

# EVALUTATING THE ROOT CAUSES OF CHEMOTHERAPY DRUG- MEDICATION ERRORS, DISCUSS FLOW CHARTS OF CHEMOTHERAPY, ISHIKAWA MODEL, PARETO MODEL

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**Abstract:** The purpose of this study is to prepare the risk management plan for a Chemotherapy Drug Procedure (CDP). It has been observed that more than 15% of patients die due to wrong administration of chemotherapy drug to patients suffering from any particular cancer. Furthermore, this study will discuss the concept of the quality healthcare and normal quality route for the Intravenous Chemotherapy and Intrathecal Chemotherapy administering. In the healthcare sector and Health Care Management (HCM) terms there is a need for all medical practitioners to focus on a risk management plan and measurement concept of quality by concentrating on "fitness for purpose" of the chemotherapy drugs administering towards the right route for intrathecal methodology instead of intravenously approach. However, due to death occurred from a particular patient in the process of administering chemotherapy drugs, the quality the facilitator may wish to identify, assess, mitigate, and monitor the root causes of death/accident and prepare report risks of chemotherapy drugs treatment.

**KEY WORDS:** Chemotherapy Drug Procedure (CDP) Health Care Management (HCM)



## 1.0 Introduction

### 1.1 CONCEPT OF QUALITY HEALTHCARE

The concept of Quality is very complex in the healthcare sector. It has been observed that quality in principle cannot be defined by health care management. Therefore defining quality in healthcare sectors may be challenging though the results or outcomes of the treatment determine the concept and significance of quality in health care. At my working place quality is defined by effective and efficient outcomes. Every week we check on patients in the rural areas through mobile clinic facilities, getting feedbacks from home-based care treatment. We believe that healthcare is a birthright and not a luxury. Therefore, quality and quantity of life should be always equal regardless of the dimensions and complex interventions of dependability, speed, and cost-effectiveness (Sammor, 2008). Quality is the attribute of a drug or service that is attractive in the eyes of the patient. Therefore, in today's competitive environment and Health care management, ignoring the healthcare quality issues is tantamount to corporate suicide (President of Hewlett- Packard, Fortune, October 1985). Therefore, healthcare quality means internal and external patient satisfaction (Juran and Gryna, 1989).

### 1.2 Chemotherapy drugs Administering

Chemotherapy drugs are drugs used for treating cancer. Depending on your type of cancer, patients can be cured with chemotherapy drugs. Chemotherapy drugs can destroy cancer cells to the point that doctors may not be able to detect the treatment in your body and cancer cells may not grow any further. Chemotherapy can control and keep cancer from spreading to other parts of the body, thus, it slows cancer cells from growth either destroys them completely. It is important to note that cancer is the complex disease that needs qualified health professional that is trained specifically for anticancer treatments. Before, treatment starts, patients may make bookings to be checked by health medical professionals and health care counselors. However, before treatment, a flow chart must be prepared to avoid medication errors or accidents. Below is the flow chart for quality assurance of the Chemotherapy drugs procedures:

**Table 01:** Causal factors charting flow hypothetical scenario

NO	TYPES OF ERRORS	DEFINITION	EXAMPLES
1.	Dosage errors	Chemotherapy medications administered in greater dose or smaller dose	Prescription for 25mg of chemotherapy drug and a 50mg dose was administered
2.	Time errors	Chemotherapy drug medication administered to patient in either more or less than 1 hour differently	Prescription for chemotherapy drug at 5 pm and administered at 7 pm instead
3.	Unauthorized	Administering chemotherapy drug type medication that has not been prescribed by health professional/physicians	Administering intravenous instead of intrathecal chemotherapy drug
4.	Technique errors	Used inappropriate techniques or route to admin-	Used wrong technique

		ister a chemotherapy drug medication	administration or not use the infusion pump for chemotherapy administration
5.	Administration route errors	Used wrong route from what had been prescribed	Prescription for intravenous instead of intrathecal chemotherapy drug
6.	Extra doses	Used medication that had been suspended	Used intravenous instead of intrathecal chemotherapy drug
7.	Prescription errors	Incorrect selection of chemotherapy drug medication. Physicians failed to follow laid down instructions	Used intravenous instead of intrathecal chemotherapy drug
8.	Omission	Health professional's made a mistake to administer a wrong chemotherapy drug to the patient	Used intravenous instead of intrathecal chemotherapy drug
9.	Wrong patient	Administered intravenous chemotherapy drug to the wrong patient	Intravenous chemotherapy was prescribed to patient A but

