# CLARIFICATION OF CONCEPTS

**Clinical Decision Support System (CDSS):** A combination of Health and Information Technology which provides practitioners with knowledge and patient-specific information. It is used to make more accurate clinical decisions and improve patient safety (Margaret Rouse, 2016).

**Computerized provider order entry (CPOE):** Application that allows health care providers to enter medical orders electronically. This includes sending treatment instructions and laboratory orders (Megan Charles, 2018).

**Human-Computer Interaction (HCI):** HCI is the design and improvement of interaction between computers and humans. It allows computers to be more user-friendly and efficient. It is crucial when considering the design of software involving decision-making with an easy-to-use framework. This will help improve usability in carrying out healthcare processes (Daniel Chandler & Rod Munday, 2011).

**Oncology:** The study and treatment of cancer which includes the various forms of therapy and procedures used to treat cancer (National Cancer Institute, 2011).

**Evidence-Based Medicine (EBM):** This is the usage of clinical experience and data to improve healthcare decisions. The evidence is then used and applied to evaluate the performance during clinical practice (Tenny & Varacallo, 2022).

For the QIP project, we will be looking at implementing CDSS within the hospital. Our focus would be catered towards critical decision-making when diagnosing and treating cancer patients. We will also look at how CDSS helps improve patient safety when delivering effective oncology care and how it will improve the overall quality when used in hospitals. Management of the risk in late cancer diagnosis will also be evaluated when compared to having the CDSS in place.

# 5.2 Decision-making criteria

***(Someone can explain here the option we are considering and why we chose that)***

Table 1: Decision Matrix - Delay in cancer diagnosis

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Decision Matrix: Delay in cancer diagnosis** | | | | | |
| Criteria | Practical  Feasibility  3 | User-Friendliness  2 | Impact on Quality Management  5 | Data Security and privacy  4 |  |
| Problems |
| Worsening symptoms | 3 x 3 = 9 | 2 x 2 = 4 | 3 x 5 = 15 | 2 x 4 = 8 | 36 |
| Extended pain and suffering | Medium –  Real-time updates and monitoring of patient conditions  2 x 3= 6 | 1 x 2 = 2 | 2 = 5 = 10 | 1 x 4 = 4 | 22 |
| Emotional suffering | 2 x 3 = 6 | 2 x 2 = 4 | 3 x 5 = 15 | 3 x 4 = 12 | 37 |
| Increased mortality risk | 3 x 3 = 9 | 3 x 2 = 6 | 3 x 5 = 15 | 1 x 4 = 4 | 34 |

**Method 1**: Rating scale for the criteria

1, 2, 3, 4, 5 (1 = low to 5 = great)

**Method 2**: Rating scale for the problem

1, 2, 3 (1 = low, 2 = medium, 3 = high)

For the table above it was found that emotional suffering scored the highest. Therefore, when designing the system it would be best to take into consideration how this would be solved.

# 5.3 Possible solutions and options

To address time constraints when diagnosing patients who are unfamiliar with cancer treatment, the solutions proposed will improve upon the existing diagnostic process.

By keeping medical practitioners especially nurses, informed on current developments in cancer research, a CDSS will help bring a better understanding of all possible cancer symptoms. It also helps deal with the possibility of patient errors in terms of providing the symptoms that they have noticed themselves. A misinterpretation of symptoms, improperly conducted tests and failure to offer cancer screenings are some of the most common causes of cancer misdiagnosis (Wilson, 2018).

5.3 Solutions to the problem of late or misdiagnoses of cancer in patients: (These will all make use of the CDSS system)

1. Having an alert system to notify health practitioners if their patient matches key cancer symptoms or prompt a specialist to review the symptoms.
2. Allow specific information to be displayed about the diagnosis, treatment, and long-term side effects. This will help develop a plan moving forward so that a constructed decision is made with evidence-based recommendations.
3. Have a prompt that helps make recommendations for initial testing based on the symptoms of the patient, while considering their medical history.
4. Electronic health record (EHR) system that updates in real-time for better communication and tracks each patient. It would also alert and notify the severity of a patient's current condition when arriving at the hospital, this allows management to delegate who is best suited to care for the patient now.
5. Have the CDSS notify healthcare providers when the symptom of a patient worsens or if they show more symptoms related to cancer, allowing a more effective way to prevent the condition from worsening.

The current problem in the field of Oncology

Currently, the problems that health practitioners face within the oncology wards mainly have to do with the late detection of cancer which leads to complications of treatment. Long-term it can lead to hospital admissions, about 13,9%-21.8% of patients are diagnosed with cancer during emergency admissions (Michael Yule et al., 2017).

***^ Include the above where we wrote about the problem***