or undesirable way.

**Mode**

The way of manner in which something happened. Failure Mode is the manner in which something failed.

**Effect**

The results or consequences of a Failure Mode.

**Analysis**

The detailed examination of the element or the structure of the process.

The objectives of conducting FMEA are to improve quality and to enhance performance with regards to efficiency, appropriateness, and safety.

## FMEA Failure Mode and Effect Analysis

By Sharon Kong, pharmacist U41

**The FMEA Process:**

- \* Choosing a process to be studied.
- \* Assembling a multidisciplinary team.
- \* Collecting & organizing information on the process being studied.
- \* Conducting hazard analysis.
- \* Identify root cause of failure modes.
- \* Developing & implementing actions & outcomes measures.

**1. Choosing a Problem**

FMEA is usually carried out in high risk processes. A high risk process is a process that is complex, dependant on human intervention and requires variable input.

**2. The FMEA Team**

FMEA team is best consists of 4-6 members from different disciplines. A team leader is to be chosen to ensure the team has the necessary resources available and to make sure the team is progressing towards the completion of the FMEA. The team should also consist of a person who is expert in the process chosen.

**3. Defining Problem**

A flow chart can be used to list out the steps involved in the process. Team members are to discuss or brainstorm the potential failure modes of each step of the process and to list the potential effects of each failure mode.

**4. Hazard Analysis**

In this step, the team members are to assign a severity ranking for each effect, to assign an occurrence ranking for each failure mode, and to assign a detection ranking for each failure mode and/or effect. Then, the risk priority number (RPN) for each effect is calculated. The

failure modes for action can then be prioritized by comparing the RPN. The higher the RPN, the higher the risk of the failure mode.

**5. Root Cause Analysis and ACTIONS**

The team members are to list out all the possible causes of the critically-indexed failure mode and to

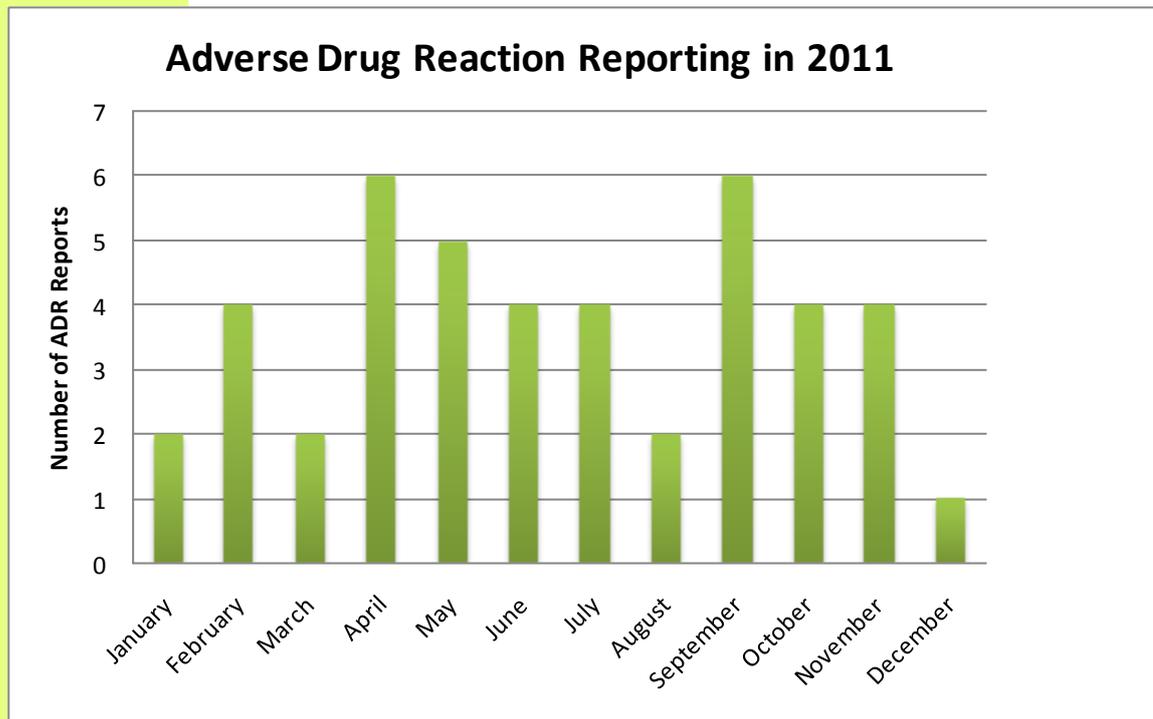
take actions or measures to solve the problem. After interventions are implemented, another FMEA are to be performed to calculate the resulting RPN. As the failure modes are reduced or eliminated, RPN should be lower.