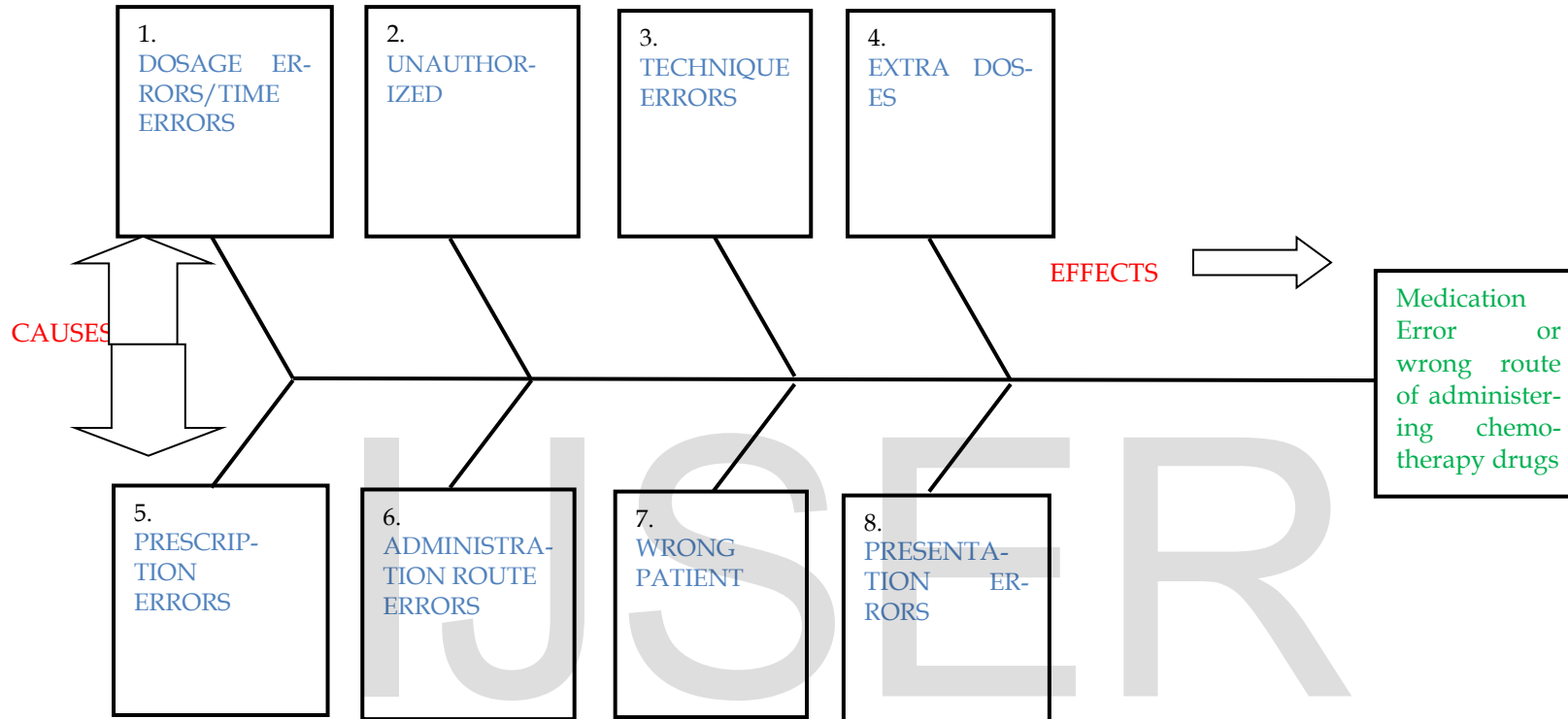
			was administered to patient B
0.	Presentation errors	Administering chemotherapy drug medication in a way different from what had been prescribed	Used intravenous instead of intrathecal chemotherapy drug

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Source: Ribeirao Preto, SP- 2007

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**FIGURE: 01 FISHBONE DIAGRAM- HYPOTHETIC MEDICATION ERROR SCENARIO**



Source:Own

As indicated in figure 01 and table 01; the goal for the quality facilitator is to identify and excess the correct procedures for a various types of the chemotherapy drugs medication to be administered to the right patient. Although an accident had occurred because of the wrong administration of Chemotherapy drug, the root cause was hypothetical scenario, because the cause effect may be due to the following reasons:

1. Dosage errors
2. Time errors
3. Unauthorized
4. Technique errors
5. Extra doses
6. Prescription errors
7. Administration route errors
8. Wrong patient
9. Presentation errors
10. Materials used

Teamwork is the major key in the improvement and continuity of quality and sustainable chemotherapy medications. Therefore, ensuring improving quality outcomes for administering the right route treatment for communities suffering from cancer-related diseases requires effective teamwork and corporate strategy with all stakeholders concerned. Health professionals should seek chemotherapy training in prescribing, dispensing, monitoring, and revise methodologies and techniques for correct chemotherapy medications towards treatment. It has been observed that the teamwork approach produces effective ideas and suggestions for health quality chemotherapy drug improvement. The flow chart should enhance teamwork, sustainable organization culture and affect digital leadership skills. Every health professional has two jobs in hospital opera-

tion tasks whenever he/she comes for work: meaning he/she must do his/her work and improve it.

The hospital administration would have prepared an effective flow chart and risk management plan for Chemotherapy drug medication. The quality and innovation conundrum should focus on cost-effectiveness and efficiency regardless of the projects we do (Davidoff and Batalden, 2007). Furthermore, wrong route medication may occur by new nurses because of lack of experiences and inadequate critical reasoning skills (Clin Simul Nurs, 2014).

Fatigue and stress in the operations may cause medical errors that could lead to injury and death to Patients. Although a medical errors are preventable, health quality care is required, for instance, errors may be caused due to lack of correct treatment; inadequate patient information and monitoring; bad writing and wrong documentation; failing to follow health policy and stipulated standards of chemotherapy drug administering (Thomas, 2016).

## **2.0 DECISION MAKING MODEL/TOOLS**

It is also important to note that health professionals may use several tools regarding decision-making. These may include a tree diagram and a Pareto diagram. However, in this discussion, we wish to apply the Pareto analysis model or tool to analyze the wrong route of chemotherapy administration. As indicated in figure 02. Statistically the wrong effort and input of 20% intravenous chemotherapy drug hypothetically 80% output or effect caused death for a particular patient suffering from cancer. But 80% input of suitable drug and procedure called intrathecally chemotherapy drug would have 20% fewer effects in the treatment of the patient suffering from known cancer.

Although some side effects of the chemotherapy treatment may occur. These side effects or risk may include:

1. Patients may have- Nausea
2. Patients may experience- Vomiting
3. Patients may have- Diarrhea
4. Patients may have- Hair loss
5. Patients may experience- Loss of appetite
6. Patients may have- Fatigue
7. Patients may have- Fever
8. Patients may have- Mouth sores
9. Patients may experience- Pain
10. Patients may have- Constipation
11. Patients may experience- Easy bruising
12. Patients may experience- Bleeding

### **3.0 HEALTH QUALITY IMPROVEMENT**

Stoner, Freeman and Gilbert, JR( 2009, p. 40)W. Edward Deming is one of the authors that identified fourteen points regarding health quality improvement. Each point was linked to the functions of management such as planning, organizing, leading, and controlling. Below are Deming's fourteen points (Stoner, Freeman, and Gilbert, JR, 2009, p. 40):

1. Health professionals are required to create consistency of purpose for quality improvement of chemotherapy drugs and health service delivery.
2. Physicians should adopt the new health philosophy such patient centered approach
3. Health staff should cease dependence on mass health inspection
4. Health professionals ought to end the practice of awarding business on price tag alone
5. Constantly and forever improve the health system of production and health service delivery
6. Health management should institute modern methods of chemotherapy drugs administering training on the job or treatment
7. Health managers should institute digital leadership skills
8. Health managers should break down barriers of communication between patients and health staff in their working areas
9. All Physicians ought to Drive out fear at the working place
10. Qualified health workers should eliminate slogans, exhortations, and targets for the patients in the working environment
11. They should also eliminate numerical quotas
12. Health management should remove barriers to pride of health workmanship
13. Top management must institute a vigorous program of education and chemotherapy training
14. Health professionals should take action to accomplish the transformation