Examples of effects of failure are as below:

Failure mode	Effects of failure
Illegible handwriting	Wrong drug, dose, freq, route
Incomplete order	Wrong dose, freq, route
Non formulary drug	More expensive therapy
Look alike drug name used	Wrong drug

## Adverse Drug Reaction



### Case of Adverse Drug Reactions (ADR) from October – December 2011:

Suspected Medications	ADR
Buffered Aspirin Tablet 100mg with Glycine 45mg OD	Gastric pain
Buffered Aspirin Tablet 100mg with Glycine 45mg OD	Dizziness, Difficulty in breathing
Cap. Calcitriol 0.25mcg OD (Osteocap)	Redness and itchiness over lower limbs Vericulobullous reaction over knee area
Tab. Gliclazide 160mg OD (SUNGLIZIDE)	Stomach bloating, gastric pain
Tab. Atorvastation 20mg OD (Ranbaxy)	Dizziness
Tab. Warfarin 4mg OD (LAWARIN 2)	Itchiness over body
Cap. Tramadol 50mg prn	Rashes and itchiness over both legs
MDI Beclomethasone 2puffs BD	Itchiness over nasal area, running nose, blocked nose
MDI Salbutamol 2puffs prn (Asthalin HFA Inhaler)	Mild tremor

# Diabetes Medication Therapy Adherence Clinic (DMTAC)

Diabetes has become a major healthcare burden in almost all countries in the world. Adherence to medication regimen is one of the vital parts of diabetes management. Poor adherence to medication therapy was associated with poor glycemic control. Pharmacists can play a significant role in improving diabetes patients' medication adherence level as well as their glycemic control.

**Diabetes Medication Therapy Adherence Clinic (DMTAC)** is an ambulatory care service conducted by pharmacists in collaboration with physicians with the aim of helping diabetes patients improves their medication adherence level and glycemic control.



## DMTAC at Hospital Labuan...

DMTAC was started at Hospital Labuan from October 2011. DMTAC operates at Klinik Pakar 3, Hospital Labuan, on every Wednesday except public holiday. There will be at least one pharmacist who performs a multitude of duties during the clinic.

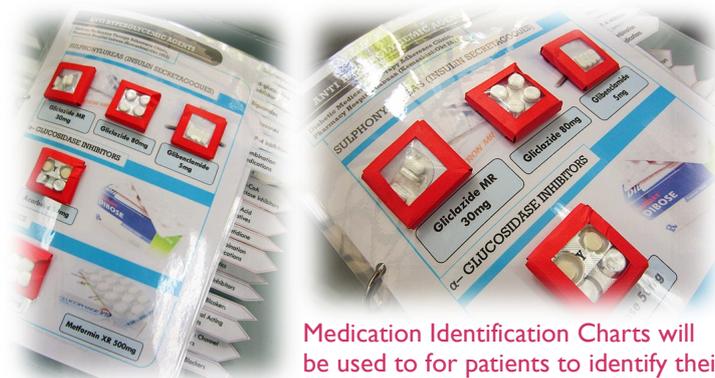
The patients enrolled in this clinic will be followed up for a minimum of eight visits where they will receive medication adherence assessment, identification and management of drug related problems, medication counseling, monitoring of clinical outcomes and diabetes education by the pharmacist.

## Objectives of DMTAC:

- \* To maximize benefits of medication therapy in diabetes patients.
- \* To reduce adverse effects and complications resulting from multiple drug regimens.
- \* To assist physicians in the management of patients placed on anti-diabetic therapy.
- \* To educate patients about diabetes and its complications, proper self-management, use of medications and self-care devices and increase patient adherence towards medication.
- \* To provide consultative services to healthcare providers on diabetes medications and related issues.
- \* To reduce emergency room visits of patients and decrease total healthcare costs of diabetes.