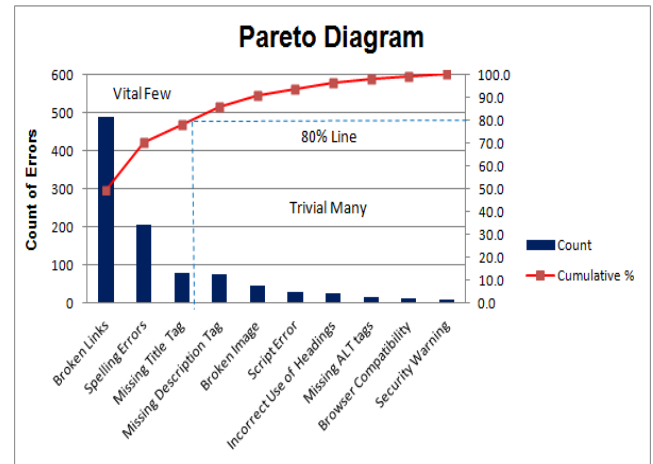
**TOTAL QUALITY MANAGEMENT**

Patient centered approach is accepted as a measure of Excellency. Chemotherapy drugs should meet patient’s requirements. *‘The health sector’s operating principles are excellence of quality, reliability of performance, and loyalty in dealer relationships. Caterpillar has zealously pursued the goal of building a better, more efficient crawler tractor than anybody else in the world (Peters and Waterman, 1982).*

Total Quality Management (TQM) can be defined as: *‘an intensive, long-term effort to transform all parts of the health sectors in order to produce the best product (chemotherapy drugs) and health service delivery to meet patient needs’. TQM is the strategic approach of any health sector that should focus on the following aspects (Hannagan, 2008, pp.204-205):*

- Statistical process control of chemotherapy drug
- Taguchi method of administering chemotherapy
- Right first time of administering chemotherapy drug
- Customer service/patient centered
- Just in time principles when ordering chemotherapy types of equipments
- Quality circles of chemotherapy
- Benchmarking - similar operations regarding chemotherapy treatment
- Quality assurance of chemotherapy administering

Figure 02: PARETO ANALYSIS MODEL/ TOOL



**SOURCE:** Mayo Clinic Family Health Book 5<sup>th</sup> Edition

As indicated the quality facilitator the health sector may base his/her decision making regarding wrong route chemotherapy drug administering by applying the 80/20 rule of pareto analysis model (Mayo Clinic Family Health Book 5<sup>th</sup> Edition):

1. 80% of patient complaints arise from 20% of your chemotherapy drugs and health services.
2. 80% of chemotherapy medication delays in the schedule result from 20% of the possible causes of the delays.
3. 20% of your chemotherapy drugs and health services account for 80% of your reward or out patients.
4. 20% of your health care and medical procedures may produce 80% recovery of patients suffering from cancer related diseases.



5. 20% of a health systems defects cause 80% of its problems and high mortality.

#### **4.0 RECOMMENDATION AND CONCLUSION BEFORE TREATMENT OF ANY CONCERT RELATED DISEASE**

If the patient is focusing on chemotherapy medication, the patient must make an appointment with a well-trained medical oncologist to check if the chemotherapy is the right route for treatment. In this regard, the doctor will assess the patient's medical problem and review the likely results during chemotherapy medication. The review may include the current and past medical and surgical history of the patient in question. Furthermore, the doctor will scan and assess the extent of cancer and the physical medical condition of the patient. The doctor will discuss the benefits and risks of chemotherapy and adequately answer questions related to chemotherapy allergies (Ribeirao Preto, SP-2007).

#### **4.1 DURING TREATMENT**

During treatment, Medical the oncologist will prescribe the chemotherapy plan; the nurses will be informed so that the concerned needs can be addressed and included in the treatment schedule. Laboratory or radiology tests will be carried out according to the specific chemotherapy drugs prescription. Depending on the specifications, the length of treatment may take several hours. The appointed medical oncologist and nurses may check and assess the patient regularly during the chemotherapy cycle. The progress report may be discussed by the entire medical oncology team during this period.

#### **4.2 AFTER TREATMENT**

The Medical oncologist concerned will compile the follow-up appointment scheduled after treatment is accomplished. The health status of the patient will be monitored normally by the medical oncologist to ensure a quick recovery.

Additional medication tests and diagnostic may be included after treatment. However, the follow-ups may gradually be reduced as days go by.

In conclusion, the quality facilitator should prepare the effective Risk management Plan (RMP) for any emergency. Strategically risk management plan is the tool for contingency approach in all health sectors. For instance, Chemotherapy drug administering errors should be documented according to the hospital's policy and RMP. Thus, consequences of an error: If the death occurred, the physician on duty should file a lawsuit and seek legal counsel. Health professionals need to be protected by hospital management as the cause is investigated. We need to present the effective method and workflow/failure model tools and effect analysis (FMEA) as well. Physicians must explain adequately how chemotherapy drugs can be administered in order to avoid potential failures as indicated in table 01.

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