## Patient Selection:

- Diabetic patients currently managed at hospitals or health clinics
- Patients with uncontrolled diabetes:
  - HbA1c > 8.0%
  - Fasting Blood Sugar (FBS) > 6.1 mmol/L
  - 2 Hours Post Prandial (2HPP) sugar level > 8.0 mmol/L
- Diabetics with co-morbidities/ multiple medications
- Diabetics with complications (macrovascular and microvascular)



Medication Identification Charts will be used to for patients to identify their past medications.



Pharmacists will show flip charts to patients during DMTAC session for the ease of counseling.



All relevant data will be recorded using designated forms, and stored at patient profile and/ or case notes.

Adopted from Medication Therapy Adherence Clinic: Diabetes Protocol, 1st Ed. 2010.

# Anemia in

# Pregnancy

By Sharon Kong, pharmacist U4I

**D**uring pregnancy, the fetus uses the mother's red blood cells for growth and development, especially in the last three months of pregnancy. If a mother has excess red blood cells stored in her bone marrow before she becomes pregnant, she can use those stores during pregnancy to help meet her baby's needs. Women who do not have adequate iron stores can develop iron deficiency anemia. Good nutrition before becoming pregnant is important to help build up these stores and prevent iron deficiency anemia.

Vitamin B12 is important in forming red blood cells and in protein synthesis. Women who are vegans (who eat no animal products) are most likely to develop vitamin B12 deficiency.

Folate, also called folic acid, is a type of vitamin B that works with iron to help with cell growth. Folate deficiency in pregnancy is often associated with iron deficiency since both folic acid and iron are found in the same types of foods.

**Haemoglobin** is the oxygen-carrying component of red blood cells. **Anaemia** is a haematological condition in which there is a deficiency of haemoglobin resulting in the decrease of oxygen-carrying capacity of blood. World Health Organisation (WHO) defines anaemia as haemoglobin level less than 13g/dl and 12g/dl for males and females respectively. During pregnancy, there is a rise in plasma volume and red blood cells mass. The plasma volume increases to a greater extent compared to red blood cells mass, leading to lowering of haemoglobin levels. This modest fall of haemoglobin levels is a normal physiological change for pregnant women. Therefore, anaemia in pregnancy is defined as haemoglobin levels less than 11g/dl in the first and third trimester and less than 10.5g/dl in the second trimester (as compared with 12g/dl in non pregnant women).

## Treatment of Anemia in Pregnancy

Treatment of iron deficiency in pregnancy is the same as that in non-pregnant, postpartum, premenopausal, and postmenopausal women. The recommended daily dose for the treatment of iron deficiency in adults is in the range of **150 to 200 mg/day of elemental iron**.

Iron salts should not be given with food because phosphates, phytates, and tannates in food bind the iron and impair its absorption.

A number of factors can inhibit the absorption of iron salts, including the use of antacids, certain antibiotics and the ingestion of iron along with cereals, dietary fiber, tea, coffee, eggs, or milk.

**Iron should be given two hours before, or four hours after, ingestion of antacids.** Iron is best absorbed as the ferrous (Fe<sup>2+</sup>) salt in a mildly acidic medium. As a result, 250 mg ascorbic acid tablet is usually added at the time of iron administration to enhance the degree of iron absorption.

Vitamin B12 cannot be synthesized by mammalian tissue – dietary intake or supplementation is hence needed. It is present only in foods of animal origin and is not present in fruits, vegetables or grains.

Anaemia due to vitamin B12 deficiency from dietary origin can be treated with oral **cyanocobalamin 50-150mcg daily**.

Folate deficiency is treated with **folic acid (1 to 5 mg/day orally)** for one to four months, or until complete hematologic recovery occurs. Other than indicated for anaemia, folate supplementation can reduce the risk of neural tube defects in infants during pregnancy.

Folic acid supplementation should be started at least one month prior to conception and continue throughout the first trimester. The dose (0.4 to 4mg) depends on the woman's risk status. Because of many pregnancies are unplanned, folic acid supplementation is recommended for all women of childbearing potential.



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